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Hill Air Force Base, Utah

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Investigation Summary Report UST Site 870 (DERR Site EGSS, IRP Site Code ST61)

Contract F42650-89-C-0038

February 1993

AQM01-01-0313

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Consulting Engineers Inc.

February 25, 1993

Ogden Air Logistics Center
Environmental Management Directorate
OO-ALC/EMR, Building 5
Hill Air Force Base, Utah 84056

Project No.: 2208.0583

ATTN: Mr. Andrew Gemperline
Project Manager

PROJECT: Draft Investigation Summary Report
UST Site 870 (DERR Site EGSS, IRP Site Code 61
Contract No. F42650-89-C-0038, Delivery Order 5009

Dear Mr. Gemperline:

James M. Montgomery, Consulting Engineers, Inc. (Montgomery) has prepared the subject report to provide a summary of investigative activities conducted to data at UST Site 870. The following sections provide summary information regarding each component of the investigative activities conducted since November 1991. A brief discussion is also included which summarizes the known and unknown aspects of the site, and provides information on what future actions are planned for the site. Where appropriate, previously prepared reports are referenced. In addition, figures, tables, and appendices that are referenced in the text are provided at the end of this report.

INTRODUCTION

This report has been prepared following guidelines and requirements set forth in Task of Contract F42650-89-C-0038 issued by Hill Air Force Base (Hill AFB) to Montgomery. The objective of the report is to provide a comprehensive summary of information, data, and observations made to date at the site.

Site Location

Site 870, which is also referred to as Site EGSS by the Utah Division of Environmental response and Remediation (DERR) and as Site Code ST61 under the Air Force Installation Restoration Program (IRP), is located in the southwestern portion of Hill AFB, as shown in Figure 1. The underground storage tank (UST) at the site is within the Base tank farm which consists of nine aboveground storage tanks (ASTs) that are used to store JP-4 (jet fuel) and diesel for use in day to day operations at the Base. The site is bounded to the south by Sixth Street and the Patriot Hills Air Force personnel housing area. Warehouses, offices, and storage facilities are east and west of the site. To the north are the ASTs that comprise the Base fuel storage tank farm. A site map showing these features is provided as Figure 2.

Site History

As part of a Base-wide effort to upgrade and/or minimize the number of USTs at Hill AFB, a 1,000-gallon "slop tank" at the site was removed the tank had been used to store condensate and residual JP-4 generated by operations at a nearby filter stand. The 21 year-old UST had a 1,000-gallon capacity, was constructed of steel, and was removed from the site in May 1991 (Hill AFB designation 870.0). Following its removal, a new dual walled steel UST equipped with leak detection equipment, was installed in the same excavation. The new UST similarly served as a drain tank for condensate and residual JP-4 generated by the adjacent filter system. During the removal and closure process, the tank appeared to be in good condition, yet contaminated soils were observed in the excavation. Soil chemical analytical data for closure samples collected from native soils beneath each end of the old UST detected the presence of total petroleum hydrocarbons (TPH) at 1,600 and 2,900 milligrams/kilogram (mg/kg). The closure sample data are tabulated in Table 1, and copies of the laboratory analytical reports are provided in Appendix A. Attempts to excavate the contaminated soils were not made to avoid damaging an adjacent retaining wall immediately south of the excavation. The site has since been the subject of several investigations which are summarized in the following sections.

Previous Investigations

The site has been investigated several times since contamination was initially detected at the site during the tank closure. The investigations began in November 1991 when a site characterization investigation was conducted and reported in a Site Characterization Report (SCR) (Montgomery, 1991). At that time, three soil borings were drilled and sampled; a monitoring well and a soil vapor probe were installed in two of the soil borings. Evidence of hydrocarbon contamination was observed in the soils adjacent to the former UST, ground-water sampling results indicated that shallow ground water had been impacted but no light non-aqueous phase liquid (LNAPL) was observed (Montgomery, 1991). In March, 1992, LNAPL was measured in the monitoring well (MW-1) during routine monitoring checks by EMR personnel; the location of the well is shown in Figure 2. Several investigations have since been conducted to delineate the source and extent of LNAPL, as well as contaminated soil and ground water. Table 2 presents a chronological description of the investigative activities at the site to date. Reports regarding the findings of the various activities have been prepared and include:

- Site Characterization Report (Montgomery, 1991)
- Free Product Letter Report (Montgomery, 1992a)
- Pumping Tests and Product Thickness Test Letter Report (Montgomery, 1992b)
- Remedial Options Letter Report, (Montgomery, 1993).

Other significant activities at the site have included a soil gas survey, the installation of an LNAPL recovery system, line tightness testing, tracer tests, and cone penetrometer testing (CPT) and drilling. The CPT and drilling activities have delineated the extent of the LNAPL and contaminated ground water, as shown in Figure 3.

Current Activities

Current activities at the site include active and passive LNAPL removal, weekly monitoring of water and LNAPL levels, and a vapor exposure assessment (VEA). Active LNAPL recovery has been conducted at the site since the installation of the recovery system in June 1992, approximately 500 gallons of LNAPL have been recovered. Passive LNAPL recovery using absorbent pads enclosed in a stainless steel perforated bailer is also being used in selected wells to maximize

LNAPL recovery. Water and LNAPL measurements are measured weekly to provide information regarding varying LNAPL thicknesses and fluctuations in the water table. A VEA for the Patriot Hills housing area is being conducted to determine whether the volatilization of toxic constituents of the LNAPL underlying the housing area constitutes a pathway for exposure to Patriot Hill residents. The project is in the planning stages and actual field vapor measurements using flux chambers are expected to begin in early March 1993.

DATA SUMMARY

Soils

A summary of soil analytical data generated during the UST Site 870 investigations is provided in Table 3, copies of the laboratory analytical reports are provided in Appendix B. The presence of LNAPL and seasonal water table fluctuations have resulted in a broad smeared zone of soil contamination above the water table. These fluctuations have created a zone of highly contaminated soils that is confined to a capillary fringe zone that ranges from 3 to 7 feet above the water table. This smeared zone of contaminated soils has been encountered above the entire lateral extent of the LNAPL (Figure 2). Headspace soil screening data from the nine monitoring wells on the site and the three located in the Patriot Hills housing area indicate that the contamination above the water table is greatest near Building 870 and well MW-3 (Figure 2). The headspace readings are provided on the boring logs in Appendix C. The soils encountered during the drilling of MW-3 were contaminated beginning at a depth of 5 feet and contaminated soils extended to the water table approximately 25 feet. Based on the headspace and laboratory analytical data the thickness of contaminated soils above the water table thins to the southwest and down gradient of the site.

Geotechnical samples were collected at the site during previous investigations and tested for permeability, Unified Soils Classification System (USCS), Atterberg Limits, and moisture. The results of the four samples are tabulated in Table 4, copies of the geotechnical reports are provided in Appendix D.

Ground Water

Ground-water analytical data collected from the site have been tabulated in Table 5; copies of the laboratory reports can be found in Appendix E. Through various investigations, the extent of LNAPL and ground-water contaminated with dissolved benzene, toluene, ethylbenzene, and xylenes (BTEX) contaminants has been identified as approximately 1,300 feet long and up to 600 feet wide beneath Patriot Hills housing area (Figure 1-2). A total of twelve monitoring wells have been installed. Three of the wells are offsite in the Patriot Hills housing while nine were onsite within the limits of the tank farm; well completion information is summarized in Table 6. A considerable amount of the ground-water data was generated during the CPT investigation in August 1992. During this investigation, CPT profiles were compiled from 39 locations and piezometers were installed. The piezometers were sampled and analyzed using a laboratory-grade portable gas chromatograph; a CPT summary report is included as Appendix F. This investigative method proved to be a useful screening method for determining the extent of contamination. Some of the samples collected from the site contained halogenated compounds, however, these compounds were only tentatively identified by matching library elution times with peaks on the chromatogram. Additionally, the gas chromatograph was not calibrated for these compounds so there is uncertainty regarding whether the compounds were properly quantified and identified. Other ground-water samples (SGS-1, CPT-7, and MW-5) collected at the site contained halogenated compounds just at or above the detection limits suggesting that these compounds may be present at very low concentrations (Table 5).

During a recent CPT investigation conducted in November 1992, an attempt was made to assess the vertical extent of ground-water contamination. A push-in sampler was advanced to a specified depth using the hydraulics and weight of the CPT rig. When the sampler was at the sample interval, the cone rods were pulled back opening the sampler screened interval and a small stainless steel bailer was then used to collect a ground-water sample through the cone rods. Samples were collected at two locations, one adjacent to MW-4 and the other by MW-3. Three ground-water samples were collected from each location at 10-foot intervals beginning at 10 feet beneath the water table. Based on the results of the sampling (Table 5) it suggests that dissolved contaminants may extend to a depth of at least 69 feet bgs.

SITE HYDROGEOLOGY

Investigations at the site have encountered sediments typical of a deltaic depositional environment. Soils are comprised of silty sands and poorly sorted sands with interbedded silts and clays. Two cross-sections of the site have been prepared, Section A-A' is oriented northeast-southwest down the length of the LNAPL and contaminated ground water, while Section B-B' is oriented northwest-southeast, as shown in Figures 4 and 5. The cross-sections provide a good conceptual understanding of the shallow geology beneath the site. Sediment types that were logged in borehole CPT-40, located at the northeast end of the cross-section, extending to MW-12 to the southwest (Figure 4) is primarily composed of silty sands until a depth of approximately 25 feet bgs; below this depth sandy clays to silts with interbedded silty sands are the primary sediment type. The LNAPL and dissolved contaminants in ground water appear to have migrated into the interbedded silty sands. Based on physical soil sample observations and CPT profiles at the site, the silty sand layers have a maximum thickness of approximately 1/2-inch resulting in very low conductivities and transmissivities.

Between MW-12 and the end of the cross-section at CPT-26 (Figure 4), the stratigraphy is comprised of silty sands with interbedded or alternating layers of poorly sorted sand, however, at approximately 25 feet silts and clays become more prevalent and are interbedded with silty sands and poorly sorted sands. A fairly thick (12 to 16 feet) and continuous body of poorly sorted sand was observed beneath the middle of the NAPL area beginning near the location of MW-12 and extending to CPT-26 where its thickness decreases considerably. The sand is believed to be an old deltaic stream channel. The channel sand in the cross-section is bound beneath by silts and clays interbedded with silty sand; however, in the cross-sections, LNAPL and ground water appear to have migrated through both the channel sand and the surrounding silt and clay with interbedded silty sand or poorly sorted sands.

In cross-section B-B', the stratigraphy has been interpreted to be composed of silty sands to poorly sorted sands near the surface grading downward into silts and clays. This cross-section also shows that the ground water does not appear to be limited to the area of the channel sand.

The extent of the LNAPL and contaminated ground water is shown in Figure 2. The LNAPL thickness throughout the area is thickest in MW-3 adjacent the pump house and generally thins to the southwest beneath the Patriot Hills housing area. However, the LNAPL thicknesses and ground-water levels appear to fluctuate based on recent field measurements. LNAPL thicknesses and water level measurements are being collected on a weekly basis which should provide a better understanding of LNAPL thicknesses both on site and in the Patriot Hills housing area.

LNAPL RECOVERY

An active LNAPL recovery system was installed at the site in June 1992 in MW-3 adjacent to Building 870 (see Figure 2). Over the past eight months, the active recovery system and the passive recovery systems have removed approximately 500 gallons of LNAPL from the subsurface. More recently, a passive LNAPL recovery system (Soakease System) was installed in October 1992 in 2

of the wells at the site. The passive system uses an absorbent sock which is placed in a stainless steel perforated bailer and lowered into the well across the water table where LNAPL is wicked into the absorbent material. The bailer is removed and wrung out on a weekly basis to remove the LNAPL from the absorbent material and the process is repeated. All LNAPL has been containerized in 55-gallon drums at the site and disposed of by Hill AFB.

AQUIFER TESTING

Pumping Tests

Pumping tests were performed at the site to determine the maximum sustainable ground-water pumping rate as well as the feasibility of installing a ground water/LNAPL recovery and treatment system (Montgomery, 1992b). Results of the tests indicated that the combined rate from five on-site wells is not likely to exceed two gallons per minute (gpm); the most productive well (MW-3) was able to sustain a flow of 0.65 to 0.75 gpm. The shallow aquifer beneath the site typically has very low conductivities and transmissivities, and drawdown is localized. Changes in product thickness during pumping were monitored at three of the pumping wells, but were only significant in MW-3. The lack of observable change in product thickness may be attributed to the small product thickness at the time of testing. A more detailed discussion of the results of the field tests are provided in Pumping Tests and Product Thickness Test Letter Report (Montgomery 1992b).

Slug Testing

As part of the November 1991 investigation, slug tests were performed at the site to determine the hydraulic conductivity for the aquifer material at the site. Two tests were performed in MW-1, and the hydraulic conductivity was calculated using the Bouwer (1978) method at 1.50×10^{-4} and 1.80×10^{-4} cm/s. These values are indicative of silty sands and fine sands according to Freeze and Cherry (1979). the Site Characterization Report (Montgomery, 1991) provides a discussion of the slug tests and resultant hydraulic conductivities.

DISCUSSION

As a result of the investigations, the extent of the LNAPL and the contaminated ground water is known to extend southwest of the pump house at Site 870 into the Patriot Hill housing area; it is roughly 1,300 feet long and up to 600 feet wide (Figure 2). The LNAPL is thickest in the area of MW-3, believed to be near the source area at the west end of the pump house. The LNAPL thickness generally decreases down gradient to the southwest beneath the Patriot Hill housing area. The LNAPL that flows into MW-3 is actively pumped using an LNAPL recovery system, typically the product thickness in the well is maintained at 0.02 feet or less. The lithology of the site as determined by CPT and drilling has been observed to be comprised of silty sands interbedded with silts and clays. A stream channel composed of poorly sorted sand has been interpreted to be superimposed on top of less permeable clayey silts and silty clays interbedded with thin silty sand layers. It appears that the lateral and vertical distribution of LNAPL is influenced by the stream channel and the less permable sediments beneath the sand. The identification of the channel sand has, in part, defined the area and shape of the LNAPL and contaminated ground water which is oriented northeast-southwest across the site.

The LNAPL has a gas chromatograph signature typical of fresh to weathered JP-4 and/or diesel fuel. The source of the LNAPL has not been idintified nor has it been determined if it is from active leaks or if it is from past spills or leaks. Further investigations to identify the sources are planned and will involve additional line tightness testing, tracer studies, and hand augering along utility trenches. In addition to this, the VEA study will be conducted in the Patriot Hills

housing area to determine if there are any imminent health risks to the residents. Containment and recovery treatability studies are planned which will involve driving sheet piling into the ground to control the migration of LNAPL off site, different LNAPL recovery and insitu groundwater treatment approaches will be considered. The studies will also involve air sparging and soil vapor extraction on a small scale to determine if these are viable remediate alternatives. If the results of the treatability studies are promising, a full scale design will be pursued.

We welcome your comments. Please do not hesitate to call us if you have any questions or comments.

Very truly yours,

JAMES M. MONTGOMERY
Consulting Engineers, Inc.

Robert Glascott
Hydrogeologist

David Fulton, P.G.
Project Manager

/pw
Enclosures

REFERECNES

Bouwer, H., 1978. Groundwater Hydrology: McGraw-Hill, Inc., Inc.

Freeze R.A., and Cherry, J.A., 1979. Groundwater: Prentice-Hall, Inc., Englewood Cliffs, New Jersey, p. 29.

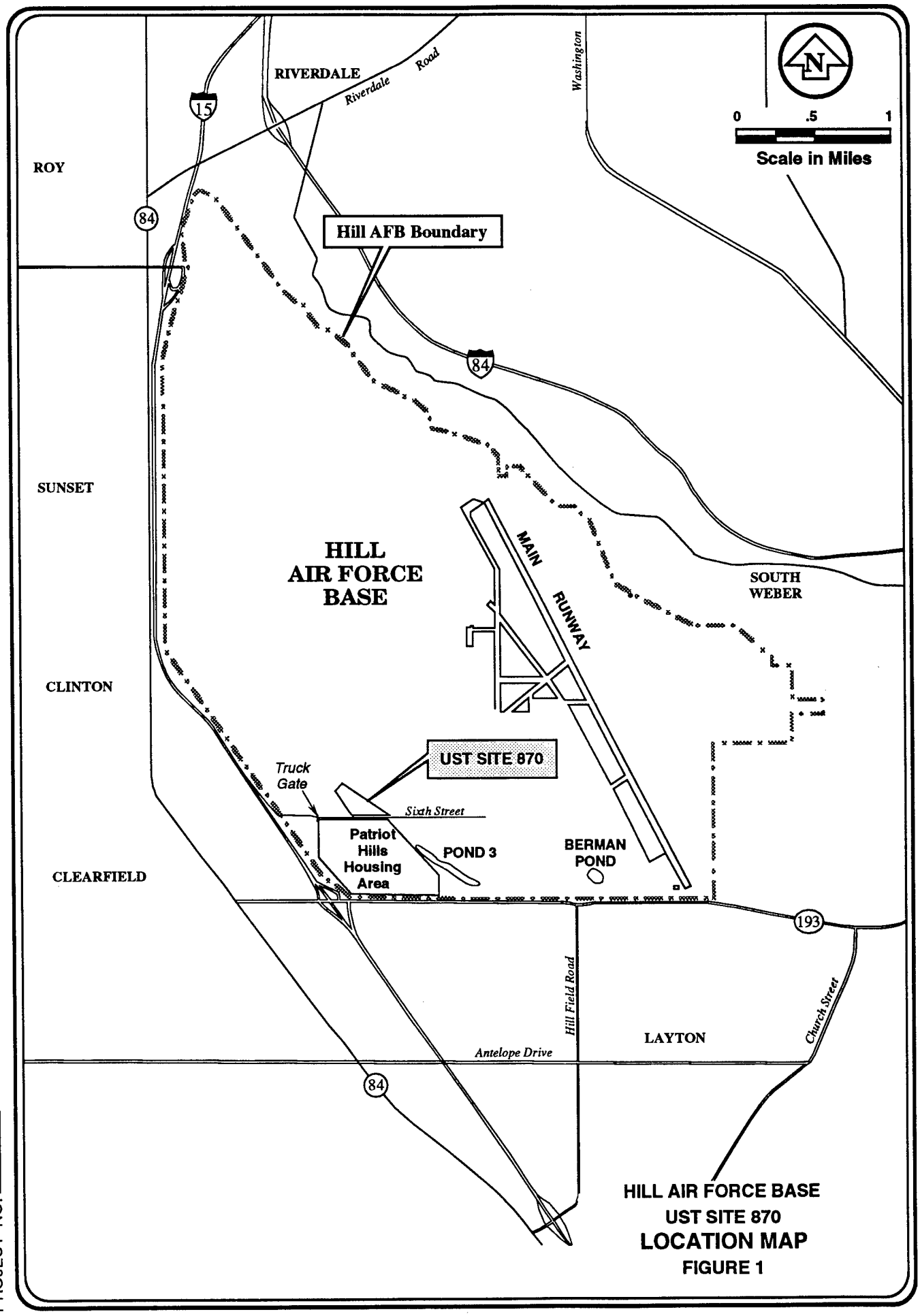
James M. Montgomery Consulting Engineers, Inc., (Montgomery), 1991. External Draft Site Characteriztion Report for UST Site 870.0 (AGSS), December 1991.

James M. Montgomery Consulting Engineers, Inc., (Montgomery), 1992a. Free Product Recovery Letter Report, UST Site 870.0 (EGSS), November 1991.

James M. Montgomery Consulting Engineers, Inc., (Montgomery), 1992b. Pumping Tests and Product Thickness Test Letter Report UST Site 870 (EGSS) (IRP Site Code ST61), November 1992.

James M. Montgomery Consulting Engineers, Inc., (Montgomery), 1993. Remedial Options Letter Report, January 1993.

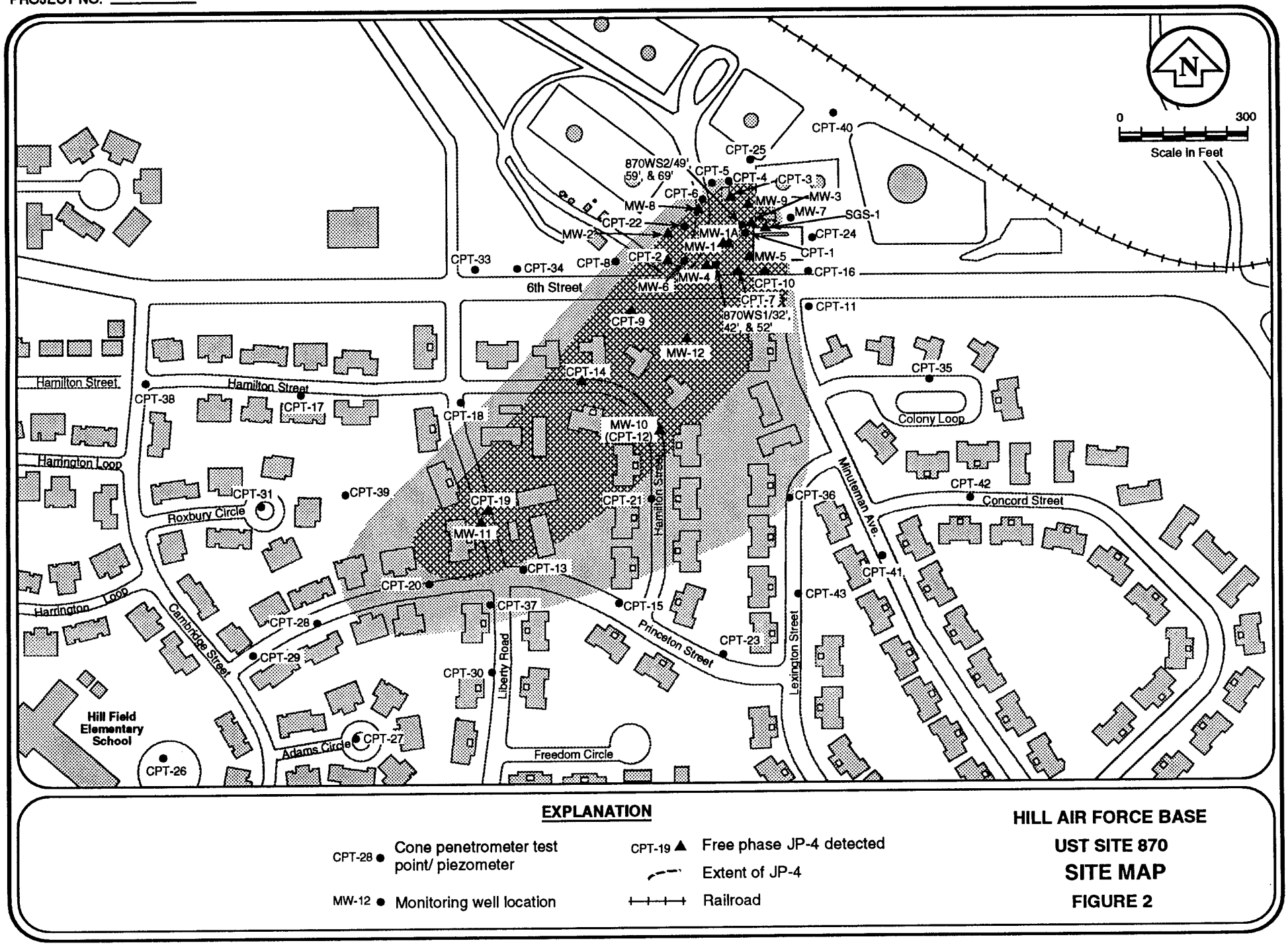
FIGURES



HILL AIR FORCE BASE
UST SITE 870
LOCATION MAP
FIGURE 1

PROJECT NO. 2208.0583

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EXPLANATION

CPT-28 ● Cone penetrometer test point/ piezometer

MW-12 ● Monitoring well location

CPT-19 ▲ Free phase JP-4 detected

Extent of JP-4

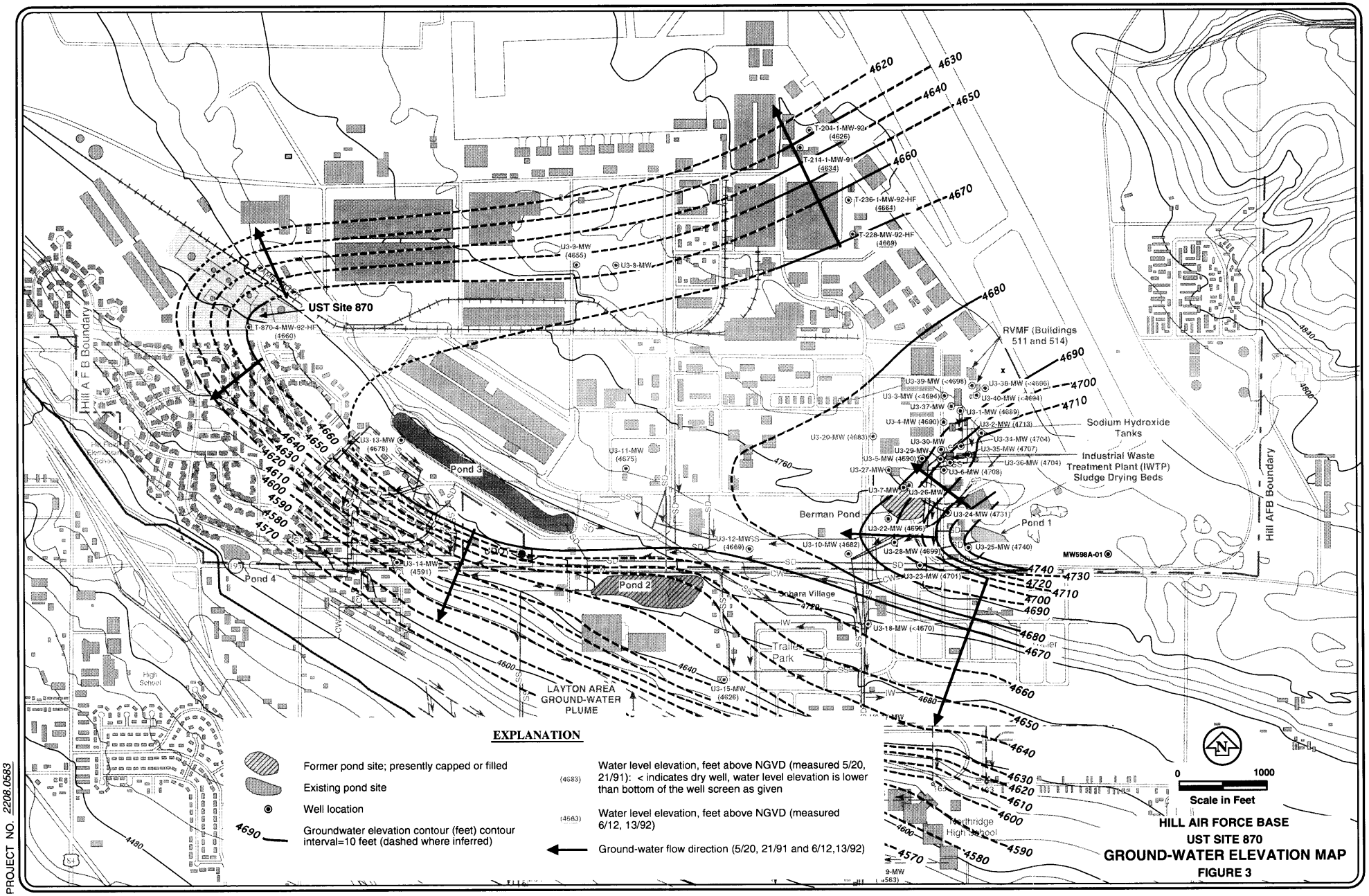
Railroad

HILL AIR FORCE BASE

UST SITE 870

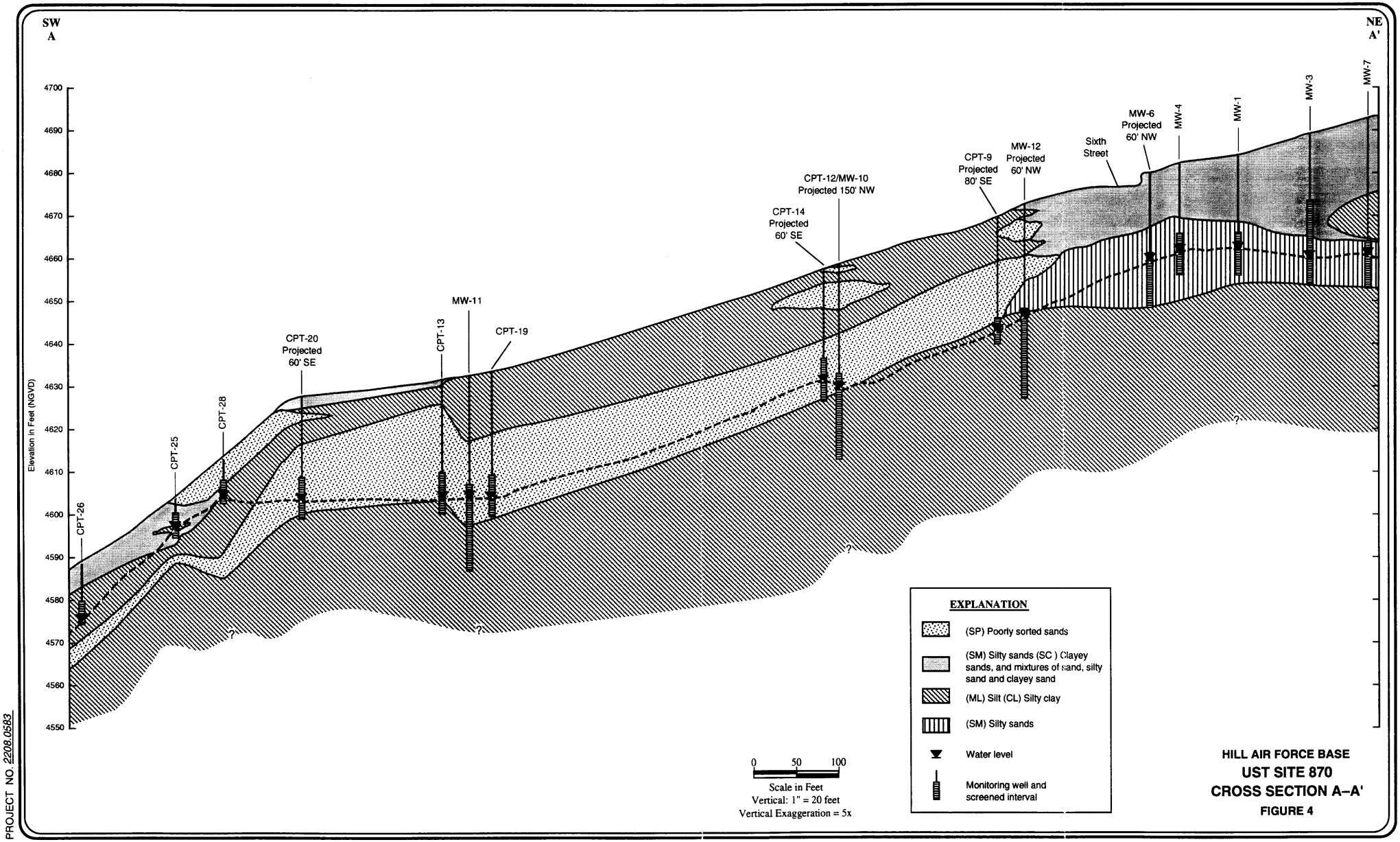
SITE MAP

FIGURE 2



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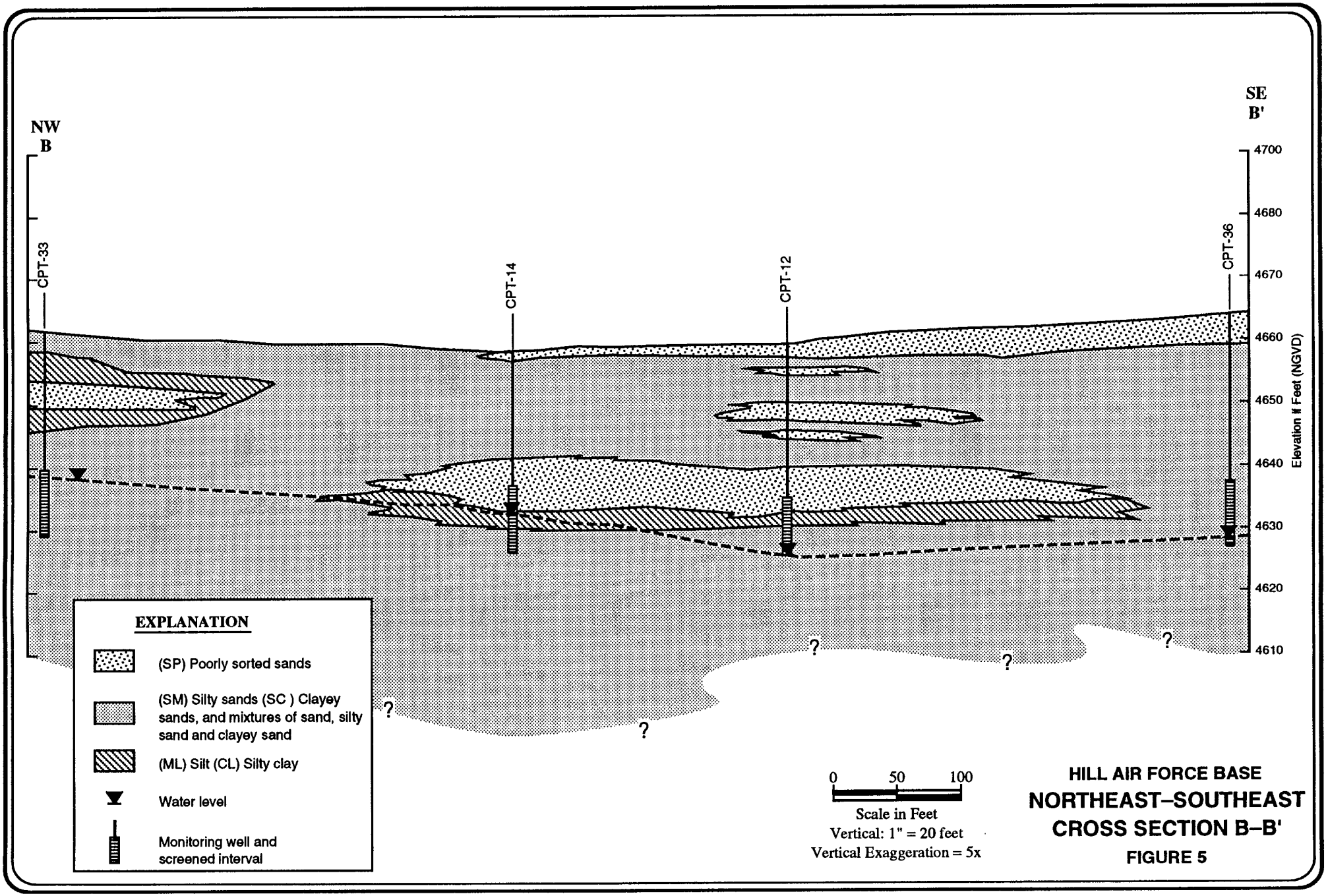
HILL AIR FORCE BASE
UST SITE 870
GROUND-WATER ELEVATION MAP
FIGURE 3



HILL AIR FORCE BASE
UST SITE 870
CROSS SECTION A–A'
FIGURE 4

PROJECT NO. 2208.0583

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HILL AIR FORCE BASE

NORTHEAST–SOUTHEAST CROSS SECTION B–B'

FIGURE 5

TABLES

TABLE 1

CLOSURE SOIL ANALYTICAL DATA

Analyte	Sample I.D.:	SS# 870T-1 (Southwest End)	SS# 870T-2 (Northeast End)	SS# 870P-1 (Southeast End)
Total petroleum hydrocarbons (TPH)(mg/kg)		2,900	1,600	<2.0

mg/kg Milligrams/kilogram

All soil samples were analyzed according to EPA SW-846 Method 8015 Modified.

TABLE 2

SUMMARY OF INVESTIGATIVE ACTIVITIES

Field Activity	Date(s)	Safety Level	Regulatory Notification(s)/ Permitting Requirement(s)	Result
Site Characterization (JMM)	11/6/91-11/8/91	D	Division of Water Rights notified of intent to install monitoring well. Utility clearance by Base Red Stakes.	Soil and ground-water contamination identified near 1,000 gallon UST and piping draining filters to UST. Three borings, one completed as vapor probe, one completed as 4-inch monitoring well (MW-1). Site Characterization Report submitted to DERR 12/91.
Weekly Water Level Measurements (EMR/JMM)	3/25/92	D	DERR (Robin Jenkins) and DWQ (Larry Mize) notified of free-product in MW-1.	Product detected in MW-1 (Figure 2). Bail-down test performed. Daily bailing conducted to remove product. Removed approximately 1 gallon on 3/25/92 and approximately 1/2 gallon each day.
Soil Gas Survey (JMM/Target)	3/31/92-4/3/92	D	None	Optimum probe depth determined to be 15 feet below ground surface. Survey shows plume to be primarily on site. Highest values near Building 870. Attempts at sampling ground water through soil gas probes unsuccessful. (Target Environmental Services, Inc., Soil Gas Survey, UST Site 870, April 1992, p. 9.)
Site Investigation (JMM)	5/20/92-5/26/92	D	Division of Water Rights notified of intent to install monitoring wells. DERR notified of product found in additional wells.	Three borings completed as wells (MW-2, 3, 4) as depicted in Figure 2. Soil contamination observed in 2 of 3 borings. Free product observed in MW-3 boring and suspected in MW-4. Bailing initiated for wells MW-3 and MW-4.
Product Recovery Pump Installation and Operation (JMM/EMR)	6/12/92	D	None	Installed QED-specific gravity product skimmer pump in MW-3. Operated constantly. Monitored and serviced daily by JMM/EMR. All equipment is explosion-proof, meeting all Base fire codes.
Site Investigation (JMM)	6/16/92-6/18/92	D	Division of Water Rights notified of intent to install monitoring wells. Utility clearance by Base Red Stakes.	Three borings completed as wells (MW-5, 6, and 8) as depicted in Figure 2. Soil contamination observed in all of the borings. Free product present in MW-5 and MW-8. Bailing initiated for MW-5 and MW-8.
Product Pump Installation and Recovery Test (JMM)	6/30/92	D	None	Installed a CEE Selective Oil Skimmer (SOS) pump in MW-1 for recovery and thickness testing. MW-1 was pumped until only a sheen remained, the pump was removed and product level monitored over time. After 95 minutes there was only 0.02 of product in the well. Based on the test, the true thickness of product is believed to be 0.02 feet.

TABLE 2

SUMMARY OF INVESTIGATIVE ACTIVITIES
(CONTINUED)

Field Activity	Date(s)	Safety Level	Regulatory Notification(s)/ Permitting Requirement(s)	Result
Site Investigation (JMM/HAFB)	8/3/92-8/6/92	D	Base Fire Department notified and present at site.	Excavated some of the product lines associated with the pumphouse. No leaks were found. Base Bioenvironmental Engineering conducted site air monitoring. Hand augered in 12 locations around the pumphouse at the site. Eleven of 12 locations contained soil contamination, no ancillary pipe leak(s) was detected. Installed soil vapor probes in all holes to monitor soil gas.
Site Investigation (JMM/Terra Technologies)	8/6/92-8/14/92	D	Utility clearance by Base Red Stakes.	Cone penetrometer testing performed at 37 locations, involving the installation and sampling of temporary well points. Ground-water samples were analyzed using a laboratory-grade gas chromatogram with a PID. Determined the extent of dissolved and free product in ground water.
Site Investigation (JMM/Tracer Research Corp.)	8/20/92-8/21/92	D	None	Tracer tested ancillary piping associated with the pumphouse. No leaks were found in lines that were checked.
Residential Air Sampling (HAFB)	8/25/92-8/27/92	D	None	Seven houses were selected within the plume in Patriot Hills for air sampling. Samples were collected from the basements. Two air samples were taken in backyards one within the plume and one background location.
Site Investigation (JMM)	9/2/92-9/10/92	D	Division of Water Rights notified of intent to install monitoring wells. Utility clearance by Base Red Stakes.	Three borings were completed as wells (MW-10, 11, and 12) as depicted in Figure 2. Soil contamination observed in all three borings above the water table.
Fuels Analysis (HAFB)	9/3/92	D	None	Monitoring wells MW-3, 4, and TWP-1 or MW-8 (Figure 2) were sampled to determine the composition of the product. The samples were analyzed at Tyndall AFB, FL. A copy of the analytical data can be found in Appendix D.
Site Investigation (JMM)	9/15/92-9/18/92	D	None	Performed pump tests on five wells to measure sustainable pumping rates. Maximum pump rate from all five wells combined is less than 2.25 gallons per minute.
Site Investigation (JMM)	9/18/92-10/1/92	D	None	Installation of three additional SOS pump systems in monitoring wells MW-1, 4, and 8 as depicted in Figure 2.

TABLE 2

SUMMARY OF INVESTIGATIVE ACTIVITIES
(CONTINUED)

Field Activity	Date(s)	Safety Level	Regulatory Notification(s)/ Permitting Requirement(s)	Result
Site Investigation (JMM)	10/23/92	D	None	Installed a passive recovery system in monitoring well MW-4 for product removal. Information on this recovery method is provided in Appendix E.
Site Investigation (JMM/Fugro Geosciences)	11/22/92-11/24/92	D	None	Installed four piezometers; one onsite 870 and three in Patriot Hills. Collected three groundwater samples in two locations onsite to vertically profile the shallow aquifer.

TABLE 3

SOIL ANALYTICAL RESULTS

Analyte	Soil Boring and Sample Depth							
	MW-1 (16'-17')	MW-1 (18'-19')	SB870A-02 (15'-16')	SB870A-02 (17'-18')	SB870A-03 (11'-12')	SB870A-03 (19'-20')	SB870A-03 (29'-30') (Duplicate) of 19'-20')	Trip Blank (Water) 11/7/92 (µg/L)
BTEX (µg/kg)								
Benzene	150	564	43.2	13.0	9,400	338	22,200	<1.0
Toluene	129	145	51.3	60.2	115,000	595	187,000	<1.0
Ethylbenzene	57.0	341	52.2	57.7	66,700	138	83,100	<1.0
Xylenes	318	2,249	457.3	509	634,000	1,143	744,000	<1.0
TPH (mg/kg)	<10.0	98.3	23.2	37.0	2,790	<10.0	15,100	<1.0
Total Organic Carbon (mg/kg)	--	--	--	--	--	1,100	--	--
Moisture (%)	21.9	19.4	18.9	24.2	7.3	20.3	14.0	--

µg/kg Micrograms/kilogram
mg/kg Milligrams/kilogram
µg/L Micrograms/liter
-- Not analyzed

Soil Samples were analyzed according to EPA SW-846 Methods 8020 and 8015 Modified.

TABLE 3

SOIL ANALYTICAL RESULTS
(CONTINUED)

Analyte	Soil Boring and Sample Depth								
	MW-5 (15.5'-16')	MW-6 (21'-21.5')	Trip Blank (Water) 6/17/92 (µg/L)	MW-8 (11'-11.5')	Trip Blank (Water) 6/18/92 (µg/L)	MW-9 (17'-17.5')	MW-1A (17'-17.5') Abandoned	Trip Blank (Water) 6/29/92	MW-1A (59.5'-60') Abandoned
BTEX&N (µg/g)									
Benzene	2.0	0.009	<1.0	<0.005	<1.0	0.10	10	<1.0	<0.009
Toluene	0.11	<0.005	<1.0	0.031	1.4	0.10	23	<1.0	<0.005
Ethylbenzene	0.26	<0.005	<1.0	0.12	<1.0	0.18	16	<1.0	<0.005
Xylenes	2.8	<0.005	3.5	0.92	5.5	5.4	74	2.9	<0.01
Naphthelene	1.4	0.05	<5.0	4.4	<5.0	2.9	6.6	<5	<0.01
TPH (mg/g)	0.02	<0.01	--	0.11	--	0.36	1.5	--	<0.01

µg/g Micrograms/gram
mg/g Milligrams/gram
µg/L Micrograms/liter
-- Not analyzed

Soil Samples were analyzed according to EPA SW-846 Methods 8020 and 8015 Modified.

TABLE 4

GEOTECHNICAL RESULTS

Geotechnical Characteristic	Sample ID and Sample Depth			
	MW-1 (25.5'-26')	SB-3 (15.5'-16')	MW-5 (31'-31.5')	MW-6 (30.5'-31')
Moisture (%)	23.9	NA	29.1	23.9
USC Classification	CL	NA	CL	ML
Atterburg Limits	Liquid Limit=28 Plastic Index=7	NA	Liquid Limit=32 Plastic Index=10	Non-plastic
Permeability (cm/s)	1.29×10^{-7}	2.31×10^{-7}	1.78 x 10-7	2.03×10^{-6}

NA Not analyzed

TABLE 5

GROUNDWATER ANALYTICAL RESULTS

Analyte	MW870A-01	MW-570 (Duplicate)	CPT-42	CPT-43
BTEX (µg/L)				
Benzene	305	222	<1.0	<1.0
Toluene	690	660	<1.0	<1.0
Ethylbenzene	132	102	<1.0	<1.0
Xylenes	2,303	2,396	<1.0	<1.0
TPH (mg/L)	11.9	7.5	<1.0	<1.0

µg/L Micrograms/liter
mg/L Milligrams/liter
-- Not analyzed

Water samples were analyzed according to EPA SW-846 Methods 8020/602 and 8015 Modified.

TABLE 5

GROUNDWATER ANALYTICAL RESULTS

Analyte Volatiles - Priority Pollutants	CPT-7 (µg/L)	MW-5 (µg/L)	MW-27 Blind Dup of MW-5 (µg/L)	MW-10 µg/L)	MW-11 (µg/L)	MW-12 (µg/L)	Trip Blank 10/1/92 (µg/L)	CPT-10 (µg/L)	CPT-14 (µg/L)
Chloromethane	*71	4J	<100	<10	<10	<10	<10	<10	<500,000
Vinyl Chloride	<500	<100	<100	<10	<10	<10	<10	<10	<500,000
Bromomethane	<500	<100	<100	<10	<10	<10	<10	<10	<500,000
Chloroethane	<500	<100	<100	<10	<10	<10	<10	<10	<500,000
Trichlorofluoromethane	<250	<50	<50	<5	<5	<5	<5	<5	<250,000
Acrolein	<5,000	<1,000	<1,000	<100	<100	<100	<100	<100	<1,000,000
1,1-Dichloroethene	<250	<50	<50	<5	<5	<5	<5	<5	<250,000
Methylene Chloride	<250	<50	<50	<5	<5	11	<5	12	<250,000
Acrylonitrile	<5,000	<1,000	<1,000	<100	<100	<100	<100	<100	<1,000,000
1,1-Dichloroethane	<250	<50	<50	<5	<5	<5	<5	<5	<250,000
1,2-Dichloroethene (total)	<250	<50	<50	<5	<5	<5	<5	<5	<250,000
Chloroform	<250	<50	<50	<5	<5	<5	<5	<5	<250,000
1,1,1-Trichloroethane	<250	<50	<50	<5	<5	<5	<5	<5	<250,000
Carbon Tetrachloride	<250	<50	<50	<5	<5	<5	<5	<5	<250,000
Benzene	680	74	76	<5	26	10	<5	<5	<250,000
1,2-Dichloroethane	<250	<50	<50	<5	<5	<5	<5	<5	<250,000
Trichloroethene	<250	<50	8	<5	<5	<5	<5	<5	<250,000
1,2-Dichloropropane	<250	<50	<50	<5	<5	<5	<5	<5	<250,000
Bromodichloromethane	<250	<50	<50	<5	<5	<5	<5	<5	<250,000
2-Chloroethylvinyl ether	<500	<100	<100	<10	<10	<10	<10	<10	<500,000
cis-1,3-Dichloropropene	<250	<50	<50	<5	<5	<5	<5	<5	<250,000
Toluene	*34J	<50	<50	17	33	<5	<5	11	<250,000
trans-1,3-Dichloropropene	<250	<50	<50	<5	<5	<5	<5	<5	<250,000

TABLE 5

GROUNDWATER ANALYTICAL RESULTS
(CONTINUED)

Analyte Volatiles - Priority Pollutants	CPT-7 (µg/L)	MW-5 (µg/L)	MW-27 Blind Dup of MW-5 (µg/L)	MW-10 µg/L)	MW-11 (µg/L)	MW-12 (µg/L)	Trip Blank 10/1/92 (µg/L)	CPT-10 (µg/L)	CPT-14 (µg/L)
1,1,2-Trichloroethane	<250	<50	<50	<5	<5	<5	<5	<5	<250,000
Tetrachloroethene	*<50J	2J	3J	<5	<5	<5	<5	<5	<250,000
Dibromochloromethane	<250	<50	<50	<5	<5	<5	<5	<5	<250,000
Chlorobenzene	<250	<50	<50	<5	<5	<5	<5	<5	<250,000
Ethylbenzene	1,400	160	150	<5	21	29	<5	16	1,400,000
Xylenes (Total)	5,700	900	890	110	180	300	<5	160	13,000,000
Bromoform	<250	<50	<50	<5	<5	<5	<5	<5	<250,000
1,1,2,2-Tetrachloroethane	*<50J	<50	2J	<5	<5	<5	<5	<5	<250,000

µg/L Micrograms/liter
J Estimated value
* In an attempt to lower detection limits, a 1 ml aliquot was analyzed outside the holding time.

Water samples were analyzed according to EPA SW-846 Method 8240.

TABLE 5

GROUNDWATER ANALYTICAL RESULTS

Analyte Volatiles - Organic Compounds	870-WS-1/32' (µg/L)	870-WS-1/42' (µg/L)	870-WS-1/92' (µg/L)	870-WS-2/49' µg/L)	MW-40 Blind Dup of 870-WS-2/49' (µg/L)	870-WS-2/59' (µg/L)	870-WS-2/69' (µg/L)	CPT-40 (µg/L)	Trip Blank 11/23/93 (µg/L)
Chloromethane	<2.0	<20.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Vinyl Chloride	<2.0	<20.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Bromomethane	<2.0	<20.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Chloroethane	<2.0	<20.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Fluorotrichloromethane	<2.0	<20.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,1-Dichloroethene	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dichloromethane	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	10.7
trans-1,2-Dichloroethene	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzene	17.4	30.5	27.0	8.4	6.5	24.0	43.5	<1.0	<1.0
1,2-Dichloroethane	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	1.8	113	59.3	13.8	7.8	68.0	71.7	<1.0	<1.0
Tetrachloroethene (PCE)	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	56.4	21.6	4.5	1.7	50.7	38.2	<1.0	<1.0
Bromoform	<2.0	<20.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
m,p-Xylene	4.9	369	107	30.2	12.2	294	258	<1.0	<1.0
o-Xylene/Styrene*	1.3	103	36.4	9.4	3.4	93.7	63.6	<1.0	<1.0

TABLE 5

GROUNDWATER ANALYTICAL RESULTS
(CONTINUED)

Analyte Volatiles - Organic Compounds	870-WS-1/32' (µg/L)	870-WS-1/42' (µg/L)	870-WS-1/92' (µg/L)	870-WS-2/49' µg/L)	MW-40 Blind Dup of 870-WS-2/49' (µg/L)	870-WS-2/59' (µg/L)	870-WS-2/69' (µg/L)	CPT-40 (µg/L)	Trip Blank 11/23/93 (µg/L)
1,1,2,2-Tetrachloroethane	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

µg/L Micrograms/liter

Water samples were analyzed according to EPA Method 601/602.

TABLE 5

GROUNDWATER ANALYTICAL RESULTS

Analyte Volatiles - Organic Compounds	CPT-7 (µg/L)	SGS-1 (µg/L)
1,1,2-Trichloroethane (1,1,2-T)	<500	<5
1,1-Dichloroethylene (1,1DCE)	<500	<5
1,1-Dichloroethane	<500	<5
1,2-Dichlorobenzene	<500	<5
1,2-Dichloroethane	<500	<5
1,2-Dichloropropane	<500	<5
1,3-Dichlorobenzene	<500	<5
1,4-Dichlorobenzene (p-DCB)	<500	<5
2-Butanone (MEK)	<10,000	<100
2-Chloroethylvinylether	<1,000	<10
2-Hexanone	<10,000	<100
4-Methyl-2-Pentanone (MIBK)	<1,000	<10
Acetone	<1,000	<100
Acrolein	<1,000	<10
Acrylonitrile	<500	<10
Benzene	<500	7.7
cis-1,2-Dichloroethene	<500	<5
Chlorobenzene	<500	<5
cis-1,3-Dichloropropene	<500	<5
Bromoform	<500	<5
Chloroform (Trichloromethane)	<500	<5
Chloroethane	<1,000	<10
Carbon Disulfide	<500	<5
Carbon Tetrachloride	<500	<5
Dibromochloromethane	<500	<5
Dichlorobromomethane	<500	<5
Ethyl benzene	1,800	5.5
Methyl Bromide	<1,000	<10
Methyl Chloride	<1,000	<10
Methylene Chloride	<3,000	<30

TABLE 5

GROUNDWATER ANALYTICAL RESULTS
(CONTINUED)

Analyte Volatiles - Organic Compounds	CPT-7 (µg/L)	SGS-1 (µg/L)
m,p-Xylenes	4,600	8.8
o-Xylene	1,900	19
1,1,2,2-Tetrachloroethane	<500	<5
Tetrachloroethylene (PCE)	<500	18
Styrene	<500	<5
trans-1,2-Dichloroethene	<500	<5
1,1,1-Trichloroethane	<500	<5
Trichloroethylene (TCE)	<500	<5
Trichlorofluoromethane	<1,000	<10
trans-1,3-Dichloropropene	<500	<5
Tetrahydrofuran	<10,000	<100
Toluene	<500	<5
Vinyl Chloride (VC)	<1,000	<10
Vinyl Acetate	<10,000	<100

µg/L Micrograms/liter

All samples were analyzed according to EPA SW-846 Method 8240.

TABLE 5

GROUNDWATER ANALYTICAL RESULTS

Analyte Volatile Organic Compounds (TCL)	MW-6 (µg/L)	MW-7 (µg/L)	MW-27 Blind Dup of MW-7 (µg/L)
Chloromethane	<50	<10	<10
Vinyl Chloride	<50	<10	<10
Bromomethane	<50	<10	<10
Chloroethane	<50	<10	<10
1,1-Dichloroethene	<25	<5	<5
Acetone	<100	<20	<20
Carbon Disulfide	<25	<5	<5
Methylene Chloride	<25	<5	<5
1,1-Dichloroethane	<25	<5	<5
Vinyl Acetate	<25	<5	<5
2-Butanone	<100	<20	<20
1,2-Dichloroethene (total)	<25	<5	<5
Chloroform	<25	<5	<5
1,1,1-Trichloroethane	<25	<5	<5
Carbon Tetrachloride	<25	<5	<5
Benzene	<25	<5	<5
1,2-Dichloroethane	<25	<5	<5
Trichloroethene	<25	<5	<5
1,2-Dichloropropane	<25	<5	<5
Bromodichloromethane	<25	<5	<5
cis-1,3-Dichloropropene	<25	<5	<5
4-Methyl-2-Pentanone	<25	<10	<10
Toluene	<25	<5	<5
trans-1,3-Dichloropropene	<25	<5	<5
1,1,2-Trichloroethane	<25	<5	<5
Tetrachloroethene	<25	<5	<5
2-Hexanone	<50	<10	<10
Dibromochloromethane	<25	<5	<5
Chlorobenzene	<25	<5	<5
Ethybenzene	<25	<5	<5
Xylenes (total)	<25	<5	<5
Styrene	<25	<5	<5
Bromoform	<25	<5	<5
1,1,2,2-Tetrachloroethane	<25	<5	<5

µg/L Micrograms/liter

Water samples were analyzed according to EPA CLP.

TABLE 5

GROUNDWATER ANALYTICAL RESULTS

Analyte Semi-Volatiles (TCL)	MW-6 (µg/L)	MW-7 (µg/L)	MW-27 Blind Dup of MW-7 (µg/L)
N-Nitrosodimethylamine	<20	<20	<20
Phenol	<20	<20	<20
Bis (2-chloroethyl) ether	<20	<20	<20
2-Chlorophenol	<20	<20	<20
1,3-Dichlorobenzene	<20	<20	<20
1,4-Dichlorobenzene	<20	<20	<20
Benzyl Alcohol	<40	<40	<40
1,2-Dichlorobenzene	<20	<20	<20
2-Methylphenol	<20	<20	<20
Bis (2-chloroisopropyl) ether	<20	<20	<20
4-Methylphenol	<20	<20	<20
3- or 4-Methylphenol	<20	<20	<20
Hexachloroethane	<20	<20	<20
n-Nitrosodi-n-propylamine	<20	<20	<20
Nitrobenzene	<20	<20	<20
Isophorone	<20	<20	<20
2,4-Dimethylphenol	<20	<20	<20
2-Nitrophenol	<20	<20	<20
Benzoic Acid	<100	<100	<100
Bis (2-chloroethoxy) methane	<20	<20	<20
2,4-Dichlorophenol	<20	<20	<20
1,2,4-Trichlorobenzene	<20	<20	<20
Naphthalene	<20	<20	<20
4-Chloroaniline	<40	<40	<40
Hexachlorobutadiene	<20	<20	<20
4-Chloro-3-Methylphenol	<20	<20	<20
2-Methylnaphthalene	<20	<20	<20
Hexachlorocyclopentadiene	<20	<20	<20
2,4,6-Trichlorophenol	<20	<20	<20
2,4,5-Trichlorophenol	<20	<20	<20
2-Chloronaphthalene	<20	<20	<20
2-Nitroaniline	<100	<100	<100
2,6-Dinitrotoluene	<20	<20	<20
Acenaphthylene	<20	<20	<20
3-Nitroaniline	<100	<100	<100
2,4-Dinitrophenol	<100	<100	<100
Acenaphthene	<20	<20	<20
4-Nitrophenol	<100	<100	<100
2,4-Dinitrotoluene	<20	<20	<20
Dibenzofuran	<20	<20	<20
Diethylphthalate	<20	<20	<20
4-Chlorophenyl phenyl ether	<20	<20	<20
Fluorene	<20	<20	<20

TABLE 5

GROUNDWATER ANALYTICAL RESULTS
(CONTINUED)

Analyte Semi-Volatiles (TCL)	MW-6 (µg/L)	MW-7 (µg/L)	MW-27 blind dup. of MW-7 (µg/L)
4-Nitroaniline	<40	<40	<40
4,6-Dinitro-2-methylphenol	<100	<100	<100
n-Nitrosodiphenylamine	<20	<20	<20
4-Bromophenyl phenyl ether	<20	<20	<20
Hexachlorobenzene	<20	<20	<20
Pentachlorophenol	<100	<100	<100
Phenanthrene	<20	<20	<20
Anthracene	<20	<20	<20
Carbazole	<20	<20	<20
Di-n-butylphthalate	<20	<20	<20
Fluoranthene	<20	<20	<20
Pyrene	<20	<20	<20
Butylbenzylphthalate	<20	<20	<20
Bis (2-ethylhexyl) phthalate	<20	<20	<20
3,3'-Dichlorobenzidine	<40	<40	<40
Benzo (a) anthracene	<20	<20	<20
Chrysene	<20	<20	<20
Di-n-octyl phthalate	<20	<20	<20
Benzo (b) fluoranthene	<20	<20	<20
Benzo (k) fluoranthene	<20	<20	<20
Benzo (a) pyrene	<20	<20	<20
Indeno (1,2,3-c,d) pyrene	<20	<20	<20
Dibenz (a,h) anthracene	<20	<20	<20
Benzo (g,h,i) perylene	<20	<20	<20

µg/L Micrograms/liter

Water samples were analyzed according to EPA CLP.

TABLE 5

GROUNDWATER ANALYTICAL RESULTS

Analyte Pesticides and PCBs (TCL)	MW-6 (µg/L)	MW-7 (µg/L)	MW-27 Blind Dup of MW-7 (µg/L)
Alpha BHC	<0.10	<0.10	<0.10
Beta BHC	<0.10	<0.10	<0.10
Delta BHC	<0.10	<0.10	<0.10
Gamma BHC - Lindane	<0.10	<0.10	<0.10
Heptachlor	<0.10	<0.10	<0.10
Aldrin	<0.10	<0.10	<0.10
Heptachlor Epoxide	<0.10	<0.10	<0.10
Endosulfan I	<0.10	<0.10	<0.10
Dieldrin	<0.10	<0.10	<0.10
p,p'-DDE	<0.10	<0.10	<0.10
Endrin	<0.10	<0.10	<0.10
Endosulfan II	<0.10	<0.10	<0.10
p,p'-DDD	<0.10	<0.10	<0.10
Endosulfan Sulfate	<0.10	<0.10	<0.10
p,p'-DDT	<0.10	<0.10	<0.10
Endrin ketone	<0.10	<0.10	<0.10
alpha-Chlordane	<0.10	<0.10	<0.10
gamma-Chlordane	<0.10	<0.10	<0.10
Methoxychlor	<0.50	<0.50	<0.50
Toxaphene	<1.0	<1.0	<1.0
Aroclor-1016	<1.0	<1.0	<1.0
Aroclor-1221	<1.0	<1.0	<1.0
Aroclor-1232	<1.0	<1.0	<1.0
Aroclor-1242	<1.0	<1.0	<1.0
Aroclor-1248	<1.0	<1.0	<1.0
Aroclor-1254	<1.0	<1.0	<1.0
Aroclor-1260	<1.0	<1.0	<1.0

µg/L Micrograms/liter

Water samples were analyzed according to EPA SW-846 Method 8081

TABLE 5

GROUNDWATER ANALYTICAL RESULTS

Analyte - Metals (TCL)	MW-6 (mg/L)	MW-7 (mg/L)	MW-27 Blind Dup of MW-7 (mg/L)
Aluminum	1.43	33.6	26.1
Antimony	<0.25	<0.25	<0.25
Arsenic	<0.010	<0.010	<0.010
Barium	0.71	0.20	0.19
Beryllium	<0.005	<0.005	<0.005
Cadmium	<0.005	<0.005	<0.005
Calcium	4.2	267	225
Chromium	<0.05	0.13	0.07
Cobalt	<0.05	0.05	0.05
Copper	0.02	0.07	0.05
Iron	1.43	75.4	67.8
Lead	<0.05	<0.04	<0.04
Magnesium	84	55	45
Manganese	1.62	1.36	1.13
Mercury	<0.0005	<0.005	<0.005
Nickel	<0.04	0.05	0.05
Potassium	3.95	0.509	0.513
Selenium	0.008	<0.005	<0.005
Silver	<0.01	<0.01	<0.01
Sodium	703	456	455
Thallium	<0.1	<0.002	<0.002
Vanadium	0.07	0.25	0.15
Zinc	0.06	0.29	0.23
Cyanide	<0.005	<0.005	<0.005

mg/L Milligrams/liter

All water samples were analyzed according to EPA CLP.

TABLE 6

UST SITE 870 WELL COMPLETION INFORMATION

Well ID	Construction Date	Well Diameter and Material (inches)	Total Depth (ft)	Screened Interval (ft)
MW-1	November 6, 1991	4" PVC	28.20	18-28
MW-2	May 22, 1992	4" PVC	27.90	15-25
MW-3	May 26, 1992	6" PVC	37.24	15-35
MW-4	May 26, 1992	6" PVC	24.68	14-24
MW-5	June 18, 1992	4" PVC	27.39	17.5-27.5
MW-6	June 18, 1992	4" PVC	29.34	20-30
MW-7	June 30, 1992	4" PVC	40.20	28-38
MW-8	June 18, 1992	2" PVC	29.72	20-30
MW-9	June 29, 1992	2" PVC	36.65	15-35
MW-10	September 2, 1992	6" PVC	44.94	25.0-45.5
MW-11	September 8, 1992	6" PVC	45.32	25-45.5
MW-12	September 9, 1992	6" PVC	44.80	24.5-45

APPENDIX A

CLOSURE SAMPLE DATA

AMERICAN WEST ANALYTICAL LABORATORIES

463 West 3600 South
Salt Lake City, Utah
84115

(801) 263-8686
Fax (801) 263-8687

ORGANIC ANALYSIS REPORT

Client: Petroleum Environmental
Date Received: April 26,1991
Set Identification Number: 5836
Set Description: Four Soil Samples

Contact: Troy Spachman
Received By: Elona Hayward

Analysis Requested:	Method Ref. Number:	Date Analyzed:
Total Petroleum Hydrocarbons	EPA SW-846 #8015 (modified) (Extraction - GC/FID)	May 2, 1991

Lab Sample ID. Number:	Field Sample ID. Number:
5836-Method Blank	Method Blank

Analytical Results — TPH

Units = mg/kg (ppm)

Compound:	Detection Limit:	Amount Detected:
Total Petroleum Hydrocarbons	2.0	<2.0

1. < Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.

2. T = Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Analyzed by: _____ Released by: _____ Date: 5/6/91
Laboratory Supervisor

Report Date 5/6/91 1 of 1

THIS REPORT IS PROVIDED FOR THE EXCLUSIVE USE OF THE ADDRESSEE. PRIVILEGES OF SUBSEQUENT USE OF THE NAME OF THIS COMPANY OR ANY MEMBER OF ITS STAFF, OR REPRODUCTION OF THIS REPORT IN CONNECTION WITH THE ADVERTISEMENT, PROMOTION OR SALE OF ANY PRODUCT OR PROCESS OR IN CONNECTION WITH THE RE-PUBLICATION OF THIS REPORT FOR ANY PURPOSE THAN FOR THE ADDRESSEE WILL BE GRANTED ONLY ON CONTRACT. THIS COMPANY ACCEPTS NO RESPONSIBILITY EXCEPT FOR THE DUE PERFORMANCE OF INSPECTION AND/OR ANALYSIS IN GOOD FAITH AND ACCORDING TO THE RULES OF THE TRADE AND OF SCIENCE.

AMERICAN WEST ANALYTICAL LABORATORIES

463 West 3600 South
Salt Lake City, Utah
84115

(801) 263-8686
Fax (801) 263-8687

ORGANIC ANALYSIS REPORT

Client: Petroleum Environmental
Date Received: April 26,1991
Set Identification Number: 5836
Set Description: Four Soil Samples

Contact: Troy Spachman
Received By: Elona Hayward

Analysis Requested:
Total Petroleum Hydrocarbons

Method Ref. Number:
EPA SW-846 #8015 (modified)
(Extraction - GC/FID)

Date Analyzed:
May 2, 1991

Lab Sample ID. Number:
5836-02

Field Sample ID. Number:
Hill AFB NE End/SS#870T-2

Analytical Results

TPH

Units = mg/kg (ppm)

Compound:	Detection Limit:	Amount Detected:
Total Petroleum Hydrocarbons	2.0	1,600.

1. < Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.
2. T = Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Analyzed by: _____ Released by: _____ Date: 5/6/91
Laboratory Supervisor

Report Date 5/6/91

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ORGANIC ANALYSIS REPORT

AMERICAN WEST ANALYTICAL LABORATORIES

463 West 3600 South
Salt Lake City, Utah
84115

(801) 263-8686
Fax (801) 263-8687

Client: Petroleum Environmental
Date Received: April 26,1991
Set Identification Number: 5836
Set Description: Four Soil Samples

Contact: Troy Spachman
Received By: Elona Hayward

Analysis Requested:	Method Ref. Number:	Date Analyzed:
Total Petroleum Hydrocarbons	EPA SW-846 #8015 (modified) (Extraction - GC/FID)	May 2, 1991

Lab Sample ID. Number: 5836-01

Field Sample ID. Number: Hill AFB SW End/SS#870T-1

Analytical Results

TPH

Units = mg/kg (ppm)

Compound:	Detection Limit:	Amount Detected:
Total Petroleum Hydrocarbons	2.0	2,900.

1. < Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.
2. T = Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Analyzed by: _____ Released by: _____ Date: 5/6/91
Laboratory Supervisor

Report Date 5/6/91

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AMERICAN WEST ANALYTICAL LABORATORIES

463 West 3600 South
Salt Lake City, Utah
84115

(801) 263-8686
Fax (801) 263-8687

ORGANIC ANALYSIS REPORT

Client: Petroleum Environmental
Date Received: April 26,1991
Set Identification Number: 5836
Set Description: Four Soil Samples

Contact: Troy Spachman
Received By: Elona Hayward

Analysis Requested:	Method Ref. Number:	Date Analyzed:
Total Petroleum Hydrocarbons	EPA SW-846 #8015 (modified) (Extraction - GC/FID)	May 2, 1991

Lab Sample ID. Number: 5836-04

Field Sample ID. Number: Hill AFB SW End/SS#870 P-1

Analytical Results

TPH

Units = mg/kg (ppm)

Compound:	Detection Limit:	Amount Detected:
Total Petroleum Hydrocarbons	2.0	<2.0

1. < Value = None detected above the specified method detection limit, or a value that reflects a reasonable limit due to interferences.
2. T = Trace. Detectable amount is lower than the practical quantitation limit for this compound.

Analyzed by: _____ Released by: _____ Date: 5/6/91
Laboratory Supervisor

Report Date 5/6/91

THIS REPORT IS PROVIDED FOR THE EXCLUSIVE USE OF THE ADDRESSEE. PRIVILEGES OF SUBSEQUENT USE OF THE NAME OF THIS COMPANY OR ANY MEMBER OF ITS STAFF, OR REPRODUCTION OF THIS REPORT IN CONNECTION WITH THE ADVERTISEMENT, PROMOTION OR SALE OF ANY PRODUCT OR PROCESS, OR IN CONNECTION WITH THE RE-PUBLICATION OF THIS REPORT FOR ANY PURPOSE OTHAN FOR THE ADDRESSEE WILL BE GRANTED ONLY ON CONTRACT. THIS COMPANY ACCEPTS NO RESPONSIBILITY EXCEPT FOR THE DUE PERFORMANCE OF INSPECTION AND/OR ANALYSIS IN GOOD FAITH AND

AMERICAN WEST ANALYTICAL LABORATORIES

463 West 3600 South
Salt Lake City, Utah
84115

(801) 263-8686
Fax (801) 263-8687

SOIL ANALYSIS REPORT

Client: Petroleum Environmental
Date Received: April 26, 1991
Set Identification Number: 5836

Contact: Troy Spackman
Received By: Elona Hayward

Analysis Requested:
Uniform Soil Classification

Method Ref. Number:
2488-84, X4.2

Analytical Results

Lab Sample ID. #:	Field Sample ID. #	Classification:
5836-03	Hill AFB SW End/SS#870TG-1	Well Graded Sand w/Silt (SW-SM)

Analyzed by: _____

Released by: _____ Date: 5/6/91
Laboratory Supervisor

Report Date 5/6/91

THIS REPORT IS PROVIDED FOR THE EXCLUSIVE USE OF THE ADDRESSEE. PRIVILEGES OF SUBSEQUENT USE OF THE NAME OF THIS COMPANY OR ANY MEMBER OF ITS STAFF, OR REPRODUCTION OF THIS REPORT IN CONNECTION WITH THE ADVERTISEMENT, PROMOTION OR SALE OF ANY PRODUCT OR PROCESS OR IN CONNECTION WITH THE RE-PUBLICATION OF THIS REPORT FOR ANY PURPOSE THAN FOR THE ADDRESSEE WILL BE GRANTED ONLY ON CONTRACT. THIS COMPANY ACCEPTS NO RESPONSIBILITY EXCEPT FOR THE DUE PERFORMANCE OF INSPECTION AND/OR ANALYSIS IN GOOD FAITH AND

CHAIN OF CUSTODY RECORD #5836

PROJECT NO.	PROJECT NAME
90-215	HAFB

SAMPLERS: (Signature)

Tony Spaulding

Sample No.	Date	Time	Sample Location	NO. OF CONTAINERS	Method 8020 / 602	Method 8015 Modified	Method 413.1	U.S.C.	Other	Other	SAMPLE SEALED Y/N
SS#870T-1	4-26	1:06	S.W. End	1		X					
SS#870T-2	4-26	1:05	N.E. End	1		X					
SS#870TG-1	4-26	1:00	S.W. End	1				X			
SS#870 P-1	4-26	1115		1		X					

RETURN TO:

Petroleum Environmental Services
2440 South 3270 West
Salt Lake City, Utah 84119

REMARKS

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Tony Spaulding	4-26	4:00					
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Witness (Signature)	Date	Time	Received for Lab by: (Signature)	Date 4/26/91	Time 1600	Remarks	
			Ellen Hayes				

APPENDIX B

SOIL ANALYTICAL DATA

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Form ARF-AL
Page 1 of 2
Part 1 of 1

Date 6-25-92
Agency Identification Number S92-0427-BC
Account No. 03018

James M. Montgomery Consulting Engineers
4525 Wasatch Blvd, Suite 200
Salt Lake City, UT 84124
Attention: Bob Glascott

FAX (801) 272-0430
Telephone (801) 272-1900

Sampling Collection and Shipment

Sampling Site HAFB Date of Collection June 17, 1992

Date Samples Received at Laboratory June 18, 1992

Analysis

Method of Analysis 8020MOD

Date(s) of Analysis June 18, 1992

Analytical Results

Field Sample Number	Laboratory Number	Sample Type	Benzene UG/G	Ethyl Benzene UG/G	Toluene UG/G	Xylene UG/G	Naphthalene UG/G			
HF/15.5'-16'	EL 2415	SOIL	2.0	0.26	0.11	2.8	1.4			
HF/21'-21.5'	EL 2416	SOIL	.009	ND*	ND*	ND*	.05			
* Limit of Detection			.005.	.005.	.005.	.01	.01			

* See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** See comment on last page.
( ) Parameter between LOD and LOQ.

Analyst: Arthur B. Clarke

Reviewer:

Laboratory Supervisor: Richard W. Wade

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Date 6-25-92

Agency Identification Number S92-0427-BC

General Set Comments

No corrections were made for the percent moisture content of the soils.

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

THIS SET DIES (DAYS/DATE)
Preparation:
Analysis:

DataChem Laboratories
CHAIN-OF-CUSTODY

SDG/Batch #:
DCL Set ID: 592 0427
Client: JM Montgomery Account: 3018
Comments:

Date Sampled	Field ID Number	DCL Sample Number(s)	Sample Matrix	QC	Splits A: TPH JP-4	Splits B: BETX 2
6-17-92	T-870-5-MW-4-92-HF/15.5	EL 2415	Soil		1	1
↓	T-870-6-MW-4-92-HF/21	↓ 2416	↓		1	1
↓	Trip Blank 6/17/92	↓ 2417	water	TB		1

ORIGINAL FIELD SAMPLE CONTAINER(S) FOR ANALYSIS OF: →

Received: Date/Time/Signature 6-18-92 / 0800 /

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer/ Storage Location
	6-18-92		GCVOA/R63.2

IS SET CONTINUED ON CONTINUATION PAGE? ___ YES ___ NO

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

SAMPLE PREP /ANALYSIS FOR: _____ LAB NOTEBOOK NO. _____
Prepared/Analyzed by _____ Date/Time _____

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer/ Storage Location

Revised 04/03/92

ANALYTICAL REQUEST FORM

DATA CHEM LABORATORIES

1. ☑ **REGULAR Status**

☐ **RUSH Status Requested - ADDITIONAL CHARGE**

RESULTS REQUIRED BY _____ DATE

CONTACT DATACHEM LABS PRIOR TO SENDING SAMPLES.

2. Date 6/17/92 Purchase Order No. 2208.0313

3. Company Name JMM

Address 4525 S. Wasatch Blvd.

SLC UT 84124

Person to Contact Rob Blount

Telephone (801) 272-1900

Fax Telephone ( )

Billing Address (if different from above)

4. Quote No. _____

DCL Project Manager R. Potter

5. **Sample Collection**

Sampling Site HAFB

Industrial Process _____

Date of Collection _____

Time Collected _____

Date of Shipment _____

Chain of Custody No. _____

6. **REQUEST FOR ANALYSES**

Laboratory Use Only	Client Sample Number	Media Type*	Sample Volume (ML/Liters)	ANALYSES REQUESTED - Use Method Number if Known
EL 2415	T-80-5-MW-4-92	Soil	125mL	8015
↓	"	"	" / "	8020 As JP-4
2416	T-80-6-MW-4-92	Soil	125mL	8015
↓	"	"	" / "	8020 As JP-4
↓ 2417	[redacted]	Aqueous		8015

*Specify: Solid sorbent tube, e.g. Charcoal; Filter type; Impinger solution; Bulk Sample; Blood; Urine; Tissue; Soil; Water; Other

6. **Q C REQUIREMENTS**

MUST BE COMPLETED FOR ENVIRONMENTAL SAMPLES - See General Services Terms and Conditions: QC samples billed at regular sample rate

☑ METHOD QC SAMPLES (Lab QC according to published methods)

☐ PROJECT PLAN QC SAMPLES (Lab QC according to provided QA/QC Plan)

☐ NO QC SAMPLES REQUESTED (May not conform to Agency requirements)

☐ OTHER (as specified below)

Comments Note JP-4 Stds are to be used for TPH Analysis

Possible Contamination and/or Chemical Hazards HC - Hydrocarbon

7. Requested by Robb Blount

960 West LeVoy Drive / Salt Lake City, UT 84123 800-356-9135 or 801- 266-7700 / FAX: 801-268-9992
4388 Glendale-Milford Road / Cincinnati, OH 45242 800-458-1493 or 513-733-5336 / FAX: 513-733-5347

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MONTGOMERY LABORATORIES

CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
2208.0313	HAFB USTs

SAMPLERS: (Signature) Robert A. Glascott (RAG)

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	ANALYSIS: BTEX + Naphthalene (8015)	ANALYSIS: TPH as JP-4 ★ (8020)	REMARKS
	6/17/92	1125		✓	T-870-5-MW-4-92-HF/15.5'-16'	1	✓		★ NOTE: For TPH use JP-4 std.
	6/17/92	1125		✓	T-870-5-MW-4-92-HF/15.5'-16'	1		✓	
	6/17/92	1615		✓	T-870-6-MW-4-92-HF/21'-21.5'	1	✓		
	6/17/92	1615		✓	T-870-6-MW-4-92-HF/21'-21.5'	1		✓	For questions contact Bob Glascott @ 272-1980 or 580-9740
	6/17/92				Trip Blank 6/17/92	1	✓		

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
Robert A. Glascott	6/17/92 1930				
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE) Glascott	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME: 6-18-92 0800	REMARKS	

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Form ARF-AL
Page 1 of 1
Part 1 of 1

Date 6-25-92
Agency Identification Number S92-0427-CC
Account No. 03018

James M. Montgomery Consulting Engineers
4525 Wasatch Blvd, Suite 200
Salt Lake City, UT 84124
Attention: Bob Glascott

FAX (801) 272-0430
Telephone (801) 272-1900

Sampling Collection and Shipment

Sampling Site HAFB Date of Collection June 17, 1992

Date Samples Received at Laboratory June 18, 1992

Analysis

Method of Analysis 8020MOD

Date(s) of Analysis June 19, 1992

Analytical Results

Field Sample Number	Laboratory Number	Sample Type	Benzene UG/L	Ethyl Benzene UG/L	Toluene UG/L	Xylene UG/L	Naphthalene UG/L			
TRP BLK 6/17	EL 2417	WATER	ND*	ND*	ND*	3.5	ND*			
* Limit of Detection			1.	1.	1.	2.	5.			

* See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** See comment on last page.
( ) Parameter between LOD and LOQ.

RECEIVED
JUL 2 1992
JAMES M. MONTGOMERY

Analyst: Arthur B. Clarke

Reviewer:

Laboratory Supervisor: Richard W. Wade

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

DataChem Laboratories
CHAIN-OF-CUSTODY

Page _____ of _____

THIS SET DIES (DAYS/DATE)
Preparation: | |
Analysis: | |

SDG/Batch #:
DCL Set ID: 592 0427
Client: JM Montgomery Account: 3018
Comments:

Splits

Date Sampled	Field ID Number	DCL Sample Number(s)	Sample Matrix	QC	A TPH JP-4	B BETX 2
6-17-92	T-870-5-MW-4-92-HF/15.5	EL 2415	Soil		1	1
↓	T-870-6-MW-4-92-HF/21	↓ 2416	↓		1	1
↓	Trip Blank 6/17/92	↓ 2417	water	TB		1

ORIGINAL FIELD SAMPLE CONTAINER(S) FOR ANALYSIS OF: →

Received: Date/Time/Signature 6-18-92 / 0800 /

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer/ Storage Location
	6-18-92		GCVOA / R63.2

IS SET CONTINUED ON CONTINUATION PAGE? ___ YES ___ NO

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

SAMPLE PREP /ANALYSIS FOR: _____ LAB NOTEBOOK NO. _____
Prepared/Analyzed by _____ Date/Time _____

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer/ Storage Location

Revised 04/03/92

ANALYTICAL REQUEST FORM

DATA CHEM LABORATORIES

1. ☑ REGULAR Status

☐ **RUSH** Status Requested - ADDITIONAL CHARGE

RESULTS REQUIRED BY _____ DATE

CONTACT DATACHEM LABS PRIOR TO SENDING SAMPLES.

2. Date 6/17/92 Purchase Order No. 2208.0713

3. Company Name JMM

Address 4525 S. Wasatch Blvd.

SLC UT 84124

Person to Contact Rob Blount

Telephone (801) 272-1900

Fax Telephone ( )

Billing Address (if different from above)

4. Quote No. _____

DCL Project Manager R. Potter

5. Sample Collection

Sampling Site HAPD

Industrial Process _____

Date of Collection _____

Time Collected _____

Date of Shipment _____

Chain of Custody No. _____

6. REQUEST FOR ANALYSES

Laboratory Use Only	Client Sample Number	Media Type*	Sample Volume (Liters)	ANALYSES REQUESTED - Use Method Number if Known
EL 2415	T-810-5-MW-4-92	[redacted]	Soil / 125mL	8015
↓	"	"	" / "	8020 As JP-4
2416	T-810-6-MW-4-92	[redacted]	Soil / 125mL	8015
↓	"	"	" / "	8020 As JP-4
↓ 2417	[redacted]	[redacted]	1/2 Gallons	8015

*Specify: Solid sorbent tube, e.g. Charcoal; Filter type; Impinger solution; Bulk Sample; Blood; Urine; Tissue; Soil; Water; Other

6. Q C REQUIREMENTS

MUST BE COMPLETED FOR ENVIRONMENTAL SAMPLES - See General Services Terms and Conditions: QC samples billed at regular sample rate

☑ METHOD QC SAMPLES (Lab QC according to published methods)

☐ PROJECT PLAN QC SAMPLES (Lab QC according to provided QA/QC Plan)

☐ NO QC SAMPLES REQUESTED (May not conform to Agency requirements)

☐ OTHER (as specified below)

Comments Note JP-4 Stds are to be used for TPH analysis

Possible Contamination and/or Chemical Hazards HC - Hydrocarbon

7. Requested by Bobb Hall

960 West LeVoy Drive / Salt Lake City, UT 84123 800-356-9135 or 801-266-7700 / FAX: 801-268-9992
4388 Glendale-Milford Road / Cincinnati, OH 45242 800-458-1493 or 513-733-5336 / FAX: 513-733-5347

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MONTGOMERY LABORATORIES

CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
2208.0313	HAFB USTs

SAMPLERS: (Signature) Robert H. Blaylock (RAB)

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	BTEX & Methyl Chloride (8015)	TPH as JP-4 * (8020)	REMARKS
	6/17/92	1125		✓	T-870-5-MW-4-92-HF/15.5'-16'	1	✓		* NOTE: For TPH use
	6/17/92	1125		✓	T-870-5-MW-4-92-HF/15.5'-16'	1		✓	JP-4 std.
	6/17/92	1615		✓	T-870-6-MW-4-92-HF/21'-21.5'	1	✓		
	6/17/92	1615		✓	T-870-6-MW-4-92-HF/21'-21.5'	1		✓	For questions contact Bob
	6/17/92				Trip Blank 6/17/92	1	✓		Glascott @ 272-1980 or
									580-9740

ANALYSIS — USE 1 COLUMN PER BOTTLE

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
Robert H. Blaylock	6/17/92 1931				
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
		Glascott			
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS	
			6-18-92 0800		

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Form ARF-AL
Page 1 of 2
Part 1 of 1

Date 7/2/92

Agency Identification Number S92-0427-AC

Account No. 03018

James M. Montgomery Consulting Engineers
4525 Wasatch Blvd, Suite 200
Salt Lake City, UT 84124
Attention: Bob Glascott

FAX (801) 272-0430
Telephone (801) 272-1900

Sampling Collection and Shipment

Sampling Site HAFB Date of Collection June 17, 1992

Date Samples Received at Laboratory June 18, 1992

Analysis

Method of Analysis DCL-TPHD

Date(s) of Analysis June 27, 1992

Analytical Results

Field Sample Number	Laboratory Number	Sample Type	TPH-Jet Fuel mg/g
HF/15.5'-16'	EL 2415	SOIL	0.02
HF/21'-21.5'	EL 2416	SOIL	ND*
* Limit of Detection			0.01

* See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** See comment on last page.
( ) Parameter between LOD and LOQ.

RECEIVED
JUL 6 1992
JAMES M. MONTGOMERY

Analyst: Lawrence E. Miller

Reviewer: Dan Bruch

Laboratory Supervisor: Dan Bruch

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Date 7-13-92

Agency Identification Number S92-0427-AC

General Set Comments

Total hydrocarbons is the area sum of the peaks in the JP-4 range minus the solvent peak. The peak pattern observed in the samples eluted later than JP-4.

The control spike had 82% recovery.

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

DATA CHEM LABORATORIES

ANALYTICAL REQUEST FORM

1. ☑ **REGULAR Status**

☐ **RUSH Status Requested - ADDITIONAL CHARGE**

RESULTS REQUIRED BY _____ DATE

CONTACT DATACHEM LABS PRIOR TO SENDING SAMPLES.

2. Date 6/17/92 Purchase Order No. 2208.0313

3. Company Name JMM

Address 4525 S. Wasatch Blvd.

SLC UT 84124

Person to Contact Rob Blaisdell

Telephone (801) 272-1900

Fax Telephone ( )

Billing Address (if different from above)

4. Quote No. _____

DCL Project Manager R. Potter

5. **Sample Collection**

Sampling Site HAFB

Industrial Process _____

Date of Collection _____

Time Collected _____

Date of Shipment _____

Chain of Custody No. _____

6. **REQUEST FOR ANALYSES**

Laboratory Use Only	Client Sample Number	Media Type*	Sample Volume (ML/Liters)	ANALYSES REQUESTED - Use Method Number if Known
EL 2415	T-880-5-MW-4-92	HP/15.5-16'	Soil / 125mL	8015
↓	"	"	" / "	8020 As JP-4
2416	T-880-6-MW-4-92	HP/21'-21.5'	Soil / 125mL	8015
↓	"	"	" / "	8020 As JP-4
↓ 2417	Trip Blank 6/17/92	Aqueous		8015

*Specify: Solid sorbent tube, e.g. Charcoal; Filter type; Impinger solution; Bulk Sample; Blood; Urine; Tissue; Soil; Water; Other

6. **Q C REQUIREMENTS**

MUST BE COMPLETED FOR ENVIRONMENTAL SAMPLES - See General Services Terms and Conditions: QC samples billed at regular sample rate

☑ METHOD QC SAMPLES (Lab QC according to published methods)

☐ PROJECT PLAN QC SAMPLES (Lab QC according to provided QA/QC Plan)

☐ NO QC SAMPLES REQUESTED (May not conform to Agency requirements)

☐ OTHER (as specified below)

Comments Note JP-4 Stds are to be used for TPH analysis

Possible Contamination and/or Chemical Hazards HC - Hydrocarbon

7. Requested by Rob Blaisdell

960 West LeVoy Drive / Salt Lake City, UT 84123 800-356-9135 or 801- 266-7700 / FAX: 801-268-9992
4388 Glendale-Milford Road / Cincinnati, OH 45242 800-458-1493 or 513-733-5336 / FAX: 513-733-5347

MONTGOMERY LABORATORIES

CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
2208.031	HAFB LISTs

SAMPLERS: (Signature) (RAB)

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	ANALYSIS (USE 1 COLUMN PER BOTTLE)	REMARKS
	11/25 6/17/92			✓	T-870-5-MW-4-92-HF/15.5'-16'	1	✓	* NOTE: For TPH use TP 4 std.
	6/17/92	1125		✓	T-870-5-MW-4-92-HF/15.5'-16'	1	✓	
	6/17/92	1615		✓	T-870-6-MW-4-92-HF/21'-21.5'	1	✓	
	6/17/92	1615		✓	T-870-6-MW-4-92-HF/21'-21.5'	1	✓	For questions contact Bob Glascott @ 272-1900 or 580-9740
	6/17/92				Trip Blank 6/17/92	1	✓	

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	6/17/92 1930				
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS	
			6-18-92 0800		

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Form ARF-AL
Page 1 of 2
Part 1 of 1

Date 6-30-92
Agency Identification Number S92-0429-BB
Account No. 03018

James M. Montgomery Consulting Engineers
4525 Wasatch Blvd, Suite 200
Salt Lake City, UT 84124
Attention: Bob Glascott

FAX (801) 272-0430
Telephone (801) 272-1900

Sampling Collection and Shipment

Sampling Site HAFB Date of Collection June 18, 1992

Date Samples Received at Laboratory June 19, 1992

Analysis

Method of Analysis 8020MOD

Date(s) of Analysis June 23, 1992 - June 24, 1992

Analytical Results

Field Sample Number	Laboratory Number	Sample Type	Benzene UG/G	Ethyl Benzene UG/G	Toluene UG/G	Xylene UG/G	Naphthalene UG/G			
HF/11-11.5'	EL 2419	SOIL	ND*	0.12	.031	.92	4.4			
* Limit of Detection			.005	.005	.005	.01	.01			

* See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** See comment on last page.
( ) Parameter between LOD and LOQ.

Analyst: Arthur B. Clarke

Reviewer:

Laboratory Supervisor: Richard W. Wade

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Date 6-30-92

Agency Identification Number S92-0429-BB

General Set Comments

No corrections were made for the percent moisture content of the soils.

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

[redacted] Laboratories [redacted]

Preparation:

Analysis:

CHAIN-OF-CUSTODY

SDG/Batch #:

DCL Set ID: S 92 0429

Client: J.M. MONTGOMERY Account: 3018

Comments:

Splits

Date Sampled	Field ID Number	DCL Sample Number(s)	Sample Matrix	QC	A	B
					TPH Jet Fuel	BETXN
6-18-92	TB10-1-TWPU-92-HF/11-11.5	EL 2419	WATER		1	1
↓	TRIP BLANK	↓ 2420	SOIL			2

ORIGINAL FIELD SAMPLE CONTAINER(S) FOR ANALYSIS OF: →

Received: Date/Time/Signature 6-19-92 / 1545 /

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer/ Storage Location
	6-19-92 1550	SAMPLE STORAGE	R-24-1 STORAGE
STORAGE R-24	6-22-92	GC VOA analysis	R-63-2

IS SET CONTINUED ON CONTINUATION PAGE? ___ YES ___ NO

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

SAMPLE PREP /ANALYSIS FOR: _____ LAB NOTEBOOK NO. _____

Prepared/Analyzed by _____ Date/Time _____

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer/ Storage Location

Revised 04/03/92

DATA CHEM LABORATORIES

ANALYTICAL REQUEST FORM

1. ☑ **REGULAR Status**

☐ **RUSH Status Requested - ADDITIONAL CHARGE**

RESULTS REQUIRED BY _____ DATE

CONTACT DATACHEM LABS PRIOR TO SENDING SAMPLES.

2. Date 6/19/97 Purchase Order No. 2208.0313

3. Company Name JMM

Address 4525 S. Wasatch Blvd

SLC UT 84124

Person to Contact Bob Glossup

Telephone (801) 272-1900

Fax Telephone ( )

Billing Address (if different from above)

4. Quote No. _____

DCL Project Manager R. Potter

5. **Sample Collection**

Sampling Site HAFB

Industrial Process _____

Date of Collection _____

Time Collected _____

Date of Shipment _____

Chain of Custody No. _____

6. **REQUEST FOR ANALYSES**

Laboratory Use Only	Client Sample Number	Media Type*	Sample Volume (Liters)	ANALYSES REQUESTED - Use Method Number if Known
EL 2419	T820-1-TWP-U-92-HP/U-11.5	Soil	125mL	BTEX + Naphthalene (8015)
↓ ↓	"	Soil	125mL	TPH as JP-4 (8020)
↓ 2420	T820-1-TWP-U-92-HP/U-11.5	aqueous	2-40mL	BTEX + N (8015)

*Specify: Solid sorbent tube, e.g. Charcoal; Filter type; Impinger solution; Bulk Sample; Blood; Urine; Tissue; Soil; Water; Other

6. **Q C REQUIREMENTS**

MUST BE COMPLETED FOR ENVIRONMENTAL SAMPLES - See General Services Terms and Conditions: QC samples billed at regular sample rate

☑ METHOD QC SAMPLES
(Lab QC according to published methods)

☐ PROJECT PLAN QC SAMPLES
(Lab QC according to provided QA/QC Plan)

☐ NO QC SAMPLES REQUESTED
(May not conform to Agency requirements)

☐ OTHER (as specified below)

_____

_____

Comments Note: TPH as JP-4

Possible Contamination and/or Chemical Hazards _____

7. Requested by B. Glossup (RAG)

960 West LeVoy Drive / Salt Lake City, UT 84123 800-356-9135 or 801- 266-7700 / FAX: 801-268-9992
4388 Glendale-Milford Road / Cincinnati, OH 45242 800-458-1493 or 513-733-5336 / FAX: 513-733-5347

MONTGOMERY LABORATORIES

CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
2204.0313	HAFB

SAMPLERS: (Signature) (RAK)

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	BTEX & Naphthalene (8015)	TPH as JP-4 (8020)	REMARKS
	6/18/92	1700		✓	T-870-1-TWP-4-92-HF/11-11.5'	2	✓	✓	* Note: TPH as JP-4 (RAK)
	6/18/92				Trip Blank 6/18/92	2	✓		

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	6/19/92 1540			6-19-92 1545	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS	

MONTGOMERY LABORATORIES

CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
2208.013	11A1B

SAMPLERS: (Signature) [signature] (RAF)

ANALYSIS — USE 1 COLUMN PER BOTTLE

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	BTEX & Naphthalene (8015)	TPH as JP-4 (8020)	REMARKS
	6/15/92	1700		✓	T-870-1-TWP-11-92-11'/11-11.5'	2	✓	✓	* Note: TPH as JP-4 (RAF)
	6/15/92				Trip Blank 6/15/92	2	✓		

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6/19/92 1540	[signature]	[signature]	6-19-92 1545	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS	

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Form ARF-AL
Page 1 of 2
Part 1 of 1

Date 7/2/92
Agency Identification Number S92-0429-AB
Account No. 03018

James M. Montgomery Consulting Engineers
4525 Wasatch Blvd, Suite 200
Salt Lake City, UT 84124
Attention: Bob Glascott

FAX (801) 272-0430
Telephone (801) 272-1900

Sampling Collection and Shipment

Sampling Site HAFB Date of Collection June 18, 1992

Date Samples Received at Laboratory June 19, 1992

Analysis

Method of Analysis DCL-TPHD

Date(s) of Analysis June 27, 1992

Analytical Results

Field Sample Number	Laboratory Number	Sample Type	TPH-Jet Fuel mg/g							
HF/11-11.5'	EL 2419	SOIL	0.11							
Limit of Detection			0.01							

* See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** See comment on last page.
( ) Parameter between LOD and LOQ.

Analyst: Lawrence E. Miller

Reviewer: Dan Bruch

Laboratory Supervisor: Dan Bruch

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Date 7/2/92

Agency Identification Number S92-0429-AB

General Set Comments

Total hydrocarbons is the area sum of the peaks in the JP-4 range minus the solvent peak. The peak pattern observed in the sample eluted later than JP-4. The reported results are quantitated from only those peaks eluting within the JP-4 range, and would be about 10% higher if it included the later eluting peaks that are outside the JP-4 range.
The control spike had 82% recovery.

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

DATA CHEM LABORATORIES

ANALYTICAL REQUEST FORM

1. ☑ **REGULAR Status**

☐ **RUSH Status Requested - ADDITIONAL CHARGE**

RESULTS REQUIRED BY _____ DATE

CONTACT DATACHEM LABS PRIOR TO SENDING SAMPLES.

2. Date 6/19/96 Purchase Order No. 2107.031

3. Company Name JMM

Address 4525 S Wasatch Blvd

SLC UT 84124

Person to Contact Bob Glowacki

Telephone (801) 272-1908

Fax Telephone ( )

Billing Address (if different from above)

4. Quote No. _____

DCL Project Manager R Potter

5. **Sample Collection**

Sampling Site HAFB

Industrial Process _____

Date of Collection _____

Time Collected _____

Date of Shipment _____

Chain of Custody No. _____

6. **REQUEST FOR ANALYSES**

Laboratory Use Only	Client Sample Number	Media Type*	Sample Volume (Liters)	ANALYSES REQUESTED - Use Method Number if Known
EL 2419	TS20-1-TWP.U-92-HF/4-11.5'	Soil	5:1 125mL	BTEX + Naphthalene (8015)
↓	"	/ "	Soil 125mL	TPH as JP-4 (8020)
↓ 2420	Trip blank 6/18/96 sequence		2-40mL	BTEX + N (8015)

*Specify: Solid sorbent tube, e.g. Charcoal; Filter type; Impinger solution; Bulk Sample; Blood; Urine; Tissue; Soil; Water; Other

6. **Q C REQUIREMENTS**

MUST BE COMPLETED FOR ENVIRONMENTAL SAMPLES - See General Services Terms and Conditions: QC samples billed at regular sample rate

☑ METHOD QC SAMPLES (Lab QC according to published methods)

☐ PROJECT PLAN QC SAMPLES (Lab QC according to provided QA/QC Plan)

☐ NO QC SAMPLES REQUESTED (May not conform to Agency requirements)

☐ OTHER (as specified below)

Comments Note: TPH as JP-4

Possible Contamination and/or Chemical Hazards _____

7. Requested by B. Glowacki (RAG)

960 West LeVoy Drive / Salt Lake City, UT 84123 800-356-9135 or 801- 266-7700 / FAX: 801-268-9992
4388 Glendale-Milford Road / Cincinnati, OH 45242 800-458-1493 or 513-733-5336 / FAX: 513-733-5347

DATACHEM LABORATORIES - A SORENSON COMPANY

DISTRIBUTION: WHITE - LABORATORY COPY CANARY - CUSTOMER COPY

MONTGOMERY LABORATORIES

CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
2204.0313	HAFB

SAMPLERS: (Signature) (RAF)

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	ANALYSIS: BTEX & Naphthalene (8015)	ANALYSIS: TPH as JP-4 (8015)	REMARKS
	6/18/92	1700		✓	T-870-1-TWP-U-92-HF/11'-11.5'	2	✓	✓	* Note: TPH as JP-4 (RAF)
	6/14/92				Trip Blank 6/18/92	2	✓		

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	6/19/92 1540			6-19-92 1545	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS	

MONTGOMERY LABORATORIES

CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
2200.0313	HAFB

SAMPLERS: (Signature) (RAF)

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	ANALYSIS (USE 1 COLUMN PER BOTTLE): BTEX & Naphthalene (8015)	TPH as JP-4 (8020)	REMARKS
	6/18/92	1700		✓	T-870-1-TWP-4-92-HF/11-11.5'	2	✓	✓	* Note: TPH as JP-4 (RAF)
	6/18/92				Trip Blank 6/18/92	2	✓		

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	6/19/92 1540			6/19/92 1545	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS	

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Form ARF-AL
Page 1 of 1
Part 1 of 1

Date 6-30-92
Agency Identification Number S92-0429-CB
Account No. 03018

James M. Montgomery Consulting Engineers
4525 Wasatch Blvd, Suite 200
Salt Lake City, UT 84124
Attention: Bob Glascott

FAX (801) 272-0430
Telephone (801) 272-1900

Sampling Collection and Shipment

Sampling Site HAFB Date of Collection June 18, 1992

Date Samples Received at Laboratory June 19, 1992

Analysis

Method of Analysis 8020MOD

Date(s) of Analysis June 18, 1992

Analytical Results

Field Sample Number	Laboratory Number	Sample Type	Benzene UG/L	Ethyl Benzene UG/L	Toluene UG/L	Xylene UG/L	Naphthalene UG/L			
TRP BLK 6/18	EL 2420	WATER	ND*	ND*	1.9	5.5	ND*			
* Limit of Detection			1.	1.	1.	2.	5.			

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** See comment on last page.
( ) Parameter between LOD and LOQ.

RECEIVED
JUL 2 1992
JAMES M. MONTGOMERY

Analyst: Arthur B. Clarke

Reviewer: Larry Scanlan

Laboratory Supervisor: Richard W. Wade

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

THIS SET DIES (DAYS/DATE)
Preparation: | |
Analysis: | |

DataChem Laboratories
CHAIN-OF-CUSTODY

Page _____ of _____

SDG/Batch #:
DCL Set ID: S 92 0429
Client: J.M. MONTGOMERY Account: 3018
Comments:

Date Sampled	Field ID Number	DCL Sample Number(s)	Sample Matrix	QC	Splits A	Splits B	TPH Jet Fuel	BETXN
6-18-92	TB10-1-TWPU-92-HF/11-11.5	EL 2419	WATER		1	1		
↓	TRIP BLANK	↓ 2420	SOIL			2		

ORIGINAL FIELD SAMPLE CONTAINER(S) FOR ANALYSIS OF: →

Received: Date/Time/Signature 6-19-92 / 1545 / [signature]

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer/ Storage Location
[signature]	6-19-92 1550	SAMPLE STORAGE	STORAGE R-24-1
STORAGE R-24-1	6-22-92	[signature]	GC VOA analysis / R-63-2

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

SAMPLE PREP /ANALYSIS FOR: _____ LAB NOTEBOOK NO. _____
Prepared/Analyzed by _____ Date/Time _____

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer/ Storage Location

IS SET CONTINUED ON CONTINUATION PAGE? ___ YES ___ NO

Revised 04/03/92

DATA CHEM LABORATORIES

ANALYTICAL REQUEST FORM

1. ☑ **REGULAR Status**

☐ **RUSH Status Requested - ADDITIONAL CHARGE**

RESULTS REQUIRED BY _____ DATE

CONTACT DATACHEM LABS PRIOR TO SENDING SAMPLES.

2. Date 6/19/97 Purchase Order No. 2208.030

3. Company Name JMM

Address 4525 S. Wasatch Blvd

SLC UT 84124

Person to Contact Bob Glessner

Telephone (801) 272-1408

Fax Telephone ( )

Billing Address (if different from above)

4. Quote No. _____

DCL Project Manager R Potter

5. **Sample Collection**

Sampling Site HAFB

Industrial Process _____

Date of Collection _____

Time Collected _____

Date of Shipment _____

Chain of Custody No. _____

6. **REQUEST FOR ANALYSES**

Laboratory Use Only	Client Sample Number	Media Type*	Sample Volume (Liters)	ANALYSES REQUESTED - Use Method Number if Known
EL 2419	T820-1-TWP.U-92-HF/H-11.5'	Soil	125mL	BTEX + Naphthalene (8015)
↓ ↓	"	"	Soil 125mL	TPH as JP-4 (8020)
↓ 2420	T820-1-TWP.U-92-HF/H-11.5'	aqueous	2-40mL	BTEX + N (8015)

*Specify: Solid sorbent tube, e.g. Charcoal; Filter type; Impinger solution; Bulk Sample; Blood; Urine; Tissue; Soil; Water; Other

6. **Q C REQUIREMENTS**

MUST BE COMPLETED FOR ENVIRONMENTAL SAMPLES - See General Services Terms and Conditions: QC samples billed at regular sample rate

☑ METHOD QC SAMPLES
(Lab QC according to published methods)

☐ PROJECT PLAN QC SAMPLES
(Lab QC according to provided QA/QC Plan)

☐ NO QC SAMPLES REQUESTED
(May not conform to Agency requirements)

☐ OTHER (as specified below)

Comments Note: TPH as JP-4

Possible Contamination and/or Chemical Hazards _____

7. Requested by B. Glessner (RAG)

960 West LeVoy Drive / Salt Lake City, UT 84123 800-356-9135 or 801- 266-7700 / FAX: 801-268-9992
4388 Glendale-Milford Road / Cincinnati, OH 45242 800-458-1493 or 513-733-5336 / FAX: 513-733-5347

MONTGOMERY LABORATORIES

CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
2204.0313	HAFB

SAMPLERS: (Signature) (RAK)

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	ANALYSIS (USE 1 COLUMN PER BOTTLE): BTEX & Naphthalene (8015)	TPH as JP-4 (8020)	REMARKS
	6/18/92	1700		✓	T-870-1-TWP-11-92-HF/11-11.5'	2	✓	✓	* Note: TPH as JP-4 (RAK)
	6/18/92				Trip Blank 6/18/92	2	✓		

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	6/19/92 1540			6-19-92 1545	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS	

MONTGOMERY LABORATORIES

CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
2208.03(3	11A1B

SAMPLERS: (Signature) (RAF)

ANALYSIS — USE 1 COLUMN PER BOTTLE

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	BTEX & Naphthalene (8015)	TPH as JP-4 (8020)	REMARKS
	6/15/92	1700		✓	T-870-1-TWP-11-92-11'/11-11.5'	2	✓	✓	* Note: TPH as JP-4 (RAF)
	6/15/92				Trip Blank 6/15/92	2	✓		

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	6/19/92 1240			6-19-92 1545	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS	

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Form ARF-AL
Page 1 of 2
Part 1 of 1

Date 7-28-92
Agency Identification Number S92-0517-BC
Account No. 03018

James M. Montgomery Consulting Engineers
4525 Wasatch Blvd, Suite 200
Salt Lake City, UT 84124
Attention: Bob Glascott

FAX (801) 272-0430
Telephone (801) 272-1900

Sampling Collection and Shipment

Sampling Site HAFB Date of Collection June 29, 1992

Date Samples Received at Laboratory June 30, 1992

Analysis

Method of Analysis 8020MOD

Date(s) of Analysis July 22, 1992

Analytical Results

Field Sample Number	Laboratory Number	Sample Type	Benzene µg/g	Ethyl Benzene µg/g	Toluene µg/g	Xylene µg/g	Naphthalene µg/g			
2HF/17'-17.5	EL 2858	SOIL	.10	.18	.10	5.4	2.9			
7HF/17'-17.5	EL 2859	SOIL	10.	16.	23.	74.	6.6			
Limit of Detection			.005	.005	.005	.01	.01			

* See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** See comment on last page.
( ) Parameter between LOD and LOQ.

RECEIVED
AUG 3 1992

Analyst: Arthur B. Clarke

Reviewer: Larry Scanlan

Laboratory Supervisor: Richard W. Wade

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Date 7-28-92

Agency Identification Number S92-0517-BC

General Set Comments

Hold times were inadvertantly exceeded for samples.

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

THIS SET DIES:	TIME	DEADLINE	STARTED
Preparation:			
Analysis:			

DataChem Laboratories
CHAIN-OF-CUSTODY
Environmental Contract Program

SDG/Batch #:

DCL Set ID: 592 0517

Client: JM Montgomery **Account:** 3018

Comments:

Date Sampled	Field ID Number	DCL Sample Number(s)	QC	Matrix	Cooler	SPLIT	A	B
						SUBSEQUENCE		
						ANALYSIS	TPH-JPH	BETXN
6-29-92	T-870-2-TWP-U-92-HF/17	EL 2858		Soil	N/A		1	1
↓	T-870-7-MW-U-92-HF/17	↓ 2859		↓	↓		1	1
↓	TRIP BLANK 6/29/92	↓ 2860		water	↓			1

ORIGINAL FIELD SAMPLE CONTAINER(S) FOR ANALYSIS OF: → X

Received: Date/Time/Signature 7-21-92 / 0800 / [signature]

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer/ Storage Location
[signature]	7-21-92 1200	Sample Storage	storage / R-24-1, R-24-3
Storage (AA)	7-22 92 10:50	[signature]	BTEXN analysis / R-83-2

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

SAMPLE PREP/ANALYSIS FOR: _____ LAB NOTEBOOK NO. _____

Prepared/Analyzed by: _____ Date/Time: _____

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer/ Storage Location

IS SET CONTINUED ON CONTINUATION PAGE? ___ YES ___ NO

MONTGOMERY LABORATORIES

CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
2208.0302	HAFB USTs

SAMPLERS: (Signature) (RAB)

	STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	ANALYSIS: TPH 418.1 / 8020 BTEX + Naphthalene / 8015 modified	REMARKS
2858		6/29/92	1140		✓	T-870-2-TWP-U-92-HF/~~17-17.5~~	1	✓ ✓	Note: Sample T-870-2-MW etc.
2859		6/30/92	1645		✓	T-870-7-MW-U-92-HF/17-17.5	2	✓ ✓	only has 125ml if possible &
2860		6/29/92				Trip Blank 6/29/92	1	✓	enough volume run both TPH
									& BTEX & N.
									For questions call B. Glascoff
									@ 242-1900

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	1972 6/30/92				
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS	
			7-21-92 0800	when samples were originally rec'd, they were misplaced by custodial staff. They were found on 7-21-92	

DATACHEM LABORATORIES

ANALYTICAL REQUEST FORM

1. ☑ **REGULAR Status**

☐ **RUSH Status Requested - ADDITIONAL CHARGE**

RESULTS REQUIRED BY _____ DATE

CONTACT DATACHEM LABS PRIOR TO SENDING SAMPLES.

2. Date 6/30 Purchase Order No. 2264.0202

3. Company Name MM

Address 5 S. Wall Blvd.

UT Floor

Person to Contact Bob Glosh

Telephone ( ) 272-1495

Fax Telephone ( )

Billing Address (if different from above)

4. Quote No. _____

DCL Project Manager R. Potter

5. **Sample Collection**

Sampling Site HAFB

Industrial Process _____

Date of Collection 6/29-30/92

Time Collected _____

Date of Shipment _____

Chain of Custody No. _____

6. **REQUEST FOR ANALYSIS**

Laboratory Use Only	Client Sample Number	Media Type*	Sample Volume (Liters)	ANALYSES REQUESTED - Use Method Number if Known
	T-870-2-TH-U	Soil	125ml	TPH (8020) + BTEXN (mod. 8015) Please perform both analyses if enough volume, if not do TPH.
	T870-7-TH-U-92-HF/H-17.5'	Soil	250ml	TPH (8020) + BTEXN mod. (8015)

*Specify: Solid sorbent tube, e.g. Charcoal; Filter type; Impinger solution; Bulk Sample; Blood; Urine; Tissue; Soil; Water; Other

6. **Q C REQUIREMENTS**

MUST BE COMPLETED FOR ENVIRONMENTAL SAMPLES - See General Services Terms and Conditions: QC samples billed at regular sample rate

☑ METHOD QC SAMPLES (Lab QC according to published methods)

☐ PROJECT PLAN QC SAMPLES (Lab QC according to provided QA/QC Plan)

☐ NO QC SAMPLES REQUESTED (May not conform to Agency requirements)

☐ OTHER (as specified below)

_____

_____

Comments * Put comment on report: "Inadvertantly exceeded hold times" per Randy Jo

Possible Contamination and/or Chemical Hazards Hydrocarbon

7. Requested by Bob Glosh (RJH)

960 West LeVoy Drive / Salt Lake City, UT 84123
4388 Glendale-Milford Road / Cincinnati, OH 45242
800-356-9135 or 801- 266-7700 / FAX: 801-268-9992
800-458-1493 or 513-733-5336 / FAX: 513-733-5347
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DATA CHEM LABORATORIES

ANALYTICAL REPORT

Form ARF-AL
Page 1 of 2
Part 1 of 1

Date 8/3/92
Agency Identification Number S92-0517-AC
Account No. 03018

James M. Montgomery Consulting Engineers
4525 Wasatch Blvd, Suite 200
Salt Lake City, UT 84124
Attention: Bob Glascott

FAX (801) 272-0430
Telephone (801) 272-1900

Sampling Collection and Shipment

Sampling Site HAFB Date of Collection June 29, 1992

Date Samples Received at Laboratory June 30, 1992

Analysis

Method of Analysis DCL-TPHD

Date(s) of Analysis July 27, 1992

Analytical Results

Field Sample Number	Laboratory Number	Sample Type	TPH-Jet Fuel mg/g								
2HF/17'-17.5	EL 2858	SOIL	0.36								†
7HF/17'-17.5	EL 2859	SOIL	1.5								
Limit of Detection			0.01								

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** See comment on last page.
( ) Parameter between LOD and LOQ.

Analyst: Lawrence E. Miller

Reviewer: Dan Bruch

Laboratory Supervisor: Dan Bruch

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Date 8/3/92
Agency Identification Number S92-0517-AC

General Set Comments

Total hydrocarbons is the area sum of all the peaks in the JP-4 range minus the solvent peak.

The control spike had 57 % recovery.

Sample Comments

Laboratory Number	-- Comment --
EL 2858	Sample appeard to be diesel and had many peaks beyond JP-4 range.

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MONTGOMERY LABORATORIES

CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
2208.0302	HAFB USTs

SAMPLERS: (Signature) (RAB)

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	ANALYSIS (USE 1 COLUMN PER BOTTLE) TPH as DRO (8020) BTEX & Naphthalene (8015 modified)	REMARKS
EL 2858	6/29/92	1140		✓	T-870-2-TWP-U-92-HF/17'-17.5'	1	✓ ✓	Note: Sample T-870-2-MW etc. only has 125ml if possible &
2859	6/30/92	1645		✓	T-870-7-MW-U-92-HF/17-17.5	2	✓ ✓	enough volume run both TPH
2860	6/29/92				Trip Blank 6/29/92	1	✓	& BTEX & N.
								For questions call B. Glasscock
								@ 272-1400

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	1978 6/30/92				
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS	
			7-21-92 0800	when samples were originally rec'd, they were misplaced by custodial staff. They were found on 7-21-92	

DATA CHEM LABORATORIES

ANALYTICAL REQUEST FORM

1. ☑ **REGULAR Status**

☐ **RUSH Status Requested - ADDITIONAL CHARGE**

RESULTS REQUIRED BY _____ DATE

CONTACT DATACHEM LABS PRIOR TO SENDING SAMPLES.

2. Date 6/30/92 Purchase Order No. 2204.0702

3. Company Name JMM

Address 4525 S. Wasatch Blvd.

SLC UT 84124

Person to Contact Bob Glascoff

Telephone (801) 272-1900

Fax Telephone ( )

Billing Address (if different from above)

4. Quote No. _____

DCL Project Manager R. Potter

5. **Sample Collection**

Sampling Site HAFB

Industrial Process _____

Date of Collection 6/29-30/92

Time Collected _____

Date of Shipment _____

Chain of Custody No. _____

6. **REQUEST FOR ANALYSES**

Laboratory Use Only	Client Sample Number	Media Type*	Sample Volume (Liters)	ANALYSES REQUESTED - Use Method Number if Known
	T-870-2-TWP-4	92-HF/17'-17.5'	Soil 125ml	TPH (8020) + BTEXN (mod. 8015) Please perform both analyses if enough volume if not do TPH.
	T870-7-MW-4	92-HF/17'-17.5'	Soil 250ml	TPH (8020) + BTEXN mod. (8015)

*Specify: Solid sorbent tube, e.g. Charcoal; Filter type; Impinger solution; Bulk Sample; Blood; Urine; Tissue; Soil; Water; Other

6. **Q C REQUIREMENTS**

MUST BE COMPLETED FOR ENVIRONMENTAL SAMPLES - See General Services Terms and Conditions: QC samples billed at regular sample rate

☑ METHOD QC SAMPLES (Lab QC according to published methods)

☐ PROJECT PLAN QC SAMPLES (Lab QC according to provided QA/QC Plan)

☐ NO QC SAMPLES REQUESTED (May not conform to Agency requirements)

☐ OTHER (as specified below)

_____

_____

Comments * Put comment on report: "Inadvertently exceeded hold times per Randy Jo"

Possible Contamination and/or Chemical Hazards Hydrocarbon

7. Requested by Bob Glascoff (RSK)

960 West LeVoy Drive / Salt Lake City, UT 84123 800-356-9135 or 801- 266-7700 / FAX: 801-268-9992
4388 Glendale-Milford Road / Cincinnati, OH 45242 800-458-1493 or 513-733-5336 / FAX: 513-733-5347

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DATA CHEM LABORATORIES

ANALYTICAL REPORT

Form ARF-AL
Page 1 of 2
Part 1 of 1

Date 7-28-92
Agency Identification Number S92-0517-CC
Account No. 03018

James M. Montgomery Consulting Engineers
4525 Wasatch Blvd, Suite 200
Salt Lake City, UT 84124
Attention: Bob Glascott

FAX (801) 272-0430
Telephone (801) 272-1900

Sampling Collection and Shipment

Sampling Site HAFB Date of Collection June 29, 1992

Date Samples Received at Laboratory June 30, 1992

Analysis

Method of Analysis 8020MOD

Date(s) of Analysis July 22, 1992

Analytical Results

Field Sample Number	Laboratory Number	Sample Type	Benzene µg/L	Ethyl Benzene µg/L	Toluene µg/L	Xylene µg/L	Naphthalene µg/L			
TRP BLK 6/29	EL 2860	WATER	ND*	ND*	ND*	2.9	ND*			
* Limit of Detection			1.	1.	1.	2.	5.			

* See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** See comment on last page.
( ) Parameter between LOD and LOQ.

Analyst: Arthur B. Clarke

Reviewer: Larry Scanlan

Laboratory Supervisor: Richard W. Wade

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Date 7-28-92

Agency Identification Number S92-0517-CC

General Set Comments

Hold times were inadvertantly exceeded for samples.

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

THIS SET DIES:	TIME	DEADLINE	STARTED
Preparation:			
Analysis:			

DataChem Laboratories
CHAIN-OF-CUSTODY
Environmental Contract Program

Page _____ of _____

SDG/Batch #:

DCL Set ID: 592 0517

Client: JM Montgomery **Account:** 3018

Comments:

Date Sampled	Field ID Number	DCL Sample Number(s)	QC	Matrix	Cooler	SPLIT A: TPH-JPH	SPLIT B: BETX2	SUBSEQUENCE	ANALYSIS
6-29-92	T-870-Z-TWP-U-92-HF/17	EL 2858		Soil	N/A	1	1		
	T-870-Z-TWP-U-92-HF/17	2859				1	1		
	TRIP BLANK 6/29/92	2860		water			1		

ORIGINAL FIELD SAMPLE CONTAINER(S) FOR ANALYSIS OF: → X

Received: Date/Time/Signature 7-21-92 / 0800 /

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer/ Storage Location
	7-21-92 1200	Sample Storage	storage / R-24-1, R-24-3
Storage (AC)	7-22 92 10:50		Extra analysis / R-63-2

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

SAMPLE PREP/ANALYSIS FOR: _____ LAB NOTEBOOK NO. _____

Prepared/Analyzed by: _____ Date/Time: _____

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer/ Storage Location

IS SET CONTINUED ON CONTINUATION PAGE? ___ YES ___ NO

Revised 06/92

MONTGOMERY LABORATORIES

CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
2208.0302	HAFB USTs

SAMPLERS: (Signature) (RAB)

	STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	ANALYSIS (USE 1 COLUMN PER BOTTLE): TPH as DRO (8015 mod.)	TPH as GRO - A (8020)	BTEX & Naphthalene (8015 mod.)	REMARKS
2858		6/29/92	1140		✓	T-870-2-TWP-U-92-HF/17-17.5'	1	✓	✓		Note: Sample T-870-2-MW etc. only has 125ml if possible & enough volume run both TPH & BTEX & N.
2859		6/30/92	1645		✓	T-870-7-MW-U-92-HF/17-17.5	2	✓	✓		
2860		6/29/92				Trip Blank 6/29/92	1		✓		
											For questions call B. Glasgow @ 242-1400

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6/30/92	[signature]			
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS	
		[signature]	7-21-92 0800	when samples were originally rec'd, they were misplaced by custodial staff. They were found on 7-21-92	

[signature] 7-21-92

ANALYTICAL REQUEST FORM

DATACHEM LABORATORIES

1. ☑ REGULAR Status

☐ RUSH Status Requested - ADDITIONAL CHARGE

RESULTS REQUIRED BY _____ DATE

CONTACT DATACHEM LABS PRIOR TO SENDING SAMPLES.

2. Date 6/30 Purchase Order No. 2264.002

3. Company NAME MM

Address 5 S. Wall Blvd.

UT 84104

Person to Contact Bob Clough

Telephone ( ) 272-1911

Fax Telephone ( )

Billing Address (if different from above)

4. Quote No. _____

DCL Project Manager R. Potter

5. Sample Collection

Sampling Site HAFB

Industrial Process _____

Date of Collection 6/29-30/92

Time Collected _____

Date of Shipment _____

Chain of Custody No. _____

6. REQUEST FOR ANALYSIS

Laboratory Use Only	Client Sample Number	Media Type*	Sample Volume (Liters)	ANALYSES REQUESTED - Use Method Number if Known
	T-870-2-TM-U	92-WP/17'-17.5'	5.0 L 125mL	TPH (8020) + BTEX N (mod. 8015) Please perform both analyses if enough volume if not do TPH.
	T870-7-TM-U	92-HF/17'-17.5'	5.0 L 250mL	TPH (8020) + BTEX N mod. (8015)

*Specify: Solid sorbent tube, e.g. Charcoal; Filter type; Impinger solution; Bulk Sample; Blood; Urine; Tissue; Soil; Water; Other

6. Q C REQUIREMENTS

MUST BE COMPLETED FOR ENVIRONMENTAL SAMPLES - See General Services Terms and Conditions: QC samples billed at regular sample rate

☑ METHOD QC SAMPLES (Lab QC according to published methods)

☐ PROJECT PLAN QC SAMPLES (Lab QC according to provided QA/QC Plan)

☐ NO QC SAMPLES REQUESTED (May not conform to Agency requirements)

☐ OTHER (as specified below)

Comments * Put comment on report: "Inadvertant exceeded hold times" per Randy Jo

Possible Contamination and/or Chemical Hazards Hydrocarbon

7. Requested by Bob Clough (RM)

960 West LeVoy Drive / Salt Lake City, UT 84123
4388 Glendale-Milford Road / Cincinnati, OH 45242
800-356-9135 or 801- 266-7700 / FAX: 801-268-9992
800-458-1493 or 513-733-5336 / FAX: 513-733-5347
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DATA CHEM LABORATORIES

ANALYTICAL REPORT

Form ARF-AL
Page 1 of 2
Part 1 of 1

Date 7-7-92
Agency Identification Number S92-0453-BB
Account No. 03018

James M. Montgomery Consulting Engineers
4525 Wasatch Blvd, Suite 200
Salt Lake City, UT 84124
Attention: Bob Glascott

FAX (801) 272-0430
Telephone (801) 272-1900

Sampling Collection and Shipment

Sampling Site HAFB Date of Collection July 01, 1992

Date Samples Received at Laboratory July 02, 1992

Analysis

Method of Analysis 8020MOD

Date(s) of Analysis July 06, 1992

Analytical Results

Field Sample Number	Laboratory Number	Sample Type	Benzene UG/G	Ethyl Benzene UG/G	Toluene UG/G	Xylene UG/G	Naphthalene UG/G			
HF/59.5'-60'	EL 2578	SOIL	ND*	ND*	ND*	ND*	ND*			
* Limit of Detection			.005	.005	.005	.01	.01			

* See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** See comment on last page.
( ) Parameter between LOD and LOQ.

RECEIVED
JUL 10 1992
JAMES M. MONTGOMERY

Analyst: Arthur B. Clarke

Reviewer:

Laboratory Supervisor: Richard W. Wade

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Date 7-7-92

Agency Identification Number S92-0453-BB

General Set Comments

No corrections were made for the moisture content of the soil.

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

THIS SET DIES:	TIME	DEADLINE	STARTED
Preparation:			
Analysis:			

DataChem Laboratories
CHAIN-OF-CUSTODY
Environmental Contract Program

SDG/Batch #:

DCL Set ID: 592 0453

Client: JM Montgomery | Account: 3018

Comments:

Date Sampled	Field ID Number	DCL Sample Number(s)	QC	Matrix	Cooler	SPLIT	A	B
						SUBSEQUENCE	AB	BB
						ANALYSIS	TPH-TPH	BTEX 2
7-1-92	T-870-7-MW-4-92-HF/	EL 2578		Soil	N/A		1	1
	597.5-60							
						ORIGINAL FIELD SAMPLE CONTAINER(S) FOR ANALYSIS OF: →		X

Received: Date/Time/Signature 7-2-92 / 0800 /

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer/ Storage Location
	7-2-92 1400	Sample storage	storage / R-24-3
Storage (AC)	7-6-92 8:30		GC-VOA analysis / R-632

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

SAMPLE PREP/ANALYSIS FOR: _____ LAB NOTEBOOK NO. _____

Prepared/Analyzed by: _____ Date/Time: _____

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer/ Storage Location

IS SET CONTINUED ON CONTINUATION PAGE? ___ YES ___ NO

DATA CHEM LABORATORIES

ANALYTICAL REQUEST FORM

1. ☑ **REGULAR Status**

☐ **RUSH Status Requested - ADDITIONAL CHARGE**

RESULTS REQUIRED BY _____ DATE

CONTACT DATACHEM LABS PRIOR TO SENDING SAMPLES.

2. Date 7/1/92 Purchase Order No. 2218.002

3. Company Name JMM

Address 4525 S. Wasatch Blvd

SLC UT 84124

Person to Contact Bob Glascock

Telephone (801) 272-1408

Fax Telephone ( )

Billing Address (if different from above)

4. Quote No. _____

DCL Project Manager Rand Potter

5. **Sample Collection**

Sampling Site HAFB

Industrial Process _____

Date of Collection 7/1/92

Time Collected _____

Date of Shipment _____

Chain of Custody No. _____

6. **REQUEST FOR ANALYSES**

Laboratory Use Only	Client Sample Number	Media Type*	Sample Volume (Liters)	ANALYSES REQUESTED - Use Method Number if Known
EL 2578	T-S70-7-MW-11-92-HF/55.5'-61'	Soil	2/125mL	TPH as JP-4 8020 + BTEX + N (mod. 8015)

*Specify: Solid sorbent tube, e.g. Charcoal; Filter type; Impinger solution; Bulk Sample; Blood; Urine; Tissue; Soil; Water; Other

6. **Q C REQUIREMENTS**

MUST BE COMPLETED FOR ENVIRONMENTAL SAMPLES - See General Services Terms and Conditions: QC samples billed at regular sample rate

☑ METHOD QC SAMPLES (Lab QC according to published methods)

☐ PROJECT PLAN QC SAMPLES (Lab QC according to provided QA/QC Plan)

☐ NO QC SAMPLES REQUESTED (May not conform to Agency requirements)

☐ OTHER (as specified below)

Comments: Perform TPH w/ JP-4 Std.

Possible Contamination and/or Chemical Hazards Hydrocarbons (?)

7. Requested by Bob Glascock (RAF)

960 West LeVoy Drive / Salt Lake City, UT 84123 800-356-9135 or 801- 266-7700 / FAX: 801-268-9992
4388 Glendale-Milford Road / Cincinnati, OH 45242 800-458-1493 or 513-733-5336 / FAX: 513-733-5347

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MONTGOMERY LABORATORIES

CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
2208.0302	HAFB USTs

SAMPLERS: (Signature) Robert A. Blomquist

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CON-TAINERS	TPH as JP-4 [8015]	BTEX'd [8020]	REMARKS
	7/1/92	1100		✓	T-870-7-MW-U-92-HF/59.5-60'	1	✓		Note: TPH as JP-4 Std.
	7/1/92	1400		✓	T-870-7-MW-U-92-HF/59.5-60	1		✓	
									For questions Contact Bob Blomquist @ 272-1900

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
Robert A. Blomquist	7/1/92 1910	Robert A. Blomquist			
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS	
			7-2-92 0800		

* No Info. received yet from project manager

DATACHEM LABORATORIES
PROJECT PROTOCOL WORKSHEET

CLIENT NAME	PROJECT NAME	PROJECT MANAGER	ACCOUNT NUMBER
J M Montgomery		Rand Potter	3018

PROJECT TYPE

- ☐ CLP SOW _____
- ☐ SW846 Rev._____
- ☐ EPA NPDES
- ☐ EPA SDWA
- ☐ USATHAMA
- ☐ NIOSH
- ☐ OSHA
- ☐ Other (Explain)

Comments _____

SPECIFIC QC REQUIREMENTS (e.g., MS, MSD, LODs)

Explain _____

PREPARATION PROCEDURE/REQUIREMENTS

- ☐ CLP SOW_____
- ☐ SW846 Rev._____
- ☐ USATHAMA
- ☐ NIOSH
- ☐ DCL-SOP _____
- ☐ Other (Explain)
- ☐ NPDES/SDWA

Comments _____

ANALYTICAL PROCEDURE/REQUIREMENTS

- ☐ CLP SOW_____
- ☐ SW846 Rev._____
- ☐ USATHAMA
- ☐ NIOSH
- ☐ DCL-SOP _____
- ☐ Other (Explain)
- ☐ NPDES/SDWA

Comments _____

REPORTING PROCEDURE/REQUIREMENTS

- ☐ CLP (Full)
- ☐ CLP Raw Data
- ☐ DCL Report Form
- ☐ CLP Diskette (SOW)
- ☐ CLP Forms
- ☐ DCL QC Sheets
- ☐ Custom Diskette
- ☐ USATHAMA
- ☐ Other (Explain)

Comments _____

OTHER SPECIAL INSTRUCTIONS (e.g., additional analytes)

Approved By: _____
Project Manager Date

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Form ARF-AL
Page 1 of 2
Part 1 of 1

Date 7/13/92
Agency Identification Number S92-0453-AB
Account No. 03018

James M. Montgomery Consulting Engineers
4525 Wasatch Blvd, Suite 200
Salt Lake City, UT 84124
Attention: Bob Glascott

FAX (801) 272-0430
Telephone (801) 272-1900

Sampling Collection and Shipment

Sampling Site HAFB Date of Collection July 01, 1992

Date Samples Received at Laboratory July 02, 1992

Analysis

Method of Analysis DCL-TPHD

Date(s) of Analysis

Analytical Results

Field Sample Number	Laboratory Number	Sample Type	TPH-Jet Fuel mg/g							
HF/59.5'-66'	EL 2578	SOIL	ND*							
* Limit of Detection			0.01							

RECEIVED
JUL 14 1992
JAMES M. MONTGOMERY

* See comment on last page. ** See comment on last page.
ND Parameter not detected. ( ) Parameter between LOD and LOQ.
NR Parameter not requested.

Analyst: Lawrence E. Miller

Reviewer: Dan Bruch

Laboratory Supervisor: Dan Bruch

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Date 7/13/92

Agency Identification Number S92-0453-AB

General Set Comments

Total hydrocarbons is the area sum of the peaks in the JP-4 range minus the solvent peak.

The control spike had 78 % recovery.

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

DATA CHEM LABORATORIES

ANALYTICAL REQUEST FORM

1. ☑ **REGULAR Status**

☐ **RUSH Status Requested - ADDITIONAL CHARGE**

RESULTS REQUIRED BY _____ DATE

CONTACT DATACHEM LABS PRIOR TO SENDING SAMPLES.

2. Date 7/1/92 Purchase Order No. 2208.0202

3. Company Name JMM

Address 4525 S. Wasatch Blvd

SLC UT 84124

Person to Contact Bob Glascock

Telephone (801) 272-1908

Fax Telephone ( )

Billing Address (if different from above)

4. Quote No. _____

DCL Project Manager Rand Potter

5. **Sample Collection**

Sampling Site HAFB

Industrial Process _____

Date of Collection 7/1/92

Time Collected _____

Date of Shipment _____

Chain of Custody No. _____

6. **REQUEST FOR ANALYSES**

Laboratory Use Only	Client Sample Number	Media Type*	Sample Volume (Liters)	ANALYSES REQUESTED - Use Method Number if Known
EL 2578	T-810-7-MW-11-92-HF	Soil	2/125mL	TPH as JP-4 8020 + BTEX + N (mod. 8015)

*Specify: Solid sorbent tube, e.g. Charcoal; Filter type; Impinger solution; Bulk Sample; Blood; Urine; Tissue; Soil; Water; Other

6. **Q C REQUIREMENTS**

MUST BE COMPLETED FOR ENVIRONMENTAL SAMPLES - See General Services Terms and Conditions: QC samples billed at regular sample rate

☑ METHOD QC SAMPLES (Lab QC according to published methods)

☐ PROJECT PLAN QC SAMPLES (Lab QC according to provided QA/QC Plan)

☐ NO QC SAMPLES REQUESTED (May not conform to Agency requirements)

☐ OTHER (as specified below)

Comments Perform TPH w/ JP-4 Std.

Possible Contamination and/or Chemical Hazards Hydrocarbons (?)

7. Requested by Bob Glascock (RAE)

960 West LeVoy Drive / Salt Lake City, UT 84123 800-356-9135 or 801- 266-7700 / FAX: 801-268-9992
4388 Glendale-Milford Road / Cincinnati, OH 45242 800-458-1493 or 513-733-5336 / FAX: 513-733-5347

DATACHEM LABORATORIES - A SORENSON COMPANY

DISTRIBUTION: WHITE - LABORATORY COPY CANARY - CUSTOMER COPY

MONTGOMERY LABORATORIES

CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
2208.0302	HAFB USTs

SAMPLERS: (Signature) Robert A. Blomquist

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	ANALYSIS: TPH as JP-4 (8020)	ANALYSIS: BTEX & N (Mod. 8015)	REMARKS
	7/1/92	1100		✓	T-870-7-MW-U-92-HF/59.5-60'	1	✓		Note: TPH w/ JP-4
	7/1/92	1400		✓	T-870-7-MW-U-92-HF/59.5-60	1		✓	Std.
									For questions Contact
									Bob Glascoff @ 272-1900

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
Robert A. Blomquist	7/1/92 1910	Robert A. Blomquist			
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS	
			7-2-92 0800		

APPENDIX C

SOIL BORING LOGS

HORIZONTAL COORDINATES: 283,841.75N 1,862,510.36E

DATE STARTED:11-6-91 DATE COMPLETED 11-6-91
GROUND SURFACE ELEVATION (above MSL): 4,683.90'

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	MAX PID READING (ppm)	RECOVERY	SAMPLE TYPE*	SAMPLE INTERVAL	GRAPHIC LOG	LITHOLOGIC LOG	MONITORING WELL COMPLETION DETAIL	ELEVATION (FEET)
0									Had water in concrete cut as a result, sample saturated.		4,684
		70	30	0.5	10"	SS		SM	Silty sand, dark yellowish brown (10YR4/4),trace gravel subrounded, medium to fine sand, subangular to subrounded,low plasticity, soft, very moist.		
		70	30	0.1	10"	SS			As above with color change to strong brown (7.5YR4/6).		
5		70	30	3.2	18"	SS			As above with color change, yellowish brown (10YR4/6).		4,679
		70	30	373					Silty sand, light brownish gray (10YR6/2), medium to fine sand, subangular to subrounded, low plasticity, firm, strong hydrocarbon odor, weathered, moist.		
		70	30		14"	SS					
		70	30	350					Color change to grayish brown (10YR5/2), very fine to fine sand, low plasticity, firm, moist; alternating layers of clayey sand and silty sand ranging from 2 to 8 inches, the clayey shows black mottling with a strong hydrocarbon odor, contaminants follows fractures.		
10		50	50		16"	SS					4,674
		70	30	889					As above with alternating layers of clayey sand and silty sand ranging from 2 to 3 inches, strong hydrocarbon odor.		
		50	50		6"	SS					
		70	30	241					As above, slight color change (10YR5/3), strong hydrocarbon odor, alternating layers with clayey sands ranging from 3 to 6 inches, showing some hydrocarbon staining and iron staining.		
		50	50		17"	SS					
15		70	30	1481					As above (10YR5/3), with strong hydrocarbon odor, very moist, clayey sand medium plasticity, has very weathered odor, shows iron mottling to olive green.		4,669
		50	50		15"	SS			MW870A-01 Chemical sample at 16.0-17.0 feet.		
		50	50	545				SC	Clayey sand, brown (10YR5/3), very fine to fine sand, subangular to subrounded, medium plasticity, firm, very moist; strong hydrocarbon odor. Has approximately 4 inches of silty sand, dark gray (10YR4/1) definitely hydrocarbon stained.		
					10"	SS			MW870A-01 Chemical sample at 18.0-19.0 feet.		
		50	50	790					As above, brown (10YR5/3), strong hydrocarbon odor, some staining, saturated last 8 inches sand medium to fine, low plasticity, firm, saturated.		
		70	30		16"	SS					

PROJECT NO. 2208.0313

James M. Montgomery

SS California Split Spoon Sampler (2.0" I.D.)
CC Continuous Core

HILL AIR FORCE BASE
MW870A-01
(Monitoring Well)

HORIZONTAL COORDINATES: ?N ?E

DATE STARTED: 11-6-91 DATE COMPLETED 11-6-91
GROUND SURFACE ELEVATION (above MSL): ?'

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	MAX PID READING (ppm)	RECOVERY	SAMPLE TYPE*	SAMPLE INTERVAL	GRAPHIC LOG	LITHOLOGIC LOG	MONITORING WELL COMPLETION DETAIL	ELEVATION (FEET)
20								SC	As above (10YR5/3), strong hydrocarbon odor, some staining, saturated last 8 inches sand medium to fine, low plasticity, firm, saturated.		4,664
		70	30	190	16"	SS		SM	Silty sand, brown (10YR5/4), medium to fine sand, subangular to subrounded, low plasticity, firm, saturated; with hydrocarbon odor.		
		60	40		18"	SS					
25		60	40	142	4"	SS			As above, poor recovery, saturated.		4,659
									MW870A-01 Geotechnical sample at 25.5-26.0 feet.		
					12"	SS					
30		60	40	159					As above, yellowish brown (10YR5/4), saturated.		4,654
									T.D. 30.0'		
35											4,649

James M. Montgomery

SS California Split Spoon Sampler (2.0" I.D.)
CC Continuous Core

HILL AIR FORCE BASE
MW870A-01
(Monitoring Well)

PROJECT NO. 2208.0313

Project: Hill Air Force Base

Date Drilled: 5-2-92 **Date Completed:** 5-20-92
Logged By: Bob Glascott

Drilling Contractor: Layne Environmental
Drilling Method: Hollow Stem Auger

JMM Boring No.: T-870-2-MW-U-92-HF
Northing: 283,846.24 **Easting:** 1,862,389.21

Ground Surface Elevation (ft.): 4,681.89
Measuring Point (MP) Elevation (ft.): 4,684.39
MP is Top of PVC Casing **Datum:** NGVD (1929)

Borehole: Total Depth (ft.) 31.5 Diameter (in.) 10
Well Screen: Diameter (in. I.D.) 4 Depth (ft.) 25–15 Type PVC Schedule 40 Slot Size 0.020 Inch
Blank Casing: Diameter (in. I.D.) 4 Length (ft.) 15–0 Type PVC Schedule 40
Interval: Sand (ft.) 25–13 Bentonite Seal (ft.) 13–11 Cement Grout Seal (ft.) 11–0
Depth to Water from MP (ft) 24.38 Date Measured 7-2-92

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
0	10	70	20	0.2	2			SM	Silty sand, very dark grayish brown (10YR3/2), fine to medium sand, gravel to 1/2 inch in diameter, subrounded, loose, moist; no hydrocarbon odor.		MP 4,684.4
					2	C					10" Borehole
1					3						4,683.4
											4" Schedule 40 PVC Casing
2											4,682.4
											Cement-Bentonite Grout Seal
3											4,681.4
4								SC			4,680.4

PROJECT NO. 2208.0402

James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-2-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-2-MW-U-92-HF

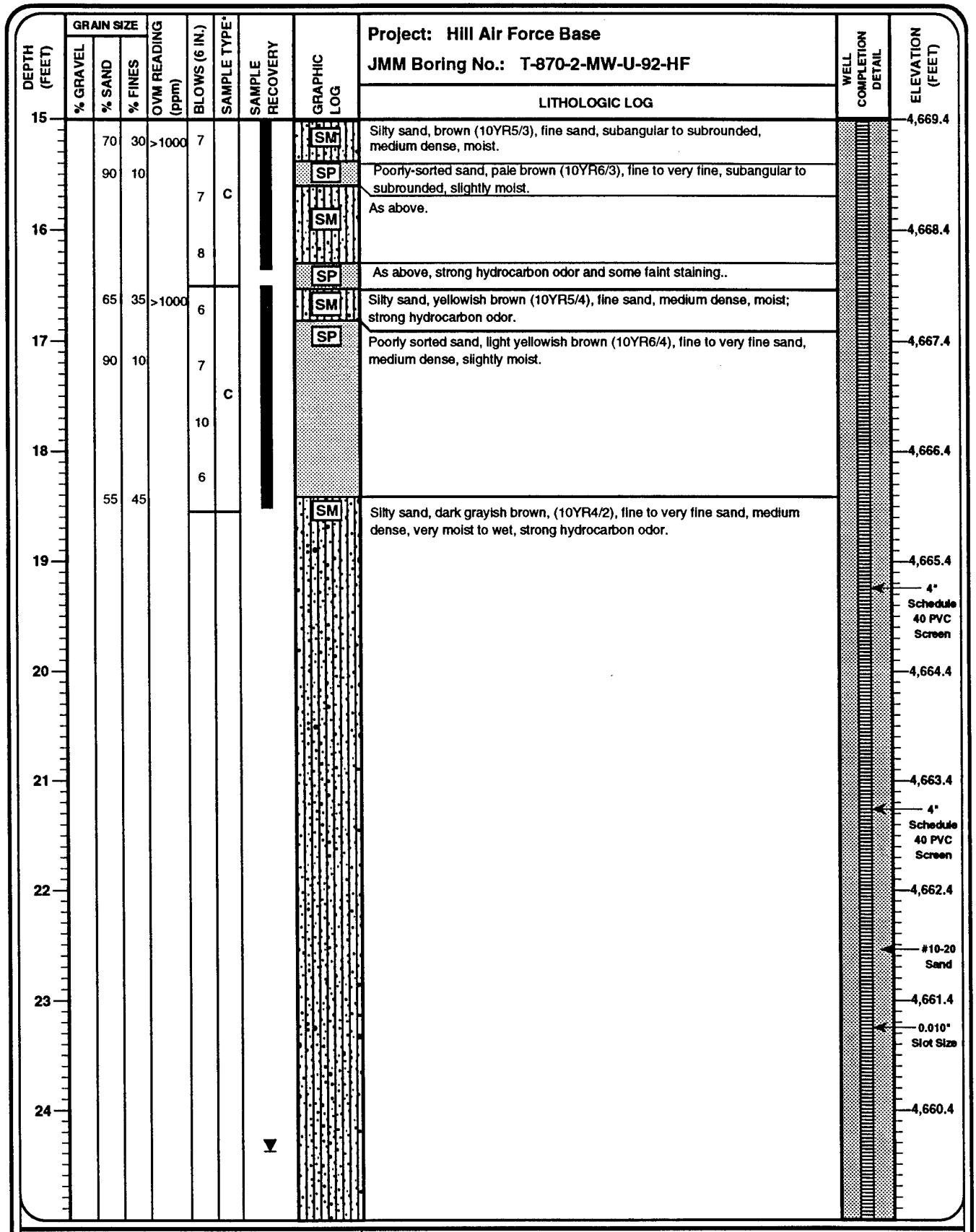
DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
5		60	40	0.2	6			SC	Clayey sand, dark yellowish brown (10YR4/4), very fine sand, medium dense, moist; iron staining present in bedding, thin white vertical lines, clay lenses 1/16 inch thick.		4,679.4
6					18	C					4,678.4 Cement-Bentonite Grout Seal
					15						
		90	10					SP	Poorly-sorted sand, light yellowish brown (10YR4/4), fine sand, subangular to subrounded, medium dense, slightly moist.		
7											4,677.4
8											4,676.4
9								SM			4,675.4 4" Schedule 40 PVC Screen
									Silty sand, yellowish brown (10YR5/4), fine to very fine sand, subangular to subrounded, medium dense, moist.		
10		80	20	1.2	7			SP			4,674.4
		95	5		19	C			Poorly-sorted sand, yellowish brown (10YR5/6), fine sand, subangular to subrounded, dense, moist.		
11					23						4,673.4 Bentonite Seal
12											4,672.4
13											4,671.4
14											4,670.4

PROJECT NO. 2208.0402

James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-2-MW-U-92-HF
(Monitoring Well)



PROJECT NO. 2208.0402

JMM James M. Montgomery

* C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-2-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-2-MW-U-92-HF

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
25		10	90	15	5			CL	Clay interbedded with silty sand, yellowish brown (10YR5/4), loose to medium dense, moist. Sand layers to 1/2 inch thick, clay to 2 inches thick. Top of the sand iron stained.		4,659.4
		80	20		5	C		SM			
					7						
26											4,658.4
27											4,657.4
28											4,656.4
29											4,655.4
30		80	20	20	0				Silty sand, dark yellowish brown (10YR4/4), fine to very fine sand, loose, wet; increasing silt with depth, no hydrocarbon odor or staining present.		4,654.4
		60	40		2	C					
31					2						4,653.4
									T.D. 31.5'		
32											4,652.4
33											4,651.4
34											4,650.4

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-2-MW-U-92-HF
(Monitoring Well)

PROJECT NO. 2208.0402

Project: Hill Air Force Base

Date Drilled: 5-26-92 **Date Completed:** 5-26-92
Logged By: Bob Glascott

Drilling Contractor: Layne Environmental
Drilling Method: Hollow Stem Auger

JMM Boring No.: T-870-3-MW-U-92-HF
Northing: 283,882.19 **Easting:** 1,862,533,09

Ground Surface Elevation (ft.): 4,688.43
Measuring Point (MP) Elevation (ft.): 4,690.67
MP is Top of PVC Casing **Datum:** NGVD (1929)

Borehole: Total Depth (ft.) 36.5 Diameter (in.) 13
Well Screen: Diameter (in. I.D.) 6 Depth (ft.) 35–15 Type PVC Schedule 40 Slot Size 0.010 inch
Blank Casing: Diameter (in. I.D.) 6 Length (ft.) 15–0 Type PVC Schedule 40
Interval: Sand (ft.) 35–13 Bentonite Seal (ft.) 13–11 Cement Grout Seal (ft.) 11–0
Depth to Water from MP (ft) 26.30 Date Measured 5-27-92

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
0										MP	4,690.7
	10	70	20	2.0	5			SM	Silty sand, very dark grayish brown (10YR3/2), fine sand, angular to subrounded, medium dense, moist; faint hydrocarbon odor.	13" Borehole	
1					8	C					4,689.7
					8					6" Schedule 40 PVC Casing	
2											4,688.7
										Cement-Bentonite Grout Seal	
3											4,687.7
4											4,686.7

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-3-MW-U-92-HF
(Monitoring Well)

PROJECT NO. 2208.0402

Project: Hill Air Force Base

JMM Boring No.: T-870-3-MW-U-92-HF

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
5		75	25	>1000	6			SM	Silty sand, yellowish brown (10YR4/4), fine to very fine sand, angular to subrounded, medium dense, moist.		4,685.7
		60	40		11	C			Silty sand, increasing silt, brown (10YR5/3), very fine sand, strong hydrocarbon odor and staining present.		
6					14						4,684.7 Cement-Bentonite Grout Seal
7											4,683.7
8											4,682.7
9											4,681.7 6" Schedule 40 PVC Screen
10		60	40	>1000	6				Silty sand, grayish brown (10YR5/2), fine to very fine sand, subrounded to subangular, medium dense, moist.		4,680.7
		90	10		11	C		SP	Poorly-sorted sand, pale brown (10YR6/3), very fine sand, medium dense, slightly moist.		
11					14			SM	Silty sand as above, strong hydrocarbon odor.		4,679.7
12											4,678.7 Bentonite Seal
13											4,677.7 #10-20 Sand
14											4,676.7

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-3-MW-U-92-HF
(Monitoring Well)

PROJECT NO. 2208.0402

Project: Hill Air Force Base

JMM Boring No.: T-870-3-TWP-U-92-HF

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
15		60	40	>1000	8			SM	Silty sand, dark grayish brown (10YR4/2), fine to very fine sand, medium dense, very moist; strong hydrocarbon odor, weathered.		4,675.7
					12	C				#10-20 Sand	
16					19						4,674.7
17											4,673.7
18											4,672.7
19											4,671.7
										6" Schedule 40 PVC Screen	
20		60	40	>1000	2				Silty sand, grayish brown (10YR5/2), very fine sand, loose, wet; strong hydrocarbon odor; increasing sand.		4,670.7
		70	30		1	C					
21					1						4,669.7
										0.010" Slot Size	
22											4,668.7
23											4,667.7
24											4,666.7

PROJECT NO. 2208.0402

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-3-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-3-MW-U-92-HF

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
25		60	40	>1000	4			SM	Silty sand, grayish brown (10YR5/2), fine to very fine sand, subangular to subrounded, loose, wet; interbedded with clay, dark yellowish brown (10YR4/4), very fine sand, low plasticity, medium dense, moist; strong hydrocarbon odor throughout, staining present.		4,665.7
		10	90		5	C		CL			
26					7						4,664.7
											#10-20 Sand
27											4,663.7
28											4,662.7
29											4,661.7
											6" Schedule 40 PVC Screen
30									As above.		4,660.7
		10	90	>1000	1						0.010" Slot Size
		70	30		1	C					
31					4						4,659.7
32											4,658.7
33											4,657.7
34											4,656.7

PROJECT NO. 2208.0402

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-3-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-3-MW-U-92-HF

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
35		10	90	400	2			CL	As above (continued).		4,655.7
		70	30		3	C					
36					4						4,654.7
									T.D. 36.5'		
37											4,653.7
38											4,652.7
39											4,651.7
40											4,650.7
41											4,649.7
42											4,648.7
43											4,647.7
44											4,646.7

PROJECT NO. 2208.0402

JMM James M. Montgomery

* C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-3-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

Date Drilled: 5-26-92 **Date Completed:** 5-26-92
Logged By: Bob Glascott

Drilling Contractor: Layne Environmental
Drilling Method: Hollow Stem Auger

JMM Boring No.: T-870-4-MW-U-92-HF
Northing: 283,798.05 **Easting:** 1,862,446.70

Ground Surface Elevation (ft.): 4,682.56
Measuring Point (MP) Elevation (ft.): 4,682.13
MP is Top of PVC Casing **Datum:** NGVD (1929)

Borehole: Total Depth (ft.) 26.5 Diameter (in.) 13
Well Screen: Diameter (in. I.D.) 6 Depth (ft.) 26.5–16.5 Type PVC Schedule 40 Slot Size 0.010 inch
Blank Casing: Diameter (in. I.D.) 6 Length (ft.) 16.5–0 Type PVC Schedule 40
Interval: Sand (ft.) 26.5–14.5 Bentonite Seal (ft.) 14.5–12.5 Cement Grout Seal (ft.) 12.5–0
Depth to Water from MP (ft) 23.65 Date Measured 5-27-92

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
0									7.5 inches concrete.	MP	4,682.1
										13" Borehole	
	20	60	20	0.2	7	C		SM	Silty sand, dark grayish brown (10YR3/3), gravel to 1 inch in diameter, subangular to subrounded, medium to fine sand, medium dense, moist.		
1					11						4,681.1
										6" Schedule 40 PVC Casing	
					12						
2											4,680.1
										Cement-Bentonite Grout Seal	
3											4,679.1
4											4,678.1

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-4-MW-U-92-HF
(Monitoring Well)

PROJECT NO. 2208.0402

Project: Hill Air Force Base

JMM Boring No.: T-870-4-MW-U-92-HF

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
5		80	20	1.4	5			SM	Silty sand, yellowish brown (10YR6/5), fine to very fine sand, angular to subrounded, medium dense, moist.		4,677.1
					7	C					
6					8						4,676.1
											Cement-Bentonite Grout Seal
7											4,675.1
8											4,674.1
9											4,673.1
											6" Schedule 40 PVC Screen
10									Silty sand, yellowish brown (10YR5/6), fine to very fine, subangular to subrounded, medium dens, moist.		4,672.1
		80	20	0.6	9			SC	Clayey sand, yellowish brown (10YR5/4), very fine sand, medium dense, very moist.		
		55	45		11	C		SP	Poorly-graded sand, brownish yellow (10YR6/6), fine sand, angular to subrounded, medium dense, moist.		
11		95	5		15						4,671.1
12											4,670.1
								SM			Bentonite Seal
13											4,669.1
14											4,668.1
											#10-20 Sand

PROJECT NO. 2208.0402

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-4-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-4-MW-U-92-HF

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
15		75	25	>1000	5			SM/SC	Silty sand, dark yellowish brown (10YR4/4), fine to very fine sand, angular to subrounded, medium dense, moist; interbedded with sandy silt layers, show iron staining.		4,667.1
		60	40		7	C					
16					7				As above except dark gray (10YR4/1), strong hydrocarbon odor and staining present.		4,666.1
		75	25								
17		60	40								4,665.1
											0.010" Slot Size
18											4,664.1
19											4,663.1
											6" Schedule 40 PVC Screen
20		75	25	>1000	1				Silty sand, yellowish brown (10YR5/4), very fine sand, loose, wet; interbedded with clayey sand, grayish brown (10YR5/2), very fine sand, loose, wet; strong hydrocarbon odor and staining present.		4,662.1
		80	20		1	C					
21		60	40		1						4,661.1
											#10-20 Sand
22											4,660.1
23											4,659.1
24								SC/SM			4,658.1

James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-4-MW-U-92-HF
(Monitoring Well)

PROJECT NO. 2208.0402

Project: Hill Air Force Base

JMM Boring No.: T-870-4-MW-U-92-HF

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
25		55	45	4.5	4			SC/SM	Clayey sand, brown (7.5YR5/4), very fine sand, medium dense, moist; interbedded with silty sand, brown (10YR5/3), fine to very fine sand, subangular to subrounded, medium dense, moist.	#10-20 Sand	4,657.1
					5	C					
26		80	20		6					0.010" Slot Size	4,656.1
									T.D. 26.5'		
27											4,655.1
28											4,654.1
29											4,653.1
30											4,652.1
31											4,651.1
32											4,650.1
33											4,649.1
34											4,648.1

PROJECT NO. 2208.0402

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-4-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

Date Drilled: 6-17-92 **Date Completed:** 6-17-92
Logged By: Bob Glascott

Drilling Contractor: Layne Environmental
Drilling Method: Hollow Stem Auger

JMM Boring No.: T-870-5-MW-U-92-HF
Northing: 283,813.49 **Easting:** 1,862,536.47

Ground Surface Elevation (ft.): 4,687.17
Measuring Point (MP) Elevation (ft.): 4,686.76
MP is Top of PVC Casing **Datum:** NGVD (1929)

Borehole: Total Depth (ft.) 31.5 Diameter (in.) 10
Well Screen: Diameter (in. I.D.) 4 Depth (ft.) 27.5–17.5 Type PVC Schedule 40 Slot Size 0.010 inch
Blank Casing: Diameter (in. I.D.) 4 Length (ft.) 17.5–0 Type PVC Schedule 40
Interval: Sand (ft.) 31.5–15 Bentonite Seal (ft.) 15–10 Cement Grout Seal (ft.) 10–0
Depth to Water from MP (ft) 21.47 Date Measured 7-2-92

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
0									Concrete.	MP	4,687.2
										10" Borehole	
1	50	30	20	1.5	7			GM	Fill—silty sandy gravels, dark brown (10YR4/3), gravel to 1/2 inch in diameter, angular to subrounded, medium to fine sand, angular to subrounded, medium dense, moist.		4,686.2
					8	C				4" Schedule 40 PVC Casing	
		70	30		2			SM	Silty sand, dark brown (10YR4/3), medium to fine sand, angular to subrounded, medium dense, slightly moist; no hydrocarbon odor.		4,685.2
2										Cement-Bentonite Grout Seal	
3				0.7							4,684.2
4									Color change to yellowish brown (10YR5/6).		4,683.2
								SP			

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-5-MW-U-92-HF
(Monitoring Well)

PROJECT NO. 2208.0402

Project: Hill Air Force Base

JMM Boring No.: T-870-5-MW-U-92-HF

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
5		95	5	1.1	6			SP	Poorly graded sand, yellowish brown (10YR5/6), medium to fine sand, angular to subrounded, medium dense, slightly moist.		4,682.2
					8	C					
6					7						4,681.2
											Cement-Bentonite Grout Seal
7											4,680.2
8				1.5							4,679.2
9											4,678.2
10		90	10	1.1	9				Poorly graded sand, yellowish brown (10YR5/4), medium to fine sand, angular to subrounded, medium dense, slightly moist; interbedded with small silty beads.		4,677.2
					15	C					Bentonite Seal
11					15						4,676.2
12				4.7				SM			4,675.2
13											4,674.2
14											4,673.2

PROJECT NO. 2208.0402

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-5-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-5-MW-U-92-HF

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
15		75	25	1308	4			SM/SC	Silty sand, pale brown (10YR6/3), fine to very fine sand, angular to round, loose, moist; interbedded with clayey sand (SC), yellowish brown (10YR5/4), very fine sand, medium dense, moist; shows iron oxide staining. Chemical sample collected.		4,672.2
		60	40		6	C					
16					6						4,671.2
											#10-20 Sand
17											4,670.2
18				1489							4,669.2
19											4,668.2
											4" Schedule 40 PVC Screen
20		85	15	1165	4				Silty sand, grayish brown (10YR5/2), fine to very fine sand, angular to subangular, medium dense, moist; strong hydrocarbon odor and staining, interbedded with clayey sand (SC).		4,667.2
		60	40		8	C					
21					5		▼				4,666.2
		85	15	232	4				As above except faint hydrocarbon odor, minor staining and iron staining		
22		60	40		6	C					4,665.2
					10						
23											4,664.2
											0.010" Slot Size
24								SM			4,663.2

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-5-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-5-MW-U-92-HF

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
25		85	15	58	2			SM	Silty sand, yellowish brown (10YR5/4), fine to very fine sand, angular to subrounded, loose, wet, faint hydrocarbon odor, shows iron mottling throughout.	0.010" Slot Size	4,662.2
		60	40		2	C					
26					1					4" Schedule 40 PVC Screen	4,661.2
27											4,660.2
28											4,659.2
29								SM/CL			4,658.2
30		70	30	1070	0				Silty sand, grayish brown (10YR5/2), fine to very fine sand, angular to subrounded, loose, wet; strong hydrocarbon odor and staining, iron staining present, interbedded with sandy clay (CL), strong brown (7.54/6), very fine sand, low plasticity, soft, loose, very moist; hydrocarbon odor present.	#10-20 Sand	4,657.2
		30	70		1	C					
31					3				Geotechnical sample collected.		4,656.2
									T.D. 31.5'		
32											4,655.2
33											4,654.2
34											4,653.2

PROJECT NO. 2208.0402

James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-5-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

Date Drilled: 6-17-92 **Date Completed:** 6-18-92
Logged By: Bob Glascott

Drilling Contractor: Layne Environmental
Drilling Method: Hollow Stem Auger

JMM Boring No.: T-870-6-MW-U-92-HF
Northing: 283,794.35 **Easting:** 1,862,389.06

Ground Surface Elevation (ft.): 4,679.34
Measuring Point (MP) Elevation (ft.): 4,679.03
MP is Top of PVC Casing **Datum:** NGVD (1929)

Borehole: Total Depth (ft.) 31.5 Diameter (in.) 10
Well Screen: Diameter (in. I.D.) 4 Depth (ft.) 30–20 Type PVC Schedule 40 Slot Size 0.010 inch
Blank Casing: Diameter (in. I.D.) 4 Length (ft.) 20–0 Type PVC Schedule 40
Interval: Sand (ft.) 31.5–17 Bentonite Seal (ft.) 17–12 Cement Grout Seal (ft.) 12–0
Depth to Water from MP (ft) 21.60 Date Measured 7-2-92

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
0									Concrete.	MP	4,679.3
	50	30	20	2.7	5			GM	Fill—silty sandy gravel, dark yellowish brown (10YR4/4), gravel to 1/2 inch in diameter, subangular, medium to very fine sand, angular to subrounded, medium dense, slightly moist.	10" Borehole	
1		80	20		9 11	C		SM	Silty sand, brownish yellow (10YR6/6), fine to very fine sand, angular to subrounded, medium dense, slightly moist, no hydrocarbon odor.		4,678.3
										4" Schedule 40 PVC Casing	
2											4,677.3
										Cement-Bentonite Grout Seal	
3											4,676.3
4											4,675.3

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-6-MW-U-92-HF
(Monitoring Well)

PROJECT NO. 2208.0402

Project: Hill Air Force Base

JMM Boring No.: T-870-6-MW-U-92-HF

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
5		80	20	1.1	4			SM	Silty sand (continued), color change to yellowish brown (10YR5/4)with minor iron oxide staining.		4,674.3
					6	C					
6								SP	Poorly graded sand, brownish yellow (10YR6/6), fine sand, angular to subrounded, medium dense, slightly moist.		4,673.3
		95	5		6					Cement-Bentonite Grout Seal	
7											4,672.3
8								SM			4,671.3
9											4,670.3
										4" Schedule 40 PVC Casing	
10		70	30	0.7	8				Silty sand, dark yellowish brown (10YR4/4), fine to very fine sand, angular to subrounded, medium dense, moist; iron oxide staining present.		4,669.3
		95	5		11	C		SP	Poorly graded sand, brownish yellow (10YR6/6), fine sand, angular to subrounded, medium dense, slightly moist.		
11											4,668.3
					14			SM	Silty sand, dark yellowish brown (10YR4/4), fine to very fine sand, angular to subrounded, medium dense, moist; iron oxide staining present.		
								SP	Poorly graded sand, brownish yellow (10YR6/6), fine sand, angular to subrounded, medium dense, slightly moist.		
12											4,667.3
										Bentonite Seal	
13								SM			4,666.3
14											4,665.3

PROJECT NO. 2208.0402

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-6-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-6-MW-U-92-HF

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
15		70	30	64	4			SM	Silty sand, dark yellowish brown (10YR4/4), fine to very fine sand, subangular to subrounded, slightly moist.		4,664.3
		50	50		5	C		SP/SM	Poorly graded sand, brownish yellow (10YR6/6), fine sand, angular to subrounded, medium dense, slightly moist; interbedded with silty sand.		
16					5						4,663.3
										Bentonite Seal	
17											4,662.3
18											4,661.3
										#10-20 Sand	
19								SM			4,660.3
				45					Faint hydrocarbon odor present in cuttings.		
20		70	30	489	4				Silty sand, yellowish brown (10YR5/4), very fine sand, loose to medium dense, very moist; hydrocarbon odor present.		4,659.3
		50	50		6	C		SC/SM	Clayey sand, yellowish brown (10YR5/4), very fine sand, medium dense, very moist; hydrocarbon odor present, interbedded with silty sand.		
21					9				Chemical sample collected.		4,658.3
22											4,657.3
				655						4" Schedule 40 PVC Screen	
23								SM			4,656.3
										0.010" Slot Size	
24											4,655.3

GRAIN SIZE

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-6-MW-U-92-HF
(Monitoring Well)

PROJECT NO. 2208.0402

Project: Hill Air Force Base

JMM Boring No.: T-870-6-MW-U-92-HF

DEPTH (FEET)	% GRAVEL	GRAIN SIZE % SAND	GRAIN SIZE % FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
25		70	30	38	1			SM	Silty sand, yellowish brown (10YR5/4), very fine sand, loose to medium dense, very moist; faint hydrocarbon odor, iron staining present.		4,654.3
		30	70		2	C		SC/SM	Sandy clay, yellowish brown (10YR5/4), very fine sand, low plasticity; iron oxide staining present, faint hydrocarbon odor, interbedded with silty sand.		
26					5						4,653.3
										#10-20 Sand	
27											4,652.3
										4" Schedule 40 PVC Screen	
28				2.4				SM			4,651.3
										0.010" Slot Size	
29											4,650.3
30		70	30	0	1				Silty sand, yellowish brown (10YR5/4), fine to very fine sand, angular to subrounded, loose, wet.		4,649.3
					2	C			Geotechnical sample collected.		
31					7						4,648.3
									T.D. 31.5'		
32											4,647.3
33											4,646.3
34											4,645.3

PROJECT NO. 2208.0402

James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-6-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

Date Drilled: 6-29-92 **Date Completed:** 6-30-92
Logged By: Bob Glascott

Drilling Contractor: Layne Environmental
Drilling Method: Hollow Stem Auger

JMM Boring No.: T-870-7-MW-U-92-HF
Northing: 283,900.79 **Easting:** 1,862,621.27

Ground Surface Elevation (ft.): 4,691.85
Measuring Point (MP) Elevation (ft.): 4,693.80
MP is Top of PVC Casing **Datum:** NGVD (1929)

Borehole: Total Depth (ft.) 38.0 Diameter (in.) 10
Well Screen: Diameter (in. I.D.) 4 Depth (ft.) 38–28 Type PVC Schedule 40 Slot Size 0.010 inch
Blank Casing: Diameter (in. I.D.) 4 Length (ft.) 28–0 Type PVC Schedule 40
Interval: Sand (ft.) 38–26 Bentonite Seal (ft.) 26–21 Cement Grout Seal (ft.) 21–0
Depth to Water from MP (ft) 31.29 Date Measured 7-2-92

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
0						c		GP	Fill—gravel 1/2 inch to 2 1/2 inches in diameter, subrounded, moist.	MP	4,693.8
										10" Borehole	
								SM	Silty sand, dark yellowish brown (10YR3/4), medium to very fine sand, angular to subrounded, moist.		
1						c					4,692.8
										4" Schedule 40 PVC Casing	
				0.0							
2											4,691.8
										Cement-Bentonite Grout Seal	
3											4,692.8
4		70	30	0.2		c			As above.		4,691.8

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

BORING NO.
T-870-7-MW-U-92-HF

PROJECT NO. 2208.0402

Project: Hill Air Force Base

JMM Boring No.: T-870-7-MW-U-92-HF

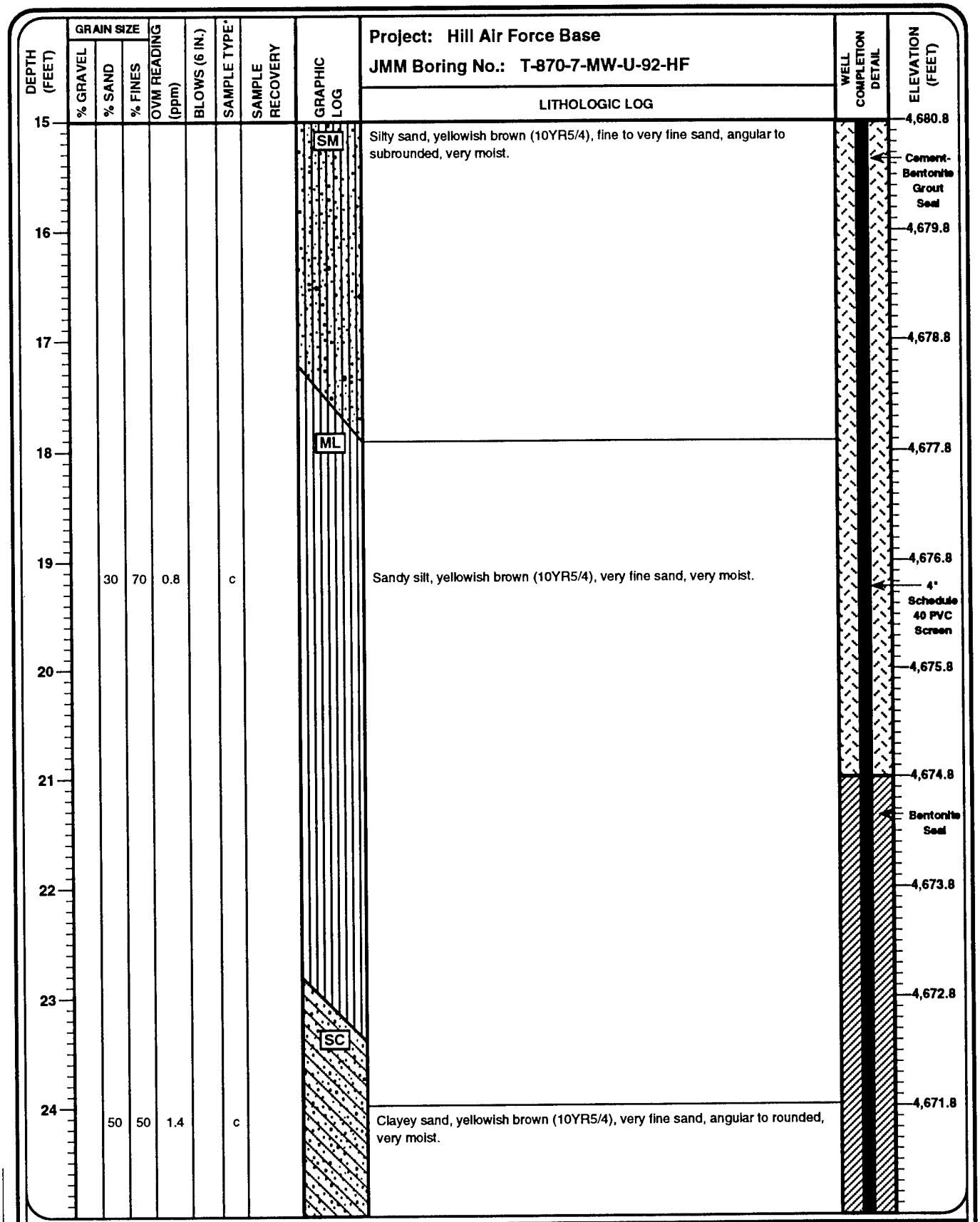
DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
5								SM	Silty sand, dark yellowish brown (10YR3/4), medium to very fine sand, angular to subrounded, moist.		4,690.8
6											4,689.8 Cement-Bentonite Grout Seal
7								SM/SC			4,688.8
8											4,687.8
9		60	40	0.2		c			Silty sand to clayey sand, yellowish brown (10YR5/4), fine to very fine sand, angular to subrounded, moist.		4,686.8 4" Schedule 40 PVC Screen
10											4,685.8
11											4,684.8
12											4,683.8
13								SM			4,682.8
14		55	45	0.2		c			Silty sand, yellowish brown (10YR5/4), fine to very fine sand, angular to subrounded, very moist.		4,681.8

PROJECT NO. 2208.0402

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

BORING NO. T-870-7-MW-U-92-HF

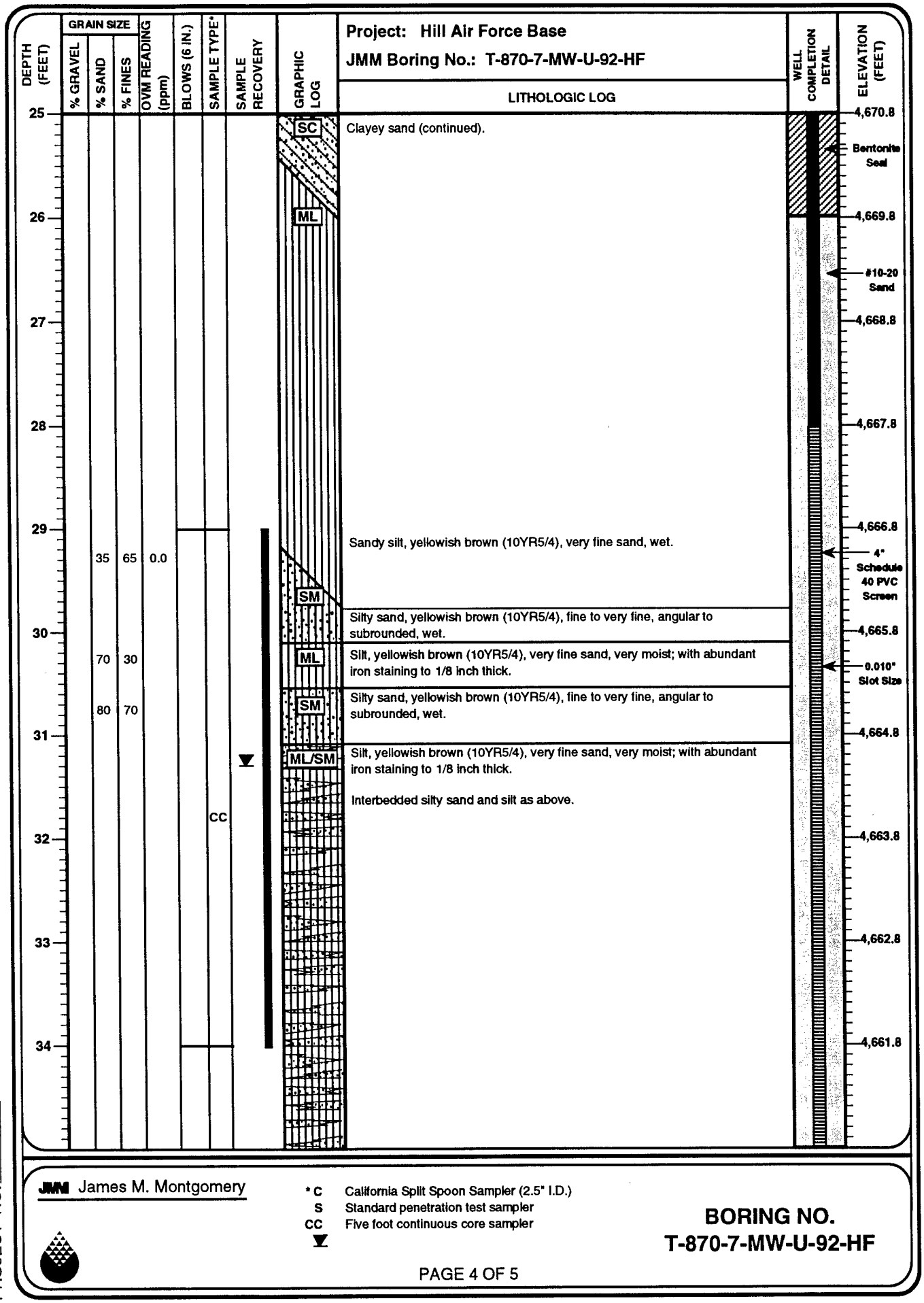


PROJECT NO. 2208.0402

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

BORING NO. T-870-3-MW-U-92-HF



PROJECT NO. 2208.0402

JMM James M. Montgomery

* C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
CC Five foot continuous core sampler

BORING NO. T-870-7-MW-U-92-HF

Project: Hill Air Force Base

JMM Boring No.: T-870-7-MW-U-92-HF

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
35								ML/SM	As above, interbedded SM and ML.	4" Schedule 40 PVC Screen	4,660.8
36										#10-20 Sand	4,659.8
37										0.010" Slot Size	4,658.8
38									T.D. 38.0'		4,657.8
39											4,656.8
40											4,655.8
41											4,654.8
42											4,653.8
43											4,652.8
44											4,651.8

PROJECT NO. 2208.0402

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

BORING NO.
T-870-7-MW-U-92-HF

Project: Hill Air Force Base

Date Drilled: 6-18-92 **Date Completed:** 6-18-92
Logged By: Bob Glascott

Drilling Contractor: Layne Environmental
Drilling Method: Hollow Stem Auger

JMM Boring No.: T-870-8-MW-92-HF
Northing: 283,893.96 **Easting:** 1,862,449.70

Ground Surface Elevation (ft.): 4,686.66
Measuring Point (MP) Elevation (ft.): 4,688.02
MP is Top of PVC Casing **Datum:** NGVD (1929)

Borehole: Total Depth (ft.) 31.5 Diameter (in.) 6
Well Screen: Diameter (in. I.D.) 2 Depth (ft.) 30–20 Type PVC Schedule 40 Slot Size 0.020 inch hack saw slits
Blank Casing: Diameter (in. I.D.) 2 Length (ft.) 20–0 Type PVC Schedule 40
Interval: Sand (ft.) 31.5–17 Bentonite Seal (ft.) 17–12 Cement Grout Seal (ft.) 12–0
Depth to Water from MP (ft) 26.68 Date Measured 7-2-92

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
0	50	30	20	1.1	9			GM	Silty sand, dark yellowish brown (10YR4/4), gravel to 1 inch in diameter, angular to subrounded, medium to very fine sand, angular to subrounded, medium dense, slightly moist.	MP	4,688
					12	C		SM		6" Borehole	
1	30	50	20		18				Silty gravelly sand, dark brown (10YR3/3), gravel to 1.2 inch in diameter, subrounded, medium to very fine sand, angular to subrounded, medium dense to dense, moist.	2" Schedule 40 PVC Casing	4,687
2										Cement-Bentonite Grout Seal	4,686
3								SP			4,685
4				1.6							4,684

PROJECT NO. 2208.0402

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-8-MW-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-8-MW-92-HF

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
5		95	5	8.2	5			SP	Poorly graded sand, light yellowish brown (10YR6/4), fine sand, angular to subrounded, medium dense, moist.		4,683
					6	C					
6					5						4,682
										Cement-Bentonite Grout Seal	
7				3.0							4,681
8											4,680
9											4,679
										2" Schedule 40 PVC Screen	
10		95	5	752	5			SM	Silty sand, yellowish brown, (10YR5/4), fine to very fine sand, angular to subrounded, medium dense, moist.		4,678
									Poorly graded sand, brown (10YR5/1), very fine sand, medium dense, moist; hydrocarbon odor.		
		50	50		7	C		SC	Clayey sand, yellowish brown (10YR5/4), fine to very fine sand, angular to subrounded, medium dense, slightly moist.		
11		75	25		8			SM	Silty sand, brown (10YR5/3), fine to very fine, angular to subrounded, medium dense, moist, strong hydrocarbon odor.		4,677
									Chemical sample collected.		
12											4,676
13				170							4,675
14											4,674

James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-8-MW-92-HF
(Monitoring Well)

PROJECT NO. 2208.0402

Project: Hill Air Force Base

JMM Boring No.: T-870-8-MW-92-HF

DEPTH (FEET)	% GRAVEL	GRAIN SIZE % SAND	GRAIN SIZE % FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
15		75	25	483	4			SM	Silty sand, grayish brown (10YR5/2), strong hydrocarbon odor and staining present.		4,673
		50	50		6	C		SC/SM	Sandy clay, grayish brown (10YR5/2), very fine sand, medium dense, moist; strong hydrocarbon odor and staining, interbedded with silty sand.	Cement-Bentonite Grout Seal	
16					10						4,672
										Bentonite Seal	
17											4,671
18				554					Cuttings have a strong weathered hydrocarbon odor.		4,670
19											4,669
20		65	35	137	1			SM	Silty sand, brown (10YR5/3), fine to very fine sand, angular to subrounded, loose, wet; strong hydrocarbon odor, weathered.		4,668
		50	50		1	C		SC	Clayey sand, yellowish brown (10YR5/4), very fine sand, medium dense, very moist; hydrocarbon odor present.		
21		65	35		3			SM/SC	Silty sand, brown (10YR5/3), fine to very fine sand, angular to subrounded, loose, wet; strong weathered hydrocarbon odor, iron mottling present, interbedded clayey sand and silty sands.		4,667
										2" Schedule 40 PVC Screen	
22											4,666
23											4,665
24											4,664

PROJECT NO. 2208.0402

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-8-MW-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-8-MW-92-HF

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
25		70	30	89	2			SM	As above except faint hydrocarbon odor.		4,663
								CL	Sandy clay, yellowish brown (10YR5/4), very fine sand, low plasticity, loose, very moist to wet; faint hydrocarbon odor.		
26		20	80		4	C					4,662
					5					#10-20 Sand	
27											4,661
28											4,660
										0.010" Slot Size	
29											4,659
										2" Schedule 40 PVC Screen	
30		80	20	13.9	2			SM	Silty sand, brown (10YR5/3),less, fines, fine to very fine sand, angular to subrounded, loose, wet; faint hydrocarbon odor.		4,658
		20	80		5	C			Sandy clay, yellowish brown (10YR5/4), very fine sand, low plasticity, loose, very moist to wet; faint hydrocarbon odor.		
31								CL			4,657
					8			SM	Silty sand, brown (10YR5/3),less, fines, fine to very fine sand, angular to subrounded, loose, wet; faint hydrocarbon odor.		
									T.D. 31.5'		
32											4,656
33											4,655
34											4,654

PROJECT NO. 2208.0402

James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-8-MW-92-HF
(Monitoring Well)

Project: Hill Air Force Base

Date Drilled: 6-16-92 **Date Completed:** 6-16-92
Logged By: Bob Glascott

Drilling Contractor: Layne Environmental
Drilling Method: Hollow Stem Auger

JMM Boring No.: T-870-9-MW-U-92-HF
Northing: 283,930.05 **Easting:** 1,862,529.21

Ground Surface Elevation (ft.): 4,2689.68
Measuring Point (MP) Elevation (ft.): 4,2692.09
MP is Top of PVC Casing **Datum:** NGVD (1929)

Borehole: Total Depth (ft.) 35 Diameter (in.) 6
Well Screen: Diameter (in. I.D.) 2 Depth (ft.) 35–15 Type PVC Schedule 40 Slot Size 0.020 inch hack saw
Blank Casing: Diameter (in. I.D.) 2 Length (ft.) 15–0 Type PVC Schedule 40
Interval: Sand (ft.) 35–13.5 Bentonite Seal (ft.) 13.5–10 Cement Grout Seal (ft.) 10–0
Depth to Water from MP (ft) 29.28 Date Measured 7-2-92

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
0										MP	4,2692.1
	50	30	20			c		GM	Silty sandy gravel, yellowish brown (10YR4/3), gravel to 1/2 inch in diameter, angular, medium to fine sand, angular to rounded, moist.	6" Borehole	
1											4,2691.1
										2" Schedule 40 PVC Casing	
								SM			
2											4,2690.1
										Cement-Bentonite Grout Seal	
3											4,2689.1
4											4,2688.1
		70	30	3.9		c			Silty sand, dark yellowish brown (10YR4/4), medium to fine sand, angular to subrounded, moist.		

PROJECT NO. 2208.0402

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

BORING NO.
T-870-9-MW-U-92-HF

Project: Hill Air Force Base

JMM Boring No.: T-870-9-MW-U-92-HF

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
5								SM	Silty sand as above.		4,2687.1
6											4,2686.1
										Cement-Bentonite Grout Seal	
								SM/SC			4,2685.1
7											
8		55	45	0.8		c			Silty sand to clayey sand, yellowish brown (10YR5/4), medium to fine sand, angular to subrounded, moist.		4,2684.1
9											4,2683.1
										2" Schedule 40 PVC Screen	
10									Poorly graded sand 2 feet, light yellowish brown (10YR6/4), fine to very fine sand, angular to subrounded, moist.		4,2682.1
										Bentonite Seal	
11											4,2681.1
								SC			
12											4,2680.1
13											4,2679.1
14		50	50	3.1		c			Clayey sand, yellowish brown (10YR5/4), very fine to fine sand, angular to subrounded, moist.		4,2678.1
										#10-20 Sand	

PROJECT NO. 2208.0402

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

BORING NO. T-870-9-MW-U-92-HF

Project: Hill Air Force Base

JMM Boring No.: T-870-9-MW-U-92-HF

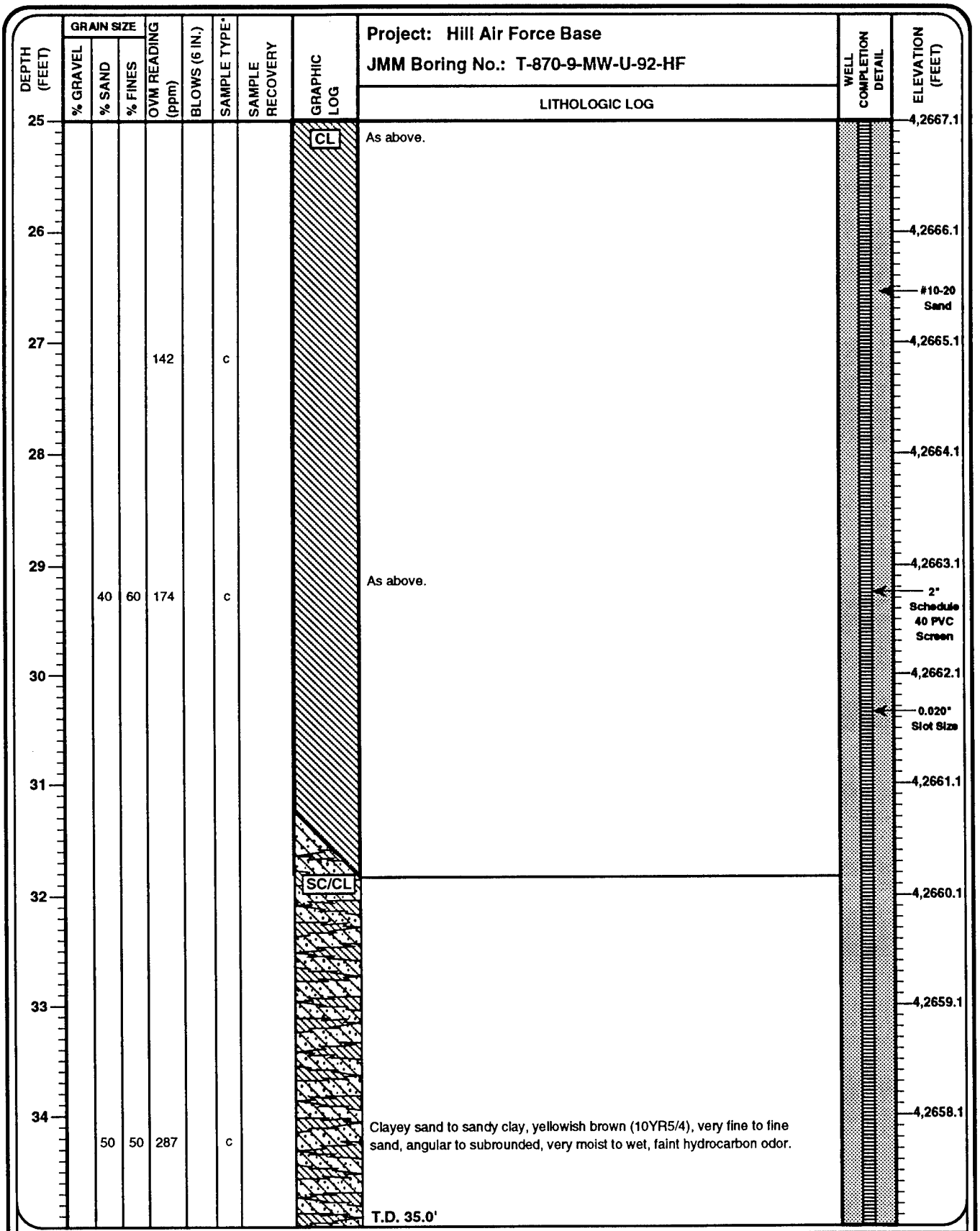
DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
15								SC	Clayey sand as above.		4,2677.1
16											4,2676.1
										#10-20 Sand	
17									Chemical sample collected.		4,2675.1
								SM			
18		65	35	252					Silty sand, yellowish brown (10YR5/4), medium to fine sand, angular to subrounded, moist; hydrocarbon odor present.		4,2674.1
								SC			
		50	50	920					Clayey sand, yellowish brown (10YR5/4), hydrocarbon odor present.		
19											4,2673.1
										2" Schedule 40 PVC Screen	
20											4,2672.1
										0.020" Slot Size	
21											4,2671.1
22											4,2670.1
23											4,2669.1
								CL			
24		40	60	263		c			Sandy clay, yellowish brown (10YR5/4), very fine to fine sand, angular to subrounded, very moist; hydrocarbon odor present.		4,2668.1

PROJECT NO. 2208.0402

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

BORING NO. T-870-9-MW-U-92-HF



PROJECT NO. 2208.0402

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

BORING NO. T-870-9-MW-U-92-HF

Project: Hill Air Force Base

Date Drilled: 9-2-92 **Date Completed:** 9-2-92
Logged By: Bob Glascott

Drilling Contractor: Layne Environmental
Drilling Method: Mobile Drill B-80

JMM Boring No.: T-870-10-MW-U-92-HF
Northing: **Easting:**

Ground Surface Elevation (ft.):
Measuring Point (MP) Elevation (ft.):
MP is Top of PVC Casing **Datum:** NGVD (1929)

Borehole: Total Depth (ft.) 45 Diameter (in.) 10.5
Well Screen: Diameter (in. I.D.) 6 Depth (ft.) 45–24.5 Type PVC Schedule 40 Slot Size 0.010 inch
Blank Casing: Diameter (in. I.D.) 6 Length (ft.) 24.5–0 Type PVC Schedule 40
Interval: Sand (ft.) 45.5–23.0 Bentonite Seal (ft.) 23–17 Cement Grout Seal (ft.) 17–0
Depth to Water from MP (ft) 28.83 Date Measured 9/14/92

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
0									Asphalt 3".	MP	4,690.7
	50	30	20			c		GM	3" road base fill.	10.5" Borehole	
1								SM		6" Schedule 40 PVC Casing	4,689.7
2	–	60	40	3.8		c			Silty sand, yellowish brown (10YR5/4), medium to fine sand, subangular to round, medium dense, moist.	Cement-Bentonite Grout Seal	4,688.7
3											4,687.7
4											4,686.7

PROJECT NO. 2208.0402

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-10-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-10-MW-U-92-HF

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
5		75	25	1529	5			SM	Silty sand, light yellowish brown (10YR6/4), fine to very fine, subangular to round, medium dense, moist.		4,685.7
					7						
6		75	25		7	C			Silty sand increasing silt, yellowish brown (10YR5/4), medium to very fine sand, subangular to round, medium dense, moist; iron staining present, faint hydrocarbon odor.		4,684.7
					8						Cement-Bentonite Grout Seal?
7											4,683.7
8											4,682.7
9											4,681.7
10		95	5	8.9	8			SW	Well graded sands, light yellowish brown to yellowish brown (10YR6/4-5/6), medium to fine, subangular to round, medium dense, moist; no hydrocarbon odor.		4,680.7
					11						
11						C					4,679.7
					16						
					17						
12											4,678.7
											Bentonite Seal?
13											4,677.7
14		95	5	0		c		ML	Same as above.		4,676.7

PROJECT NO. 2208.0402

James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-10-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-10-MW-U-92-HF

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
15		40	60	0	4			ML/SM	Sandy silt, dark yellowish brown (10YR4/4), very fine sand, stiff, very moist; interbedded with silty sand, dark yellowish brown (10YR4/4) medium to very fine and, subangular to round, moist; (1/4" to 1/2" thick) iron staining present in the sands.		4,675.7
		60	40								Bentonite Seal
					6						
16						C					4,674.7
					9						
					9						
17											4,673.7
18											4,672.7
19											4,671.7
20		90	10	0	11			SP	Poorly sorted sand, light yellowish brown (10YR6/4), medium sand, angular to round, very dense, moist.		4,670.7
					18						
21						C					4,669.7
					29						
					34						
22								SM			4,668.7
23											4,667.7
											#10-20 Sand
24											4,666.7

James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-10-MW-U-92-HF
(Monitoring Well)

PROJECT NO. 2208.0402

Project: Hill Air Force Base

JMM Boring No.: T-870-10-MW-U-92-HF

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
25		70	30	790	6			SM	Silty sand, grayish brown (10YR5/2), fine to very fine sand, subangular to subrounded, loose, wet.		4,665.7
		30	70		7			ML	Sandy silt, yellowish brown (10YR5/4), fine to very fine sand, medium dense, moist.		
26		70	30		9	C		SM	Same as above, (silty sand), wet.		4,664.7
		30	70		7			ML	Same as above, (sandy silt), moist.	#10-20 Sand	
27											4,663.7
28											4,662.7
29							▼	SM			4,661.7
										6" Schedule 40 PVC Screen	
30		70	30	234	4				Silty sand, dark grayish brown (10YR4/2), medium to fine sand, subangular to round, medium, dense, wet; hydrocarbon stained, strong odor.		4,660.7
		20	80		6	C		ML/SM	Sandy silt, dark yellowish brown, (10YR4/4), fine to very fine sand, medium dense, moist; interbedded with silty sands, thicker silty sand contains water, typically 1/8" to 1/4" SM with 1/4" to 1/2" ML, faint hydrocarbon odor, iron staining present in interbedded layers.	0.010" Slot Size	
31					8						4,659.7
					10						
32											4,658.7
33											4,657.7
34											4,656.7

PROJECT NO. 2208.0402

James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-10-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-10-MW-U-92-HF

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
35		20	80	0	4			ML/SM	Same as above, except brown in color (10YR5/3), interbedded with silty sand, brown, medium to very fine, subangular to round, loose, wet, silty sand to 1" thick, sandy silts to 4" thick with iron staining.		4,655.7
		70	30		4						
36					4	C					4,654.7
					6						
37											4,653.7
38											4,652.7
39											4,651.7
40		20	80	80.6	3				Interbedded sandy silts and silty sands. Silty sands moist to wet; sandy silts moist. Silty sands 1/4" to 1/2"; sandy silts 1/2' to 2", with iron staining.		4,650.7
		70	30		4						
41					8						4,649.7
					8						
42											4,648.7
43											4,647.7
44											4,646.7
											4,645.7

PROJECT NO. 2208.0402

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-10-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-10-MW-U-92-HF

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
45		10	90		6			ML/SM	Same as above, except dark gray (10YR4/1), interbedded with silty sand, dark gray, fine to very fine, very dense, moist to wet.		4,645.7
		80	20		8	C					
46					15				Interbedded sandy silts and silty sands. Silty sands 1/8" to 1/4" thick, sandy silts 1/2" to 4", dark color, looks organic, no hydrocarbon odor.		4,6447
					20						
47									**T.D. 45', sampled to 47'**		4,643.7
48											4,642.7
49											4,641.7
50											4,640.9
51											4,639.7
52											4,638.7
53											4,637.7
54											4,636.7

PROJECT NO. 2208.0402

JMM James M. Montgomery

* C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-10-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

Date Drilled: 9-8-92 **Date Completed:** 9-8-92
Logged By: Bob Glascott

Drilling Contractor: Layne Environmental
Drilling Method: Mobile Drill B-80

JMM Boring No.: T-870-11-MW-U-92-HF
Northing: **Easting:**

Ground Surface Elevation (ft.):
Measuring Point (MP) Elevation (ft.):
MP is Top of PVC Casing **Datum:** NGVD (1929)

Borehole: Total Depth (ft.) 50 Diameter (in.) 6 1/4
Well Screen: Diameter (in. I.D.) 4 Depth (ft.) 45.5-25 Type PVC Schedule 40 Slot Size 0.010 inch
Blank Casing: Diameter (in. I.D.) 4 Length (ft.) 25–0 Type PVC Schedule 40
Interval: Sand (ft.) 45.5–23.0 Bentonite Seal (ft.) 23-18 Cement Grout Seal (ft.) 18-0
Depth to Water from MP (ft) 25.38 Date Measured 9/14/92

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
0									Asphalt 3".	MP	4,690.7
								GM	1' road base fill.	6' 1/4" Borehole	
1										4" Schedule 40 PVC Casing	4,689.7
								ML			
2										Cement-Bentonite Grout Seal	4,688.7
3		20	80	0		c			Sandy silt, brown (7.5YR5/3), fine to very fine sand, moist.		4,687.7
4											4,686.7

PROJECT NO. 2208.0402

JMM James M. Montgomery

* C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-11-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-11-MW-U-92-HF

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
5		20	80	0	5			ML/SP	Same as above, except there are fine beds of poorly sorted sands interbedded.		4,685.7
		85	15		5						
6					6	C					4,684.7
					9					Cement-Grout Seal	
7											4,683.7
8											4,682.7
9											4,681.7
10		20	80	0	3				Same as above, except very moist; medium stiff, iron staining present.		4,680.7
		90	10		4	C		SP	Poorly sorted sand, light yellowish brown (10YR6/4), fine to very fine, medium dense, very moist.		
11					4						4,679.7
					5						
12											4,678.7
13								ML/SP			4,677.7
14											4,676.7

PROJECT NO. 2208.0402

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
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HILL AIR FORCE BASE
T-870-11-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-11-MW-U-92-HF

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
15		20	80	35	1			ML/SP	Same as above except soft, very moist; iron staining present. Interbedded with very thin poorly sorted sand, very moist to wet.		4,675.7
					3	C				Cement-Grout Seal	
16					5						4,674.7
		95	5					SP	Poorly sorted sand, pale brown (10YR6/3), fine to very fine sand, angular to subrounded, medium dense, moist.		
17					8						4,673.7
18											4,672.7
										Bentonite Seal	
19											4,671.7
20		95	5	54.5	4				Same as above.		4,670.7
					9	C					
21					11						4,669.7
					14						
22											4,668.7
23											4,667.7
										#10-20 Sand	
24											4,666.7

PROJECT NO. 2208.0402

JMM James M. Montgomery

* C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-11-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-11-MW-U-92-HF

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
25		95	5	18.5	6		▼	SP	Same as above, for 7", medium dense.		4,665.7
					13	C			Same as above, except gray (10YR6/1), hydrocarbon staining and odor.		
26					15						4,664.7
										#10-20 Sand	
27											4,663.7
28											4,662.7
29											4,661.7
										6" Schedule 40 PVC Screen	
30		95	5	>2500	5				Poorly sorted sand, gray to dark gray (10YR8/1–4/1), medium sand, angular to subround, medium dense, top 15" moist, lower 6" wet.		4,660.7
					8	C				0.010" Slot Size	
31					11						4,659.7
					14						
32											4,658.7
33											4,657.7
34											4,656.7

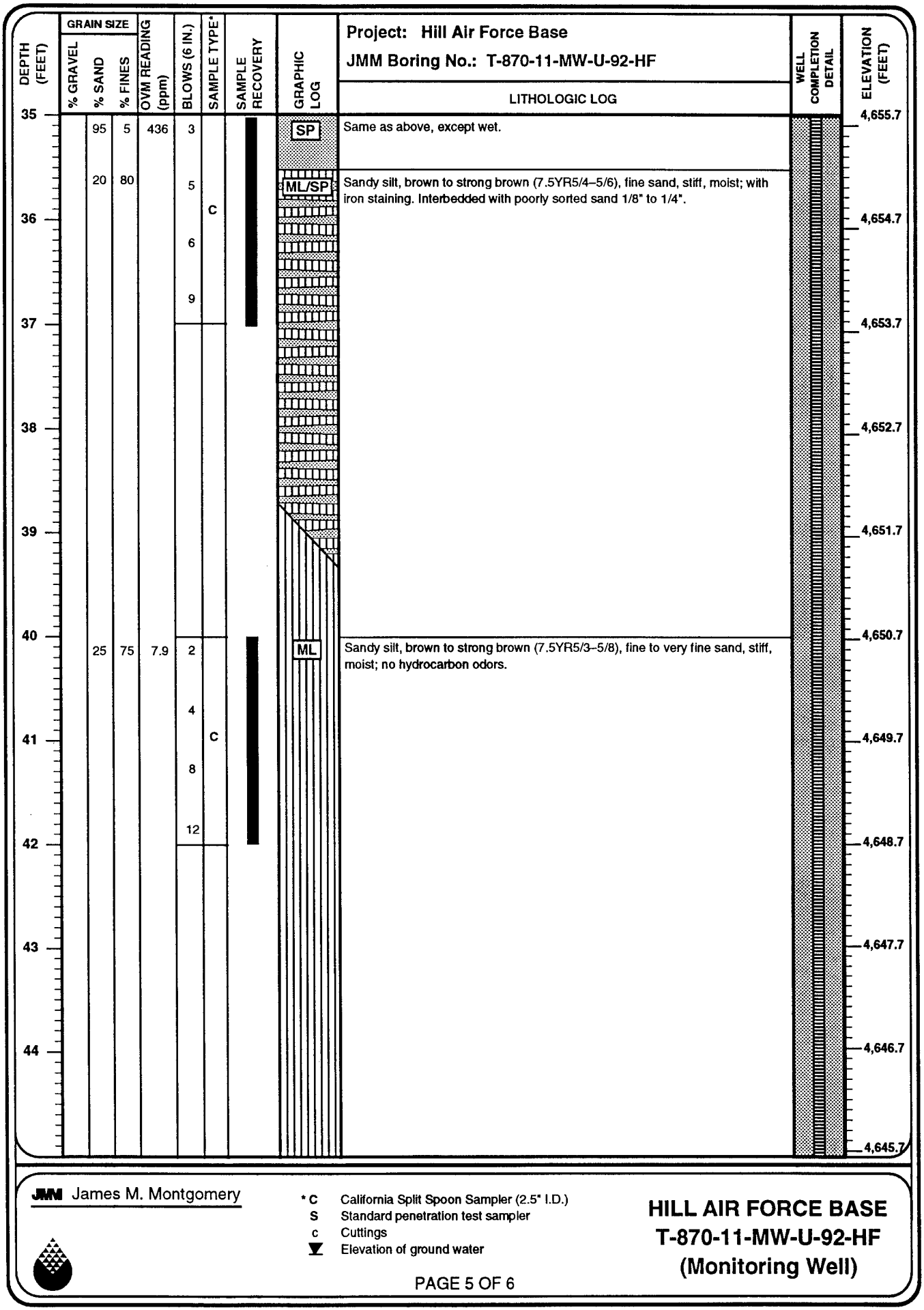
GRAIN SIZE

JMM James M. Montgomery

* C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-11-MW-U-92-HF
(Monitoring Well)

PROJECT NO. 2208.0402



PROJECT NO. 2208.0402

JMM James M. Montgomery

* C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-11-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-11-MW-U-92-HF

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
45		25	75	2.1	1			ML/SP	Same as above, (sandy silts) from 1/2" to 1.5" thick. Interbedded with poorly sorted sand, brown (10YR3/5), medium to fine sand, angular to subround, medium dense, moist; from 1/8" to 1/2 thick.		4,645.7
		90	10		3	C					
46					6						4,6447
47					6						4,643.7
48		25	75	1.4	2				Same as above.		4,642.7
49					4	C					4,641.7
					7						
50					9						4,640.9
									T.D. 50'		
51											4,639.7
52											4,638.7
53											4,637.7
54											4,636.7

PROJECT NO. 2208.0402

JMM James M. Montgomery

* C California Split Spoon Sampler (2.5" I.D.)
S Standard penetration test sampler
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-11-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

Date Drilled: 9-9-92 **Date Completed:** 9-9-92
Logged By: Bob Glascott

Drilling Contractor: Layne Environmental
Drilling Method: Mobile Drill B-80

JMM Boring No.: T-870-12-MW-U-92-HF
Northing: **Easting:**

Ground Surface Elevation (ft.):
Measuring Point (MP) Elevation (ft.):
MP is Top of PVC Casing **Datum:** NGVD (1929)

Borehole: Total Depth (ft.) 45 Diameter (in.) 8 1/4
Well Screen: Diameter (in. I.D.) 6 Depth (ft.) 45-24.5 Type PVC Schedule 40 Slot Size 0.010 inch
Blank Casing: Diameter (in. I.D.) 6 Length (ft.) 24.5–0 Type PVC Schedule 40
Interval: Sand (ft.) 45–23 Bentonite Seal (ft.) 23–17 Cement Grout Seal (ft.) 17–0
Depth to Water from MP (ft) 25.38 Date Measured 9/29/92

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
0		60	40	0		CC		SM	Grass, silty sand, very dark grayish brown (10YR3/4), medium to very fine sand, angular to subrounded, medium dense, moist.	MP	4,690.7
										8' 1/4" Borehole	
1		40	60	4.3				ML	Sandy silt, light yellowish brown to dark brown (10YR6/4–6/6), fine to very fine sand, medium stiff, moist.		4,689.7
										6" Schedule 40 PVC Casing	
2											4,688.7
										Cement-Bentonite Grout Seal	
3											4,687.7
4								SP			4,686.7

PROJECT NO. 2208.0402

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
CC Continuous Corer
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-12-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-12-MW-U-92-HF

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
5		95	5	0		CC		SP	Poorly sorted sand, light yellowish brown (10YR6/4), fine to very fine, medium dense, moist.		4,685.7
6											4,684.7 Cement-Grout Seal
7				0							4,683.7
8											4,682.7
9											4,681.7
10		95	5	0		CC		SP	Poorly sorted sand, light yellowish brown (106/4-6/6), fine to very fine, medium dense, moist.		4,680.7
		30	70					ML	Sandy silt, brown (7.5YR5/3), fine to very fine sand, medium stiff, moist; shows iron staining 1/16" to 1/8" thick.		
11		95	5					SP/ML	Same as above with occasional small interbedded sandy silt, as above.		4,679.7
12											4,678.7
13				0							4,677.7
14											4,676.7

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
CC Continuous Corer
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-12-MW-U-92-HF
(Monitoring Well)

PROJECT NO. 2208.0402

Project: Hill Air Force Base

JMM Boring No.: T-870-12-MW-U-92-HF

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
15		95	5	0		CC		SP	Poorly sorted sand, light yellowish brown (10YR6/4), medium to fine sand, angular to subround, medium dense, moist; occasional interbedded sandy silt layers.		4,675.7
										Cement-Grout Seal	
16											4,674.7
17				0							4,673.7
										Bentonite Seal	
18								SM/ML			4,672.7
19											4,671.7
20		95	5	0	7	C			Poorly sorted sand, brownish yellow (10YR6/6), angular to subround, medium dense, moist to very moist; occasional interbedded sandy silt layers.		4,670.7
					9						
21					10						4,669.7
		25	75		8			ML	Sandy silt, yellowish brown (10YR5/8), fine to very fine sand, very stiff, moist; iron staining present in bedding.		
22											4,668.7
								SM			
23											4,667.7
										#10-20 Sand	
24											4,666.7

PROJECT NO. 2208.0402

JMM James M. Montgomery

* C California Split Spoon Sampler (2.5" I.D.)
CC Continuous Corer
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-12-MW-U-92-HF
(Monitoring Well)

Project: Hill Air Force Base

JMM Boring No.: T-870-12-MW-U-92-HF

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
25		60	40	>2500	4		▼	SM	Silty sand, brown/dark brown(10YR4/3), medium to fine sand, angular to subround. loose to medium dense, moist; hydrocarbon odor and staining present.		4,665.7
		85	15		4			SP/ML	Poorly sorted sand, black/dark brown (10YR4/3), fine sand, wet; interbedded with sandy silt, brown/dark brown (10YR4/1), fine sand, stiff,, moist. Sandy silt from 1/2" to 3" thick. Poorly sorted sand from 1/2" to 2" thick. Strong hydrocarbon odor.	6" Schedule 40 PVC Screen	
26		30	70			C					4,664.7
					5					#10-20 Sand	
					5						
27											4,663.7
28											4,662.7
29								SM			4,661.7
30		60	40	40	3				Silty sand, dark yellowish brown (10YR4/4), fine to very fine sand, medium dense, wet; faint hydrocarbon odor.		4,660.7
					4					0.010" Slot Size	
31						C					4,659.7
					6						
					7						
32											4,658.7
33								ML/SM			4,657.7
34											4,656.7

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
CC Continuous Corer
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-12-MW-U-92-HF
(Monitoring Well)

PROJECT NO. 2208.0402

Project: Hill Air Force Base

JMM Boring No.: T-870-12-MW-U-92-HF

DEPTH (FEET)	% GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
35		40	60	6.7	3			ML/SM	Sandy silt, brown (10YR5/3), fine to very fine, medium stiff, moist. Interbedded with silty sand, brown (10YR5/3) medium to fine sand, angular to subround, loose, very moist; no hydrocarbon odor. Silty sand from 1/8" to 1/2"; Sandy silts from 1/2" to 2".		4,655.7
		75	25		3						
36					4	C					4,654.7
					5						
37											4,653.7
38											4,652.7
39								SM			4,651.7
40		65	35	0	5				Silty sand, dark gray (10YR4/1), medium to fine sand, angular to subround, dense, very moist; containing organic material (wood, etc.)		4,650.7
					17						
41					18						4,649.7
42					18			SM/ML			4,648.7
43											4,647.7
44											4,646.7
											4,645.7

JMM James M. Montgomery

*C California Split Spoon Sampler (2.5" I.D.)
CC Continuous Corer
c Cuttings
▼ Elevation of ground water

HILL AIR FORCE BASE
T-870-12-MW-U-92-HF
(Monitoring Well)

PROJECT NO. 2208.0402

Project: Hill Air Force Base

JMM Boring No.: T-870-12-MW-U-92-HF

DEPTH (FEET)	GRAIN SIZE % GRAVEL	% SAND	% FINES	OVM READING (ppm)	BLOWS (6 IN.)	SAMPLE TYPE*	SAMPLE RECOVERY	GRAPHIC LOG	LITHOLOGIC LOG	WELL COMPLETION DETAIL	ELEVATION (FEET)
45		65	35	0	4			SM/ML	Same as above, interbedded with sandy silt, dark gray (10YR4/1) fine to very fine sand, stiff, moist.		4,645.7
		30	70		5						
46					9						4,6447
					9						
47											4,643.7
									T.D. = 45 ', Sampled to 47'.		
48											4,642.7
49											4,641.7
50											4,640.9
51											4,639.7
52											4,638.7
53											4,637.7
54											4,636.7

PROJECT NO. 2208.0402

JMM James M. Montgomery

* C California Split Spoon Sampler (2.5" I.D.)
CC Continuous Corer
c Cuttings
▼ Elevation of ground water

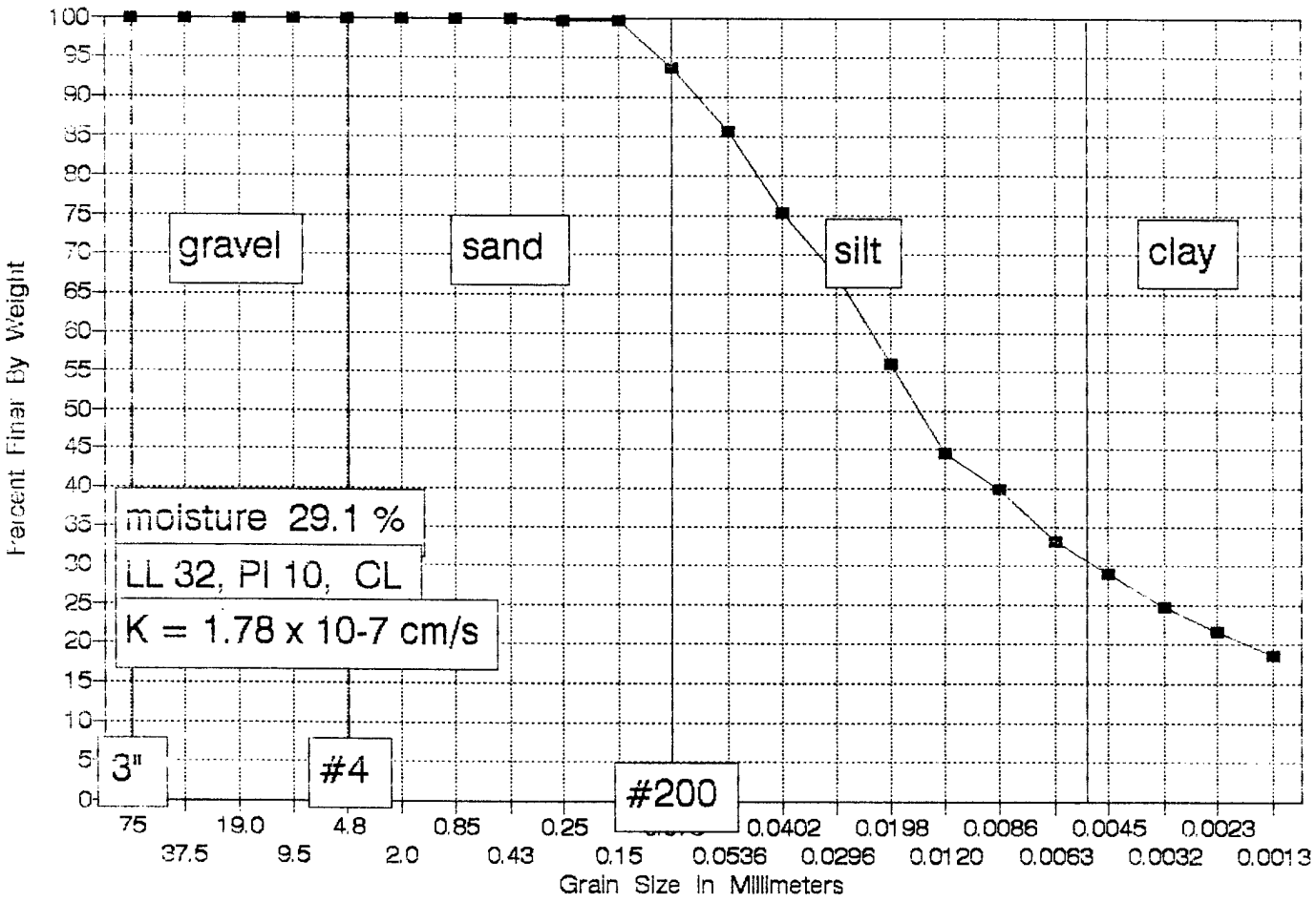
HILL AIR FORCE BASE
T-870-12-MW-U-92-HF
(Monitoring Well)

APPENDIX D

SOIL GEOTECHNICAL DATA

GRADATION CURVE

T-870-5MW-U-92,at 31 to 31.5 ft



HAFB

Dry soil & dish 327.2
Dish 109

Boring T-870-5MW-U-92
Sample at 31 to 31.5 feet

SIEVE & HYDROMETER ANALYSIS

SIEVE PORTION

Dry weight of TOTAL sample= 218.2
sample split -#10 sieve = 55.1

Sieve #	Weight Retained	Total Percent Finer
1.5 inch		100.00%
3/4 inch	0	100.00%
3/8 inch	0	100.00%
# 4	0	100.00%
# 10	0	100.00%
# 20	0	100.00%
# 40	0.04	99.93%
# 60	0.15	99.73%
# 100	0.2	99.64%
# 200	3.41	93.81%

Constants this test
Gs= 2.65 20c=.01365 21c=.01348 22c=.01332
18c=.01399 19c=.01382
When 5 grams of Sodium
Hexametaphosphate used correction
= 6

HYDROMETER ANALYSIS

Elapsed time	Tc	R'	Zr	Particle Dia. mm	Percent Partial	Total Percent Finer
0.5	19	53.2	7.52	0.0536	85.66	85.66
1	19	47.5	8.46	0.0402	75.32	75.32
2	19	43.2	9.17	0.0296	67.51	67.51
5	19	36.9	10.21	0.0198	56.08	56.08
15	19	30.5	11.27	0.0120	44.46	44.46
30	19	27.9	11.70	0.0086	39.75	39.75
60	19	24.2	12.31	0.0063	33.03	33.03
120	19	22	12.67	0.0045	29.04	29.04
250	19	19.6	13.07	0.0032	24.68	24.68
500	21	17.9	13.35	0.0023	21.60	21.60
1444	19	16.2	13.63	0.0013	18.51	18.51

MECHANICAL ANALYSIS

SA-HA

DATE 7/4/92 BY Jmensch

JOB NUMBER 05461-029-6081 OWNER/CLIENT JM MONTGOMERY

LOCATION HAFB.

BORING I-870-5-MW-4-92 SAMPLE — DEPTH 31-31.5'

@#10

66

NUMBER OF RINGS		DISH	305
WT. OF RINGS & WET SOIL		WT. OF DISH & WET SOIL	383.9
WT. OF RINGS		WT. OF DISH & DRY SOIL	327.2
WT. OF WET SOIL		WT. OF MOISTURE	
FIELD DENSITY		WT. OF DISH	109.0
DRY DENSITY		WT. OF DRY SOIL	
		FIELD MOISTURE CONTENT	

WASH SIEVE _____ DRY SIEVE _____ WEIGHT OF OVEN DRY SOIL _____ (grams)

DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUMULATIVE WEIGHT RETAINED	ACCUMULATIVE PERCENT RETAINED	ACCUMULATIVE PERCENT FINER
		3"				
		1-1/2"				
		3/4"				
		3/8"				
		#4				
		PAN				
		TOTAL				

DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUM. WEIGHT RETAINED	ACCUMULATIVE PERCENT PARTIAL RETAINED	ACCUMULATIVE PERCENT PARTIAL FINER	ACCUMULATIVE PERCENT TOTAL FINER
		#10		0			
211		#20		0			
		#40		.04			
		#60		.15			
		#100		.20			
		#200		3.41			
		PAN					
		TOTAL					

Dames & Moore

HYDROMETER ANALYSIS

DATE 7/5/92

OWNER JM MONTGOMERY JOB NO. 05461-029-6081

BORING NO. T-870-5-MW-4-92 31-31.5'

SAMPLE SPECIMEN NO. CLASSIFICATION

DISH NO. 66 GRADUATE NO. 15 HYDROMETER NO.

DISPERSING AGENT USED Sodium H-MPH ; QUANITY 5g

DISPERSING AGENT CORRECTION, C_D .5 ; MENISCUS CORRECTION, C_M= .1

	TIME	ELAPSED TIME	TEMP °C	HYDRO READING (R')	CORRECTED READING $R+C_M-C_D$	HEIGHT Z_R	PARTICLE DIA. (MM)	PERCENT FINER PARTIAL	PERCENT FINER TOTAL
7/6	0840	0	19°						
		.5		53^2					
	0841	.1		47^5					
	0842	.2		43^2					
	0845	5		36^9					
	0855	15		30^5					
	0910	30		27^9					
	0940	60	19°	24^2					
	1040	120	19°	22					
	1250	250	19°	19^6					
	1700	500	21°	17^9					
7/7	0844		19°	16^2					

WEIGHT IN GRAMS

DISH PLUS DRY SOIL

DISH

DRY SOIL W_O

668.9 − 613.8

SPECIFIC GRAVITY OF SOLIDS, G_S =

CORRECTED HYDROMETER READING (R) = HYDROMETER READING (R')+C_M

THE PARTICLE DIAMETER (D) IS CALCULATED FROM STOKE'S EQUATION USING CORRECTED HYDROMETER READING. USE NOMOGRAPHIC CHART FOR SOLUTION OF STOKE'S EQUATION.

HYDROMETER GRADUATED IN SPECIFIC GRAVITY

PARTIAL PERCENT FINER $= \frac{G_S}{G_S-1} \times \frac{100}{W_O}(R-C_D+M)$

HYDROMETER GRADUATED IN GRAMS PER LITER

PARTIAL PERCENT FINER $= \frac{100}{W_O}(R-C_D+M)$

W_S = TOTAL OVEN-DRY WT. OF SAMPLE USED FOR COMBINED ANALYSIS

W_O = OVEN-DRY WT. IN GRAMS OF SOIL USED FOR HYDROMETER ANALYSIS

W_1 = OVEN-DRY WT OF SAMPLE RETAINED ON NO. 200 SIEVE

TOTAL PERCENT FINER = PARTIAL PERCENT FINER $\times \frac{W_S-W_1}{W_S}$

REMARKS

TECHNICIAN JHewett COMPUTED BY CHECKED BY Ed

URAQT FORM 1040-A
2-31-75

ATTERBERG LIMITS TEST DATA

FIELD CLASSIFICATION _____

LABORATORY CLASSIFICATION _____

JOB NO. _____

CLIENT/OWNER JMM

LOCATION HAFB

BORING T SAMPLE S-D-5 DEPTH 31.5'-32'

FIELD DENSITY BY _____

DETERMINATION	1	2
NUMBER OF RINGS		
WT OF RINGS + WET SOIL		
WT OF RINGS	—	—
WT OF WET SOIL		
FIELD DENSITY		
DRY DENSITY		

THIS IS AN 1/8-INCH THREAD

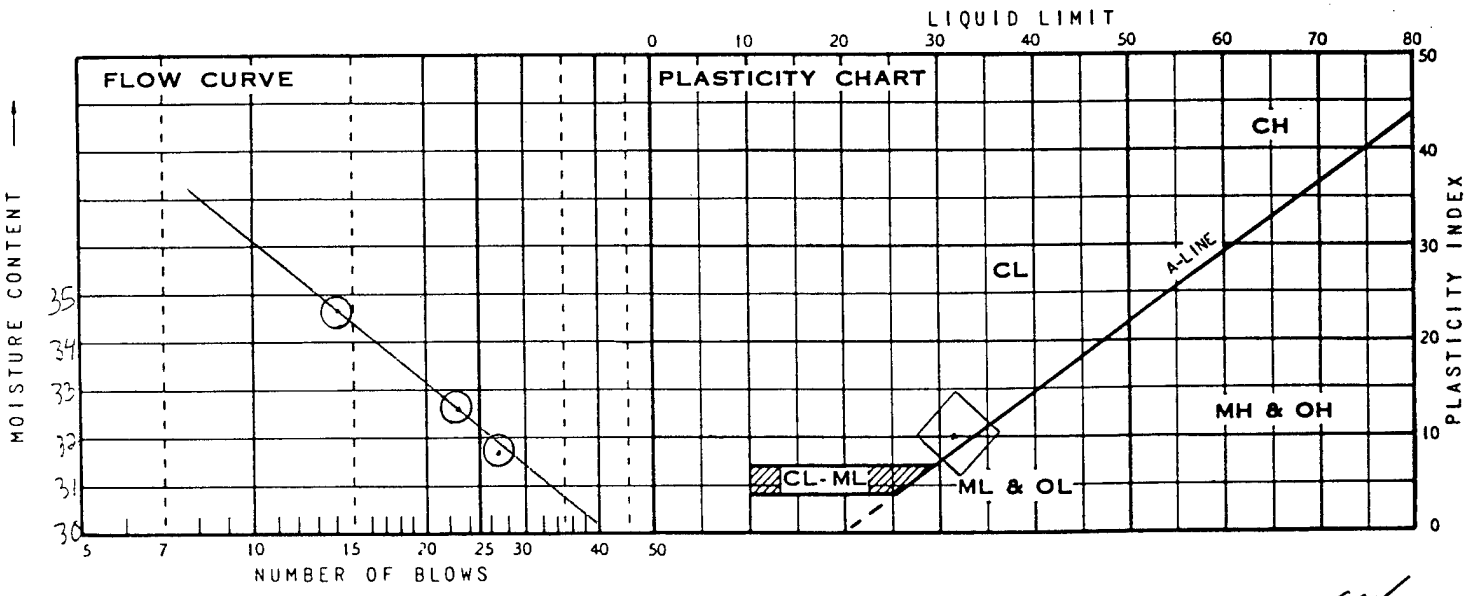
DETERMINATION	1	2
DISH		
WT OF DISH + WET SOIL		
WT OF DISH + DRY SOIL	—	—
WT OF MOISTURE		
WT OF DISH	—	—
WT OF DRY SOIL		
FIELD MOISTURE CONTENT		

PLASTIC LIMIT BY RC 6/5/92

DETERMINATION	1	2	3	4	5	6
DISH	133	18				
WT OF DISH + WET SOIL	16.52	16.99				
WT OF DISH + DRY SOIL	13.91	14.22	—	—	—	—
WT OF MOISTURE						
WT OF DISH	1.4	1.4	—	—	—	—
WT OF DRY SOIL						
MOISTURE CONTENT	21.66	21.61	AV=22			

LIQUID LIMIT

DETERMINATION	1	2	3	4	5	6
DISH	183	180	19			
NUMBER OF BLOWS	27	23	14			
WT OF DISH + WET SOIL	14.99	13.00	14.94			
WT OF DISH + DRY SOIL	11.72	10.5	11.46	—	—	—
WT OF MOISTURE						
WT OF DISH	1.4	1.41	1.41	—	—	—
WT OF DRY SOIL						
MOISTURE CONTENT	31.69	32.57	34.59			



SUMMARY

DRY DENSITY	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	IDENTIFICATION	
		32	22	10	CL	

Dames & Moore

OWNER/LOCATION JAM- HAFB

JOB NO. 5461-029-6081

BORING NO. T-877-5-MW3-11-92

DATE 6/26/92

DEPTH 31.0-31.5'

TESTED DK / JHeinrich

SAMPLE NO. —

LAB SOIL DESCRIPTION

INITIAL HEIGHT 2.0"

FINAL HEIGHT 1.785"

DENSITY	BEFORE TEST	AFTER TEST
WT. SOIL & RINGS	384.1	377.3
WT. RINGS	98.7	98.7
WT. SOIL	285.4	278.6
WET DENSITY	118.5	129.6
DRY DENSITY	91.8	102.9
MAX. DRY DENSITY		
~~PERCENT COMPACTION~~ POROSITY	0.445	0.378

MOISTURE	BEFORE TEST	AFTER TEST
WT. WET SOIL & PAN		383.9
WT. DRY SOIL & PAN		327.2
WT. WATER		
WT. OF PAN NO.	#305	109.0
WT. DRY SOIL		
WATER CONTENT	29.1	26.0

SETUP NO. 4

SURCHARGE 2600 PSF

H_2O: DISTILLED

INITIAL DIAL .742

FINAL DIAL .527

(50.0")

$K = \frac{aL}{A\Delta t} \text{ in } \frac{h_1}{h_2}$

DATE	TIME	ELAPSED TIME (Δt)	DIAL	BURETTE READING h_1 (CC)	BURETTE READING h_2(CC)	PERCOLATION RATE ~~FT/YEAR~~	CM/SEC
6/26/92	14.54		.686	0.0			
6/27/92	1231	1297	.578	15.2		2.29	$\times 10^{-7}$
	1822	351	"	19.3		2.38	$\times 10^{-7}$
6/30/92	1122	3900	.577	61.6		2.51	$\times 10^{-7}$
	1915	473		65.9		2.40	$\times 10^{-7}$
7/1/92	1109	954	.577	74.2		2.39	$\times 10^{-7}$
7/2/92	1140	1471	.524*	84.6		2.01	$\times 10^{-7}$
7/2	1232	0	.529	0.0		—	—
	1424	112	"	1.2		1.97	$\times 10^{-7}$
7/2	1901	0	.528	0.2		—	—
7/3/92	1505	1204	.527	11.8		1.81	$\times 10^{-7}$
	1635	90		12.6		1.72	
	1708	33		12.9		1.77	
7/4/92	1210	1142	.527	23.4		1.78 $\times 10^{-7}$	
	1705	295		25.9	AV.	1.78 $\times 10^{-7}$	1.74
	1825	80		26.6		1.78 $\times 10^{-7}$	1.82 $\times 10^{-7}$
					$K_{AV.} = 1.777 \times 10^{-7}$		

PERCOLATION TEST - FALLING HEAD

Dames & Moore

* AIR IN H_2O TUBE. RESTARTED H_2O.

DATE 7/7/92

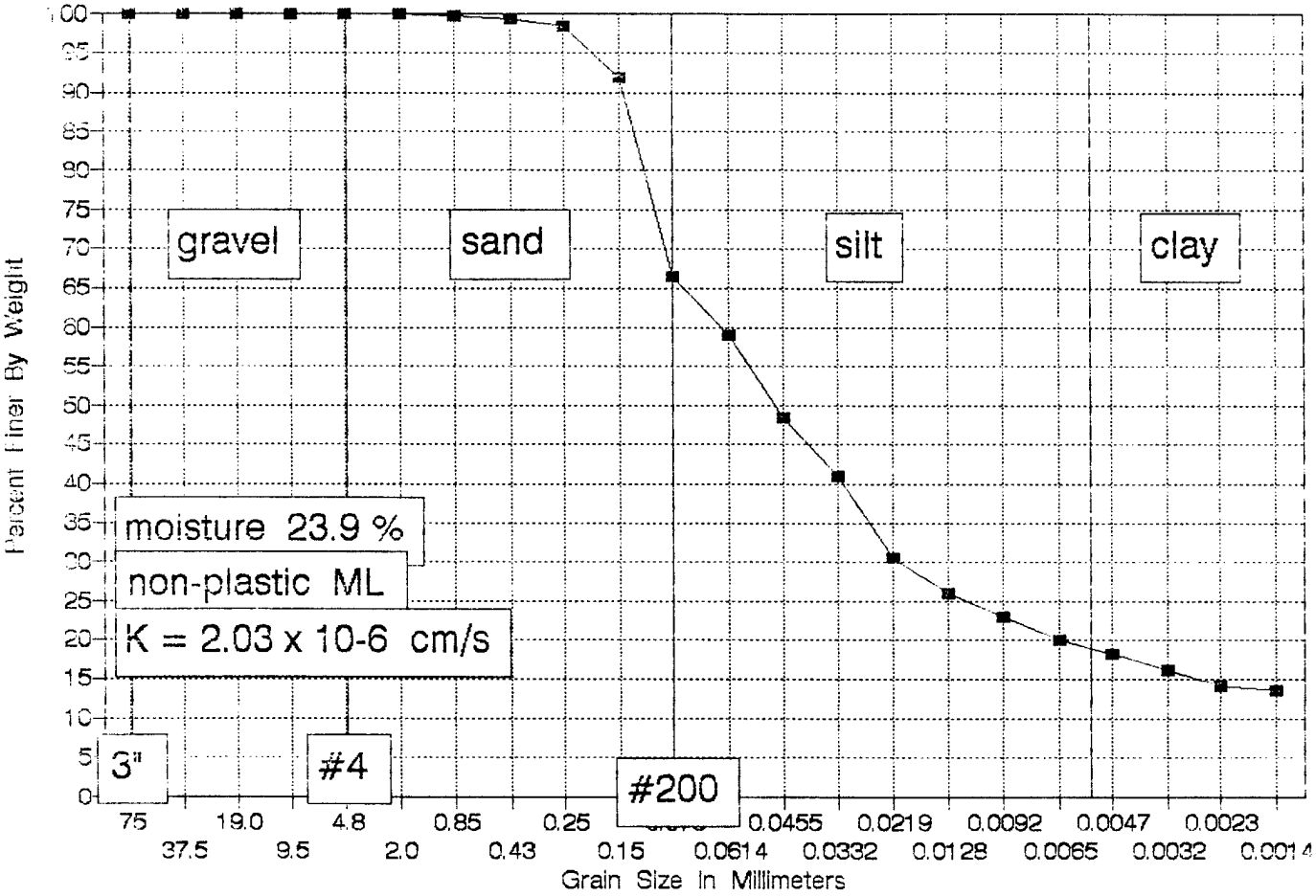
CHECKED BY EHeinrich

DATE 6/26/92

BY DK/JHeinrich

GRADATION CURVE

T-870-6MW-U-92,at 30.5 to 31.0 ft



HAFB

Dry soil & dish 343.4
Dish 106.8

Boring T-870-6MW-U-92
Sample at 30.5 to 31.0 feet

SIEVE & HYDROMETER ANALYSIS

SIEVE PORTION

Dry weight of TOTAL sample= 236.6
sample split -#10 sieve = 55.8

Sieve #	Weight Retained	Total Percent Finer
1.5 inch		100.00%
3/4 inch	0	100.00%
3/8 inch	0	100.00%
# 4	0	100.00%
# 10	0	100.00%
# 20	0.14	99.75%
# 40	0.35	99.37%
# 60	0.84	98.49%
# 100	4.53	91.88%
# 200	18.73	66.43%

Constants this test
Gs= 2.65 20c=.01365 21c=.01348 22c=.01332
18c=.01399 19c=.01382
When 5 grams of Sodium
Hexametaphosphate used correction
= 6

HYDROMETER ANALYSIS

Elapsed time	Tc	R'	Zr	Particle Dia. mm	Percent Partial	Total Percent Finer
0.5	19	39	9.87	0.0614	59.14	59.14
1	19	33	10.86	0.0455	48.39	48.39
2	19	28.9	11.53	0.0332	41.04	41.04
5	19	23	12.51	0.0219	30.47	30.47
15	19	20.5	12.92	0.0128	25.99	25.99
30	19	18.9	13.18	0.0092	23.12	23.12
60	19	17.2	13.46	0.0065	20.07	20.07
120	19	16.1	13.64	0.0047	18.10	18.10
250	19	15	13.83	0.0032	16.13	16.13
500	21	13.9	14.01	0.0023	14.16	14.16
1440	19	13.5	14.07	0.0014	13.44	13.44

MECHANICAL ANALYSIS

SA-HA

DATE 7/1/92 BY Jheinsch

JOB NUMBER 05461-029-6081 OWNER/CLIENT JMMONTGOMERY

LOCATION H.A.F.B.

BORING I-870-6-MW-U SAMPLE — DEPTH 30.5-31.0'

⊖ #10 108

NUMBER OF RINGS		DISH	306
WT. OF RINGS & WET SOIL		WT. OF DISH & WET SOIL	394.7
WT. OF RINGS		WT. OF DISH & DRY SOIL	343.4
WT. OF WET SOIL		WT. OF MOISTURE	
FIELD DENSITY		WT. OF DISH	106.8
DRY DENSITY		WT. OF DRY SOIL	
		FIELD MOISTURE CONTENT	

WASH SIEVE _____ DRY SIEVE _____ WEIGHT OF OVEN DRY SOIL _____ (grams)

DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUMULATIVE WEIGHT RETAINED	ACCUMULATIVE PERCENT RETAINED	ACCUMULATIVE PERCENT FINER
		3"				
		1-1/2"				
		3/4"				
		3/8"				
		#4				
		PAN				
		TOTAL				

DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUM. WEIGHT RETAINED	ACCUMULATIVE PERCENT PARTIAL RETAINED	ACCUMULATIVE PERCENT PARTIAL FINER	ACCUMULATIVE PERCENT TOTAL FINER
		#10		0			
36		#20		.14			
		#40		.35			
		#60		.84			
		#100		4.53			
		#200		18.73			
		PAN					
		TOTAL					

Dames & Moore

HYDROMETER ANALYSIS

DATE 7/5/92

OWNER JMMONTGOMERY JOB NO. 05461-029-6081

BORING NO. T-870-6-MW-4 30.5-31.0'

SAMPLE SPECIMEN NO. CLASSIFICATION

DISH NO. 108 GRADUATE NO. 22 HYDROMETER NO.

DISPERSING AGENT USED Sodium Hexametaphosphate ; QUANITY 5g

DISPERSING AGENT CORRECTION, C_D .5 ; MENISCUS CORRECTION, C_M = .1

	TIME	ELAPSED TIME	TEMP °C	HYDRO READING (R')	CORRECTED READING $R+C_M-C_D$	HEIGHT Z_R	PARTICLE DIA. (MM)	PERCENT FINER PARTIAL	PERCENT FINER TOTAL
7/6	0845	0	19°						
		.5		39					
	0846	1.		33					
	0847	2.		28.9					
	0850	5		23					
	0900	15		20.5					
	0915	30		18.9					
	0945	60	19°	17.2					
	1045	120	19°	16.1					
	1255	250	19°	15					
	1705	500	21°	13.9					
7/7	0845		19°	13.5					

WEIGHT IN GRAMS

DISH PLUS DRY SOIL		
DISH		
DRY SOIL	W_O	

SPECIFIC GRAVITY OF SOLIDS, G_S =

CORRECTED HYDROMETER READING (R) = HYDROMETER READING (R') + C_M

672.1 — 616.3

THE PARTICLE DIAMETER (D) IS CALCULATED FROM STOKE'S EQUATION USING CORRECTED HYDROMETER READING. USE NOMOGRAPHIC CHART FOR SOLUTION OF STOKE'S EQUATION.

HYDROMETER GRADUATED IN SPECIFIC GRAVITY

PARTIAL PERCENT FINER = $\frac{G_S}{G_S-1} \times \frac{100}{W_O}(R-C_D+M)$

HYDROMETER GRADUATED IN GRAMS PER LITER

PARTIAL PERCENT FINER = $\frac{100}{W_O}(R-C_D+M)$

W_S = TOTAL OVEN-DRY WT. OF SAMPLE USED FOR COMBINED ANALYSIS

W_O = OVEN-DRY WT. IN GRAMS OF SOIL USED FOR HYDROMETER ANALYSIS

W_1 = OVEN-DRY WT OF SAMPLE RETAINED ON NO. 200 SIEVE

TOTAL PERCENT FINER = PARTIAL PERCENT FINER X $\frac{W_S-W_1}{W_S}$

REMARKS

TECHNICIAN JHbrooks COMPUTED BY CHECKED BY

URAQT FORM 1040-A
2-31-75

ATTERBERG LIMITS TEST DATA

FIELD CLASSIFICATION _____

LABORATORY CLASSIFICATION _____

JOB NO. 4208.0313

CLIENT/OWNER JMM

LOCATION HAFB

BORING T SAMPLE # 706 DEPTH 30.5-31'

FIELD DENSITY BY ___/__/__

DETERMINATION	1	2
NUMBER OF RINGS		
WT OF RINGS + WET SOIL		
WT OF RINGS	—	—
WT OF WET SOIL		
FIELD DENSITY		
DRY DENSITY		

THIS IS AN 1/8-INCH THREAD

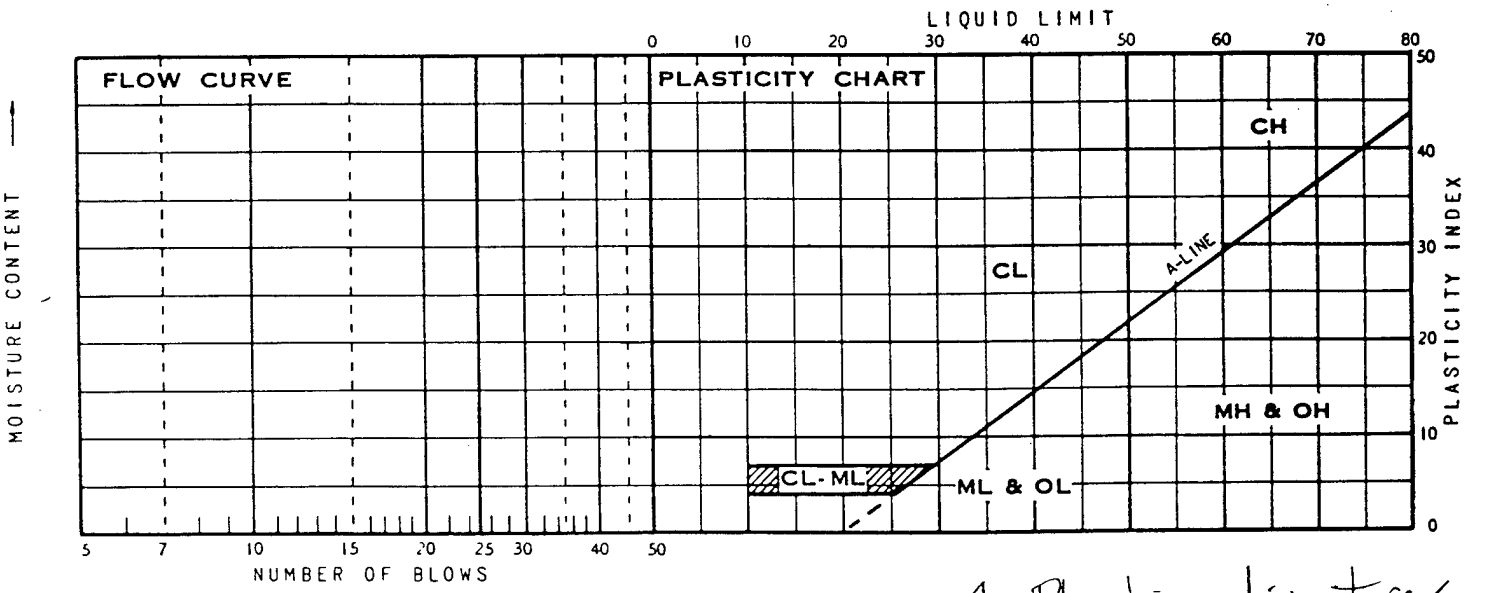
DETERMINATION	1	2
DISH		
WT OF DISH + WET SOIL		
WT OF DISH + DRY SOIL	—	—
WT OF MOISTURE		
WT OF DISH	—	—
WT OF DRY SOIL		
FIELD MOISTURE CONTENT		

PLASTIC LIMIT BY BC. 6/30/92

DETERMINATION	1	2	3	4	5	6
DISH	74	71				
WT OF DISH + WET SOIL						
WT OF DISH + DRY SOIL	—	—	—	—	—	—
WT OF MOISTURE						
WT OF DISH	1.4	1.4	1.4	—	—	—
WT OF DRY SOIL						
MOISTURE CONTENT						

LIQUID LIMIT

DETERMINATION	1	2	3	4	5	6
DISH	14	33	15			
NUMBER OF BLOWS						
WT OF DISH + WET SOIL						
WT OF DISH + DRY SOIL	—	—	—	—	—	—
WT OF MOISTURE						
WT OF DISH	1.4	1.4	1.4	—	—	—
WT OF DRY SOIL						
MOISTURE CONTENT						



SUMMARY

No Plastic Limit ECH

DRY DENSITY	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	IDENTIFICATION	

Dames & Moore

OWNER/LOCATION JMM-HAFB | JOB NO. 5361-029-6081

BORING NO. T-870-6(NXL)-11 | DATE 6/26/92

DEPTH 30.5-31' | TESTED DK / Jmeunch

SAMPLE NO. — | LAB SOIL DESCRIPTION —

INITIAL HEIGHT 2.0" | FINAL HEIGHT 1.927"

DENSITY	BEFORE TEST	AFTER TEST	MOISTURE	BEFORE TEST	AFTER TEST
WT. SOIL & RINGS	394.7	389.5	WT. WET SOIL & PAN		394.7
WT. RINGS	99.0	99.0	WT. DRY SOIL & PAN		343.4
WT. SOIL	295.7	290.5	WT. WATER		
WET DENSITY	122.8	125.2	WT. OF PAN NO.	#306	106.8
DRY DENSITY	99.2	102.9	WT. DRY SOIL		
MAX. DRY DENSITY			WATER CONTENT	23.9	21.7
~~PERCENT COMPACTION~~ POROSITY	0.401	0.378			

SETUP NO. 2

SURCHARGE 2000 PSF

H_2O: DISTILLED

INITIAL DIAL .682

FINAL DIAL .609

50.0"

$K = \frac{aL}{A\Delta t} \text{ in } \frac{h_1}{h_2}$

DATE	TIME	ELAPSED TIME (Δt)	DIAL	BURETTE READING h_1 (CC)	BURETTE READING h_2(CC)	PERCOLATION RATE FT/YEAR	PERCOLATION RATE CM/SEC
6/26/92	14.10		.616	0.0			
	15.53	103	.613	14.4		2.86	$\times 10^{-6}$
6/27/92	1230	0	.611	+100ml 0.6		—	—
	1300	30		4.0		2.26	$\times 10^{-6}$
	1454	114		15.4		2.07	$\times 10^{-6}$
	1535	41		19.3		2.04	$\times 10^{-6}$
	1655	80		26.5		1.99	$\times 10^{-6}$
	1822	87		33.7		1.89	$\times 10^{-6}$
6/30/92	1211	0	.609	+200ml 0.0		—	—
	1218	7		0.8		2.26 $\times 10^{-6}$	2.26 $\times 10^{-6}$
	1442	144		14.0		2.07	1.87 $\times 10^{-6}$
	1914	272		34.8	AV.	1.95	1.70 $\times 10^{-6}$
7/1/92	1108	954	.609	88.6		1.85 $\times 10^{-6}$	1.56 $\times 10^{-6}$
						$K_{AV.} = 2.032 \times 10^{-6}$	

CHECKED BY — DATE 6/26/92

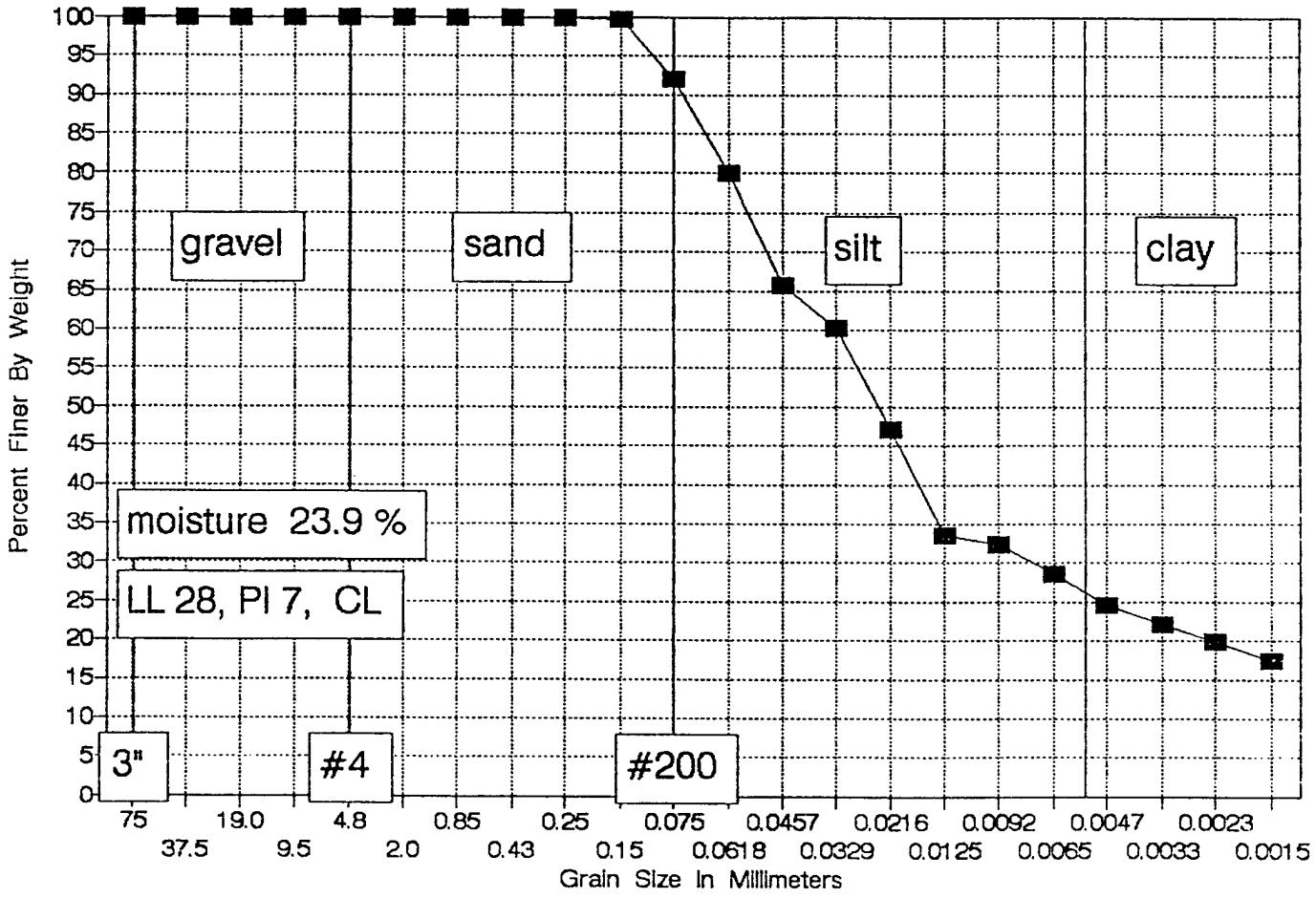
BY DK / Jmeunch DATE —

PERCOLATION TEST - FALLING HEAD

Dames & Moore

GRADATION CURVE

Sample SB870A-01 at 25.5 to 26.0 feet



OWNER/LOCATION J MONTGOMERY

JOB NO. 05461-029-6081

BORING NO. SB870A-01

DATE 11/11/91

DEPTH OR SAMPLE NO. 25.5 - 26'

TESTED BY JMunch

LAB. SOIL DESCRIPTION

NO. OF RINGS 2.00"

FINAL HEIGHT 1.870"

DENSITY	BEFORE TEST	AFTER TEST
WT. SOIL & RINGS	391.4	384.2
WT. RINGS	98.9	98.9
WT. SOIL	292.5	285.3
WET DENSITY	121.5	126.7
DRY DENSITY	95.7	102.3
MAX. DRY DENSITY		
~~PERCENT COMPACTION~~ POROSITY	.422	.381

MOISTURE	BEFORE TEST	AFTER TEST
WT. WET SOIL & PAN		393.0
WT. DRY SOIL & PAN		338.4
WT. WATER		
WT. OF PAN NO.	#210	109.6
WT. DRY SOIL		
WATER CONTENT	27.0	23.9

SETUP NO. 1

SURCHARGE 2500 psf

INITIAL DIAL .624

FINAL DIAL .494

$K = \frac{aL}{A\Delta t} \ln \frac{h_1}{h_2}$

C = 2593.03 PER RING C = 5186.06 FOR 2 RINGS

(50.0")

	DATE	TIME	ELAPSED TIME (Δt)	BURETTE READING h_1 (CC)	BURETTE READING h_2 (CC)	C/Δt ①	ln $\frac{153.192 - h_1}{153.192 - h_2}$ ②	PERCOLATION RATE FT/YEAR ① X ②	CM/SEC ③ X .97 X 10^{-6}
.500	11/11/91	1705		0.2					
.498	11/12/91	1025	1040	6.8				1.24	X 10^{-7}
.497	11/13/91	0915	1370	14.1				1.07	X 10^{-7}
.497	11/14/91	0845	1410	21.2				1.05	X 10^{-7}
.497	11/15/91	0845	1440	28.2				1.05	X 10^{-7}
.495	11/17/91	1115	3030	45.7				1.33	X 10^{-7}
.494	11/18/91	1115	1440	54.2				1.46	X 10^{-7}
.494	11/19/91	1045	1410	62.6				1.55	X 10^{-7}

KAV = 1.29×10^{-7} cm/s

REVISIONS BY DATE

FILE

BY JMunch DATE 11/11/91

CHECKED BY

PERCOLATION TEST - FALLING HEAD

DAMES & MOORE

JM Montgomery

Wt soil and dish	393
Dry soil & dish	338.4
Dish	109.6

Sample SB870A-01 at 25.5 to 26 feet
Moisture Content = 23.9

SIEVE & HYDROMETER ANALYSIS

SIEVE PORTION

Dry weight of TOTAL sample= 228.8
sample split -#10 sieve = 40.27

Sieve #	Weight Retained	Total Percent Finer
1.5 inch		100.00%
3/4 inch	0	100.00%
3/8 inch	0	100.00%
# 4	0	100.00%
# 10	0	100.00%
# 20	0	100.00%
# 40	0.01	99.98%
# 60	0.03	99.93%
# 100	0.08	99.80%
# 200	3.17	92.13%

Constants this test
Gs= 2.65 20c=.01365 21c=.01348 22c=.01332
18c=.01399 19c=.01382
When 5 grams of Sodium Hexametaphosphate used correction = 6

HYDROMETER ANALYSIS

Elapsed time	Tc	R'	Zr	Particle Dia. mm	Percent Partial	Total Percent Finer
0.5	21	38.2	10.00	0.0618	79.96	79.96
1	21	32.5	10.94	0.0457	65.81	65.81
2	21	30.2	11.32	0.0329	60.09	60.09
5	21	25	12.18	0.0216	47.18	47.18
16	21	19.5	13.08	0.0125	33.52	33.52
30	21	19	13.17	0.0092	32.28	32.28
60	21	17.5	13.41	0.0065	28.56	28.56
120	20	15.9	13.68	0.0047	24.58	24.58
250	20	14.9	13.84	0.0033	22.10	22.10
500	20	14	13.99	0.0023	19.87	19.87
1176	19	13	14.16	0.0015	17.38	17.38

HYDROMETER ANALYSIS

DATE 11/20/91

OWNER JM MONTGOMERY JOB NO. 5461-029-6081

BORING NO. TB-70A-01 75.5-96'

SAMPLE SPECIMEN NO.	CLASSIFICATION	
DISH NO. 16	GRADUATE NO. 11	HYDROMETER NO.

DISPERSING AGENT USED SODIUM 11-MPH ; QUANITY 5g

DISPERSING AGENT CORRECTION, C_D .5 ; MENISCUS CORRECTION, C_M = .1

	TIME	ELAPSED TIME	TEMP °C	HYDRO READING (R')	CORRECTED READING $R+C_M-C_D$	HEIGHT Z_R	PARTICLE DIA. (MM)	PERCENT FINER PARTIAL	PERCENT FINER TOTAL
11/20	0932	0	21°						
		.5	21°	38²					
	0933	1.	21°	32⁵					
	0934	2.	21°	30²					
	0937	5	21°	25					
	0947	15	21°	19⁵					
	1002	30	21°	19					
	1032	60	21°	17⁵					
	1132	120	20°	15⁹					
	1342	250	20°	14⁹					
	1752	500	20	14					
11/21	0508		19	13					

WEIGHT IN GRAMS

DISH PLUS DRY SOIL		
DISH		
DRY SOIL	W_O	

SPECIFIC GRAVITY OF SOLIDS, G_S =

CORRECTED HYDROMETER READING (R) = HYDROMETER READING (R') + C_M

632 60 − 592.33

THE PARTICLE DIAMETER (D) IS CALCULATED FROM STOKE'S EQUATION USING CORRECTED HYDROMETER READING. USE NOMOGRAPHIC CHART FOR SOLUTION OF STOKE'S EQUATION.

HYDROMETER GRADUATED IN SPECIFIC GRAVITY

$$\text{PARTIAL PERCENT FINER} = \frac{G_S}{G_S - 1} \times \frac{100}{W_O}(R - C_D + M)$$

HYDROMETER GRADUATED IN GRAMS PER LITER

$$\text{PARTIAL PERCENT FINER} = \frac{100}{W_O}(R - C_D + M)$$

W_S = TOTAL OVEN-DRY WT. OF SAMPLE USED FOR COMBINED ANALYSIS

W_O = OVEN-DRY WT. IN GRAMS OF SOIL USED FOR HYDROMETER ANALYSIS

W_1 = OVEN-DRY WT OF SAMPLE RETAINED ON NO. 200 SIEVE

$$\text{TOTAL PERCENT FINER} = \text{PARTIAL PERCENT FINER} \times \frac{W_S - W_1}{W_S}$$

REMARKS

TECHNICIAN [signature] COMPUTED BY CHECKED BY [signature]

URAQT FORM 1040-A
2-31-75

MECHANICAL ANALYSIS

SA-HA

DATE 11/19/91 BY JMerrick

JOB NUMBER 5461-029-6081 OWNER/CLIENT JM MONTGOMERY

LOCATION

BORING SB870A-01 SAMPLE — DEPTH 25.5-26'

⊙#10

NUMBER OF RINGS		DISH	210	16
WT. OF RINGS & WET SOIL		WT. OF DISH & WET SOIL	393.0	
WT. OF RINGS		WT. OF DISH & DRY SOIL	338.4	
WT. OF WET SOIL		WT. OF MOISTURE		
FIELD DENSITY		WT. OF DISH	109.6	
DRY DENSITY		WT. OF DRY SOIL		
		FIELD MOISTURE CONTENT	23.9	

WASH SIEVE _____ DRY SIEVE _____ WEIGHT OF OVEN DRY SOIL _____ (grams)

DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUMULATIVE WEIGHT RETAINED	ACCUMULATIVE PERCENT	
					RETAINED	FINER
		3"				
		1-1/2"				
		3/4"				
		3/8"				
		#4				
		PAN				
		TOTAL				

DISH NUMBER	DISH WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUM. WEIGHT RETAINED	ACCUMULATIVE PERCENT		
					PARTIAL		TOTAL
					RETAINED	FINER	FINER
		#10		0			
		#20		0			
		#40		.01			
		#60		.03			
		#100		.08			
		#200		3.17			
		PAN					
		TOTAL					

98

Dames & Moore

ATTERBERG LIMITS TEST DATA

FIELD CLASSIFICATION _____

LABORATORY CLASSIFICATION _____

JOB NO. 5461-029-6081

CLIENT/OWNER IMMANUEL MONTGOMERY

LOCATION _____

BORING SB-7A SAMPLE ____ DEPTH 35.5-36

FIELD DENSITY BY ____/__/__

DETERMINATION	1	2
NUMBER OF RINGS		
WT OF RINGS + WET SOIL		
WT OF RINGS	——	——
WT OF WET SOIL		
FIELD DENSITY		
DRY DENSITY		

THIS IS AN 1/8-INCH THREAD

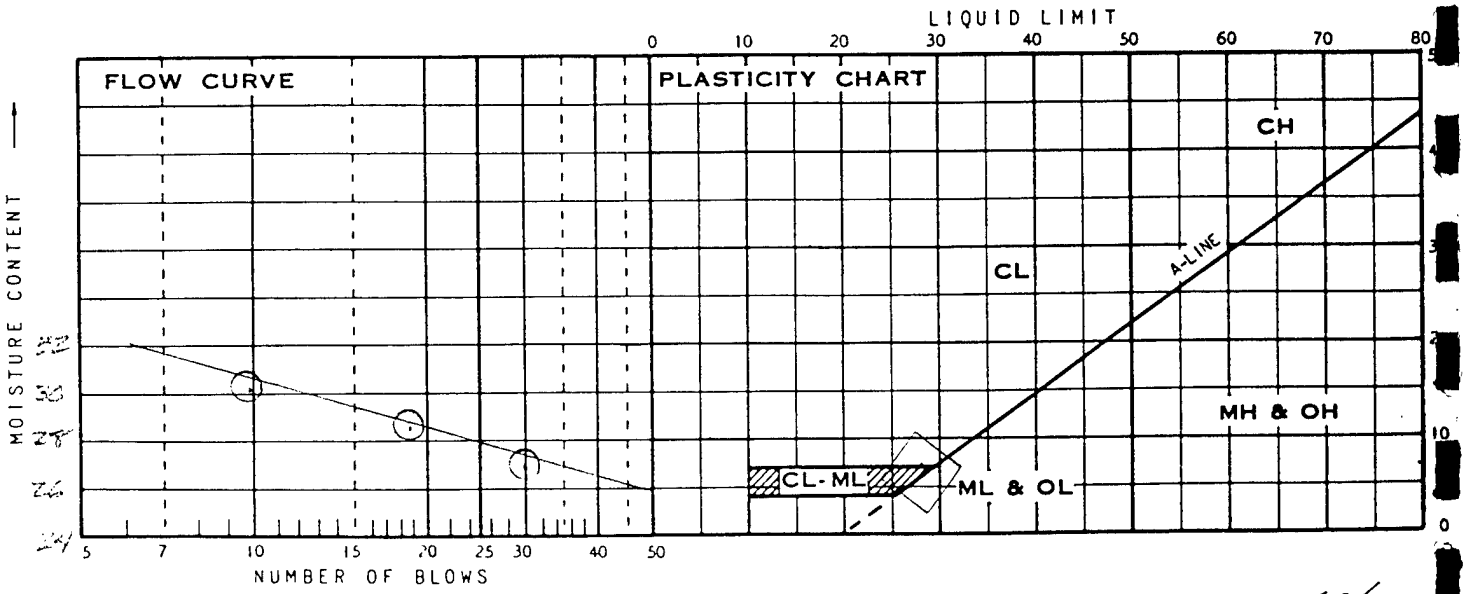
DETERMINATION	1	2
DISH		
WT OF DISH + WET SOIL		
WT OF DISH + DRY SOIL	——	——
WT OF MOISTURE		
WT OF DISH	——	——
WT OF DRY SOIL		
FIELD MOISTURE CONTENT		

PLASTIC LIMIT BY DS 11/18/91

DETERMINATION	1	2	3	4	5	6
DISH	611	125				
WT OF DISH + WET SOIL	10.71	10.70				
WT OF DISH + DRY SOIL	9.07	9.07	——	——	——	——
WT OF MOISTURE						
WT OF DISH	1.4	1.4	——	——	——	——
WT OF DRY SOIL						
MOISTURE CONTENT	21.38	21.25	AV=21			

LIQUID LIMIT

DETERMINATION	1	2	3	4	5	6
DISH	AL112	AL-80	16			
NUMBER OF BLOWS	30	19	13			
WT OF DISH + WET SOIL	10.03	10.22	10.28			
WT OF DISH + DRY SOIL	8.20	8.26	8.23	——	——	——
WT OF MOISTURE						
WT OF DISH	1.4	1.4	1.4	——	——	——
WT OF DRY SOIL						
MOISTURE CONTENT	26.91	28.57	30.81			



SUMMARY

EGL

DRY DENSITY	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	IDENTIFICATION	
		27	21	7	CL	

Dames & Moore

OWNER/LOCATION MONTGOMERY

BORING NO. SB870A-03 (2208.0312)

DEPTH OR SAMPLE NO. 15.5-16'

NO. OF RINGS 2.00"

JOB NO. 05461-029-6081

DATE 11/11/91

TESTED BY JMunsch

LAB. SOIL DESCRIPTION

FINAL HEIGHT 1.967"

DENSITY	BEFORE TEST	AFTER TEST
WT. SOIL & RINGS	390.2	393.5
WT. RINGS	98.3	98.3
WT. SOIL	291.9	295.2
WET DENSITY	121.2	124.7
DRY DENSITY	100.9	102.6
MAX. DRY DENSITY		
~~PERCENT COMPACTION~~ POROSITY	.390	.380

MOISTURE	BEFORE TEST	AFTER TEST
WT. WET SOIL & PAN		252.0
WT. DRY SOIL & PAN		226.1
WT. WATER		
WT. OF PAN NO.	#98	105.6
WT. DRY SOIL		
WATER CONTENT	20.1	21.5

SETUP NO. 2

SURCHARGE 1600 psf

INITIAL DIAL .666

FINAL DIAL .633

$K = \frac{aL}{A\Delta t} \ln \frac{h_1}{h_2}$

C = 2593.03 PER RING C = 5186.06 FOR 2 RINGS

(50.0")

	DATE	TIME	ELAPSED TIME (Δt)	BURETTE READING h_1 (CC)	BURETTE READING h_2 (CC)	C/Δt ①	ln $\frac{153.192-h_1}{153.192-h_2}$ ②	PERCOLATION RATE FT/YEAR ① X ②	PERCOLATION RATE CM/SEC ③ X $.97\times10^{-6}$
.636	11/11/91	1705		0.0					
.636	11/12/91	1025	1040	15.3				3.07	$\times10^{-7}$
.635	11/13/91	0915	1370	30.7				2.53	$\times10^{-7}$
.635	11/14/91	0845	1410	44.0				2.29	$\times10^{-7}$
.634	11/15/91	0845	1440	56.4				2.25	$\times10^{-7}$
.634	11/17/91	1115	3030	79.9				2.26	$\times10^{-7}$
.633	11/18/91	1115	1440	89.9				2.27	$\times10^{-7}$
.633	11/19/91	1045	1410	99.7				2.45	$\times10^{-7}$
"	"	1050	0	0.4				—	—
.633	11/21/91	1050	2880	31.0				2.31	$\times10^{-7}$
.633	11/22/91	0820	1290	43.0				2.25	$\times10^{-7}$

$K_{AV} = 2.31 \times 10^{-7}$ cm/s

REVISIONS BY DATE

FILE MONTGOMERY

BY JMunsch DATE 11/11/91

CHECKED BY DATE

PERCOLATION TEST - FALLING HEAD

EGK

DAMES & MOORE

APPENDIX E

GROUND-WATER ANALYTICAL DATA

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-

ATTN: Mr. Robert Glascot

SAMPLE ID: 870-WS-1/32'

LAB NO: 0001523
GROUP NO: 000297S
DATE SAMPLED: 11/23/92
TIME SAMPLED: 1500
DATE RECEIVED: 11/25/92
DATE REPORTED: 12/10/92
DISPOSAL DATE: 01/09/93

COMPOUND(s)	FINAL RESULT	LIMIT OF QUANTITATION
1,1,2,2-Tetrachloroethane	< 1.0 ug/l	1.0 ug/l
1,1,2-Trichloroethane	< 1.0 ug/l	1.0 ug/l
1,2-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l
1,3-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l
1,4-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l

Date Analyzed: 12/02/92

*These compounds coelute under the conditions used. The result represents the total amount for these compounds.

Respectfully submitted,

Kenneth A. Roberts

Kenneth A. Roberts, B.S.
GC Group Leader

Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-

ATTN: Mr. Robert Glascot

SAMPLE ID: 870-WS-1/32'

SAMPLE NO: 0001523
SAMPLE SET NO: 000297S
DATE SAMPLED: 11/23/92
TIME SAMPLED: 1500
DATE RECEIVED: 11/25/92
DATE REPORTED: 12/10/92
DISPOSAL DATE: 01/09/93

ANALYSIS: Volatiles - Water Matrix [EPA 601/602] (Capillary)

COMPOUND(s)	RESULT	LIMIT OF QUANTITATION
Chloromethane	< 2.0 ug/l	2.0 ug/l
Vinyl Chloride	< 2.0 ug/l	2.0 ug/l
Bromomethane	< 2.0 ug/l	2.0 ug/l
Chloroethane	< 2.0 ug/l	2.0 ug/l
Fluorotrichloromethane	< 2.0 ug/l	2.0 ug/l
1,1-Dichloroethene	< 1.0 ug/l	1.0 ug/l
Dichloromethane	< 1.0 ug/l	1.0 ug/l
trans-1,2-Dichloroethene	< 1.0 ug/l	1.0 ug/l
1,1-Dichloroethane	< 1.0 ug/l	1.0 ug/l
Chloroform	< 1.0 ug/l	1.0 ug/l
1,1,1-Trichloroethane	< 1.0 ug/l	1.0 ug/l
Carbon Tetrachloride	< 1.0 ug/l	1.0 ug/l
Benzene	17.4 ug/l	1.0 ug/l
1,2-Dichloroethane	< 1.0 ug/l	1.0 ug/l
Trichloroethene (TCE)	< 1.0 ug/l	1.0 ug/l
1,2-Dichloropropane	< 1.0 ug/l	1.0 ug/l
Bromodichloromethane	< 1.0 ug/l	1.0 ug/l
cis-1,3-Dichloropropene	< 1.0 ug/l	1.0 ug/l
trans-1,3-Dichloropropene	< 1.0 ug/l	1.0 ug/l
Toluene	1.8 ug/l	1.0 ug/l
Tetrachloroethene (PCE)	< 1.0 ug/l	1.0 ug/l
Chlorodibromomethane	< 1.0 ug/l	1.0 ug/l
Chlorobenzene	< 1.0 ug/l	1.0 ug/l
Ethylbenzene	< 1.0 ug/l	1.0 ug/l
Bromoform	< 2.0 ug/l	2.0 ug/l
m,p-Xylene	4.9 ug/l	1.0 ug/l
o-Xylene/Styrene*	1.3 ug/l	1.0 ug/l

-Continued-

Mountain States Analytical

The Quality Solution

James M. Montgomery Engineers
4525 South Wasatch Blvd., Suite 200
Salt Lake City, UT 84124
Telephone: (801) 272-1900
Facsimile: (801) 272-0403

Sample Number: 0001523
Sample Set: 000297S
Date Reported: 10 DEC 1992
Date Received: 25 NOV 1992
Disposal Date: 8 JAN 1993

Attention: Robert Glascot
Project: HAFB USTs
Case Number: VOCs/BTEXN
Purchase Order: 2208.0585

Customer Number: 870-WS-1/32'
Date Sampled: 23 NOV 1992
Matrix: Water/Waste Water
Containers: 3

Analysis	Catalog Number	Method	Result	Dry Result	Reporting Units
Volatile Aromatics/Halocarbons	05515	EPA 600 Series 601/ 602	See Attached		

1 Analysis for GC

Reviewed and approved by
Kenneth Roberts, B.S.
GC Group Leader

1 Analysis for Sample Number 0001523

Member: American Council of Independent Laboratories, Inc.

Mountain States Analytical

The Quality Solution

James M. Montgomery Engineers
4525 South Wasatch Blvd., Suite 200
Salt Lake City, UT 84124
Telephone: (801) 272-1900
Facsimile: (801) 272-0403

Sample Number: 0001524
Sample Set: 000297S
Date Reported: 10 DEC 1992
Date Received: 25 NOV 1992
Disposal Date: 8 JAN 1993

Attention: Robert Glascot
Project: HAFB USTs
Case Number: VOCs/BTEXN
Purchase Order: 2208.0585

Customer Number: 870-WS-1/42'
Date Sampled: 23 NOV 1992
Matrix: Water/Waste Water
Containers: 3

Analysis	Catalog Number	Method	Result	Dry Result	Reporting Units
Volatile Aromatics/Halocarbons	05515	EPA 600 Series 601/ 602	See Attached		

1 Analysis for GC

Reviewed and approved by
Kenneth Roberts, B.S.
GC Group Leader

1 Analysis for Sample Number 0001524

Member: American Council of Independent Laboratories, Inc.

Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-

ATTN: Mr. Robert Glascot

SAMPLE ID: 870-WS-1/42'

SAMPLE NO: 0001524
SAMPLE SET NO: 000297S
DATE SAMPLED: 11/23/92
TIME SAMPLED: 1630
DATE RECEIVED: 11/25/92
DATE REPORTED: 12/10/92
DISPOSAL DATE: 01/09/93

ANALYSIS: Volatiles - Water Matrix [EPA 601/602] (Capillary)

COMPOUND(s)		RESULT	LIMIT OF QUANTITATION
Chloromethane	<	20.0 ug/l	20.0 ug/l
Vinyl Chloride	<	20.0 ug/l	20.0 ug/l
Bromomethane	<	20.0 ug/l	20.0 ug/l
Chloroethane	<	20.0 ug/l	20.0 ug/l
Fluorotrichloromethane	<	20.0 ug/l	20.0 ug/l
1,1-Dichloroethene	<	10.0 ug/l	10.0 ug/l
Dichloromethane	<	10.0 ug/l	10.0 ug/l
trans-1,2-Dichloroethene	<	10.0 ug/l	10.0 ug/l
1,1-Dichloroethane	<	10.0 ug/l	10.0 ug/l
Chloroform	<	10.0 ug/l	10.0 ug/l
1,1,1-Trichloroethane	<	10.0 ug/l	10.0 ug/l
Carbon Tetrachloride	<	10.0 ug/l	10.0 ug/l
Benzene		30.5 ug/l	10.0 ug/l
1,2-Dichloroethane	<	10.0 ug/l	10.0 ug/l
Trichloroethene (TCE)	<	10.0 ug/l	10.0 ug/l
1,2-Dichloropropane	<	10.0 ug/l	10.0 ug/l
Bromodichloromethane	<	10.0 ug/l	10.0 ug/l
cis-1,3-Dichloropropene	<	10.0 ug/l	10.0 ug/l
trans-1,3-Dichloropropene	<	10.0 ug/l	10.0 ug/l
Toluene		113 ug/l	10.0 ug/l
Tetrachloroethene (PCE)	<	10.0 ug/l	10.0 ug/l
Chlorodibromomethane	<	10.0 ug/l	10.0 ug/l
Chlorobenzene	<	10.0 ug/l	10.0 ug/l
Ethylbenzene		56.4 ug/l	10.0 ug/l
Bromoform	<	20.0 ug/l	20.0 ug/l
m,p-Xylene		369 ug/l	10.0 ug/l
o-Xylene/Styrene*		103 ug/l	10.0 ug/l

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT:	J.M. Montgomery Engineers	LAB NO:	0001524
	4525 So. Wasatch #200	GROUP NO:	000297S
	Salt Lake City, UT 84124-	DATE SAMPLED:	11/23/92
		TIME SAMPLED:	1630
ATTN:	Mr. Robert Glascot	DATE RECEIVED:	11/25/92
		DATE REPORTED:	12/10/92
SAMPLE ID:	870-WS-1/42'	DISPOSAL DATE:	01/09/93

COMPOUND(s)	FINAL RESULT	LIMIT OF QUANTITATION
1,1,2,2-Tetrachloroethane	< 10.0 ug/l	10.0 ug/l
1,1,2-Trichloroethane	< 10.0 ug/l	10.0 ug/l
1,2-Dichlorobenzene	< 10.0 ug/l	10.0 ug/l
1,3-Dichlorobenzene	< 10.0 ug/l	10.0 ug/l
1,4-Dichlorobenzene	< 10.0 ug/l	10.0 ug/l

Date Analyzed: 12/09/92

*These compounds coelute under the conditions used. The result represents the total amount for these compounds.

Respectfully submitted,

Kenneth A. Roberts, B.S.
GC Group Leader

Mountain States Analytical

The Quality Solution

James M. Montgomery Engineers
4525 South Wasatch Blvd., Suite 200
Salt Lake City, UT 84124
Telephone: (801) 272-1900
Facsimile: (801) 272-0403

Sample Number: 0001533
Sample Set: 000297S
Date Reported: 10 DEC 1992
Date Received: 25 NOV 1992
Disposal Date: 8 JAN 1993

Attention: Robert Glascot
Project: HAFB USTs
Case Number: VOCs/BTEXN
Purchase Order: 2208.0585

Customer Number: 870-WS-1/52'
Date Sampled: 24 NOV 1992
Matrix: Water/Waste Water
Containers: 3

Analysis	Catalog Number	Method	Result	Dry Result	Reporting Units
Volatile Aromatics/Halocarbons	05515	EPA 600 Series 601/ 602	See Attached		

1 Analysis for GC

Reviewed and approved by
Kenneth Roberts, B.S.
GC Group Leader

1 Analysis for Sample Number 0001533

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-

ATTN: Mr. Robert Glascot

SAMPLE ID: 870-WS-1/52'

SAMPLE NO: 0001533
SAMPLE SET NO: 000297S
DATE SAMPLED: 11/24/92
TIME SAMPLED: 830
DATE RECEIVED: 11/25/92
DATE REPORTED: 12/10/92
DISPOSAL DATE: 01/09/93

ANALYSIS: Volatiles - Water Matrix [EPA 601/602] (Capillary)

COMPOUND(s)		RESULT	LIMIT OF QUANTITATION
Chloromethane	<	2.0 ug/l	2.0 ug/l
Vinyl Chloride	<	2.0 ug/l	2.0 ug/l
Bromomethane	<	2.0 ug/l	2.0 ug/l
Chloroethane	<	2.0 ug/l	2.0 ug/l
Fluorotrichloromethane	<	2.0 ug/l	2.0 ug/l
1,1-Dichloroethene	<	1.0 ug/l	1.0 ug/l
Dichloromethane	<	1.0 ug/l	1.0 ug/l
trans-1,2-Dichloroethene	<	1.0 ug/l	1.0 ug/l
1,1-Dichloroethane	<	1.0 ug/l	1.0 ug/l
Chloroform	<	1.0 ug/l	1.0 ug/l
1,1,1-Trichloroethane	<	1.0 ug/l	1.0 ug/l
Carbon Tetrachloride	<	1.0 ug/l	1.0 ug/l
Benzene		27.0 ug/l	1.0 ug/l
1,2-Dichloroethane	<	1.0 ug/l	1.0 ug/l
Trichloroethene (TCE)	<	1.0 ug/l	1.0 ug/l
1,2-Dichloropropane	<	1.0 ug/l	1.0 ug/l
Bromodichloromethane	<	1.0 ug/l	1.0 ug/l
cis-1,3-Dichloropropene	<	1.0 ug/l	1.0 ug/l
trans-1,3-Dichloropropene	<	1.0 ug/l	1.0 ug/l
Toluene		59.3 ug/l	1.0 ug/l
Tetrachloroethene (PCE)	<	1.0 ug/l	1.0 ug/l
Chlorodibromomethane	<	1.0 ug/l	1.0 ug/l
Chlorobenzene	<	1.0 ug/l	1.0 ug/l
Ethylbenzene		21.6 ug/l	1.0 ug/l
Bromoform	<	2.0 ug/l	2.0 ug/l
m,p-Xylene		107 ug/l	1.0 ug/l
o-Xylene/Styrene*		36.4 ug/l	1.0 ug/l

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT:	J.M. Montgomery Engineers	LAB NO:	0001533
	4525 So. Wasatch #200	GROUP NO:	000297S
	Salt Lake City, UT 84124-	DATE SAMPLED:	11/24/92
		TIME SAMPLED:	830
ATTN:	Mr. Robert Glascot	DATE RECEIVED:	11/25/92
		DATE REPORTED:	12/10/92
SAMPLE ID:	870-WS-1/52'	DISPOSAL DATE:	01/09/93

COMPOUND(s)	FINAL RESULT	LIMIT OF QUANTITATION
1,1,2,2-Tetrachloroethane	< 1.0 ug/l	1.0 ug/l
1,1,2-Trichloroethane	< 1.0 ug/l	1.0 ug/l
1,2-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l
1,3-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l
1,4-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l

Date Analyzed: 12/02/92

*These compounds coelute under the conditions used. The result represents the total amount for these compounds.

Respectfully submitted,

Kenneth A. Roberts, B.S.
GC Group Leader

Mountain States Analytical

The Quality Solution

James M. Montgomery Engineers
4525 South Wasatch Blvd., Suite 200
Salt Lake City, UT 84124
Telephone: (801) 272-1900
Facsimile: (801) 272-0403

Sample Number: 0001526
Sample Set: 000297S
Date Reported: 10 DEC 1992
Date Received: 25 NOV 1992
Disposal Date: 8 JAN 1993

Attention: Robert Glascot
Project: HAFB USTs
Case Number: VOCs/BTEXN
Purchase Order: 2208.0585

Customer Number: 870-WS 2/49'
Date Sampled: 24 NOV 1992
Matrix: Water/Waste Water
Containers: 2

Analysis	Catalog Number	Method	Result	Dry Result	Reporting Units
Volatile Aromatics/Halocarbons	05515	EPA 600 Series 601/ 602	See Attached		

1 Analysis for GC

Reviewed and approved by
Kenneth Roberts, B.S.
GC Group Leader

1 Analysis for Sample Number 0001526

Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-

ATTN: Mr. Robert Glascot

SAMPLE ID: 870-WS 2/49'

SAMPLE NO: 0001526
SAMPLE SET NO: 000297S
DATE SAMPLED: 11/24/92
TIME SAMPLED: 1015
DATE RECEIVED: 11/25/92
DATE REPORTED: 12/10/92
DISPOSAL DATE: 01/09/93

ANALYSIS: Volatiles - Water Matrix [EPA 601/602] (Capillary)

COMPOUND(s)		RESULT	LIMIT OF QUANTITATION
Chloromethane	<	2.0 ug/l	2.0 ug/l
Vinyl Chloride	<	2.0 ug/l	2.0 ug/l
Bromomethane	<	2.0 ug/l	2.0 ug/l
Chloroethane	<	2.0 ug/l	2.0 ug/l
Fluorotrichloromethane	<	2.0 ug/l	2.0 ug/l
1,1-Dichloroethene	<	1.0 ug/l	1.0 ug/l
Dichloromethane	<	1.0 ug/l	1.0 ug/l
trans-1,2-Dichloroethene	<	1.0 ug/l	1.0 ug/l
1,1-Dichloroethane	<	1.0 ug/l	1.0 ug/l
Chloroform	<	1.0 ug/l	1.0 ug/l
1,1,1-Trichloroethane	<	1.0 ug/l	1.0 ug/l
Carbon Tetrachloride	<	1.0 ug/l	1.0 ug/l
Benzene		8.4 ug/l	1.0 ug/l
1,2-Dichloroethane	<	1.0 ug/l	1.0 ug/l
Trichloroethene (TCE)	<	1.0 ug/l	1.0 ug/l
1,2-Dichloropropane	<	1.0 ug/l	1.0 ug/l
Bromodichloromethane	<	1.0 ug/l	1.0 ug/l
cis-1,3-Dichloropropene	<	1.0 ug/l	1.0 ug/l
trans-1,3-Dichloropropene	<	1.0 ug/l	1.0 ug/l
Toluene		13.8 ug/l	1.0 ug/l
Tetrachloroethene (PCE)	<	1.0 ug/l	1.0 ug/l
Chlorodibromomethane	<	1.0 ug/l	1.0 ug/l
Chlorobenzene	<	1.0 ug/l	1.0 ug/l
Ethylbenzene		4.5 ug/l	1.0 ug/l
Bromoform	<	2.0 ug/l	2.0 ug/l
m,p-Xylene		30.2 ug/l	1.0 ug/l
o-Xylene/Styrene*		9.4 ug/l	1.0 ug/l

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-

ATTN: Mr. Robert Glascot

SAMPLE ID: 870-WS 2/49'

LAB NO: 0001526
GROUP NO: 000297S
DATE SAMPLED: 11/24/92
TIME SAMPLED: 1015
DATE RECEIVED: 11/25/92
DATE REPORTED: 12/10/92
DISPOSAL DATE: 01/09/93

COMPOUND(s)	FINAL RESULT	LIMIT OF QUANTITATION
1,1,2,2-Tetrachloroethane	< 1.0 ug/l	1.0 ug/l
1,1,2-Trichloroethane	< 1.0 ug/l	1.0 ug/l
1,2-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l
1,3-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l
1,4-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l

Date Analyzed: 12/02/92

*These compounds coelute under the conditions used. The result represents the total amount for these compounds.

Respectfully submitted,

Kenneth A. Roberts, B.S.
GC Group Leader

Mountain States Analytical

The Quality Solution

James M. Montgomery Engineers
4525 South Wasatch Blvd., Suite 200
Salt Lake City, UT 84124
Telephone: (801) 272-1900
Facsimile: (801) 272-0403

Sample Number: 0001527
Sample Set: 000297S
Date Reported: 10 DEC 1992
Date Received: 25 NOV 1992
Disposal Date: 8 JAN 1993

Attention: Robert Glascot
Project: HAFB USTs
Case Number: VOCs/BTEXN
Purchase Order: 2208.0585

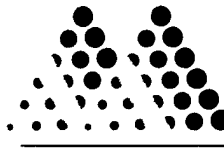
Customer Number: MW-40
Date Sampled: 24 NOV 1992
Matrix: Water/Waste Water
Containers: 3

Analysis	Catalog Number	Method	Result	Dry Result	Reporting Units
Volatile Aromatics/Halocarbons	05515	EPA 600 Series 601/ 602	See Attached		

1 Analysis for GC

Reviewed and approved by
Kenneth Roberts, B.S.
GC Group Leader

1 Analysis for Sample Number 0001527



Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-

ATTN: Mr. Robert Glascot

SAMPLE ID: MW-40

SAMPLE NO: 0001527
SAMPLE SET NO: 000297S
DATE SAMPLED: 11/24/92
TIME SAMPLED: 800
DATE RECEIVED: 11/25/92
DATE REPORTED: 12/10/92
DISPOSAL DATE: 01/09/93

ANALYSIS: Volatiles - Water Matrix [EPA 601/602] (Capillary)

COMPOUND(s)		RESULT	LIMIT OF QUANTITATION
Chloromethane	<	2.0 ug/l	2.0 ug/l
Vinyl Chloride	<	2.0 ug/l	2.0 ug/l
Bromomethane	<	2.0 ug/l	2.0 ug/l
Chloroethane	<	2.0 ug/l	2.0 ug/l
Fluorotrichloromethane	<	2.0 ug/l	2.0 ug/l
1,1-Dichloroethene	<	1.0 ug/l	1.0 ug/l
Dichloromethane	<	1.0 ug/l	1.0 ug/l
trans-1,2-Dichloroethene	<	1.0 ug/l	1.0 ug/l
1,1-Dichloroethane	<	1.0 ug/l	1.0 ug/l
Chloroform	<	1.0 ug/l	1.0 ug/l
1,1,1-Trichloroethane	<	1.0 ug/l	1.0 ug/l
Carbon Tetrachloride	<	1.0 ug/l	1.0 ug/l
Benzene		6.5 ug/l	1.0 ug/l
1,2-Dichloroethane	<	1.0 ug/l	1.0 ug/l
Trichloroethene (TCE)	<	1.0 ug/l	1.0 ug/l
1,2-Dichloropropane	<	1.0 ug/l	1.0 ug/l
Bromodichloromethane	<	1.0 ug/l	1.0 ug/l
cis-1,3-Dichloropropene	<	1.0 ug/l	1.0 ug/l
trans-1,3-Dichloropropene	<	1.0 ug/l	1.0 ug/l
Toluene		7.8 ug/l	1.0 ug/l
Tetrachloroethene (PCE)	<	1.0 ug/l	1.0 ug/l
Chlorodibromomethane	<	1.0 ug/l	1.0 ug/l
Chlorobenzene	<	1.0 ug/l	1.0 ug/l
Ethylbenzene		1.7 ug/l	1.0 ug/l
Bromoform	<	2.0 ug/l	2.0 ug/l
m,p-Xylene		12.2 ug/l	1.0 ug/l
o-Xylene/Styrene*		3.4 ug/l	1.0 ug/l

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT:	J.M. Montgomery Engineers	LAB NO:	0001527
	4525 So. Wasatch #200	GROUP NO:	000297S
	Salt Lake City, UT 84124-	DATE SAMPLED:	11/24/92
		TIME SAMPLED:	800
ATTN:	Mr. Robert Glascot	DATE RECEIVED:	11/25/92
		DATE REPORTED:	12/10/92
SAMPLE ID:	MW-40	DISPOSAL DATE:	01/09/93

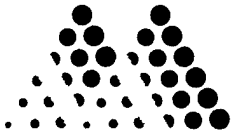
COMPOUND(s)	FINAL RESULT	LIMIT OF QUANTITATION
1,1,2,2-Tetrachloroethane	< 1.0 ug/l	1.0 ug/l
1,1,2-Trichloroethane	< 1.0 ug/l	1.0 ug/l
1,2-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l
1,3-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l
1,4-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l

Date Analyzed: 12/02/92

*These compounds coelute under the conditions used. The result represents the total amount for these compounds.

Respectfully submitted,

Kenneth A. Roberts, B.S.
GC Group Leader



Mountain States Analytical

The Quality Solution

James M. Montgomery Engineers
4525 South Wasatch Blvd., Suite 200
Salt Lake City, UT 84124
Telephone: (801) 272-1900
Facsimile: (801) 272-0403

Sample Number: 0001528
Sample Set: 000297S
Date Reported: 10 DEC 1992
Date Received: 25 NOV 1992
Disposal Date: 8 JAN 1993

Attention: Robert Glascot
Project: HAFB USTs
Case Number: VOCs/BTEXN
Purchase Order: 2208.0585

Customer Number: 870-WS-2/59'
Date Sampled: 24 NOV 1992
Matrix: Water/Waste Water
Containers: 3

Analysis	Catalog Number	Method	Result	Dry Result	Reporting Units
Volatile Aromatics/Halocarbons	05515	EPA 600 Series 601/ 602	See Attached		

1 Analysis for GC

Reviewed and approved by
Kenneth Roberts, B.S.
GC Group Leader

1 Analysis for Sample Number 0001528



Member: American Council of Independent Laboratories, Inc.

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-

ATTN: Mr. Robert Glascot

SAMPLE ID: 870-WS-2/59'

SAMPLE NO: 0001528
SAMPLE SET NO: 000297S
DATE SAMPLED: 11/24/92
TIME SAMPLED: 1200
DATE RECEIVED: 11/25/92
DATE REPORTED: 12/10/92
DISPOSAL DATE: 01/09/93

ANALYSIS: Volatiles - Water Matrix [EPA 601/602] (Capillary)

COMPOUND(s)		RESULT	LIMIT OF QUANTITATION
Chloromethane	<	2.0 ug/l	2.0 ug/l
Vinyl Chloride	<	2.0 ug/l	2.0 ug/l
Bromomethane	<	2.0 ug/l	2.0 ug/l
Chloroethane	<	2.0 ug/l	2.0 ug/l
Fluorotrichloromethane	<	2.0 ug/l	2.0 ug/l
1,1-Dichloroethene	<	1.0 ug/l	1.0 ug/l
Dichloromethane	<	1.0 ug/l	1.0 ug/l
trans-1,2-Dichloroethene	<	1.0 ug/l	1.0 ug/l
1,1-Dichloroethane	<	1.0 ug/l	1.0 ug/l
Chloroform	<	1.0 ug/l	1.0 ug/l
1,1,1-Trichloroethane	<	1.0 ug/l	1.0 ug/l
Carbon Tetrachloride	<	1.0 ug/l	1.0 ug/l
Benzene		24.0 ug/l	1.0 ug/l
1,2-Dichloroethane	<	1.0 ug/l	1.0 ug/l
Trichloroethene (TCE)	<	1.0 ug/l	1.0 ug/l
1,2-Dichloropropane	<	1.0 ug/l	1.0 ug/l
Bromodichloromethane	<	1.0 ug/l	1.0 ug/l
cis-1,3-Dichloropropene	<	1.0 ug/l	1.0 ug/l
trans-1,3-Dichloropropene	<	1.0 ug/l	1.0 ug/l
Toluene		68.0 ug/l	1.0 ug/l
Tetrachloroethene (PCE)	<	1.0 ug/l	1.0 ug/l
Chlorodibromomethane	<	1.0 ug/l	1.0 ug/l
Chlorobenzene	<	1.0 ug/l	1.0 ug/l
Ethylbenzene		50.7 ug/l	1.0 ug/l
Bromoform	<	2.0 ug/l	2.0 ug/l
m,p-Xylene		294 ug/l	50.0 ug/l
o-Xylene/Styrene*		93.7 ug/l	1.0 ug/l

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT:	J.M. Montgomery Engineers	LAB NO:	0001528
	4525 So. Wasatch #200	GROUP NO:	000297S
	Salt Lake City, UT 84124-	DATE SAMPLED:	11/24/92
		TIME SAMPLED:	1200
ATTN:	Mr. Robert Glascot	DATE RECEIVED:	11/25/92
		DATE REPORTED:	12/10/92
SAMPLE ID:	870-WS-2/59'	DISPOSAL DATE:	01/09/93

COMPOUND(s)	FINAL RESULT	LIMIT OF QUANTITATION
1,1,2,2-Tetrachloroethane	< 1.0 ug/l	1.0 ug/l
1,1,2-Trichloroethane	< 1.0 ug/l	1.0 ug/l
1,2-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l
1,3-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l
1,4-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l

Date Analyzed: 12/02/92

*These compounds coelute under the conditions used. The result represents the total amount for these compounds.

Respectfully submitted,

Kenneth A. Roberts, B.S.
GC Group Leader

Mountain States Analytical

The Quality Solution

James M. Montgomery Engineers
4525 South Wasatch Blvd., Suite 200
Salt Lake City, UT 84124
Telephone: (801) 272-1900
Facsimile: (801) 272-0403

Sample Number: 0001529
Sample Set: 000297S
Date Reported: 10 DEC 1992
Date Received: 25 NOV 1992
Disposal Date: 8 JAN 1993

Attention: Robert Glascot
Project: HAFB USTs
Case Number: VOCs/BTEXN
Purchase Order: 2208.0585

Customer Number: 870-WS-2/69'
Date Sampled: 24 NOV 1992
Matrix: Water/Waste Water
Containers: 2

Analysis	Catalog Number	Method	Result	Dry Result	Reporting Units
Volatile Aromatics/Halocarbons	05515	EPA 600 Series 601/ 602	See Attached		

1 Analysis for GC

Reviewed and approved by
Kenneth Roberts, B.S.
GC Group Leader

1 Analysis for Sample Number 0001529

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-

ATTN: Mr. Robert Glascot

SAMPLE ID: 870-WS-2/69'

SAMPLE NO: 0001529
SAMPLE SET NO: 000297S
DATE SAMPLED: 11/24/92
TIME SAMPLED: 1315
DATE RECEIVED: 11/25/92
DATE REPORTED: 12/10/92
DISPOSAL DATE: 01/09/93

ANALYSIS: Volatiles - Water Matrix [EPA 601/602] (Capillary)

COMPOUND(s)		RESULT	LIMIT OF QUANTITATION
Chloromethane	<	2.0 ug/l	2.0 ug/l
Vinyl Chloride	<	2.0 ug/l	2.0 ug/l
Bromomethane	<	2.0 ug/l	2.0 ug/l
Chloroethane	<	2.0 ug/l	2.0 ug/l
Fluorotrichloromethane	<	2.0 ug/l	2.0 ug/l
1,1-Dichloroethene	<	1.0 ug/l	1.0 ug/l
Dichloromethane	<	1.0 ug/l	1.0 ug/l
trans-1,2-Dichloroethene	<	1.0 ug/l	1.0 ug/l
1,1-Dichloroethane	<	1.0 ug/l	1.0 ug/l
Chloroform	<	1.0 ug/l	1.0 ug/l
1,1,1-Trichloroethane	<	1.0 ug/l	1.0 ug/l
Carbon Tetrachloride	<	1.0 ug/l	1.0 ug/l
Benzene		43.5 ug/l	1.0 ug/l
1,2-Dichloroethane	<	1.0 ug/l	1.0 ug/l
Trichloroethene (TCE)	<	1.0 ug/l	1.0 ug/l
1,2-Dichloropropane	<	1.0 ug/l	1.0 ug/l
Bromodichloromethane	<	1.0 ug/l	1.0 ug/l
cis-1,3-Dichloropropene	<	1.0 ug/l	1.0 ug/l
trans-1,3-Dichloropropene	<	1.0 ug/l	1.0 ug/l
Toluene		71.7 ug/l	1.0 ug/l
Tetrachloroethene (PCE)	<	1.0 ug/l	1.0 ug/l
Chlorodibromomethane	<	1.0 ug/l	1.0 ug/l
Chlorobenzene	<	1.0 ug/l	1.0 ug/l
Ethylbenzene		38.2 ug/l	1.0 ug/l
Bromoform	<	2.0 ug/l	2.0 ug/l
m,p-Xylene		258 ug/l	50.0 ug/l
o-Xylene/Styrene*		63.6 ug/l	1.0 ug/l

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT:	J.M. Montgomery Engineers	LAB NO:	0001529
	4525 So. Wasatch #200	GROUP NO:	000297S
	Salt Lake City, UT 84124-	DATE SAMPLED:	11/24/92
		TIME SAMPLED:	1315
ATTN:	Mr. Robert Glascot	DATE RECEIVED:	11/25/92
		DATE REPORTED:	12/10/92
SAMPLE ID:	870-WS-2/69'	DISPOSAL DATE:	01/09/93

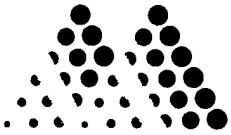
COMPOUND(s)	FINAL RESULT	LIMIT OF QUANTITATION
1,1,2,2-Tetrachloroethane	< 1.0 ug/l	1.0 ug/l
1,1,2-Trichloroethane	< 1.0 ug/l	1.0 ug/l
1,2-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l
1,3-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l
1,4-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l

Date Analyzed: 12/02/92

*These compounds coelute under the conditions used. The result represents the total amount for these compounds.

Respectfully submitted,

Kenneth A. Roberts, B.S.
GC Group Leader



Mountain States Analytical

The Quality Solution

James M. Montgomery Engineers
4525 South Wasatch Blvd., Suite 200
Salt Lake City, UT 84124
Telephone: (801) 272-1900
Facsimile: (801) 272-0403

Sample Number: 0001530
Sample Set: 000297S
Date Reported: 10 DEC 1992
Date Received: 25 NOV 1992
Disposal Date: 8 JAN 1993

Attention: Robert Glascot
Project: HAFB USTs
Case Number: VOCs/BTEXN
Purchase Order: 2208.0585

Customer Number: CPT-40
Date Sampled: 24 NOV 1992
Matrix: Water/Waste Water
Containers: 2

Analysis	Catalog Number	Method	Result	Dry Result	Reporting Units
Volatile Aromatics/Halocarbons	05515	EPA 600 Series 601/ 602	See Attached		

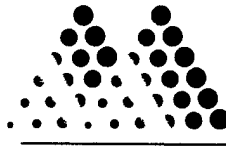
1 Analysis for GC

Reviewed and approved by
Kenneth Roberts, B.S.
GC Group Leader

1 Analysis for Sample Number 0001530



Member: American Council of Independent Laboratories, Inc.



Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-

ATTN: Mr. Robert Glascot

SAMPLE ID: CPT-40

SAMPLE NO: 0001530
SAMPLE SET NO: 000297S
DATE SAMPLED: 11/24/92
TIME SAMPLED: 1345
DATE RECEIVED: 11/25/92
DATE REPORTED: 12/10/92
DISPOSAL DATE: 01/09/93

ANALYSIS: Volatiles - Water Matrix [EPA 601/602] (Capillary)

COMPOUND(s)	RESULT	LIMIT OF QUANTITATION
Chloromethane	< 2.0 ug/l	2.0 ug/l
Vinyl Chloride	< 2.0 ug/l	2.0 ug/l
Bromomethane	< 2.0 ug/l	2.0 ug/l
Chloroethane	< 2.0 ug/l	2.0 ug/l
Fluorotrichloromethane	< 2.0 ug/l	2.0 ug/l
1,1-Dichloroethene	< 1.0 ug/l	1.0 ug/l
Dichloromethane	< 1.0 ug/l	1.0 ug/l
trans-1,2-Dichloroethene	< 1.0 ug/l	1.0 ug/l
1,1-Dichloroethane	< 1.0 ug/l	1.0 ug/l
Chloroform	< 1.0 ug/l	1.0 ug/l
1,1,1-Trichloroethane	< 1.0 ug/l	1.0 ug/l
Carbon Tetrachloride	< 1.0 ug/l	1.0 ug/l
Benzene	< 1.0 ug/l	1.0 ug/l
1,2-Dichloroethane	< 1.0 ug/l	1.0 ug/l
Trichloroethene (TCE)	< 1.0 ug/l	1.0 ug/l
1,2-Dichloropropane	< 1.0 ug/l	1.0 ug/l
Bromodichloromethane	< 1.0 ug/l	1.0 ug/l
cis-1,3-Dichloropropene	< 1.0 ug/l	1.0 ug/l
trans-1,3-Dichloropropene	< 1.0 ug/l	1.0 ug/l
Toluene	< 1.0 ug/l	1.0 ug/l
Tetrachloroethene (PCE)	< 1.0 ug/l	1.0 ug/l
Chlorodibromomethane	< 1.0 ug/l	1.0 ug/l
Chlorobenzene	< 1.0 ug/l	1.0 ug/l
Ethylbenzene	< 1.0 ug/l	1.0 ug/l
Bromoform	< 2.0 ug/l	2.0 ug/l
m,p-Xylene	< 1.0 ug/l	1.0 ug/l
o-Xylene/Styrene*	< 1.0 ug/l	1.0 ug/l

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT:	J.M. Montgomery Engineers	LAB NO:	0001530
	4525 So. Wasatch #200	GROUP NO:	000297S
	Salt Lake City, UT 84124-	DATE SAMPLED:	11/24/92
		TIME SAMPLED:	1345
ATTN:	Mr. Robert Glascot	DATE RECEIVED:	11/25/92
		DATE REPORTED:	12/10/92
SAMPLE ID:	CPT-40	DISPOSAL DATE:	01/09/93

COMPOUND(s)	FINAL RESULT	LIMIT OF QUANTITATION
1,1,2,2-Tetrachloroethane	< 1.0 ug/l	1.0 ug/l
1,1,2-Trichloroethane	< 1.0 ug/l	1.0 ug/l
1,2-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l
1,3-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l
1,4-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l

Date Analyzed: 12/02/92

*These compounds coelute under the conditions used. The result represents the total amount for these compounds.

Respectfully submitted,

Kenneth A. Roberts, B.S.
GC Group Leader

Mountain States Analytical

The Quality Solution

James M. Montgomery Engineers
4525 South Wasatch Blvd., Suite 200
Salt Lake City, UT 84124
Telephone: (801) 272-1900
Facsimile: (801) 272-0403

Sample Number: 0001525
Sample Set: 000297S
Date Reported: 10 DEC 1992
Date Received: 25 NOV 1992
Disposal Date: 8 JAN 1993

Attention: Robert Glascot
Project: HAFB USTs
Case Number: VOCs/BTEXN
Purchase Order: 2208.0585

Customer Number: Trip Blank
Date Sampled: 23 NOV 1992
Matrix: Water/Waste Water
Containers: 2

Analysis	Catalog Number	Method	Result	Dry Result	Reporting Units
Volatile Aromatics/Halocarbons	05515	EPA 600 Series 601/ 602	See Attached		

1 Analysis for GC

Reviewed and approved by
Kenneth Roberts, B.S.
GC Group Leader

1 Analysis for Sample Number 0001525

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-

ATTN: Mr. Robert Glascot

SAMPLE ID: Trip Blank

SAMPLE NO: 0001525
SAMPLE SET NO: 000297S
DATE SAMPLED: 11/23/92
TIME SAMPLED: 0
DATE RECEIVED: 11/25/92
DATE REPORTED: 12/10/92
DISPOSAL DATE: 01/09/93

ANALYSIS: Volatiles - Water Matrix [EPA 601/602] (Capillary)

COMPOUND(s)	RESULT	LIMIT OF QUANTITATION
Chloromethane	< 2.0 ug/l	2.0 ug/l
Vinyl Chloride	< 2.0 ug/l	2.0 ug/l
Bromomethane	< 2.0 ug/l	2.0 ug/l
Chloroethane	< 2.0 ug/l	2.0 ug/l
Fluorotrichloromethane	< 2.0 ug/l	2.0 ug/l
1,1-Dichloroethene	< 1.0 ug/l	1.0 ug/l
Dichloromethane	10.7 ug/l	1.0 ug/l
trans-1,2-Dichloroethene	< 1.0 ug/l	1.0 ug/l
1,1-Dichloroethane	< 1.0 ug/l	1.0 ug/l
Chloroform	< 1.0 ug/l	1.0 ug/l
1,1,1-Trichloroethane	< 1.0 ug/l	1.0 ug/l
Carbon Tetrachloride	< 1.0 ug/l	1.0 ug/l
Benzene	< 1.0 ug/l	1.0 ug/l
1,2-Dichloroethane	< 1.0 ug/l	1.0 ug/l
Trichloroethene (TCE)	< 1.0 ug/l	1.0 ug/l
1,2-Dichloropropane	< 1.0 ug/l	1.0 ug/l
Bromodichloromethane	< 1.0 ug/l	1.0 ug/l
cis-1,3-Dichloropropene	< 1.0 ug/l	1.0 ug/l
trans-1,3-Dichloropropene	< 1.0 ug/l	1.0 ug/l
Toluene	< 1.0 ug/l	1.0 ug/l
Tetrachloroethene (PCE)	< 1.0 ug/l	1.0 ug/l
Chlorodibromomethane	< 1.0 ug/l	1.0 ug/l
Chlorobenzene	< 1.0 ug/l	1.0 ug/l
Ethylbenzene	< 1.0 ug/l	1.0 ug/l
Bromoform	< 2.0 ug/l	2.0 ug/l
m,p-Xylene	< 1.0 ug/l	1.0 ug/l
o-Xylene/Styrene*	< 1.0 ug/l	1.0 ug/l

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT:	J.M. Montgomery Engineers	LAB NO:	0001525
	4525 So. Wasatch #200	GROUP NO:	000297S
	Salt Lake City, UT 84124-	DATE SAMPLED:	11/23/92
		TIME SAMPLED:	0
ATTN:	Mr. Robert Glascot	DATE RECEIVED:	11/25/92
		DATE REPORTED:	12/10/92
SAMPLE ID:	Trip Blank	DISPOSAL DATE:	01/09/93

COMPOUND(s)	FINAL RESULT	LIMIT OF QUANTITATION
1,1,2,2-Tetrachloroethane	< 1.0 ug/l	1.0 ug/l
1,1,2-Trichloroethane	< 1.0 ug/l	1.0 ug/l
1,2-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l
1,3-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l
1,4-Dichlorobenzene	< 1.0 ug/l	1.0 ug/l

Date Analyzed: 12/02/92

*These compounds coelute under the conditions used. The result represents the total amount for these compounds.

Respectfully submitted,

Kenneth A. Roberts, B.S.
GC Group Leader

Mountain States Analytical

The Quality Solution

James M. Montgomery Engineers
4525 South Wasatch Blvd., Suite 200
Salt Lake City, UT 84124
Telephone: (801) 272-1900
Facsimile: (801) 272-0403

Sample Number: 0001531
Sample Set: 000297S
Date Reported: 10 DEC 1992
Date Received: 25 NOV 1992
Disposal Date: 8 JAN 1993

Attention: Robert Glascot
Project: HAFB USTs
Case Number: VOCs/BTEXN
Purchase Order: 2208.0585

Customer Number: CPT-42
Date Sampled: 24 NOV 1992
Matrix: Water/Waste Water
Containers: 1

Analysis	Catalog Number	Method	Result	Dry Result	Reporting Units
Btex & Naphthalene	04264	EPA 602 SW-846 5030/8020	See Attached		

1 Analysis for GC

Reviewed and approved by
Kenneth Roberts, B.S.
GC Group Leader

1 Analysis for Sample Number 0001531

Member: American Council of Independent Laboratories, Inc.

Analytical Report

Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So Wasatch #200
Salt Lake City, UT 84124-

ATTN: Mr. Robert Glascot

SAMPLE ID: CPT-42

SAMPLE NO: 0001531
SAMPLE SET NO: 000297S
DATE SAMPLED: 11/24/92
TIME SAMPLED: 1455
DATE RECEIVED: 11/25/92
DATE REPORTED: 12/09/92
DISPOSAL DATE: 01/08/93

ANALYSIS: Gasoline Contamination in Water (BTEX) [EPA 602]

COMPOUND(s)	RESULT	LIMIT OF QUANTITATION
Benzene	< 1.0 ug/l	1.0 ug/l
Toluene	< 1.0 ug/l	1.0 ug/l
Ethylbenzene	< 1.0 ug/l	1.0 ug/l
m,p-Xylene	< 1.0 ug/l	1.0 ug/l
o-Xylene/Styrene*	< 1.0 ug/l	1.0 ug/l
Naphthalene	< 1.0 ug/l	1.0 ug/l

Date Analyzed: 12/03/92

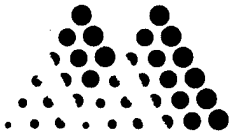
*These compounds coelute under the conditions used. The result represents the total amount for these compounds.

Respectfully submitted,

Kenneth A. Roberts, B.S.
GC Group Leader

1645 West 2200 South, Salt Lake City, Utah 84119 (801) 973-0050 FAX (801) 972-6278

Member: American Council of Independent Laboratories, Inc.



Mountain States Analytical

The Quality Solution

James M. Montgomery Engineers
4525 South Wasatch Blvd., Suite 200
Salt Lake City, UT 84124
Telephone: (801) 272-1900
Facsimile: (801) 272-0403

Sample Number: 0001532
Sample Set: 000297S
Date Reported: 10 DEC 1992
Date Received: 25 NOV 1992
Disposal Date: 8 JAN 1993

Attention: Robert Glascot
Project: HAFB USTs
Case Number: VOCs/BTEXN
Purchase Order: 2208.0585

Customer Number: CPT-43
Date Sampled: 24 NOV 1992
Matrix: Water/Waste Water
Containers: 1

Analysis	Catalog Number	Method	Result	Dry Result	Reporting Units
Btex & Naphthalene	04264	EPA 602 SW-846 5030/8020	See Attached		

1 Analysis for GC

Reviewed and approved by
Kenneth Roberts, B.S.
GC Group Leader

1 Analysis for Sample Number 0001532



Member: American Council of Independent Laboratories, Inc.

Analytical Report

Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So Wasatch #200
Salt Lake City, UT 84124-

ATTN: Mr. Robert Glascot

SAMPLE ID: CPT-43

SAMPLE NO: 0001532
SAMPLE SET NO: 000297S
DATE SAMPLED: 11/24/92
TIME SAMPLED: 1600
DATE RECEIVED: 11/25/92
DATE REPORTED: 12/09/92
DISPOSAL DATE: 01/08/93

ANALYSIS: Gasoline Contamination in Water (BTEX) [EPA 602]

COMPOUND(s)	RESULT	LIMIT OF QUANTITATION
Benzene	< 1.0 ug/l	1.0 ug/l
Toluene	< 1.0 ug/l	1.0 ug/l
Ethylbenzene	< 1.0 ug/l	1.0 ug/l
m,p-Xylene	< 1.0 ug/l	1.0 ug/l
o-Xylene/Styrene*	< 1.0 ug/l	1.0 ug/l
Naphthalene	< 1.0 ug/l	1.0 ug/l

Date Analyzed: 12/03/92

*These compounds coelute under the conditions used. The result represents the total amount for these compounds.

Respectfully submitted,

Kenneth A. Roberts, B.S.
GC Group Leader

1645 West 2200 South, Salt Lake City, Utah 84119 (801) 973-0050 FAX (801) 972-6278

Member: American Council of Independent Laboratories, Inc.

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

Chain of Custody Number _____
Cooler Number _____
Lot Control ID _____
Page _____ of _____
Air Bill No. _____

LABORATORY Mt. States Analytical

MONTGOMERY WATSON, INC.
Phone (801) 272-1900 FAX (801) 272-0430
MW Contact Glascott / Fulton
Project HAFB USTs
Project Number 22081585
Date Due Std. TAT (2wks)
Samplers Signature Robert G. Glascott (RGG)

Lab ID No. (Lab Only)	Location ID / Sample ID / Depth Interval (ft)	Date Collected	Time Collected	Matrix[1]	Sampling Technique[2]	Number of Containers (Total)	ANALYSES REQUESTED: VOC 0557S	BNAE	Pest/PCB	Dioxin/Furan	TPH MOD	Metals	Cyanide	TCLP- Metals VOC BNAE Pest.	BTEX+N				
	870-WS-1/32'	11/23/92	1500	WG	G	3	✓												
	870-WS-1/42'	11/23/92	1630	WG	G	3	✓												
	Trip Blank 11/23/92	11/23/92				2	✓		~~Hold only / Hold~~										
	870-WS-2/49'	11/24/92	1015	WG	G	2	✓												
	MW-40	11/24/92	0840	WG	G	3	✓												
	870-WS-2/59'	11/24/92	1200	WG	G	3	✓												
	870-WS-2/65'	11/24/92	1315	WG	G	2	✓												
	CPT-40	11/24/92	1345	WG	G	2	✓												
Broken	CPT-42 — one vial	11/24/92	1455	WG	G	2										✓ 04264			
Broken	CPT-41 — no vials	11/24/92	1542	WG	G	2										✓			
Broken	CPT-43 — one vial	11/24/92	1600	WG	G	2										✓			
	870-WS-1/52'	11/24/92	0830	WG	G	3	✓												

GGC 11/25

[1] Matrix:
SO- Soil
SE - Sediment
WS - Surface Water
WG - Ground Water
LF - Product
AA - Air
SW - Wipe
DC - Drum Solids
LD- Drum Liquids
EP/TCLP Leachate

[2] Sampling Technique:
Composite=C
Grab=G

SPECIAL INSTRUCTIONS (i.e. metals list...):
* Note: Please try to keep the detection limits as low as possible again we're looking for PCE at very low levels (ppb). Note CPT-41 & 43 contain no preservative.

Relinquished by	Received by	Date	Time
[signature]	Pamela Olson	11/25/92	0800

Relinquished by	Received by	Date	Time

LABORATORY USE ONLY

SAMPLES WERE:
1 Shipped or hand delivered
Notes:
2 Ambient or Chilled
Notes:
3 Temperature _____
4 Received Broken/Leaking (Improperly Sealed) Y N
Notes:
5 Properly Preserved Y N
Notes:
6 Received Within Holding Times Y N
Notes:

COC Tape Was:
1 Present on Outer Package Y N NA
2 Unbroken on Outer Package Y N NA
3 Present on Sample Y N NA
4 Unbroken on Sample Y N NA
Notes:

Discrepancies Between Sample Labels and COC Record? Y N
Notes:

Mountain States Analytical

The Quality Solution

James M. Montgomery Engineers
4525 South Wasatch Blvd., Suite 200
Salt Lake City, UT 84124
Telephone: (801) 272-1900
Facsimile: (801) 272-0403

Sample Number: 0003135
Sample Set: 000665S
Date Reported: 6 JAN 1993
Date Received: 18 DEC 1992
Disposal Date: 2 FEB 1993

Attention: Robert Glascot
Project: HAFB UST
Case Number:
Purchase Order: 2208.0580

Customer Number: CPT-14
Date Sampled: 18 DEC 1992
Matrix: Combustible Liquids
Containers: 2

Analysis	Catalog Number	Method	Result	Dry Result	Reporting Units
Priority Pollutant Volatile Organics	01177	EPA SW-846 8240	See Attached		

1 Analysis for GC/MS

Reviewed and approved by
John Hayes, B.S.
Supervisor, GCMS Group

1 Analysis for Sample Number 0003135

19 RECD

Member: American Council of Independent Laboratories, Inc.

Mountain States Analytical
The Quality Solution

CLIENT: James M. Montgomery Engineers
4525 South Wasatch Blvd.
Salt Lake City, UT 84124

ATTN: Mr. Robert Glascot

SAMPLE ID: CPT-14
PROJECT: HAFB UST

LAB NO: 3135
GROUP NO: 665S
DATE SAMPLED: 12/18/92
TIME SAMPLED: 1145
DATE RECEIVED: 12/18/92
DATE REPORTED: 01/11/93
DISPOSAL DATE: 02/10/93
ANALYSIS DATE: 01/01/93

ANALYSIS: Priority Pollutants by GCMS (Volatiles)
EPA Method SW-846 8240

COMPOUNDS	FINAL RESULTS		QUANTITATION LIMIT	
Chloromethane	< 500,000	ug/l	500,000	ug/l
Vinyl Chloride	< 500,000	ug/l	500,000	ug/l
Bromomethane	< 500,000	ug/l	500,000	ug/l
Chloroethane	< 500,000	ug/l	500,000	ug/l
Trichlorofluoromethane	< 250,000	ug/l	250,000	ug/l
Acrolein	<1000,000	ug/l	1000,000	ug/l
1,1-Dichloroethene	< 250,000	ug/l	250,000	ug/l
Methylene Chloride	< 250,000	ug/l	250,000	ug/l
Acrylonitrile	<1000,000	ug/l	1000,000	ug/l
1,1-Dichloroethane	< 250,000	ug/l	250,000	ug/l
1,2-Dichloroethene (total)	< 250,000	ug/l	250,000	ug/l
Chloroform	< 250,000	ug/l	250,000	ug/l
1,1,1-Trichloroethane	< 250,000	ug/l	250,000	ug/l
Carbon Tetrachloride	< 250,000	ug/l	250,000	ug/l
Benzene	< 250,000	ug/l	250,000	ug/l
1,2-Dichloroethane	< 250,000	ug/l	250,000	ug/l
Trichloroethene	< 250,000	ug/l	250,000	ug/l
1,2-Dichloropropane	< 250,000	ug/l	250,000	ug/l
Bromodichloromethane	< 250,000	ug/l	250,000	ug/l
2-Chloroethylvinyl ether	< 500,000	ug/l	500,000	ug/l
cis-1,3-Dichloropropene	< 250,000	ug/l	250,000	ug/l
Toluene	< 250,000	ug/l	250,000	ug/l
trans-1,3-Dichloropropene	< 250,000	ug/l	250,000	ug/l
1,1,2-Trichloroethane	< 250,000	ug/l	250,000	ug/l
Tetrachloroethene	< 250,000	ug/l	250,000	ug/l
Dibromochloromethane	< 250,000	ug/l	250,000	ug/l
Chlorobenzene	< 250,000	ug/l	250,000	ug/l
Ethylbenzene	1,400,000	ug/l	250,000	ug/l
Xylenes (Total)	13,000,000	ug/l	250,000	ug/l

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT:	James M. Montgomery Engineers	LAB NO:	3135
	4525 South Wasatch Blvd.	GROUP NO:	665S
	Salt Lake City, UT 84124	DATE SAMPLED:	12/18/92
		TIME SAMPLED:	1145
ATTN:	Mr. Robert Glascot	DATE RECEIVED:	12/18/92
		DATE REPORTED:	01/11/93
SAMPLE ID:	CPT-14	DISPOSAL DATE:	02/10/93
PROJECT:	HAFB UST	ANALYSIS DATE:	01/01/93

ANALYSIS: Priority Pollutants by GCMS (Volatiles)
EPA Method SW-846 8240

COMPOUNDS	FINAL RESULTS		QUANTITATION LIMIT	
Bromoform	< 250,000	ug/l	250,000	ug/l
1,1,2,2-Tetrachloroethane	< 250,000	ug/l	250,000	ug/l

Comment: Surrogate standards 1,2-Dichloroethane-d4 and Bromofluorobenzene were outside of QC limits. These results were confirmed by reanalysis. Due to the sample matrix and level of target compounds, dilution was required. Limits of quantitation were raised accordingly.

Additionally, at this dilution, halogenated compounds were not be detected.

Respectfully submitted,

John G. Hayes, B.S.
Supervisor, GCMS Group

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

Chain of Custody Number _____
Cooler Number _____
Lot Control ID _____
Page 1 of 1
Air Bill No. Hand delivered.

LABORATORY Mt. States Anal.

MONTGOMERY WATSON, INC.
Phone (801) 272-1900 FAX (801) 272-0330
MW Contact Bob Glascock (Rlg)
Project HAFB UST4
Project Number 2205.0580
Date Due 3 td. 2 wk. TAT
Samplers Signature Robert Glascock (Rlg)

1/11

Lab ID No. (Lab Only)	Location ID	Sample ID	Depth Interval (ft)	Date Collected	Time Collected	Matrix[1]	Sampling Technique[2]	Number of Containers (Total)	ANALYSES REQUESTED: VOC 8240	BNAE	Pest/PCB	Dioxin/Furan	TPH MOD	Metals	Cyanide	TCLP- Metals VOC BNAE Pest.					
	CPT-14			12/15/98	1145	WG	G	2	✓												

[1] **Matrix:**
SO- Soil
SE - Sediment
WS - Surface Water
WG - Ground Water
LF - Product
AA - Air
SW - Wipe
DC - Drum Solids
LD- Drum Liquids
EP/TCLP Leachate

[2] **Sampling Technique:**
Composite=C
Grab=G

SPECIAL INSTRUCTIONS (i.e. metals list...):
* Note: Analyze the top portion in the vials. I have marked which vial to use first, it contains ~ 3/4" of product.

Relinquished by	Received by	Date	Time
[signature]	[signature]	12/15/98	1500

Relinquished by	Received by	Date	Time

LABORATORY USE ONLY

SAMPLES WERE:

1 Shipped or hand delivered
Notes:

2 Ambient or Chilled
Notes:

3 Temperature _____

4 Received Broken/Leaking (Improperly Sealed)
Y N
Notes:

5 Properly Preserved
Y N
Notes:

6 Received Within Holding Times
Y N
Notes:

COC Tape Was:

1 Present on Outer Package
Y N NA

2 Unbroken on Outer Package
Y N NA

3 Present on Sample
Y N NA

4 Unbroken on Sample
Y N NA
Notes:

Discrepancies Between Sample Labels and COC Record?
Y N
Notes:

Invoice No. 100467
14 JAN 1993

Mountain States Analytical
The Quality Solution

James M. Montgomery Engineers
4525 South Wasatch Blvd. Suite #200
Salt Lake City, Utah 84124

Sample Set: 000665S
Project: HAFB UST
Case Number:
Purchase Order: 2208.0580

Analysis	Turn Around	Price	Rush Charge	Discount Percent	Discount	Total
Sample Number: 0003135	**Containers:** 2			**Matrix:** Combustible Liquids		
Customer Number: CPT-14	**Sampled on** 18 DEC 1992 at 11:45:00					
Date Received: 18 DEC 1992 15:31:24.00	**Due Date:** 2 JAN 1993			**Storage:** GC/MS-9		
01177 - Priority Pollutant Volatile Organics, sw	18	285.00		15.00	42.75	242.25
1 Analysis for Sample Number 0003135	18	$285.00		15.00 %	$42.75	$242.25

Price	$285.00
Rush Charge	0.00
Discount (15.00%)	(42.75)
Subtotal	$242.25
Total Due	$242.25

Tax Id# 87-0437861

Mountain States Analytical

The Quality Solution

James M. Montgomery Engineers
4525 South Wasatch Blvd., Suite 200
Salt Lake City, UT 84124
Telephone: (801) 272-1900
Facsimile: (801) 272-0403

Sample Number: 0001634
Sample Set: 000322S
Date Reported: 14 DEC 1992
Date Received: 1 DEC 1992
Disposal Date: 18 JAN 1993

Attention: Robert Glascot
Project: Hill AFB
Case Number: BTEXN
Purchase Order: 2208.0585

Customer Number: CPT-42
Date Sampled: 30 NOV 1992
Matrix: Wastewater
Containers: 2

Analysis	Catalog Number	Method	Result	Dry Result	Reporting Units
Btex & Naphthalene	04264	EPA SW-846 5030/ 8020	See Attached		

1 Analysis for GC

Reviewed and approved by
Kenneth Roberts, B.S.
GC Group Leader

1 Analysis for Sample Number 0001634

Member: American Council of Independent Laboratories, Inc.

Analytical Report

Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So Wasatch Dr. #200
Salt Lake City, UT 84124-

ATTN: Mr. Robert Glascot

SAMPLE ID: CPT-42

SAMPLE NO: 0001634
SAMPLE SET NO: 000322S
DATE SAMPLED: 11/30/92
TIME SAMPLED: 1350
DATE RECEIVED: 12/01/92
DATE REPORTED: 12/10/92
DISPOSAL DATE: 01/09/93

ANALYSIS: Gasoline Contamination in Water (BTEX) [EPA 602]

COMPOUND(s)		RESULT	LIMIT OF QUANTITATION
Benzene	<	1.0 ug/l	1.0 ug/l
Toluene	<	1.0 ug/l	1.0 ug/l
Ethylbenzene	<	1.0 ug/l	1.0 ug/l
m,p-Xylene	<	1.0 ug/l	1.0 ug/l
o-Xylene/Styrene*	<	1.0 ug/l	1.0 ug/l
Naphthalene	<	1.0 ug/l	1.0 ug/l

Date Analyzed: 12/03/92

*These compounds coelute under the conditions used. The result represents the total amount for these compounds.

Respectfully submitted,

Kenneth A. Roberts, B.S.
GC Group Leader

1645 West 2200 South, Salt Lake City, Utah 84119 (801) 973-0050 FAX (801) 972-6278

Member: American Council of Independent Laboratories, Inc.

Mountain States Analytical

The Quality Solution

James M. Montgomery Engineers
4525 South Wasatch Blvd., Suite 200
Salt Lake City, UT 84124
Telephone: (801) 272-1900
Facsimile: (801) 272-0403

Sample Number: 0001635
Sample Set: 000322S
Date Reported: 14 DEC 1992
Date Received: 1 DEC 1992
Disposal Date: 18 JAN 1993

Attention: Robert Glascot
Project: Hill AFB
Case Number: BTEXN
Purchase Order: 2208.0585

Customer Number: CPT-43
Date Sampled: 30 NOV 1992
Matrix: Wastewater
Containers: 2

Analysis	Catalog Number	Method	Result	Dry Result	Reporting Units
Btex & Naphthalene	04264	EPA SW-846 5030/ 8020	See Attached		

1 Analysis for GC

Reviewed and approved by
Kenneth Roberts, B.S.
GC Group Leader

1 Analysis for Sample Number 0001635

Member: American Council of Independent Laboratories, Inc.

Analytical Report

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So Wasatch Dr. #200
Salt Lake City, UT 84124-

ATTN: Mr. Robert Glascot

SAMPLE ID: CPT-43

SAMPLE NO: 0001635
SAMPLE SET NO: 000322S
DATE SAMPLED: 11/30/92
TIME SAMPLED: 1410
DATE RECEIVED: 12/01/92
DATE REPORTED: 12/10/92
DISPOSAL DATE: 01/09/93

ANALYSIS: Gasoline Contamination in Water (BTEX) [EPA 602]

COMPOUND(s)	RESULT	LIMIT OF QUANTITATION
Benzene	< 1.0 ug/l	1.0 ug/l
Toluene	< 1.0 ug/l	1.0 ug/l
Ethylbenzene	< 1.0 ug/l	1.0 ug/l
m,p-Xylene	< 1.0 ug/l	1.0 ug/l
o-Xylene/Styrene*	< 1.0 ug/l	1.0 ug/l
Naphthalene	< 1.0 ug/l	1.0 ug/l

Date Analyzed: 12/03/92

*These compounds coelute under the conditions used. The result represents the total amount for these compounds.

Respectfully submitted,

Kenneth A. Roberts, B.S.
GC Group Leader

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

Chain of Custody Number _____
Cooler Number _____
Lot Control ID _____
Page 1 of 1
Air Bill No. Hand Delivered

LABORATORY Mountain States

MONTGOMERY WATSON, INC.
Phone (801) 272-1900 FAX (801) 272-0430
MW Contact Bob Glasscott
Project Hill AFB
Project Number 2205.0585
Date Due _____
Samplers Signature (MDL)

Lab ID No. (Lab Only)	Location ID	Sample ID	Depth Interval (ft)	Date Collected	Time Collected	Matrix[1]	Sampling Technique[2]	Number of Containers (Total)	ANALYSES REQUESTED: VOC	BNAE	Pest/PCB	Dioxin/Furan	TPH MOD	Metals	Cyanide	TCLP- Metals VOC BNAE Pest.	BTXE				
		CPT-42		11/30	13:50	WG	G	2									✓				
		CPT-43		11/30	14:10	WG	G	2									✓				

[1] **Matrix:**
SO- Soil
SE - Sediment
WS - Surface Water
WG - Ground Water
LF - Product
AA - Air
SW - Wipe
DC - Drum Solids
LD- Drum Liquids
EP/TCLP Leachate

[2] **Sampling Technique:**
Composite=C
Grab=G

SPECIAL INSTRUCTIONS (i.e. metals list...):

Relinquished by	Received by	Date	Time
Mark Lewis	Ken Aleshire	11/30/92	1710

Relinquished by	Received by	Date	Time

LABORATORY USE ONLY

SAMPLES WERE:

1 Shipped or hand delivered
Notes:

2 Ambient or Chilled
Notes:

3 Temperature _____

4 Received Broken/Leaking (Improperly Sealed)
Y N
Notes:

5 Properly Preserved
Y N
Notes:

6 Received Within Holding Times
Y N
Notes:

COC Tape Was:

1 Present on Outer Package
Y N NA

2 Unbroken on Outer Package
Y N NA

3 Present on Sample
Y N NA

4 Unbroken on Sample
Y N NA
Notes:

Discrepancies Between Sample Labels and COC Record?
Y N
Notes:

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. Bob Glascok

SAMPLE ID: T-870-MW-6-U-92-HF

LAB NO: 31657
GROUP NO: 7730
DATE SAMPLED: 09/04/92
TIME SAMPLED: 1105
DATE RECEIVED: 09/04/92
DATE REPORTED: 09/30/92
DISPOSAL DATE: 10/31/92
ANALYSIS DATE: 09/14/92

ANALYSIS: TCL VOLATILES (SOW - 2/88)

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
Chloromethane	<50 ug/l	50 ug/l
Vinyl Chloride	<50 ug/l	50 ug/l
Bromomethane	<50 ug/l	50 ug/l
Chloroethane	<50 ug/l	50 ug/l
1,1-Dichloroethene	<25 ug/l	25 ug/l
Acetone	<100 ug/l	100 ug/l
Carbon Disulfide	<25 ug/l	25 ug/l
Methylene Chloride	<25 ug/l	25 ug/l
1,1-Dichloroethane	<25 ug/l	25 ug/l
Vinyl Acetate	<25 ug/l	25 ug/l
2-Butanone	<100 ug/l	100 ug/l
1,2-Dichloroethene (total)	<25 ug/l	25 ug/l
Chloroform	<25 ug/l	25 ug/l
1,1,1-Trichloroethane	<25 ug/l	25 ug/l
Carbon Tetrachloride	<25 ug/l	25 ug/l
Benzene	<25 ug/l	25 ug/l
1,2-Dichloroethane	<25 ug/l	25 ug/l
Trichloroethene	<25 ug/l	25 ug/l
1,2-Dichloropropane	<25 ug/l	25 ug/l
Bromodichloromethane	<25 ug/l	25 ug/l
cis-1,3-Dichloropropene	<25 ug/l	25 ug/l
4-Methyl-2-Pentanone	<50 ug/l	50 ug/l
Toluene	<25 ug/l	25 ug/l
trans-1,3-Dichloropropene	<25 ug/l	25 ug/l
1,1,2-Trichloroethane	<25 ug/l	25 ug/l
Tetrachloroethene	<25 ug/l	25 ug/l
2-Hexanone	<50 ug/l	50 ug/l
Dibromochloromethane	<25 ug/l	25 ug/l
Chlorobenzene	<25 ug/l	25 ug/l
Ethylbenzene	<25 ug/l	25 ug/l
Xylenes (total)	<25 ug/l	25 ug/l
Styrene	<25 ug/l	25 ug/l

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. Bob Glascok

SAMPLE ID: T-870-MW-6-U-92-HF

LAB NO: 31657
GROUP NO: 7730
DATE SAMPLED: 06/04/92
TIME SAMPLED: 1105
DATE RECEIVED: 06/04/92
DATE REPORTED: 09/30/92
DISPOSAL DATE: 10/31/92
ANALYSIS DATE: 06/13/92

ANALYSIS: TCL VOLATILES

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
Bromoform	<25 ug/l	25 ug/l
1,1,2,2-Tetrachloroethane	<25 ug/l	25 ug/l

Comment: Due to the sample matrix, dilution was required. Limits of quantitation were raised accordingly.

Respectfully submitted,

John G Hayes, B.S.
Supervisor, GCMS Group

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. Robert Glascok

SAMPLE ID: T-870-MW-7-U-92-HF

LAB NO: 31786
GROUP NO: 7776
DATE SAMPLED: 09/07/92
TIME SAMPLED: 1440
DATE RECEIVED: 09/08/92
DATE REPORTED: 09/16/92
DISPOSAL DATE: 10/17/92
ANALYSIS DATE: 09/15/92

ANALYSIS: TCL VOLATILES (SOW - 2/88)

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
Chloromethane	<10 ug/l	10 ug/l
Vinyl Chloride	<10 ug/l	10 ug/l
Bromomethane	<10 ug/l	10 ug/l
Chloroethane	<10 ug/l	10 ug/l
1,1-Dichloroethene	<5 ug/l	5 ug/l
Acetone	<20 ug/l	20 ug/l
Carbon Disulfide	<5 ug/l	5 ug/l
Methylene Chloride	<5 ug/l	5 ug/l
1,1-Dichloroethane	<5 ug/l	5 ug/l
Vinyl Acetate	<5 ug/l	5 ug/l
2-Butanone	<20 ug/l	20 ug/l
1,2-Dichloroethene (total)	<5 ug/l	5 ug/l
Chloroform	<5 ug/l	5 ug/l
1,1,1-Trichloroethane	<5 ug/l	5 ug/l
Carbon Tetrachloride	<5 ug/l	5 ug/l
Benzene	<5 ug/l	5 ug/l
1,2-Dichloroethane	<5 ug/l	5 ug/l
Trichloroethene	<5 ug/l	5 ug/l
1,2-Dichloropropane	<5 ug/l	5 ug/l
Bromodichloromethane	<5 ug/l	5 ug/l
cis-1,3-Dichloropropene	<5 ug/l	5 ug/l
4-Methyl-2-Pentanone	<10 ug/l	10 ug/l
Toluene	<5 ug/l	5 ug/l
trans-1,3-Dichloropropene	<5 ug/l	5 ug/l
1,1,2-Trichloroethane	<5 ug/l	5 ug/l
Tetrachloroethene	<5 ug/l	5 ug/l
2-Hexanone	<10 ug/l	10 ug/l
Dibromochloromethane	<5 ug/l	5 ug/l
Chlorobenzene	<5 ug/l	5 ug/l
Ethylbenzene	<5 ug/l	5 ug/l
Xylenes (total)	<5 ug/l	5 ug/l
Styrene	<5 ug/l	5 ug/l

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. Robert Glascok

SAMPLE ID: T-870-MW-7-U-92-HF

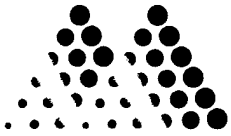
LAB NO: 31786
GROUP NO: 7776
DATE SAMPLED: 06/04/92
TIME SAMPLED: 1440
DATE RECEIVED: 06/04/92
DATE REPORTED: 09/16/92
DISPOSAL DATE: 10/17/92
ANALYSIS DATE: 06/13/92

ANALYSIS: TCL VOLATILES

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
Bromoform	<5 ug/l	5 ug/l
1,1,2,2-Tetrachloroethane	<5 ug/l	5 ug/l

Respectfully submitted,

John G Hayes, B.S.
Supervisor, GCMS Group



Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. Robert Glascok

SAMPLE ID: T-870-MW-27-U-92-HF

LAB NO: 31781
GROUP NO: 7776
DATE SAMPLED: 09/07/92
TIME SAMPLED: 900
DATE RECEIVED: 09/08/92
DATE REPORTED: 09/16/92
DISPOSAL DATE: 10/17/92
ANALYSIS DATE: 09/15/92

ANALYSIS: TCL VOLATILES (SOW - 2/88)

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
Chloromethane	<10 ug/l	10 ug/l
Vinyl Chloride	<10 ug/l	10 ug/l
Bromomethane	<10 ug/l	10 ug/l
Chloroethane	<10 ug/l	10 ug/l
1,1-Dichloroethene	<5 ug/l	5 ug/l
Acetone	<20 ug/l	20 ug/l
Carbon Disulfide	<5 ug/l	5 ug/l
Methylene Chloride	<5 ug/l	5 ug/l
1,1-Dichloroethane	<5 ug/l	5 ug/l
Vinyl Acetate	<5 ug/l	5 ug/l
2-Butanone	<20 ug/l	20 ug/l
1,2-Dichloroethene (total)	<5 ug/l	5 ug/l
Chloroform	<5 ug/l	5 ug/l
1,1,1-Trichloroethane	<5 ug/l	5 ug/l
Carbon Tetrachloride	<5 ug/l	5 ug/l
Benzene	<5 ug/l	5 ug/l
1,2-Dichloroethane	<5 ug/l	5 ug/l
Trichloroethene	<5 ug/l	5 ug/l
1,2-Dichloropropane	<5 ug/l	5 ug/l
Bromodichloromethane	<5 ug/l	5 ug/l
cis-1,3-Dichloropropene	<5 ug/l	5 ug/l
4-Methyl-2-Pentanone	<10 ug/l	10 ug/l
Toluene	<5 ug/l	5 ug/l
trans-1,3-Dichloropropene	<5 ug/l	5 ug/l
1,1,2-Trichloroethane	<5 ug/l	5 ug/l
Tetrachloroethene	<5 ug/l	5 ug/l
2-Hexanone	<10 ug/l	10 ug/l
Dibromochloromethane	<5 ug/l	5 ug/l
Chlorobenzene	<5 ug/l	5 ug/l
Ethylbenzene	<5 ug/l	5 ug/l
Xylenes (total)	<5 ug/l	5 ug/l
Styrene	<5 ug/l	5 ug/l

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. Robert Glascok

SAMPLE ID: T-870-MW-27-U-92-HF

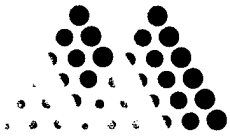
LAB NO: 31781
GROUP NO: 7776
DATE SAMPLED: 06/04/92
TIME SAMPLED: 900
DATE RECEIVED: 06/04/92
DATE REPORTED: 09/16/92
DISPOSAL DATE: 10/17/92
ANALYSIS DATE: 06/13/92

ANALYSIS: TCL VOLATILES

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
Bromoform	<5 ug/l	5 ug/l
1,1,2,2-Tetrachloroethane	<5 ug/l	5 ug/l

Respectfully submitted,

John G Hayes, B.S.
Supervisor, GCMS Group



Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. Bob Glascok

SAMPLE ID: T-870-MW-6U-92-HF

LAB NO: 31658
GROUP NO: 7730
DATE SAMPLED: 09/04/92
TIME SAMPLED: 1110
DATE RECEIVED: 09/04/92
DATE REPORTED: 09/22/92
DISPOSAL DATE: 10/23/92
ANALYSIS DATE: 09/11/92

ANALYSIS: TCL SEMIVOLATILES (SOW - 2/88)

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
N-Nitrosodimethylamine	<20 ug/l	20 ug/l
Phenol	<20 ug/l	20 ug/l
Bis(2-chloroethyl)ether	<20 ug/l	20 ug/l
2-Chlorophenol	<20 ug/l	20 ug/l
1,3-Dichlorobenzene	<20 ug/l	20 ug/l
1,4-Dichlorobenzene	<20 ug/l	20 ug/l
Benzyl Alcohol	<40 ug/l	40 ug/l
1,2-Dichlorobenzene	<20 ug/l	20 ug/l
2-Methylphenol	<20 ug/l	20 ug/l
Bis(2-chloroisopropyl)ether	<20 ug/l	20 ug/l
4-Methylphenol	<20 ug/l	20 ug/l
3- or 4-Methylphenol	<20 ug/l	20 ug/l
Hexachloroethane	<20 ug/l	20 ug/l
n-Nitrosodi-n-propylamine	<20 ug/l	20 ug/l
Nitrobenzene	<20 ug/l	20 ug/l
Isophorone	<20 ug/l	20 ug/l
2,4-Dimethylphenol	<20 ug/l	20 ug/l
2-Nitrophenol	<20 ug/l	20 ug/l
Benzoic Acid	<100 ug/l	100 ug/l
Bis(2-chloroethoxy)methane	<20 ug/l	20 ug/l
2,4-Dichlorophenol	<20 ug/l	20 ug/l
1,2,4-Trichlorobenzene	<20 ug/l	20 ug/l
Naphthalene	<20 ug/l	20 ug/l
4-Chloroaniline	<40 ug/l	40 ug/l
Hexachlorobutadiene	<20 ug/l	20 ug/l
4-Chloro-3-Methylphenol	<20 ug/l	20 ug/l
2-Methylnaphthalene	<20 ug/l	20 ug/l
Hexachlorocyclopentadiene	<20 ug/l	20 ug/l
2,4,6-Trichlorophenol	<20 ug/l	20 ug/l
2,4,5-Trichlorophenol	<20 ug/l	20 ug/l
2-Chloronaphthalene	<20 ug/l	20 ug/l
2-Nitroaniline	<100 ug/l	100 ug/l

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. Bob Glascok

SAMPLE ID: T-870-MW-6U-92-HF

ANALYSIS: TCL SEMIVOLATILES (SOW - 2/88)

LAB NO: 31658
GROUP NO: 7730
DATE SAMPLED: 09/04/92
TIME SAMPLED: 1110
DATE RECEIVED: 09/04/92
DATE REPORTED: 09/22/92
DISPOSAL DATE: 10/23/92
ANALYSIS DATE: 09/11/92

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
2,6-Dinitrotoluene	<20 ug/l	20 ug/l
Acenaphthylene	<20 ug/l	20 ug/l
3-Nitroaniline	<100 ug/l	100 ug/l
2,4-Dinitrophenol	<100 ug/l	100 ug/l
Acenaphthene	<20 ug/l	20 ug/l
4-Nitrophenol	<100 ug/l	100 ug/l
2,4-Dinitrotoluene	<20 ug/l	20 ug/l
Dibenzofuran	<20 ug/l	20 ug/l
Diethylphthalate	<20 ug/l	20 ug/l
4-Chlorophenyl phenyl ether	<20 ug/l	20 ug/l
Fluorene	<20 ug/l	20 ug/l
4-Nitroaniline	<40 ug/l	40 ug/l
4,6-Dinitro-2-methylphenol	<100 ug/l	100 ug/l
n-Nitrosodiphenylamine	<20 ug/l	20 ug/l
4-Bromophenyl phenyl ether	<20 ug/l	20 ug/l
Hexachlorobenzene	<20 ug/l	20 ug/l
Pentachlorophenol	<100 ug/l	100 ug/l
Phenanthrene	<20 ug/l	20 ug/l
Anthracene	<20 ug/l	20 ug/l
Carbazole	<20 ug/l	20 ug/l
Di-n-butylphthalate	<20 ug/l	20 ug/l
Fluoranthene	<20 ug/l	20 ug/l
Pyrene	<20 ug/l	20 ug/l
Butylbenzylphthalate	<20 ug/l	20 ug/l
Bis(2-ethylhexyl)phthalate	<20 ug/l	20 ug/l
3,3'-Dichlorobenzidine	<40 ug/l	40 ug/l
Benzo(a)anthracene	<20 ug/l	20 ug/l
Chrysene	<20 ug/l	20 ug/l
Di-n-octyl phthalate	<20 ug/l	20 ug/l
Benzo(b)fluoranthene	<20 ug/l	20 ug/l
Benzo(k)fluoranthene	<20 ug/l	20 ug/l

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. Bob Glascok

SAMPLE ID: T-870-MW-6U-92-HF

ANALYSIS: TCL SEMIVOLATILES (SOW - 2/88)

LAB NO:	31658
GROUP NO:	7730
DATE SAMPLED:	09/04/92
TIME SAMPLED:	1110
DATE RECEIVED:	09/04/92
DATE REPORTED:	09/22/92
DISPOSAL DATE:	10/23/92
ANALYSIS DATE:	09/11/92

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
Benzo(a)pyrene	<20 ug/l	20 ug/l
Indeno(1,2,3-c,d)pyrene	<20 ug/l	20 ug/l
Dibenz(a,h)anthracene	<20 ug/l	20 ug/l
Benzo(g,h,i)perylene	<20 ug/l	20 ug/l

Respectfully submitted,

John G. Hayes, B.S.
GCMS Group Leader

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. Bob Glascok

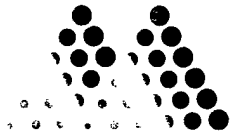
SAMPLE ID: T-870-MW-7-U-92-HF

LAB NO: 31787
GROUP NO: 7776
DATE SAMPLED: 09/07/92
TIME SAMPLED: 1445
DATE RECEIVED: 09/08/92
DATE REPORTED: 09/16/92
DISPOSAL DATE: 10/17/92
ANALYSIS DATE: 09/11/92

ANALYSIS: TCL SEMIVOLITILES (SOW - 2/88)

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
N-Nitrosodimethylamine	<20 ug/l	20 ug/l
Phenol	<20 ug/l	20 ug/l
Bis(2-chloroethyl)ether	<20 ug/l	20 ug/l
2-Chlorophenol	<20 ug/l	20 ug/l
1,3-Dichlorobenzene	<20 ug/l	20 ug/l
1,4-Dichlorobenzene	<20 ug/l	20 ug/l
Benzyl Alcohol	<40 ug/l	40 ug/l
1,2-Dichlorobenzene	<20 ug/l	20 ug/l
2-Methylphenol	<20 ug/l	20 ug/l
Bis(2-chloroisopropyl)ether	<20 ug/l	20 ug/l
4-Methylphenol	<20 ug/l	20 ug/l
3- or 4-Methylphenol	<20 ug/l	20 ug/l
Hexachloroethane	<20 ug/l	20 ug/l
n-Nitrosodi-n-propylamine	<20 ug/l	20 ug/l
Nitrobenzene	<20 ug/l	20 ug/l
Isophorone	<20 ug/l	20 ug/l
2,4-Dimethylphenol	<20 ug/l	20 ug/l
2-Nitrophenol	<20 ug/l	20 ug/l
Benzoic Acid	<100 ug/l	100 ug/l
Bis(2-chloroethoxy)methane	<20 ug/l	20 ug/l
2,4-Dichlorophenol	<20 ug/l	20 ug/l
1,2,4-Trichlorobenzene	<20 ug/l	20 ug/l
Naphthalene	<20 ug/l	20 ug/l
4-Chloroaniline	<40 ug/l	40 ug/l
Hexachlorobutadiene	<20 ug/l	20 ug/l
4-Chloro-3-Methylphenol	<20 ug/l	20 ug/l
2-Methylnaphthalene	<20 ug/l	20 ug/l
Hexachlorocyclopentadiene	<20 ug/l	20 ug/l
2,4,6-Trichlorophenol	<20 ug/l	20 ug/l
2,4,5-Trichlorophenol	<20 ug/l	20 ug/l
2-Chloronaphthalene	<20 ug/l	20 ug/l
2-Nitroaniline	<100 ug/l	100 ug/l

-Continued-



Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. Bob Glascok

SAMPLE ID: T-870-MW-7-U-92-HF

ANALYSIS: PP GC/MS BN Ex. 8270

LAB NO: 31787
GROUP NO: 7776
DATE SAMPLED: 09/07/92
TIME SAMPLED: 1445
DATE RECEIVED: 09/08/92
DATE REPORTED: 09/16/92
DISPOSAL DATE: 10/17/92
ANALYSIS DATE: 09/11/92

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
2,6-Dinitrotoluene	<20 ug/l	20 ug/l
Acenaphthylene	<20 ug/l	20 ug/l
3-Nitroaniline	<100 ug/l	100 ug/l
2,4-Dinitrophenol	<100 ug/l	100 ug/l
Acenaphthene	<20 ug/l	20 ug/l
4-Nitrophenol	<100 ug/l	100 ug/l
2,4-Dinitrotoluene	<20 ug/l	20 ug/l
Dibenzofuran	<20 ug/l	20 ug/l
Diethylphthalate	<20 ug/l	20 ug/l
4-Chlorophenyl phenyl ether	<20 ug/l	20 ug/l
Fluorene	<20 ug/l	20 ug/l
4-Nitroaniline	<40 ug/l	40 ug/l
4,6-Dinitro-2-methylphenol	<100 ug/l	100 ug/l
n-Nitrosodiphenylamine	<20 ug/l	20 ug/l
4-Bromophenyl phenyl ether	<20 ug/l	20 ug/l
Hexachlorobenzene	<20 ug/l	20 ug/l
Pentachlorophenol	<100 ug/l	100 ug/l
Phenanthrene	<20 ug/l	20 ug/l
Anthracene	<20 ug/l	20 ug/l
Carbazole	<20 ug/l	20 ug/l
Di-n-butylphthalate	<20 ug/l	20 ug/l
Fluoranthene	<20 ug/l	20 ug/l
Pyrene	<20 ug/l	20 ug/l
Butylbenzylphthalate	<20 ug/l	20 ug/l
Bis(2-ethylhexyl)phthalate	<20 ug/l	20 ug/l
3,3'-Dichlorobenzidine	<40 ug/l	40 ug/l
Benzo(a)anthracene	<20 ug/l	20 ug/l
Chrysene	<20 ug/l	20 ug/l
Di-n-octyl phthalate	<20 ug/l	20 ug/l
Benzo(b)fluoranthene	<20 ug/l	20 ug/l
Benzo(k)fluoranthene	<20 ug/l	20 ug/l

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. Bob Glascok

SAMPLE ID: T-870-MW-7-U-92-HF

ANALYSIS: PP GC/MS BN Ex. 8270

LAB NO:	31787
GROUP NO:	7776
DATE SAMPLED:	09/07/92
TIME SAMPLED:	1445
DATE RECEIVED:	09/08/92
DATE REPORTED:	09/16/92
DISPOSAL DATE:	10/17/92
ANALYSIS DATE:	09/11/92

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
Benzo(a)pyrene	<20 ug/l	20 ug/l
Indeno(1,2,3-c,d)pyrene	<20 ug/l	20 ug/l
Dibenz(a,h)anthracene	<20 ug/l	20 ug/l
Benzo(g,h,i)perylene	<20 ug/l	20 ug/l

Respectfully submitted,

John G. Hayes, B.S.
GCMS Group Leader

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. Bob Glascok

SAMPLE ID: T-870-MW-27-U-92-HF

LAB NO: 31782
GROUP NO: 7776
DATE SAMPLED: 09/07/92
TIME SAMPLED: 905
DATE RECEIVED: 09/08/92
DATE REPORTED: 09/30/92
DISPOSAL DATE: 10/31/92
ANALYSIS DATE: 09/11/92

ANALYSIS: TCL SEMIVOLITILES (SOW - 2/88)

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
N-Nitrosodimethylamine	<20 ug/l	20 ug/l
Phenol	<20 ug/l	20 ug/l
Bis(2-chloroethyl)ether	<20 ug/l	20 ug/l
2-Chlorophenol	<20 ug/l	20 ug/l
1,3-Dichlorobenzene	<20 ug/l	20 ug/l
1,4-Dichlorobenzene	<20 ug/l	20 ug/l
Benzyl Alcohol	<40 ug/l	40 ug/l
1,2-Dichlorobenzene	<20 ug/l	20 ug/l
2-Methylphenol	<20 ug/l	20 ug/l
Bis(2-chloroisopropyl)ether	<20 ug/l	20 ug/l
4-Methylphenol	<20 ug/l	20 ug/l
3- or 4-Methylphenol	<20 ug/l	20 ug/l
Hexachloroethane	<20 ug/l	20 ug/l
n-Nitrosodi-n-propylamine	<20 ug/l	20 ug/l
Nitrobenzene	<20 ug/l	20 ug/l
Isophorone	<20 ug/l	20 ug/l
2,4-Dimethylphenol	<20 ug/l	20 ug/l
2-Nitrophenol	<20 ug/l	20 ug/l
Benzoic Acid	<100 ug/l	100 ug/l
Bis(2-chloroethoxy)methane	<20 ug/l	20 ug/l
2,4-Dichlorophenol	<20 ug/l	20 ug/l
1,2,4-Trichlorobenzene	<20 ug/l	20 ug/l
Naphthalene	<20 ug/l	20 ug/l
4-Chloroaniline	<40 ug/l	40 ug/l
Hexachlorobutadiene	<20 ug/l	20 ug/l
4-Chloro-3-Methylphenol	<20 ug/l	20 ug/l
2-Methylnaphthalene	<20 ug/l	20 ug/l
Hexachlorocyclopentadiene	<20 ug/l	20 ug/l
2,4,6-Trichlorophenol	<20 ug/l	20 ug/l
2,4,5-Trichlorophenol	<20 ug/l	20 ug/l
2-Chloronaphthalene	<20 ug/l	20 ug/l
2-Nitroaniline	<100 ug/l	100 ug/l

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. Bob Glascok

SAMPLE ID: T-870-MW-27-U-92-HF

ANALYSIS: PP GC/MS BN Ex. 8270

LAB NO: 31782
GROUP NO: 7776
DATE SAMPLED: 09/07/92
TIME SAMPLED: 905
DATE RECEIVED: 09/08/92
DATE REPORTED: 09/30/92
DISPOSAL DATE: 10/31/92
ANALYSIS DATE: 09/11/92

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
2,6-Dinitrotoluene	<20 ug/l	20 ug/l
Acenaphthylene	<20 ug/l	20 ug/l
3-Nitroaniline	<100 ug/l	100 ug/l
2,4-Dinitrophenol	<100 ug/l	100 ug/l
Acenaphthene	<20 ug/l	20 ug/l
4-Nitrophenol	<100 ug/l	100 ug/l
2,4-Dinitrotoluene	<20 ug/l	20 ug/l
Dibenzofuran	<20 ug/l	20 ug/l
Diethylphthalate	<20 ug/l	20 ug/l
4-Chlorophenyl phenyl ether	<20 ug/l	20 ug/l
Fluorene	<20 ug/l	20 ug/l
4-Nitroaniline	<40 ug/l	40 ug/l
4,6-Dinitro-2-methylphenol	<100 ug/l	100 ug/l
n-Nitrosodiphenylamine	<20 ug/l	20 ug/l
4-Bromophenyl phenyl ether	<20 ug/l	20 ug/l
Hexachlorobenzene	<20 ug/l	20 ug/l
Pentachlorophenol	<100 ug/l	100 ug/l
Phenanthrene	<20 ug/l	20 ug/l
Anthracene	<20 ug/l	20 ug/l
Carbazole	<20 ug/l	20 ug/l
Di-n-butylphthalate	<20 ug/l	20 ug/l
Fluoranthene	<20 ug/l	20 ug/l
Pyrene	<20 ug/l	20 ug/l
Butylbenzylphthalate	<20 ug/l	20 ug/l
Bis(2-ethylhexyl)phthalate	<20 ug/l	20 ug/l
3,3'-Dichlorobenzidine	<40 ug/l	40 ug/l
Benzo(a)anthracene	<20 ug/l	20 ug/l
Chrysene	<20 ug/l	20 ug/l
Di-n-octyl phthalate	<20 ug/l	20 ug/l
Benzo(b)fluoranthene	<20 ug/l	20 ug/l
Benzo(k)fluoranthene	<20 ug/l	20 ug/l

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. Bob Glascok

SAMPLE ID: T-870-MW-27-U-92-HF

ANALYSIS: PP GC/MS BN Ex. 8270

LAB NO: 31782
GROUP NO: 7776
DATE SAMPLED: 09/07/92
TIME SAMPLED: 905
DATE RECEIVED: 09/08/92
DATE REPORTED: 09/30/92
DISPOSAL DATE: 10/31/92
ANALYSIS DATE: 09/11/92

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
Benzo(a)pyrene	<20 ug/l	20 ug/l
Indeno(1,2,3-c,d)pyrene	<20 ug/l	20 ug/l
Dibenz(a,h)anthracene	<20 ug/l	20 ug/l
Benzo(g,h,i)perylene	<20 ug/l	20 ug/l

Respectfully submitted,

John G. Hayes, B.S.
GCMS Group Leader

Analytical Report

Mountain States Analytical

The Quality Solution

CLIENT: J.M. Mongomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-

ATTN: Mr. Bob Glascok

SAMPLE ID: T-870-MW-6-U-92-HF

LAB NO: 31659
GROUP NO: 7730
DATE SAMPLED: 09/04/92
TIME SAMPLED: 1115
DATE RECEIVED: 09/04/92
DATE REPORTED: 09/14/92
DISPOSAL DATE: 10/14/92

ANALYSIS: PESTICIDES/PCBs by Method 8081.

COMPOUNDS	RESULTS	LIMIT OF QUANTITATION
Alpha BHC	< 0.10 ug/l	0.10 ug/l
Beta BHC	< 0.10 ug/l	0.10 ug/l
Delta BHC	< 0.10 ug/l	0.10 ug/l
Gamma BHC - Lindane	< 0.10 ug/l	0.10 ug/l
Heptachlor	< 0.10 ug/l	0.10 ug/l
Aldrin	< 0.10 ug/l	0.10 ug/l
Heptachlor Epoxide	< 0.10 ug/l	0.10 ug/l
Endosulfan I	< 0.10 ug/l	0.10 ug/l
Dieldrin	< 0.10 ug/l	0.10 ug/l
p,p'-DDE	< 0.10 ug/l	0.10 ug/l
Endrin	< 0.10 ug/l	0.10 ug/l
Endosulfan II	< 0.10 ug/l	0.10 ug/l
p,p'-DDD	< 0.10 ug/l	0.10 ug/l
Endosulfan Sulfate	< 0.10 ug/l	0.10 ug/l
p,p'-DDT	< 0.10 ug/l	0.10 ug/l
Endrin ketone	< 0.10 ug/l	0.10 ug/l
alpha-Chlordane	< 0.10 ug/l	0.10 ug/l
gamma-Chlordane	< 0.10 ug/l	0.10 ug/l
Methoxychlor	< 0.50 ug/l	0.50 ug/l
Toxaphene	< 1.00 ug/l	1.00 ug/l
Aroclor-1016	< 1.00 ug/l	1.00 ug/l
Aroclor-1221	< 1.00 ug/l	1.00 ug/l
Aroclor-1232	< 1.00 ug/l	1.00 ug/l
Aroclor-1242	< 1.00 ug/l	1.00 ug/l
Aroclor-1248	< 1.00 ug/l	1.00 ug/l
Aroclor-1254	< 1.00 ug/l	1.00 ug/l
Aroclor-1260	< 1.00 ug/l	1.00 ug/l

Date Analyzed: 09/11/92

Respectfully submitted,

Kenneth A. Roberts, B.S.
GC Group Leader

1645 West 2200 South, Salt Lake City, Utah 84119 (801) 973-0050 FAX (801) 972-6278

Member: American Council of Independent Laboratories, Inc.

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Mongomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-

ATTN: Mr. Bob Glascok

SAMPLE ID: T-870-MW-7-U-92-HF

LAB NO: 31788
GROUP NO: 7776
DATE SAMPLED: 09/07/92
TIME SAMPLED: 1450
DATE RECEIVED: 09/08/92
DATE REPORTED: 09/14/92
DISPOSAL DATE: 10/14/92

ANALYSIS: PESTICIDES/PCBs by Method 8081.

COMPOUNDS	RESULTS	LIMIT OF QUANTITATION
Alpha BHC	< 0.10 ug/l	0.10 ug/l
Beta BHC	< 0.10 ug/l	0.10 ug/l
Delta BHC	< 0.10 ug/l	0.10 ug/l
Gamma BHC - Lindane	< 0.10 ug/l	0.10 ug/l
Heptachlor	< 0.10 ug/l	0.10 ug/l
Aldrin	< 0.10 ug/l	0.10 ug/l
Heptachlor Epoxide	< 0.10 ug/l	0.10 ug/l
Endosulfan I	< 0.10 ug/l	0.10 ug/l
Dieldrin	< 0.10 ug/l	0.10 ug/l
p,p'-DDE	< 0.10 ug/l	0.10 ug/l
Endrin	< 0.10 ug/l	0.10 ug/l
Endosulfan II	< 0.10 ug/l	0.10 ug/l
p,p'-DDD	< 0.10 ug/l	0.10 ug/l
Endosulfan Sulfate	< 0.10 ug/l	0.10 ug/l
p,p'-DDT	< 0.10 ug/l	0.10 ug/l
Endrin ketone	< 0.10 ug/l	0.10 ug/l
alpha-Chlordane	< 0.10 ug/l	0.10 ug/l
gamma-Chlordane	< 0.10 ug/l	0.10 ug/l
Methoxychlor	< 0.50 ug/l	0.50 ug/l
Toxaphene	< 1.00 ug/l	1.00 ug/l
Aroclor-1016	< 1.00 ug/l	1.00 ug/l
Aroclor-1221	< 1.00 ug/l	1.00 ug/l
Aroclor-1232	< 1.00 ug/l	1.00 ug/l
Aroclor-1242	< 1.00 ug/l	1.00 ug/l
Aroclor-1248	< 1.00 ug/l	1.00 ug/l
Aroclor-1254	< 1.00 ug/l	1.00 ug/l
Aroclor-1260	< 1.00 ug/l	1.00 ug/l

Date Analyzed: 09/11/92

Respectfully submitted,

Kenneth A. Roberts, B.S.
GC Group Leader

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Mongomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-

ATTN: Mr. Bob Glascok

SAMPLE ID: T-870-MW-27-U-92-HF

LAB NO: 31783
GROUP NO: 7776
DATE SAMPLED: 09/07/92
TIME SAMPLED: 910
DATE RECEIVED: 09/08/92
DATE REPORTED: 09/14/92
DISPOSAL DATE: 10/14/92

ANALYSIS: PESTICIDES/PCBs by Method 8081.

COMPOUNDS	RESULTS	LIMIT OF QUANTITATION
Alpha BHC	< 0.10 ug/l	0.10 ug/l
Beta BHC	< 0.10 ug/l	0.10 ug/l
Delta BHC	< 0.10 ug/l	0.10 ug/l
Gamma BHC - Lindane	< 0.10 ug/l	0.10 ug/l
Heptachlor	< 0.10 ug/l	0.10 ug/l
Aldrin	< 0.10 ug/l	0.10 ug/l
Heptachlor Epoxide	< 0.10 ug/l	0.10 ug/l
Endosulfan I	< 0.10 ug/l	0.10 ug/l
Dieldrin	< 0.10 ug/l	0.10 ug/l
p,p'-DDE	< 0.10 ug/l	0.10 ug/l
Endrin	< 0.10 ug/l	0.10 ug/l
Endosulfan II	< 0.10 ug/l	0.10 ug/l
p,p'-DDD	< 0.10 ug/l	0.10 ug/l
Endosulfan Sulfate	< 0.10 ug/l	0.10 ug/l
p,p'-DDT	< 0.10 ug/l	0.10 ug/l
Endrin ketone	< 0.10 ug/l	0.10 ug/l
alpha-Chlordane	< 0.10 ug/l	0.10 ug/l
gamma-Chlordane	< 0.10 ug/l	0.10 ug/l
Methoxychlor	< 0.50 ug/l	0.50 ug/l
Toxaphene	< 1.00 ug/l	1.00 ug/l
Aroclor-1016	< 1.00 ug/l	1.00 ug/l
Aroclor-1221	< 1.00 ug/l	1.00 ug/l
Aroclor-1232	< 1.00 ug/l	1.00 ug/l
Aroclor-1242	< 1.00 ug/l	1.00 ug/l
Aroclor-1248	< 1.00 ug/l	1.00 ug/l
Aroclor-1254	< 1.00 ug/l	1.00 ug/l
Aroclor-1260	< 1.00 ug/l	1.00 ug/l

Date Analyzed: 09/11/92

Respectfully submitted,

Kenneth A. Roberts, B.S.
GC Group Leader

MONTGOMERY LABORATORIES

CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
2208.0403	UST Site 870

SAMPLERS: (Signature) [illegible] (CAC)

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	ANALYSIS: VOAs TCL	S-VOAs TCL	Pest/PCB TCL	Metals TAL	CN - TAL	REMARKS
	9/7/92	0900		✓	T-870-MW-27-U-92-HF	2-40ml	✓					
		0905		✓	T-870-MW-27-U-92-HF	3-1l		✓				
		0910		✓	T-870-MW-27-U-92-HF	2-1l			✓			
		0915		✓	T-870-MW-27-U-92-HF	1-1l				✓		
		0918		✓	T-870-MW-27-U-92-HF	1-1l					✓	
		1440		✓	T-870-MW-7-U-92 HF	2-40ml	✓					
		1445		✓	T-870-MW-7-U-92-HF	3-1l		✓				
		1450		✓	T-870-MW-7-U-92 HF	2-1l			✓			
		1455		✓	T-870-MW-7-U-92-HF	1-1l				✓		
		1457		✓	T-870-MW-7-U-92-HF	1-1l					✓	

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[illegible]	9/8/92 0745	[illegible]			
RELINQUISHED BY: (SIGNATURE) [illegible]	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS	

Mountain States Analytical

The Quality Solution

*** INVOICE ***

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-

INVOICE NO: 7776
Invoice Date: 09/28/92
Date Samples Rec'd: 09/08/92
P.O. Number:

ATTN: Mr. Robert Glascok
PROJECT: 2208.0402 UST Site 870

LAB NO	SAMPLE DATE	SAMP TIME	SAMPLE DESCRIPTION	ANALYSES PERFORMED	RUSH CRG%	FEE
31781	09/07/92	900	T-870-MW-27-U-92-HF	Volatiles, (TCL) w/ww		229.50
31782	09/07/92	905	T-870-MW-27-U-92-HF	Semi-Volatile TCL w/ww		459.00
31783	09/07/92	910	T-870-MW-27-U-92-HF	Pesticides/PCBs TCL w/ww		246.50
31784	09/07/92	915	T-870-MW-27-U-92-HF	Aluminum, FAA w/ww		11.90
				Antimony, FAA w/ww		11.90
				Arsenic, GFAA w/ww		25.50
				Barium, FAA w/ww		11.90
				Beryllium, FAA w/ww		11.90
				Cadmium, FAA w/ww		11.90
				Calcium, FAA w/ww		11.90
				Chromium, FAA w/ww		11.90
				Cobalt, FAA w/ww		11.90
				Copper, FAA w/ww		11.90
				Iron, FAA w/ww		11.90
				Lead, Total GFAA w/ww		25.50
				Magnesium, FAA w/ww		11.90
				Manganese, FAA w/ww		11.90
				Mercury Prep. CV		0.00
				Mercury, CVAA w/ww		21.25
				Metals Prep. GFAA		0.00
				Metals Digestion w/ww		12.75
				Metals Prep. FAA		0.00
				Nickel, FAA w/ww		11.90
				Potassium, FAA w/ww		11.90
				Selenium, GFAA w/ww		25.50
				Silver, FAA w/ww		11.90
				Sodium, FAA w/ww		11.90
				Thallium, GFAA w/ww		34.00
				Vanadium, FAA w/ww		11.90
				Zinc, FAA w/ww		11.90
31785	09/07/92	918	T-870-MW-27-U-92-HF	Cyanide, Total w/ww		46.75
31786	09/07/92	1440	T-870-MW-7-U-92-HF	Volatiles, (TCL) w/ww		229.50
31787	09/07/92	1445	T-870-MW-7-U-92-HF	Semi-Volatile TCL w/ww		459.00

Mountain States Analytical

The Quality Solution

31788 09/07/92 1450 T-870-MW-7-U-92-HF	Pesticides/PCBs TCL w/ww	246.50
31789 09/07/92 1455 T-870-MW-7-U-92-HF	Aluminum, FAA w/ww	11.90
	Antimony, FAA w/ww	11.90
	Arsenic, GFAA w/ww	25.50
	Barium, FAA w/ww	11.90
	Beryllium, FAA w/ww	11.90
	Cadmium, FAA w/ww	11.90
	Calcium, FAA w/ww	11.90
	Chromium, FAA w/ww	11.90
	Cobalt, FAA w/ww	11.90
	Copper, FAA w/ww	11.90
	Iron, FAA w/ww	11.90
	Lead, Total GFAA w/ww	25.50
	Magnesium, FAA w/ww	11.90
	Manganese, FAA w/ww	11.90
	Mercury Prep. CV	0.00
	Mercury, CVAA w/ww	21.25
	Metals Prep. GFAA	0.00
	Metals Digestion w/ww	12.75
	Metals Prep. FAA	0.00
	Nickel, FAA w/ww	11.90
	Potassium, FAA w/ww	11.90
	Selenium, GFAA w/ww	25.50
	Silver, FAA w/ww	11.90
	Sodium, FAA w/ww	11.90
	Thallium, GFAA w/ww	34.00
	Vanadium, FAA w/ww	11.90
	Zinc, FAA w/ww	11.90
31790 09/07/92 1457 T-870-MW-7-U-92-HF	Cyanide, Total w/ww	46.75

Reviewed and Approved:

Total Due: $ 2680.90

1645 West 2200 South, Salt Lake City, Utah 84119 (801) 973-0050 FAX (801) 972-6278

Tax Id# 87-0437861

MONTGOMERY LABORATORIES

CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
2208.0402	UST Site 870

SAMPLERS: (Signature) Robert L. Shuff (RLS)

ANALYSIS — USE 1 COLUMN PER BOTTLE

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TCL VOA *	TCL S-VOA	TCL Pest/PCB	TAL Metals	TAL Cn-	REMARKS
	9/1/92	1105		✓	T-870-MW-6-U-92-HF	2-40ml	✓					* Note VOAs preserved strongly w/ the acid.
		1110		✓	T-870-MW-6-U-92-HF	3-1l		✓				
		1115		✓	T-870-MW-6-U-92-HF	2-1l			✓			
		1120		✓	T-870-MW-6-U-92-HF	1-1l				✓		
		1123		✓	T-870-MW-6-U-92-HF	1-1l					✓	

TCL

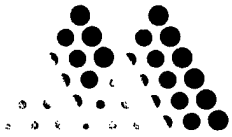
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
Robert L. Shuff	9/1/92 1335	Jeff Eaton 9/4/92 1:40			
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS	

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-
Phone: 801-272-1900 801-272-0430 (FAX)
ATTN: Mr. Bob Glascok
Project: 2208.0402 UST Site 870

Date Samples Rec'd: 09/04/92
MSAI Group No.: 7730
Sample Matrix: Aqueous
Report Date: 09/28/92
P.O. Number:

LAB SAMPLE NO.	DATE	SAMP TIME	SAMPLE DESCRIPTION	ANALYSES PERFORMED	RESULT
31657	09/04/92	1105	T-870-MW-6-U-92-HF	Volatiles, (TCL) w/ww	See Attach ---
31658	09/04/92	1110	T-870-MW-6-U-92-HF	Semi-Volatile TCL w/ww	See Attach ---
31659	09/04/92	1115	T-870-MW-6-U-92-HF	Pesticides/PCBs TCL w/w	See Attach ---
31660	09/04/92	1120	T-870-MW-6-U-92-HF	Aluminum, FAA w/ww	1.43 mg/l
				Antimony, FAA w/ww	<0.25 mg/l
				Arsenic, GFAA w/ww	<0.010 mg/l
				Barium, FAA w/ww	0.71 mg/l
				Beryllium, FAA w/ww	<0.005 mg/l
				Cadmium, FAA w/ww	<0.005 mg/l
				Calcium, FAA w/ww	412 mg/l
				Chromium, FAA w/ww	<0.05 mg/l
				Cobalt, FAA w/ww	<0.05 mg/l
				Copper, FAA w/ww	0.02 mg/l
				Iron, FAA w/ww	1.43 mg/l
				Lead, Total GFAA w/ww	<0.05 mg/l
				Magnesium, FAA w/ww	84 mg/l
				Manganese, FAA w/ww	1.62 mg/l
				Mercury Prep. CV	Complete ---
				Mercury, CVAA w/ww	<0.0005 mg/l
				Metals Prep. GFAA	Complete ---
				Metals Digestion w/ww	Complete ---
				Metals Prep. FAA	Complete ---
				Nickel, FAA w/ww	<0.04 mg/l
				Potassium, FAA w/ww	3.95 mg/l
				Selenium, GFAA w/ww	0.008 mg/l
				Silver, FAA w/ww	<0.01 mg/l
				Sodium, FAA w/ww	703 mg/l
				Thallium, Total GFAA w/	<0.1 mg/l
				Vanadium, FAA w/ww	0.07 mg/l
				Zinc, FAA w/ww	0.06 mg/l



Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-
Phone: 801-272-1900 801-272-0430 (FAX)
ATTN: Mr. Bob Glascok
Project: 2208.0402 UST Site 870

Date Samples Rec'd: 09/04/92
MSAI Group No.: 7730
Sample Matrix: Aqueous
Report Date: 09/28/92
P.O. Number:

LAB SAMPLE NO.	SAMP DATE	SAMP TIME	SAMPLE DESCRIPTION	ANALYSES PERFORMED	RESULT
31661	09/04/92	1123	T-870-MW-6-U-92-HF	Cyanide, Total w/ww	<0.005 mg/l

Respectfully submitted,

Douglas W. Later, Ph.D.
Laboratory Director

Glenn A. Sorensen, B.S.
Manager, Technical Operations

Analytical Report

Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-
Phone: 801-272-1900 801-272-0430 (FAX)
ATTN: Mr. Robert Glascok
Project: 2208.0402 UST Site 870

Date Samples Rec'd: 09/08/92
MSAI Group No.: 7776
Sample Matrix: Aqueous
Report Date: 09/28/92
P.O. Number:

LAB NO.	SAMPLE DATE	SAMP TIME	SAMPLE DESCRIPTION	ANALYSES PERFORMED	RESULT
31781	09/07/92	900	T-870-MW-27-U-92-HF	Volatiles, (TCL) w/ww	See Attach ---
31782	09/07/92	905	T-870-MW-27-U-92-HF	Semi-Volatile TCL w/ww	See Attach ---
31783	09/07/92	910	T-870-MW-27-U-92-HF	Pesticides/PCBs TCL w/w	See Attach ---
31784	09/07/92	915	T-870-MW-27-U-92-HF	Aluminum, FAA w/ww	26.1 mg/l
				Antimony, FAA w/ww	<0.25 mg/l
				Arsenic, GFAA w/ww	<0.010 mg/l
				Barium, FAA w/ww	0.19 mg/l
				Beryllium, FAA w/ww	<0.005 mg/l
				Cadmium, FAA w/ww	<0.005 mg/l
				Calcium, FAA w/ww	225 mg/l
				Chromium, FAA w/ww	0.07 mg/l
				Cobalt, FAA w/ww	0.05 mg/l
				Copper, FAA w/ww	0.05 mg/l
				Iron, FAA w/ww	67.8 mg/l
				Lead, Total GFAA w/ww	<0.04 mg/l
				Magnesium, FAA w/ww	45 mg/l
				Manganese, FAA w/ww	1.13 mg/l
				Mercury Prep. CV	Complete ---
				Mercury, CVAA w/ww	<0.0005 mg/l
				Metals Prep. GFAA	Complete ---
				Metals Digestion w/ww	Complete ---
				Metals Prep. FAA	Complete ---
				Nickel, FAA w/ww	0.05 mg/l
				Potassium, FAA w/ww	0.513 mg/l
				Selenium, GFAA w/ww	<0.005 mg/l
				Silver, FAA w/ww	<0.01 mg/l
				Sodium, FAA w/ww	455 mg/l
				Thallium, GFAA w/ww	<0.002 mg/l
				Vanadium, FAA w/ww	0.15 mg/l
				Zinc, FAA w/ww	0.23 mg/l
31785	09/07/92	918	T-870-MW-27-U-92-HF	Cyanide, Total w/ww	<0.005 mg/l
31786	09/07/92	1440	T-870-MW-7-U-92-HF	Volatiles, (TCL) w/ww	See Attach ---
31787	09/07/92	1445	T-870-MW-7-U-92-HF	Semi-Volatile TCL w/ww	See Attach ---

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-

Date Samples Rec'd: 09/08/92
MSAI Group No.: 7776

ATTN: Mr. Robert Glascok
Project: 2208.0402 UST Site 870

LAB SAMPLE NO.	SAMP DATE	TIME	SAMPLE DESCRIPTION	ANALYSES PERFORMED	RESULT
31788	09/07/92	1450	T-870-MW-7-U-92-HF	Pesticides/PCBs TCL w/w See Attach	---
31789	09/07/92	1455	T-870-MW-7-U-92-HF	Aluminum, FAA w/ww	33.6 mg/l
				Antimony, FAA w/ww	<0.25 mg/l
				Arsenic, GFAA w/ww	<0.010 mg/l
				Barium, FAA w/ww	0.20 mg/l
				Beryllium, FAA w/ww	<0.005 mg/l
				Cadmium, FAA w/ww	<0.005 mg/l
				Calcium, FAA w/ww	267 mg/l
				Chromium, FAA w/ww	0.13 mg/l
				Cobalt, FAA w/ww	0.05 mg/l
				Copper, FAA w/ww	0.07 mg/l
				Iron, FAA w/ww	75.4 mg/l
				Lead, Total GFAA w/ww	<0.04 mg/l
				Magnesium, FAA w/ww	55 mg/l
				Manganese, FAA w/ww	1.36 mg/l
				Mercury Prep. CV	Complete ---
				Mercury, CVAA w/ww	<0.0005 mg/l
				Metals Prep. GFAA	Complete ---
				Metals Digestion w/ww	Complete ---
				Metals Prep. FAA	Complete ---
				Nickel, FAA w/ww	0.05 mg/l
				Potassium, FAA w/ww	0.509 mg/l
				Selenium, GFAA w/ww	<0.005 mg/l
				Silver, FAA w/ww	<0.01 mg/l
				Sodium, FAA w/ww	456 mg/l
				Thallium, GFAA w/ww	<0.002 mg/l
				Vanadium, FAA w/ww	0.25 mg/l
				Zinc, FAA w/ww	0.29 mg/l
31790	09/07/92	1457	T-870-MW-7-U-92-HF	Cyanide, Total w/ww	<0.005 mg/l

Respectfully submitted,

Douglas W. Later, Ph.D.
Laboratory Director

Glenn A. Sorensen, B.S.
Manager, Technical Operations

Analytical Report

Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-
Phone: 801-272-1900 801-272-0430 (FAX)
ATTN: Mr. David Fulton
Project: HAFB UST Site 870

Date Samples Rec'd: 10/02/92
MSAI Group No.: 8810
Sample Matrix: Aqueous
Report Date: 10/20/92
P.O. Number: 2208.0402

LAB SAMPLE NO.	SAMP DATE	SAMP TIME	SAMPLE DESCRIPTION	ANALYSES PERFORMED	RESULT
34822	09/30/92	1000	CPT-7	PP Volatiles 8240 GCMS	See Attach ---
34823	09/30/92	1320	T-870-5-MW-U-92-HF	PP Volatiles 8240 GCMS	See Attach ---
34824	09/30/92	1100	T-870-27-MW-U-92-HF	PP Volatiles 8240 GCMS	See Attach ---
34825	09/30/92	1325	T-870-11-MW-U-92-HF	PP Volatiles 8240 GCMS	See Attach ---
34826	10/01/92	1200	T-870-12-MW-U-92-HF	PP Volatiles 8240 GCMS	See Attach ---
34827	10/01/92	1500	T-870-10-MW-U-92-HF	PP Volatiles 8240 GCMS	See Attach ---
34828	10/01/92	0	Trip Blank	PP Volatiles 8240 GCMS	See Attach ---

Respectfully submitted,

for

Douglas W. Later, Ph.D.
Laboratory Director

Glenn A. Sorensen, B.S.
Manager, Technical Operations

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S. Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. David Fulton

SAMPLE ID: CPT-7

LAB NO: 34822
GROUP NO: 8810
DATE SAMPLED: 09/30/92
TIME SAMPLED: 1000
DATE RECEIVED: 10/02/92
DATE REPORTED: 10/21/92
DISPOSAL DATE: 11/20/92
ANALYSIS DATE: 10/09/92

ANALYSIS: Priority Pollutants by GCMS (Volatiles)
EPA Method SW-846 8240

COMPOUNDS	FINAL RESULTS		QUANTITATION LIMIT
Chloromethane	* 71 ug/l		50 ug/l
Vinyl Chloride	<500 ug/l		500 ug/l
Bromomethane	<500 ug/l		500 ug/l
Chloroethane	<500 ug/l		500 ug/l
Trichlorofluoromethane	<250 ug/l		250 ug/l
Acrolein	<5,00ug/l		5,000 ug/l
1,1-Dichloroethene	<250 ug/l		250 ug/l
Methylene Chloride	<250 ug/l		250 ug/l
Acrylonitrile	<5,00ug/l		5,000 ug/l
1,1-Dichloroethane	<250 ug/l		250 ug/l
1,2-Dichloroethene (total)	<250 ug/l		250 ug/l
Chloroform	<250 ug/l		250 ug/l
1,1,1-Trichloroethane	<250 ug/l		250 ug/l
Carbon Tetrachloride	<250 ug/l		250 ug/l
Benzene	680 ug/l		250 ug/l
1,2-Dichloroethane	<250 ug/l		250 ug/l
Trichloroethene	<250 ug/l		250 ug/l
1,2-Dichloropropane	<250 ug/l		250 ug/l
Bromodichloromethane	<250 ug/l		250 ug/l
2-Chloroethylvinyl ether	<500 ug/l		500 ug/l
cis-1,3-Dichloropropene	<250 ug/l		250 ug/l
Toluene	* 34 ug/l	J	50 ug/l
trans-1,3-Dichloropropene	<250 ug/l		250 ug/l
1,1,2-Trichloroethane	<250 ug/l		250 ug/l
Tetrachloroethene	* <50 ug/l		50 ug/l
Dibromochloromethane	<250 ug/l		250 ug/l
Chlorobenzene	<250 ug/l		250 ug/l
Ethylbenzene	1,400ug/l		250 ug/l
Xylenes (Total)	5,700ug/l		250 ug/l

J - estimated value

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S. Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. David Fulton

SAMPLE ID: CPT-7

LAB NO:	34822
GROUP NO:	8810
DATE SAMPLED:	09/30/92
TIME SAMPLED:	1000
DATE RECEIVED:	10/02/92
DATE REPORTED:	10/21/92
DISPOSAL DATE:	11/20/92
ANALYSIS DATE:	10/09/92

ANALYSIS: Priority Pollutants by GCMS (Volatiles)
EPA Method SW-846 8240

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
Bromoform	<250 ug/l	250 ug/l
1,1,2,2-Tetrachloroethane	* <50 ug/l	50 ug/l

Comment: Due to the sample matrix and level of target compounds, dilution was required. The limits of quantitation were raised accordingly. In an attempt to acheive lower detection limits for Tetrachloroethene, the sample was rerun at lower dilutions. A 5.0 ml portion could not be performed due to the excessive signal. A 1.0 ml aliquot was performed and Tetrachloroethene was not detected. The "*" compounds are from the 1.0 ml analysis. The 1.0 ml analysis was performed outside of holding time.

Respectfully submitted,

John G. Hayes, B.S.
Supervisor, GCMS Group

Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S. Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. David Fulton

SAMPLE ID: T-870-5-MW-U-92-HF

LAB NO: 34823
GROUP NO: 8810
DATE SAMPLED: 09/30/92
TIME SAMPLED: 1320
DATE RECEIVED: 10/02/92
DATE REPORTED: 10/21/92
DISPOSAL DATE: 11/20/92
ANALYSIS DATE: 10/09/92

ANALYSIS: Priority Pollutants by GCMS (Volatiles)
EPA Method SW-846 8240

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
Chloromethane	J 4 ug/l	10 ug/l
Vinyl Chloride	<100 ug/l	100 ug/l
Bromomethane	<100 ug/l	100 ug/l
Chloroethane	<100 ug/l	100 ug/l
Trichlorofluoromethane	<50 ug/l	50 ug/l
Acrolein	<1,000 ug/l	1,000 ug/l
1,1-Dichloroethene	<50 ug/l	50 ug/l
Methylene Chloride	<50 ug/l	50 ug/l
Acrylonitrile	<1,000 ug/l	1,000 ug/l
1,1-Dichloroethane	<50 ug/l	50 ug/l
1,2-Dichloroethene (total)	<50 ug/l	50 ug/l
Chloroform	<50 ug/l	50 ug/l
1,1,1-Trichloroethane	<50 ug/l	50 ug/l
Carbon Tetrachloride	<50 ug/l	50 ug/l
Benzene	74 ug/l	50 ug/l
1,2-Dichloroethane	<50 ug/l	50 ug/l
Trichloroethene	<50 ug/l	50 ug/l
1,2-Dichloropropane	<50 ug/l	50 ug/l
Bromodichloromethane	<50 ug/l	50 ug/l
2-Chloroethylvinyl ether	<100 ug/l	100 ug/l
cis-1,3-Dichloropropene	<50 ug/l	50 ug/l
Toluene	<50 ug/l	50 ug/l
trans-1,3-Dichloropropene	<50 ug/l	50 ug/l
1,1,2-Trichloroethane	<50 ug/l	50 ug/l
Tetrachloroethene	J 2 ug/l	5 ug/l
Dibromochloromethane	<50 ug/l	50 ug/l
Chlorobenzene	<50 ug/l	50 ug/l
Ethylbenzene	160 ug/l	50 ug/l
Xylenes (Total)	900 ug/l	50 ug/l

J - Estimated Value

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S. Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. David Fulton

SAMPLE ID: T-870-5-MW-U-92-HF

LAB NO:	34823
GROUP NO:	8810
DATE SAMPLED:	09/30/92
TIME SAMPLED:	1320
DATE RECEIVED:	10/02/92
DATE REPORTED:	10/21/92
DISPOSAL DATE:	11/20/92
ANALYSIS DATE:	10/09/92

ANALYSIS: Priority Pollutants by GCMS (Volatiles)
EPA Method SW-846 8240

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
Bromoform	<50 ug/l	50 ug/l
1,1,2,2-Tetrachloroethane	<50 ug/l	50 ug/l

Comment: Due to the matrix and level of target compounds in the sample, dilution was required. The limits of quantation were raised accordingly. The compounds which are reported with "J" values were taken from the original 5.0 ml analysis.

Respectfully submitted,

John G. Hayes, B.S.
Supervisor, GCMS Group

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S. Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. David Fulton

SAMPLE ID: T-870-27-MW-U-92-HF

LAB NO: 34824
GROUP NO: 8810
DATE SAMPLED: 09/30/92
TIME SAMPLED: 1100
DATE RECEIVED: 10/02/92
DATE REPORTED: 10/21/92
DISPOSAL DATE: 11/20/92
ANALYSIS DATE: 10/09/92

ANALYSIS: Priority Pollutants by GCMS (Volatiles)
EPA Method SW-846 8240

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
Chloromethane	<100 ug/l	100 ug/l
Vinyl Chloride	<100 ug/l	100 ug/l
Bromomethane	<100 ug/l	100 ug/l
Chloroethane	<100 ug/l	100 ug/l
Trichlorofluoromethane	<50 ug/l	50 ug/l
Acrolein	<1,000 ug/l	1,000 ug/l
1,1-Dichloroethene	<50 ug/l	50 ug/l
Methylene Chloride	<50 ug/l	50 ug/l
Acrylonitrile	<1,000 ug/l	1,000 ug/l
1,1-Dichloroethane	<50 ug/l	50 ug/l
1,2-Dichloroethene (total)	<50 ug/l	50 ug/l
Chloroform	<50 ug/l	50 ug/l
1,1,1-Trichloroethane	<50 ug/l	50 ug/l
Carbon Tetrachloride	<50 ug/l	50 ug/l
Benzene	76 ug/l	50 ug/l
1,2-Dichloroethane	<50 ug/l	50 ug/l
Trichloroethene	8 ug/l	5 ug/l
1,2-Dichloropropane	<50 ug/l	50 ug/l
Bromodichloromethane	<50 ug/l	50 ug/l
2-Chloroethylvinyl ether	<100 ug/l	100 ug/l
cis-1,3-Dichloropropene	<50 ug/l	50 ug/l
Toluene	<50 ug/l	50 ug/l
trans-1,3-Dichloropropene	<50 ug/l	50 ug/l
1,1,2-Trichloroethane	<50 ug/l	50 ug/l
Tetrachloroethene	J 3 ug/l	5 ug/l
Dibromochloromethane	<50 ug/l	50 ug/l
Chlorobenzene	<50 ug/l	50 ug/l
Ethylbenzene	150 ug/l	50 ug/l
Xylenes (Total)	890 ug/l	50 ug/l

J - Estimated Value

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S. Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. David Fulton

SAMPLE ID: T-870-27-MW-U-92-HF

LAB NO:	34824
GROUP NO:	8810
DATE SAMPLED:	09/30/92
TIME SAMPLED:	1100
DATE RECEIVED:	10/02/92
DATE REPORTED:	10/21/92
DISPOSAL DATE:	11/20/92
ANALYSIS DATE:	10/09/92

ANALYSIS: Priority Pollutants by GCMS (Volatiles)
EPA Method SW-846 8240

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
Bromoform	<50 ug/l	50 ug/l
1,1,2,2-Tetrachloroethane	J 2 ug/l	5 ug/l

J - Estimated Value

Comment: Due to the sample matrix and level of target compounds, dilution was required. The limits of quantation were raised accordingly. The compounds which are reported with "J" values were taken from the original 5.0 ml analysis.

Respectfully submitted,

John G. Hayes, B.S.
Supervisor, GCMS Group

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S. Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. David Fulton

SAMPLE ID: T-870-11-MW-U-92-HF

LAB NO: 34825
GROUP NO: 8810
DATE SAMPLED: 09/30/92
TIME SAMPLED: 1325
DATE RECEIVED: 10/02/92
DATE REPORTED: 10/14/92
DISPOSAL DATE: 11/13/92
ANALYSIS DATE: 10/09/92

ANALYSIS: Priority Pollutants by GCMS (Volatiles)
EPA Method SW-846 8240

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
Chloromethane	<10 ug/l	10 ug/l
Vinyl Chloride	<10 ug/l	10 ug/l
Bromomethane	<10 ug/l	10 ug/l
Chloroethane	<10 ug/l	10 ug/l
Trichlorofluoromethane	<5 ug/l	5 ug/l
Acrolein	<100 ug/l	100 ug/l
1,1-Dichloroethene	<5 ug/l	5 ug/l
Methylene Chloride	<5 ug/l	5 ug/l
Acrylonitrile	<100 ug/l	100 ug/l
1,1-Dichloroethane	<5 ug/l	5 ug/l
1,2-Dichloroethene (total)	<5 ug/l	5 ug/l
Chloroform	<5 ug/l	5 ug/l
1,1,1-Trichloroethane	<5 ug/l	5 ug/l
Carbon Tetrachloride	<5 ug/l	5 ug/l
Benzene	26 ug/l	5 ug/l
1,2-Dichloroethane	<5 ug/l	5 ug/l
Trichloroethene	<5 ug/l	5 ug/l
1,2-Dichloropropane	<5 ug/l	5 ug/l
Bromodichloromethane	<5 ug/l	5 ug/l
2-Chloroethylvinyl ether	<10 ug/l	10 ug/l
cis-1,3-Dichloropropene	<5 ug/l	5 ug/l
Toluene	33 ug/l	5 ug/l
trans-1,3-Dichloropropene	<5 ug/l	5 ug/l
1,1,2-Trichloroethane	<5 ug/l	5 ug/l
Tetrachloroethene	<5 ug/l	5 ug/l
Dibromochloromethane	<5 ug/l	5 ug/l
Chlorobenzene	<5 ug/l	5 ug/l
Ethylbenzene	21 ug/l	5 ug/l
Xylenes (Total)	180 ug/l	5 ug/l
Bromoform	<5 ug/l	5 ug/l
1,1,2,2-Tetrachloroethane	<5 ug/l	5 ug/l

Respectfully submitted,

John G. Hayes, B.S.
Supervisor, GCMS Group

Analytical Report

Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. David Fulton

SAMPLE ID: T-870-12-MW-U-92-HF

LAB NO: 34826
GROUP NO: 8810
DATE SAMPLED: 10/01/92
TIME SAMPLED: 1200
DATE RECEIVED: 10/02/92
DATE REPORTED: 10/16/92
DISPOSAL DATE: 11/15/92
ANALYSIS DATE: 10/12/92

ANALYSIS: Priority Pollutants by GCMS (Volatiles)
EPA Method SW-846 8240

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
Chloromethane	<10 ug/l	10 ug/l
Vinyl Chloride	<10 ug/l	10 ug/l
Bromomethane	<10 ug/l	10 ug/l
Chloroethane	<10 ug/l	10 ug/l
Trichlorofluoromethane	<5 ug/l	5 ug/l
Acrolein	<100 ug/l	100 ug/l
1,1-Dichloroethene	<5 ug/l	5 ug/l
Methylene Chloride	11 ug/l	5 ug/l
Acrylonitrile	<100 ug/l	100 ug/l
1,1-Dichloroethane	<5 ug/l	5 ug/l
1,2-Dichloroethene (total)	<5 ug/l	5 ug/l
Chloroform	<5 ug/l	5 ug/l
1,1,1-Trichloroethane	<5 ug/l	5 ug/l
Carbon Tetrachloride	<5 ug/l	5 ug/l
Benzene	10 ug/l	5 ug/l
1,2-Dichloroethane	<5 ug/l	5 ug/l
Trichloroethene	<5 ug/l	5 ug/l
1,2-Dichloropropane	<5 ug/l	5 ug/l
Bromodichloromethane	<5 ug/l	5 ug/l
2-Chloroethylvinyl ether	<10 ug/l	10 ug/l
cis-1,3-Dichloropropene	<5 ug/l	5 ug/l
Toluene	<5 ug/l	5 ug/l
trans-1,3-Dichloropropene	<5 ug/l	5 ug/l
1,1,2-Trichloroethane	<5 ug/l	5 ug/l
Tetrachloroethene	<5 ug/l	5 ug/l
Dibromochloromethane	<5 ug/l	5 ug/l
Chlorobenzene	<5 ug/l	5 ug/l
Ethylbenzene	29 ug/l	5 ug/l
Xylenes (Total)	300 ug/l	5 ug/l
Bromoform	<5 ug/l	5 ug/l
1,1,2,2-Tetrachloroethane	<5 ug/l	5 ug/l

Respectfully submitted,

John G. Hayes, B.S.
Supervisor, GCMS Group

1645 West 2200 South, Salt Lake City, Utah 84119 (801) 973-0050 FAX (801) 972-6278

Member: American Council of Independent Laboratories, Inc.

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. David Fulton

SAMPLE ID: T-870-10-MW-U-92-HF

LAB NO: 34827
GROUP NO: 8810
DATE SAMPLED: 10/01/92
TIME SAMPLED: 1500
DATE RECEIVED: 10/02/92
DATE REPORTED: 10/16/92
DISPOSAL DATE: 11/15/92
ANALYSIS DATE: 10/12/92

ANALYSIS: Priority Pollutants by GCMS (Volatiles)
EPA Method SW-846 8240

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
Chloromethane	<10 ug/l	10 ug/l
Vinyl Chloride	<10 ug/l	10 ug/l
Bromomethane	<10 ug/l	10 ug/l
Chloroethane	<10 ug/l	10 ug/l
Trichlorofluoromethane	<5 ug/l	5 ug/l
Acrolein	<100 ug/l	100 ug/l
1,1-Dichloroethene	<5 ug/l	5 ug/l
Methylene Chloride	<5 ug/l	5 ug/l
Acrylonitrile	<100 ug/l	100 ug/l
1,1-Dichloroethane	<5 ug/l	5 ug/l
1,2-Dichloroethene (total)	<5 ug/l	5 ug/l
Chloroform	<5 ug/l	5 ug/l
1,1,1-Trichloroethane	<5 ug/l	5 ug/l
Carbon Tetrachloride	<5 ug/l	5 ug/l
Benzene	<5 ug/l	5 ug/l
1,2-Dichloroethane	<5 ug/l	5 ug/l
Trichloroethene	<5 ug/l	5 ug/l
1,2-Dichloropropane	<5 ug/l	5 ug/l
Bromodichloromethane	<5 ug/l	5 ug/l
2-Chloroethylvinyl ether	<10 ug/l	10 ug/l
cis-1,3-Dichloropropene	<5 ug/l	5 ug/l
Toluene	17 ug/l	5 ug/l
trans-1,3-Dichloropropene	<5 ug/l	5 ug/l
1,1,2-Trichloroethane	<5 ug/l	5 ug/l
Tetrachloroethene	<5 ug/l	5 ug/l
Dibromochloromethane	<5 ug/l	5 ug/l
Chlorobenzene	<5 ug/l	5 ug/l
Ethylbenzene	<5 ug/l	5 ug/l
Xylenes (Total)	110 ug/l	5 ug/l
Bromoform	<5 ug/l	5 ug/l
1,1,2,2-Tetrachloroethane	<5 ug/l	5 ug/l

Respectfully submitted,

John G. Hayes, B.S.
Supervisor, GCMS Group

Analytical Report

Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. David Fulton

SAMPLE ID: Trip Blank

LAB NO: 34828
GROUP NO: 8810
DATE SAMPLED: 10/01/92
TIME SAMPLED: 0
DATE RECEIVED: 10/02/92
DATE REPORTED: 10/16/92
DISPOSAL DATE: 11/15/92
ANALYSIS DATE: 10/12/92

ANALYSIS: Priority Pollutants by GCMS (Volatiles)
EPA Method SW-846 8240

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
Chloromethane	<10 ug/l	10 ug/l
Vinyl Chloride	<10 ug/l	10 ug/l
Bromomethane	<10 ug/l	10 ug/l
Chloroethane	<10 ug/l	10 ug/l
Trichlorofluoromethane	<5 ug/l	5 ug/l
Acrolein	<100 ug/l	100 ug/l
1,1-Dichloroethene	<5 ug/l	5 ug/l
Methylene Chloride	<5 ug/l	5 ug/l
Acrylonitrile	<100 ug/l	100 ug/l
1,1-Dichloroethane	<5 ug/l	5 ug/l
1,2-Dichloroethene (total)	<5 ug/l	5 ug/l
Chloroform	<5 ug/l	5 ug/l
1,1,1-Trichloroethane	<5 ug/l	5 ug/l
Carbon Tetrachloride	<5 ug/l	5 ug/l
Benzene	<5 ug/l	5 ug/l
1,2-Dichloroethane	<5 ug/l	5 ug/l
Trichloroethene	<5 ug/l	5 ug/l
1,2-Dichloropropane	<5 ug/l	5 ug/l
Bromodichloromethane	<5 ug/l	5 ug/l
2-Chloroethylvinyl ether	<10 ug/l	10 ug/l
cis-1,3-Dichloropropene	<5 ug/l	5 ug/l
Toluene	<5 ug/l	5 ug/l
trans-1,3-Dichloropropene	<5 ug/l	5 ug/l
1,1,2-Trichloroethane	<5 ug/l	5 ug/l
Tetrachloroethene	<5 ug/l	5 ug/l
Dibromochloromethane	<5 ug/l	5 ug/l
Chlorobenzene	<5 ug/l	5 ug/l
Ethylbenzene	<5 ug/l	5 ug/l
Xylenes (Total)	<5 ug/l	5 ug/l
Bromoform	<5 ug/l	5 ug/l
1,1,2,2-Tetrachloroethane	<5 ug/l	5 ug/l

Respectfully submitted,

John G. Hayes, B.S.
Supervisor, GCMS Group

1645 West 2200 South, Salt Lake City, Utah 84119 (801) 973-0050 FAX (801) 972-6278

Member: American Council of Independent Laboratories, Inc.

MONTGOMERY LABORATORIES

CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
2208.0402	HAFB UST Site 870

SAMPLERS: (Signature)

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	ANALYSIS: VOAs EPA 8240	REMARKS
	9/30/92	1000		✓	CPT-7	2	✓*	* Note this sample may contain free product (NAPL)
	9/30/92	1320		✓	T-870-5-MW-U-92-HF	2	✓	
	9/30/92	1100		✓	T-870-27-MW-U-92-HF	2	✓	
	9/30/92	1325		✓	T-870-11-MW-U-92-HF	2	✓	
	10/1/92	1200		✓	T-870-12-MW-U-92-HF	2	✓	
	10/1/92	1500		✓	T-870-10-MW-U-92-HF	2	✓	
					Trip Blank 9/30-10/1	2	✓	

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	10/1/92 1745				
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS	

Analytical Report

Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-
Phone: 801-272-1900 801-272-0430 (FAX)
ATTN: Mr. David Fulton
Project: UST Site 870 2208.0402

Date Samples Rec'd: 10/20/92
MSAI Group No.: 9132
Sample Matrix: Aqueous
Report Date: 10/22/92
P.O. Number:

LAB SAMPLE NO.	SAMP DATE	SAMPLE TIME	SAMPLE DESCRIPTION	ANALYSES PERFORMED	RESULT
36281	10/19/92	1700	CPT-10	PP Volatiles 8240 GCMS	See Attach ---

Respectfully submitted,

Douglas W. Later, Ph.D.
Laboratory Director

Glenn A. Sorensen, B.S.
Manager, Technical Operations

1992

Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 S Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. David Fulton

SAMPLE ID: CPT-10

LAB NO: 36821
GROUP NO: 9132
DATE SAMPLED: 10/19/92
TIME SAMPLED: 1700
DATE RECEIVED: 10/20/92
DATE REPORTED: 10/21/92
DISPOSAL DATE: 11/20/92
ANALYSIS DATE: 10/20/92

ANALYSIS: Priority Pollutants by GCMS (Volatiles)
EPA Method SW-846 8240

COMPOUNDS	FINAL RESULTS	QUANTITATION LIMIT
Chloromethane	<10 ug/l	10 ug/l
Vinyl Chloride	<10 ug/l	10 ug/l
Bromomethane	<10 ug/l	10 ug/l
Chloroethane	<10 ug/l	10 ug/l
Trichlorofluoromethane	<5 ug/l	5 ug/l
Acrolein	<100 ug/l	100 ug/l
1,1-Dichloroethene	<5 ug/l	5 ug/l
Methylene Chloride	12 ug/l	5 ug/l
Acrylonitrile	<100 ug/l	100 ug/l
1,1-Dichloroethane	<5 ug/l	5 ug/l
1,2-Dichloroethene (total)	<5 ug/l	5 ug/l
Chloroform	<5 ug/l	5 ug/l
1,1,1-Trichloroethane	<5 ug/l	5 ug/l
Carbon Tetrachloride	<5 ug/l	5 ug/l
Benzene	<5 ug/l	5 ug/l
1,2-Dichloroethane	<5 ug/l	5 ug/l
Trichloroethene	<5 ug/l	5 ug/l
1,2-Dichloropropane	<5 ug/l	5 ug/l
Bromodichloromethane	<5 ug/l	5 ug/l
2-Chloroethylvinyl ether	<10 ug/l	10 ug/l
cis-1,3-Dichloropropene	<5 ug/l	5 ug/l
Toluene	11 ug/l	5 ug/l
trans-1,3-Dichloropropene	<5 ug/l	5 ug/l
1,1,2-Trichloroethane	<5 ug/l	5 ug/l
Tetrachloroethene	<5 ug/l	5 ug/l
Dibromochloromethane	<5 ug/l	5 ug/l
Chlorobenzene	<5 ug/l	5 ug/l
Ethylbenzene	16 ug/l	5 ug/l
Xylenes (Total)	160 ug/l	5 ug/l
Bromoform	<5 ug/l	5 ug/l
1,1,2,2-Tetrachloroethane	<5 ug/l	5 ug/l

-Continued-

Mountain States Analytical
The Quality Solution

CLIENT:	J.M. Montgomery Engineers	LAB NO:	36821
	4525 S Wasatch #200	GROUP NO:	9132
	Salt Lake City, UT 84124	DATE SAMPLED:	10/19/92
		TIME SAMPLED:	1700
ATTN:	Mr. David Fulton	DATE RECEIVED:	10/20/92
		DATE REPORTED:	10/21/92
SAMPLE ID:	CPT-10	DISPOSAL DATE:	11/20/92
		ANALYSIS DATE:	10/20/92

ANALYSIS: Priority Pollutants by GCMS (Volatiles)
EPA Method SW-846 8240

Comment: Recovery of surrogate standard, Bromofluorobenzene, was outside of QC limits. This was confirmed by reanalysis.

Respectfully submitted,

John G. Hayes, B.S.
Supervisor, GCMS Group

MONTGOMERY LABORATORIES

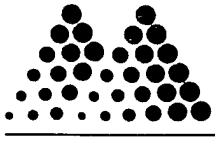
CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
2208.0402	UST Site 870

SAMPLERS: (Signature)

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	ANALYSIS (USE 1 COLUMN PER BOTTLE) VOAs 8240	REMARKS
	10/5/92	1700		✓	CPT-10	2	✓	& NOTE - This is a RUSH Sample 48-hr. TAT. Please also note that the target analyte is PCE please do not make dilutions so we can get the lowest possible detection limits. For questions contact Bob Blaszak @ 272-1980

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	10/6/92 0800	[signature]			
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS	



Mountain States Analytical *** INVOICE ***

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124-

ATTN: Mr. David Fulton
PROJECT: UST Site 870 2208.0402

INVOICE NO: 9132
Invoice Date: 10/22/92
Date Samples Rec'd: 10/20/92
P.O. Number:

LAB SAMPLE NO	SAMP DATE	SAMP TIME	SAMPLE DESCRIPTION	ANALYSES PERFORMED	RUSH CRG%	FEE
36281	10/19/92	1700	CPT-10	PP Volatiles 8240 GCMS w 80		413.10

Reviewed and Approved:

Total Due: $ 413.10

1645 West 2200 South, Salt Lake City, Utah 84119 (801) 973-0050 FAX (801) 972-6278

Analytical Report

Mountain States Analytical

The Quality Solution

CLIENT: Montgomery
4525 So. Wasatch #200
Salt Lake City, UT 84124-
Phone: 801-272-1900 801-272-0430 (FAX)
ATTN: Mr. David Fulton
Project: HAFB

Date Samples Rec'd: 11/07/91
MSAI Group No.: 4674
Sample Matrix: Non-Aqueous/Solid
Report Date: 11/14/91
P.O. Number: 2208.0312

LAB SAMPLE NO.	SAMP DATE	SAMP TIME	SAMPLE DESCRIPTION	ANALYSES PERFORMED	RESULT
22313	11/06/91	1350	SB870A-01/16'-17'	BTEX/TPH 8015/8020(D)	See Attach ---
				Homogenization-Vol. GC	Complete ---
				Moisture	21.9 %
22314	11/06/91	1400	SB870A-01/18'-19'	BTEX/TPH 8015/8020(D)	See Attach ---
				Homogenization-Vol. GC	Complete ---
				Moisture	19.4 %

RECEIVED
NOV 20 1991
JAMES M. MONTGOMERY

Respectfully submitted,

Douglas W. Later, Ph.D.
Laboratory Director

Glenn A. Sorensen, B.S.
Manager, Technical Operations

Mountain States Analytical
The Quality Solution

CLIENT: Montgomery
4525 So. Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. Dave Fulton

LAB NO:	22313
GROUP NO:	4674
DATE SAMPLED:	11/06/91
TIME SAMPLED:	1350
DATE RECEIVED:	11/07/91
DATE REPORTED:	11/14/91
DISPOSAL DATE:	12/14/91

SAMPLE ID: SB870A-01/16'-17'

ANALYSIS: Total Petroleum Hydrocarbons by EPA SW-846 Methods 3550/8015 Modified [Utah]. Benzene, Toluene, Ethylbenzene, Xylenes by EPA SW-846 Methods 5030/8020.

COMPOUNDS	RESULT DRY WEIGHT	LIMIT OF QUANTITATION
Moisture	21.9 %	
Benzene	150 ug/kg	10.0 ug/kg
Toluene	129 ug/kg	10.0 ug/kg
Ethylbenzene	57.0 ug/kg	10.0 ug/kg
m,p-Xylene	203 ug/kg	10.0 ug/kg
o-Xylene	115 ug/kg	10.0 ug/kg
TPH	< 10.0 mg/kg	10.0 mg/kg

Date Analyzed (TPH): 11/12/91
Date Analyzed (BTEX): 11/14/91

Note:

Diesel fuel calibration standards were used for TPH quantitation.

Respectfully submitted,

Matt Sorensen for

Kenneth A. Roberts, B.S.
Manager, Organics Department

Analytical Report

Mountain States Analytical

The Quality Solution

CLIENT: Montgomery
4525 So. Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. Dave Fulton

LAB NO: 22314
GROUP NO: 4674
DATE SAMPLED: 11/06/91
TIME SAMPLED: 1400
DATE RECEIVED: 11/07/91
DATE REPORTED: 11/14/91
DISPOSAL DATE: 12/14/91

SAMPLE ID: SB870A-01/18'-19'

ANALYSIS: Total Petroleum Hydrocarbons by EPA SW-846 Methods 3550/8015 Modified [Utah]. Benzene, Toluene, Ethylbenzene, Xylenes by EPA SW-846 Methods 5030/8020.

COMPOUNDS	RESULT DRY WEIGHT	LIMIT OF QUANTITATION
Moisture	19.4 %	
Benzene	564 ug/kg	20.0 ug/kg
Toluene	145 ug/kg	20.0 ug/kg
Ethylbenzene	341 ug/kg	20.0 ug/kg
m,p-Xylene	1,640 ug/kg	20.0 ug/kg
o-Xylene	609 ug/kg	20.0 ug/kg
TPH	98.3 mg/kg	10.0 mg/kg

Date Analyzed (TPH): 11/12/91
Date Analyzed (BTEX): 11/14/91

Note:
Diesel fuel calibration standards were used for TPH quantitation.

Respectfully submitted,

Matt Jensen for

Kenneth A. Roberts, B.S.
Manager, Organics Department

1645 West 2200 South, Salt Lake City, Utah 84119 (801) 973-0050 FAX (801) 972-6278

Member: American Council of Independent Laboratories, Inc.

MONTGOMERY LABORATORIES

CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
2208.0312	HAFB

SAMPLERS: (Signature)

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	ANALYSIS (USE 1 COLUMN PER BOTTLE): TPH w/ BTEX + 5 diesel / 5 w/ BTEX 8015 / 8020	REMARKS
	11/6/91	1350		✓	SB870A-01 / 16'-17'	1	✓	
	11/6/91	1400		✓	SB870A-01 / 18'-19'	1	✓	

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	11/6/91 1722				
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS	

Analytical Report

Mountain States Analytical

The Quality Solution

CLIENT: Montgomery
4525 So. Wasatch #200
Salt Lake City, UT 84124
Phone: 801-272-1900 801-272-0430 (FAX)
ATTN: Mr. David Fulton
Project: HAFB

Date Samples Rec'd: 11/13/91
MSAI Group No.: 4688
Sample Matrix: Aqueous
Report Date: 11/15/91
P.O. Number: 2208.0312

LAB SAMPLE NO.	SAMP DATE	SAMPLE TIME	SAMPLE DESCRIPTION	ANALYSES PERFORMED	RESULT
22374	10/17/91	0	Trip Blank	BTEX, 602, Aqueous	See Attach ---

Respectfully submitted,

Douglas W. Later, Ph.D.
Laboratory Director

Glenn A. Sorensen, B.S.
Manager, Technical Operations

RECEIVED
NOV 19 1991
JAMES M. MONTGOMERY

1645 West 2200 South, Salt Lake City, Utah 84119 (801) 973-0050 FAX (801) 972-6278

Member: American Council of Independent Laboratories, Inc.

Analytical Report

Mountain States Analytical

The Quality Solution

CLIENT:	Montgomery 4525 So. Wasatch #200 Salt Lake City, UT 84124	LAB NO: GROUP NO: DATE SAMPLED: TIME SAMPLED:	22374 4688 10/17/91 0
ATTN:	Mr. David Fulton	DATE RECEIVED: DATE REPORTED:	11/13/91 11/15/91
SAMPLE ID:	Trip Blank	DISPOSAL DATE:	12/15/91

ANALYSIS: Gasoline Contamination in Water (BTEX) [EPA 602]

COMPOUND(s)	RESULT	LIMIT OF QUANTITATION
Benzene	< 1.0 ug/l	1.0 ug/l
Toluene	< 1.0 ug/l	1.0 ug/l
Ethylbenzene	< 1.0 ug/l	1.0 ug/l
m,p-Xylene	< 1.0 ug/l	1.0 ug/l
o-Xylene	< 1.0 ug/l	1.0 ug/l

Date Analyzed: 11/12/91

Respectfully submitted,

Matt Brennen for

Kenneth A. Roberts, B.S.
Manager, Organics Department

1645 West 2200 South, Salt Lake City, Utah 84119 (801) 973-0050 FAX (801) 972-6278

Member: American Council of Independent Laboratories, Inc.

Analytical Report

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124
Phone: 801-272-1900 801-272-0430 **(FAX)**
ATTN: **Mr. David Fulton**
Project: **HAFB**

Date Samples Rec'd: 11/08/91
MSAI Group No.: 4687
Sample Matrix: Non-Aqueous/Solid
Report Date: 11/21/91
P.O. Number: 2208.0312

LAB SAMPLE NO.	SAMP DATE	SAMP TIME	SAMPLE DESCRIPTION	ANALYSES PERFORMED	RESULT
22369	11/07/91	1111	SB870A 02/15'-16'	BTEX/TPH 8015/8020(D)	See Attach ---
				Homogenization-Vol. GC	Complete ---
				Moisture	18.9 %
22370	11/07/91	1122	SB870A 02/17'-18'	BTEX/TPH 8015/8020(D)	See Attach ---
				Homogenization-Vol. GC	Complete ---
				Moisture	24.2 %
22371	11/07/91	1427	SB870A 03/11'-12'	BTEX/TPH 8015/8020(D)	See Attach ---
				Homogenization-Vol. GC	Complete ---
				Moisture	7.26 %
22372	11/07/91	1530	SB870A 03/19'-20'	BTEX/TPH 8015/8020(D)	See Attach ---
				Homogenization-Vol. GC	Complete ---
				Carbon, Organic TOC sw	1,100 mg/kg
				Moisture	20.3 %
22373	11/07/91	1630	SB870A 03/29'-30'	BTEX/TPH 8015/8020(D)	See Attach ---
				Homogenization-Vol. GC	Complete ---
				Moisture	14.0 %

Respectfully submitted,

Douglas W. Later, Ph.D.
Laboratory Director

Glenn A. Sorensen, B.S.
Manager, Technical Operations

Analytical Report

Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. David Fulton

SAMPLE ID: SB870A 02/15'16'

LAB NO:	22369
GROUP NO:	4687
DATE SAMPLED:	11/07/91
TIME SAMPLED:	1111
DATE RECEIVED:	11/08/91
DATE REPORTED:	11/21/91
DISPOSAL DATE:	12/21/91

ANALYSIS: Total Petroleum Hydrocarbons by EPA SW-846 Methods 3550/8015 Modified [Utah]. Benzene, Toluene, Ethylbenzene, Xylenes by EPA SW-846 Methods 5030/8020.

COMPOUNDS	RESULT DRY WEIGHT	LIMIT OF QUANTITATION
Moisture	18.9 %	
Benzene	43.2 ug/kg	10.0 ug/kg
Toluene	51.3 ug/kg	10.0 ug/kg
Ethylbenzene	52.2 ug/kg	10.0 ug/kg
m,p-Xylene	365 ug/kg	10.0 ug/kg
o-Xylene	92.3 ug/kg	10.0 ug/kg
TPH	23.2 mg/kg	10.0 mg/kg

Date Analyzed (TPH): 11/13/91
Date Analyzed (BTEX): 11/20/91

Note:
Diesel fuel calibration standards were used for TPH quantitation.

Respectfully submitted,

Kenneth A. Roberts

Kenneth A. Roberts, B.S.
Manager, Organics Department

1645 West 2200 South, Salt Lake City, Utah 84119 (801) 973-0050 FAX (801) 972-6278

Member: American Council of Independent Laboratories, Inc.

Analytical Report

Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. David Fulton

LAB NO: 22370
GROUP NO: 4687
DATE SAMPLED: 11/07/91
TIME SAMPLED: 1122
DATE RECEIVED: 11/08/91
DATE REPORTED: 11/21/91
DISPOSAL DATE: 12/21/91

SAMPLE ID: SB870A 02/17'18'

ANALYSIS: Total Petroleum Hydrocarbons by EPA SW-846 Methods 3550/8015 Modified [Utah]. Benzene, Toluene, Ethylbenzene, Xylenes by EPA SW-846 Methods 5030/8020.

COMPOUNDS	RESULT DRY WEIGHT	LIMIT OF QUANTITATION
Moisture	24.2 %	
Benzene	13.0 ug/kg	10.0 ug/kg
Toluene	60.2 ug/kg	10.0 ug/kg
Ethylbenzene	57.7 ug/kg	10.0 ug/kg
m,p-Xylene	386 ug/kg	10.0 ug/kg
o-Xylene	123 ug/kg	10.0 ug/kg
TPH	37.0 mg/kg	10.0 mg/kg

Date Analyzed (TPH): 11/13/91
Date Analyzed (BTEX): 11/20/91

Note:
Diesel fuel calibration standards were used for TPH quantitation.

Respectfully submitted,

Kenneth A. Roberts, B.S.
Manager, Organics Department

1645 West 2200 South, Salt Lake City, Utah 84119 (801) 973-0050 FAX (801) 972-6278

Member: American Council of Independent Laboratories, Inc.

Analytical Report

Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. David Fulton

LAB NO:	22371
GROUP NO:	4687
DATE SAMPLED:	11/07/91
TIME SAMPLED:	1427
DATE RECEIVED:	11/08/91
DATE REPORTED:	11/21/91
DISPOSAL DATE:	12/21/91

SAMPLE ID: SB870A 03/11'-12'

ANALYSIS: Total Petroleum Hydrocarbons by EPA SW-846 Methods 3550/8015 Modified [Utah]
Benzene, Toluene, Ethylbenzene, Xylenes by EPA SW-846 Methods 5030/8020

COMPOUNDS	RESULT DRY WEIGHT	LIMIT OF QUANTITATION
Moisture	7.3 %	
Benzene	9,400 ug/kg	5,000 ug/kg
Toluene	115,000 ug/kg	5,000 ug/kg
Ethylbenzene	66,700 ug/kg	5,000 ug/kg
m,p-Xylene	494,000 ug/kg	5,000 ug/kg
o-Xylene	140,000 ug/kg	5,000 ug/kg
TPH	2,790 mg/kg	200 mg/kg

Date Analyzed (TPH): 11/13/91
Date Analyzed (BTEX): 11/20/91

Note:

A. Gasoline calibration standards were used for TPH quantitation.

Respectfully submitted,

Kenneth A. Roberts, B.S.
Manager, Organics Department

1645 West 2200 South, Salt Lake City, Utah 84119 (801) 973-0050 FAX (801) 972-6278

Member: American Council of Independent Laboratories, Inc.

Analytical Report

Mountain States Analytical

The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. David Fulton

LAB NO:	22372
GROUP NO:	4687
DATE SAMPLED:	11/07/91
TIME SAMPLED:	1530
DATE RECEIVED:	11/08/91
DATE REPORTED:	11/21/91
DISPOSAL DATE:	12/21/91

SAMPLE ID: SB870A 03/19'-20'

ANALYSIS: Total Petroleum Hydrocarbons by EPA SW-846 Methods 3550/8015 Modified [Utah]. Benzene, Toluene, Ethylbenzene, Xylenes by EPA SW-846 Methods 5030/8020.

COMPOUNDS	RESULT DRY WEIGHT	LIMIT OF QUANTITATION
Moisture	20.3 %	
Benzene	338 ug/kg	10.0 ug/kg
Toluene	595 ug/kg	10.0 ug/kg
Ethylbenzene	138 ug/kg	10.0 ug/kg
m,p-Xylene	867 ug/kg	10.0 ug/kg
o-Xylene	276 ug/kg	10.0 ug/kg
TPH	< 10.0 mg/kg	10.0 mg/kg

Date Analyzed (TPH): 11/13/91
Date Analyzed (BTEX): 11/20/91

Note:
Diesel fuel calibration standards were used for TPH quantitation.

Respectfully submitted,

Kenneth A. Roberts, B.S.
Manager, Organics Department

1645 West 2200 South, Salt Lake City, Utah 84119 (801) 973-0050 FAX (801) 972-6278

Member: American Council of Independent Laboratories, Inc.

Mountain States Analytical
The Quality Solution

CLIENT: J.M. Montgomery Engineers
4525 So. Wasatch #200
Salt Lake City, UT 84124

ATTN: Mr. David Fulton

LAB NO:	22373
GROUP NO:	4687
DATE SAMPLED:	11/07/91
TIME SAMPLED:	1630
DATE RECEIVED:	11/08/91
DATE REPORTED:	11/21/91
DISPOSAL DATE:	12/21/91

SAMPLE ID: SB870A 03/29'-30'

ANALYSIS: Total Petroleum Hydrocarbons by EPA SW-846 Methods 3550/8015 Modified [Utah]
Benzene, Toluene, Ethylbenzene, Xylenes by EPA SW-846 Methods 5030/8020

COMPOUNDS	RESULT DRY WEIGHT	LIMIT OF QUANTITATION
Moisture	14.0 %	
Benzene	22,200 ug/kg	5,000 ug/kg
Toluene	187,000 ug/kg	5,000 ug/kg
Ethylbenzene	83,100 ug/kg	5,000 ug/kg
m,p-Xylene	567,000 ug/kg	5,000 ug/kg
o-Xylene	177,000 ug/kg	5,000 ug/kg
TPH	15,100 mg/kg	1,000 mg/kg

Date Analyzed (TPH): 11/13/91
Date Analyzed (BTEX): 11/20/91

Note:

A. Gasoline calibration standards were used for TPH quantitation.

Respectfully submitted,

Kenneth A. Roberts, B.S.
Manager, Organics Department

MONTGOMERY LABORATORIES

CHAIN OF CUSTODY RECORD

PROJECT/JOB #	PROJECT NAME
22058.0312	HAFB

SAMPLERS: (Signature)

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	ANALYSIS (USE 1 COLUMN PER BOTTLE) TPH w/ BTEX & Diesel	SVOA SW15/8020	TOC	REMARKS
	11/7/91	1111		✓	SB870A-02/15'-16'	1	✓			
	11/7/91	1122		✓	SB870A-02/17'-18'	1	✓			
	11/7/91	1427		✓	SB870A-03/11'-12'	1	✓			
	11/7/91	1530		✓	SB870A-03/19'-20'	1	✓		✓	
	11/7/91	1630		✓	SB870A-03/29'-30'	1	✓			
	11/7/91			·	Trip Blank	11	✓			
						LRM	11/7/91			

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	11/7/91 1800				
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS	

Telephone
818 796 9141

555 East Walnut Street
P.O. Box 7009
Pasadena, California
91109 7009

Montgomery Laboratories

August 14, 1992

James M. Montgomery Consulting Engineers,Inc.
4525 S. Wasatch Blvd, Suite 200
Salt Lake City, UT 84124
Attn: Dave Fulton

Dear Dave,

Enclosed please find data deliverables for the recent Hill AFB project. A detailed quality control (QC) summary follows :

Non-conformance (LCS,MS/MSD,Surrogates, and Holding Times):
No problems encountered.

Samples requiring dilution (with increased MRL's):
Sample CPT-7 was diluted 1/1000, and sample SGS-1 was diluted 1/10 for VOC analysis.

Method blanks with compounds detected:
All compounds were ND

Other Comments:
None

If you have any questions regarding this data package please feel free to call.

Sincerely,

Gregg L. Oelker
Client Services Manager
Report #: 2253

MONTGOMERY LABORATORIES
555 East Walnut Street, P.O. Box 7009
Pasadena, California 91109-7009
(818) 796-9141

Laboratory Report

for

Hill Air Force Base/JMM-SLC
4525 Wasatch Blvd

Salt Lake City, UT 84214

Attention: Dave Fulton

MONTGOMERY LABORATORIES
Submitted on
AUG 14 1992

GLO

Report#: 2253

MONTGOMERY LABORATORIES

555 East Walnut Street
Pasadena, California 91101
PH (818) 568 6400
FAX (818) 568 6324

BOTTLE ORDER/WORK ORDER

HCB 8/10/92

PROJECT MANAGER GLO

CLIENT NAME: Hill AFB

CLIENT CODE Hill-COE

PROJECT CODE NOA

GROUP # 2253

PO/Check # 2208.0403

QUOTATION #

SHIPPING ADDRESS
Notified June about Rush RD

ATTN: Bob Glascott JMM/SLC
PHONE:

REPORT/BILLING ADDRESS

ATTN:
PHONE:
FAX:

ORIGINATOR

BOTTLE ORDER DATE

DATE REC'D BY SHIPPING

DATE NEEDED BY CLIENT

DATE SHIPPED

PREPARED BY

SHIPPED VIA

SAMPLE DATE 8/7

DATE REC'D 8/8

CHAIN OF CUSTODY

DUE DATE

#SAMPLES	ANALYSIS	LAB #	SAMPLE ID/COMMENTS	UNIT PRICE
	[redacted]	92080001	CPT-7	15:00
		92080002	SGS-1	15:20
2	@VOA PP			
			Rush (5 Day) Fax Friday	8/14/92
			Fax results to JMM SLC-1	
			801 272 0430	
			ATTN: Dave Fulton	

CIRCLE MATRIX: POTABLE WATER, GROUND/SURFACE WATER, WASTE WATER, OIL, SOIL/SLUDGE, OTHER :

HAZARDOUS (TYPE OF HAZARD):

EXPECTED ARRIVAL DATE:

OTHER COMMENTS, CHARGES

Special Shipping Charges:
Turnaround Time:
OTHER:

Disposal Options: RETURN LAB PACK NO SPECIAL
Turnaround Time Surcharge:

Mountain States Analytical

The Quality Solution

Sample Chain of Custody

W.O.No.: 2208.0403 | Project Name: Hill AFB

Sampler: Bob Glascott

Sample Number	Date	Time	COMP	GRAB	Station Location	Number of Containers SW8240 (2)	Remarks
1	8/7	1500		✓	CPT-7	✓	Small Air Bubbles - could not get them out. Possible MIBK in water Definitely BTEX.
2	8/7	1520		✓	SGS-1	✓	
							~~FAX~~ Results to: Dave Fulton JMM SLC-1 ~~FAX~~: 801-272-0430

Sample Relinquished by:	Date	Time	Sample Received by:	Date	Time	Reason for Transfer
[signature]	8/7/92	1535	[signature]	8-8-92	9:15	

MONTGOMERY LABORATORIES COOLER RECEIPT FORM

PROJECT: Hill NFB 2208.0403 Date Received: 8/8/92

Use other side of this form to note further details concerning check-in problems and to describe any action(s) regarding the resolution(s) of problems.

A. PRELIMINARY EXAMINATION: Date cooler opened: 8/8/92

by (print) Melissa Hudson (sign) Melissa Hudson

1. Did cooler come with shipping slip (air bill, etc.)? (Yes) No
   If YES, attach & enter carrier and air bill # here: _____
2. Were custody seals on outside of cooler? Yes No
   If YES, how many & where: NA
   If Yes, enter the following: seal date: _____, seal name: _____
3. Were custody seals unbroken & intact at delivery? Yes No
4. Were custody papers sealed in bag & taped to lid? Yes No
5. Were custody papers filled out properly (ink, etc.) Yes No
6. Did you sign custody papers in appropriate place? Yes No
7. Was project identifiable from custody papers? Yes No
8. Have designated person(s) initial to acknowledge receipt: gs (date) 8/11/92

B. LOG-IN PHASE: Date samples were logged-in: 8/10/92 by:

(print) Melissa Hudson (sign) Melissa Hudson

9. Describe packing: Secure
10. If required, was enough ice used? (Yes) No
11. Were all bottles sealed in separate plastic bags? (Yes) No
12. Did all bottles arrive unbroken/in good condition? (Yes) No
13. Were all bottle labels complete (ID,date,sign,pres)? (Yes) No
14. Did all bottle labels agree with custody papers? (Yes) No
    If NO, indicate descrepancies on back.
15. Were correct containers useed for the analytes? (Yes) No
16. Were correct preservatives used when required? (Yes) No
17. Was sufficient amount of sample sent for tests? (Yes) No
18. Bubbles absent in VOA vials? Yes (No)
    If NO, list by sample id on back. CPT-7 has bubble in both vials
19. Was Client Services informed of problems? (Yes) No

Montgomery Laboratories
555 E. Walnut Street, Pasadena, CA 91109
PHONE: 818-568-6400/FAX: 818-568-6324

ACKNOWLEDGMENT OF SAMPLES RECEIVED

Hill Air Force Base/JMM-SLC
4525 Wasatch Blvd

Acct#: HILL-COE
PO#: 2208.0403

Salt Lake City, UT 84214
Attn: Dave Fulton

The following samples were received from you on 08/08/92. They have been scheduled for the tests listed beside each sample. If this information is incorrect, please contact your service representative. Thank you for using Montgomery Laboratories.

Sample#	Sample Identification	Tests Scheduled		
920810001	ID:CPT-7	@VOAPP	MATRIX: 1	DATE: 08/07/92
920810002	ID:SGS-1	@VOAPP	MATRIX: 1	DATE: 08/07/92

Test Acronym Description

Test Acronym	Description
@VOAPP	Volatile Organics HSL

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Laboratory Report

Hill Air Force Base/JMM-SLC
4525 Wasatch Blvd

Salt Lake City , UT 84214
ATTN: Dave Fulton

Sample # 920810001 Sample ID CPT-7 Project VOA
Sample Type Water Sampled 07-aug-1992 Received 08-aug-1992 Reported 14-aug-1992

Volatile Organics HSL (ML/SW 8240)

Parameter	Units	Result	%Rec Conc.	Dilution	Det.Limit	Prepared	By	Analyzed	By
1,1,2-Trichloroethane (1,1,2-T	ug/l	ND		1000	500			13-aug-1992	jhc
1,1-Dichloroethylene (1,1DCE)	ug/l	ND		1000	500			13-aug-1992	jhc
1,1-Dichloroethane	ug/l	ND		1000	500			13-aug-1992	jhc
1,2-Dichlorobenzene	ug/l	ND		1000	500			13-aug-1992	jhc
1,2-Dichloroethane	ug/l	ND		1000	500			13-aug-1992	jhc
1,2-Dichloropropane	ug/l	ND		1000	500			13-aug-1992	jhc
1,3-Dichlorobenzene	ug/l	ND		1000	500			13-aug-1992	jhc
1,4-Dichlorobenzene (p-DCB)	ug/l	ND		1000	500			13-aug-1992	jhc
2-Butanone (MEK)	ug/l	ND		1000	10000			13-aug-1992	jhc
2-Chloroethylvinylether	ug/l	ND		1000	1000			13-aug-1992	jhc
2-Hexanone	ug/l	ND		1000	10000			13-aug-1992	jhc
4-Methyl-2-Pentanone (MIBK)	ug/l	ND		1000	1000			13-aug-1992	jhc
Acetone	ug/l	ND		1000	10000			13-aug-1992	jhc
Acrolein	ug/l	ND		1000	1000			13-aug-1992	jhc
Acrylonitrile	ug/l	ND		1000	1000			13-aug-1992	jhc
Benzene	ug/l	ND		1000	500			13-aug-1992	jhc
cis-1,2-Dichloroethene	ug/l	ND		1000	500			13-aug-1992	jhc
Chlorobenzene	ug/l	ND		1000	500			13-aug-1992	jhc
cis-1,3-Dichloropropene	ug/l	ND		1000	500			13-aug-1992	jhc
Bromoform	ug/l	ND		1000	500			13-aug-1992	jhc
Chloroform (Trichloromethane)	ug/l	ND		1000	500			13-aug-1992	jhc
Chloroethane	ug/l	ND		1000	1000			13-aug-1992	jhc
Carbon disulfide	ug/l	ND		1000	500			13-aug-1992	jhc
Carbon Tetrachloride	ug/l	ND		1000	500			13-aug-1992	jhc
Dibromochloromethane	ug/l	ND		1000	500			13-aug-1992	jhc
Dichlorobromomethane	ug/l	ND		1000	500			13-aug-1992	jhc
Ethyl benzene	ug/l	1800		1000	500			13-aug-1992	jhc
Methyl Bromide	ug/l	ND		1000	1000			13-aug-1992	jhc
Methyl Chloride	ug/l	ND		1000	1000			13-aug-1992	jhc

Report #: 2253

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Laboratory Report

Hill Air Force Base/JMM-SLC
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Salt Lake City , UT 84214
ATTN: Dave Fulton

Sample # 920810001 Sample ID CPT-7 Project VOA
Sample Type Water Sampled 07-aug-1992 Received 08-aug-1992 Reported 14-aug-1992

Volatile Organics HSL (ML/SW 8240)

Parameter	Units	Result	%Rec Conc.	Dilution	Det.Limit	Prepared	By	Analyzed	By
Methylene Chloride	ug/l	ND		1000	3000			13-aug-1992	jhc
m,p-Xylenes	ug/l	4600		1000	500			13-aug-1992	jhc
o-Xylene	ug/l	1900		1000	500			13-aug-1992	jhc
1,1,2,2-Tetrachloroethane	ug/l	ND		1000	500			13-aug-1992	jhc
Tetrachloroethylene (PCE)	ug/l	ND		1000	500			13-aug-1992	jhc
Styrene	ug/l	ND		1000	500			13-aug-1992	jhc
trans-1,2-Dichloroethene	ug/l	ND		1000	500			13-aug-1992	jhc
1,1,1-Trichloroethane	ug/l	ND		1000	500			13-aug-1992	jhc
Trichloroethylene (TCE)	ug/l	ND		1000	500			13-aug-1992	jhc
Trichlorofluoromethane	ug/l	ND		1000	1000			13-aug-1992	jhc
trans-1,3-Dichloropropene	ug/l	ND		1000	500			13-aug-1992	jhc
Tetrahydrofuran	ug/l	ND		1000	10000			13-aug-1992	jhc
Toluene	ug/l	ND		1000	500			13-aug-1992	jhc
Vinyl Chloride (VC)	ug/l	ND		1000	1000			13-aug-1992	jhc
Vinyl Acetate	ug/l	ND		1000	10000			13-aug-1992	jhc

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Sample Type Water Sampled 07-aug-1992 Received 08-aug-1992 Reported 14-aug-1992

Volatile Organics HSL (ML/SW 8240)
Surrogate Summary

Parameter	Percent Recovery	Acceptable Range
Toluene-d8	101	88 - 110
1,2-Dichloroethane-d4	90	76 - 114
4-Bromofluorobenzene	101	86 - 115

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Sample Type Water Sampled 07-aug-1992 Received 08-aug-1992 Reported 14-aug-1992

Volatile Organics HSL (ML/SW 8240)
Quality Control

Control	Parameter	Units	Actual	Found	%Recv
LCS1	1,1-Dichloroethylene (1,1DCE)	ug/l	4	3.82	96
LCS1	Benzene	ug/l	4	4.52	113
LCS1	Chlorobenzene	ug/l	4	3.70	92
LCS1	Trichloroethylene (TCE)	ug/l	4	3.77	94
LCS1	Toluene	ug/l	4	4.02	100
LCS2	1,1-Dichloroethylene (1,1DCE)	ug/l	4	3.99	100
LCS2	Benzene	ug/l	4	4.48	112
LCS2	Chlorobenzene	ug/l	4	3.50	88
LCS2	Trichloroethylene (TCE)	ug/l	4	3.62	90
LCS2	Toluene	ug/l	4	3.92	98
MBLK	1,1,2-Trichloroethane (1,1,2-T	ug/l	ND	ND	
MBLK	1,1-Dichloroethylene (1,1DCE)	ug/l	ND	ND	
MBLK	1,1-Dichloroethane	ug/l	ND	ND	
MBLK	1,2-Dichlorobenzene	ug/l	ND	ND	
MBLK	1,2-Dichloroethane	ug/l	ND	ND	
MBLK	1,2-Dichloropropane	ug/l	ND	ND	
MBLK	1,3-Dichlorobenzene	ug/l	ND	ND	
MBLK	1,4-Dichlorobenzene (p-DCB)	ug/l	ND	ND	
MBLK	2-Butanone (MEK)	ug/l	ND	ND	
MBLK	2-Chloroethylvinylether	ug/l	ND	ND	
MBLK	2-Hexanone	ug/l	ND	ND	
MBLK	4-Methyl-2-Pentanone (MIBK)	ug/l	ND	ND	
MBLK	Acetone	ug/l	ND	ND	
MBLK	Acrolein	ug/l	ND	ND	
MBLK	Acrylonitrile	ug/l	ND	ND	
MBLK	Benzene	ug/l	ND	ND	
MBLK	cis-1,2-Dichloroethene	ug/l	ND	ND	
MBLK	Chlorobenzene	ug/l	ND	ND	
MBLK	cis-1,3-Dichloropropene	ug/l	ND	ND	
MBLK	Bromoform	ug/l	ND	ND	
MBLK	Chloroform (Trichloromethane)	ug/l	ND	ND	

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Sample Type Water Sampled 07-aug-1992 Received 08-aug-1992 Reported 14-aug-1992

Volatile Organics HSL (ML/SW 8240)
Quality Control

Control	Parameter	Units	Actual	Found	%Recv
MBLK	Chloroethane	ug/l	ND	ND	
MBLK	Carbon disulfide	ug/l	ND	ND	
MBLK	Carbon Tetrachloride	ug/l	ND	ND	
MBLK	Dibromochloromethane	ug/l	ND	ND	
MBLK	Dichlorobromomethane	ug/l	ND	ND	
MBLK	Ethyl benzene	ug/l	ND	ND	
MBLK	Methyl Bromide	ug/l	ND	ND	
MBLK	Methyl Chloride	ug/l	ND	ND	
MBLK	Methylene Chloride	ug/l	ND	ND	
MBLK	m,p-Xylenes	ug/l	ND	ND	
MBLK	o-Xylene	ug/l	ND	ND	
MBLK	1,1,2,2-Tetrachloroethane	ug/l	ND	ND	
MBLK	Tetrachloroethylene (PCE)	ug/l	ND	ND	
MBLK	Styrene	ug/l	ND	ND	
MBLK	trans-1,2-Dichloroethene	ug/l	ND	ND	
MBLK	1,1,1-Trichloroethane	ug/l	ND	ND	
MBLK	Trichloroethylene (TCE)	ug/l	ND	ND	
MBLK	Trichlorofluoromethane	ug/l	ND	ND	
MBLK	trans-1,3-Dichloropropene	ug/l	ND	ND	
MBLK	Tetrahydrofuran	ug/l	ND	ND	
MBLK	Toluene	ug/l	ND	ND	
MBLK	Vinyl Chloride (VC)	ug/l	ND	ND	
MBLK	Vinyl Acetate	ug/l	ND	ND	
MS	1,1-Dichloroethylene (1,1DCE)	ug/l	4	NA	
MS	Benzene	ug/l	4	NA	
MS	Chlorobenzene	ug/l	4	NA	
MS	Trichloroethylene (TCE)	ug/l	4	NA	
MS	Toluene	ug/l	4	NA	
MSD	1,1-Dichloroethylene (1,1DCE)	ug/l	4	NA	
MSD	Benzene	ug/l	4	NA	
MSD	Chlorobenzene	ug/l	4	NA	

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Sample # 920810001 Sample ID CPT-7 Project VOA
Sample Type Water Sampled 07-aug-1992 Received 08-aug-1992 Reported 14-aug-1992

Volatile Organics HSL (ML/SW 8240)
Quality Control

Control	Parameter	Units	Actual	Found	%Recv
MSD	Trichloroethylene (TCE)	ug/l	4	NA	
MSD	Toluene	ug/l	4	NA	

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Laboratory Report

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ATTN: Dave Fulton

Sample # 920810002 Sample ID SGS-1 Project VOA
Sample Type Water Sampled 07-aug-1992 Received 08-aug-1992 Reported 14-aug-1992

Volatile Organics HSL (ML/SW 8240)

Parameter	Units	Result	%Rec	Conc.	Dilution	Det.Limit	Prepared	By	Analyzed	By
1,1,2-Trichloroethane (1,1,2-T	ug/l	ND			10	5			12-aug-1992	dfi
1,1-Dichloroethylene (1,1DCE)	ug/l	ND			10	5			12-aug-1992	dfi
1,1-Dichloroethane	ug/l	ND			10	5			12-aug-1992	dfi
1,2-Dichlorobenzene	ug/l	ND			10	5			12-aug-1992	dfi
1,2-Dichloroethane	ug/l	ND			10	5			12-aug-1992	dfi
1,2-Dichloropropane	ug/l	ND			10	5			12-aug-1992	dfi
1,3-Dichlorobenzene	ug/l	ND			10	5			12-aug-1992	dfi
1,4-Dichlorobenzene (p-DCB)	ug/l	ND			10	5			12-aug-1992	dfi
2-Butanone (MEK)	ug/l	ND			10	100			12-aug-1992	dfi
2-Chloroethylvinylether	ug/l	ND			10	10			12-aug-1992	dfi
2-Hexanone	ug/l	ND			10	100			12-aug-1992	dfi
4-Methyl-2-Pentanone (MIBK)	ug/l	ND			10	10			12-aug-1992	dfi
Acetone	ug/l	ND			10	100			12-aug-1992	dfi
Acrolein	ug/l	ND			10	10			12-aug-1992	dfi
Acrylonitrile	ug/l	ND			10	10			12-aug-1992	dfi
Benzene	ug/l	7.7			10	5			12-aug-1992	dfi
cis-1,2-Dichloroethene	ug/l	ND			10	5			12-aug-1992	dfi
Chlorobenzene	ug/l	ND			10	5			12-aug-1992	dfi
cis-1,3-Dichloropropene	ug/l	ND			10	5			12-aug-1992	dfi
Bromoform	ug/l	ND			10	5			12-aug-1992	dfi
Chloroform (Trichloromethane)	ug/l	ND			10	5			12-aug-1992	dfi
Chloroethane	ug/l	ND			10	10			12-aug-1992	dfi
Carbon disulfide	ug/l	ND			10	5			12-aug-1992	dfi
Carbon Tetrachloride	ug/l	ND			10	5			12-aug-1992	dfi
Dibromochloromethane	ug/l	ND			10	5			12-aug-1992	dfi
Dichlorobromomethane	ug/l	ND			10	5			12-aug-1992	dfi
Ethyl benzene	ug/l	5.5			10	5			12-aug-1992	dfi
Methyl Bromide	ug/l	ND			10	10			12-aug-1992	dfi
Methyl Chloride	ug/l	ND			10	10			12-aug-1992	dfi

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Laboratory Report

Hill Air Force Base/JMM-SLC
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Salt Lake City , UT 84214
ATTN: Dave Fulton

Sample # 920810002 Sample ID SGS-1 Project VOA
Sample Type Water Sampled 07-aug-1992 Received 08-aug-1992 Reported 14-aug-1992

Volatile Organics HSL (ML/SW 8240)

Parameter	Units	Result	%Rec Conc.	Dilution	Det.Limit	Prepared	By	Analyzed	By
Methylene Chloride	ug/l	ND		10	30			12-aug-1992	dfi
m,p-Xylenes	ug/l	8.8		10	5			12-aug-1992	dfi
o-Xylene	ug/l	19		10	5			12-aug-1992	dfi
1,1,2,2-Tetrachloroethane	ug/l	ND		10	5			12-aug-1992	dfi
Tetrachloroethylene (PCE)	ug/l	18		10	5			12-aug-1992	dfi
Styrene	ug/l	ND		10	5			12-aug-1992	dfi
trans-1,2-Dichloroethene	ug/l	ND		10	5			12-aug-1992	dfi
1,1,1-Trichloroethane	ug/l	ND		10	5			12-aug-1992	dfi
Trichloroethylene (TCE)	ug/l	ND		10	5			12-aug-1992	dfi
Trichlorofluoromethane	ug/l	ND		10	10			12-aug-1992	dfi
trans-1,3-Dichloropropene	ug/l	ND		10	5			12-aug-1992	dfi
Tetrahydrofuran	ug/l	ND		10	100			12-aug-1992	dfi
Toluene	ug/l	ND		10	5			12-aug-1992	dfi
Vinyl Chloride (VC)	ug/l	ND		10	10			12-aug-1992	dfi
Vinyl Acetate	ug/l	ND		10	100			12-aug-1992	dfi

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ATTN: Dave Fulton

Sample # 920810002 Sample ID SGS-1 Project VOA
Sample Type Water Sampled 07-aug-1992 Received 08-aug-1992 Reported 14-aug-1992

Volatile Organics HSL (ML/SW 8240)
Surrogate Summary

Parameter	Percent Recovery	Acceptable Range
Toluene-d8	94	88 - 110
1,2-Dichloroethane-d4	78	76 - 114
4-Bromofluorobenzene	104	86 - 115

Report #: 2253

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Sample Type Water Sampled 07-aug-1992 Received 08-aug-1992 Reported 14-aug-1992

Volatile Organics HSL (ML/SW 8240)
Quality Control

Control	Parameter	Units	Actual	Found	%Recv
LCS1	1,1-Dichloroethylene (1,1DCE)	ug/l	4	3.82	96
LCS1	Benzene	ug/l	4	4.52	113
LCS1	Chlorobenzene	ug/l	4	3.70	92
LCS1	Trichloroethylene (TCE)	ug/l	4	3.77	94
LCS1	Toluene	ug/l	4	4.02	100
LCS2	1,1-Dichloroethylene (1,1DCE)	ug/l	4	3.99	100
LCS2	Benzene	ug/l	4	4.48	112
LCS2	Chlorobenzene	ug/l	4	3.50	88
LCS2	Trichloroethylene (TCE)	ug/l	4	3.62	90
LCS2	Toluene	ug/l	4	3.92	98
MBLK	1,1,2-Trichloroethane (1,1,2-T	ug/l	ND	ND	
MBLK	1,1-Dichloroethylene (1,1DCE)	ug/l	ND	ND	
MBLK	1,1-Dichloroethane	ug/l	ND	ND	
MBLK	1,2-Dichlorobenzene	ug/l	ND	ND	
MBLK	1,2-Dichloroethane	ug/l	ND	ND	
MBLK	1,2-Dichloropropane	ug/l	ND	ND	
MBLK	1,3-Dichlorobenzene	ug/l	ND	ND	
MBLK	1,4-Dichlorobenzene (p-DCB)	ug/l	ND	ND	
MBLK	2-Butanone (MEK)	ug/l	ND	ND	
MBLK	2-Chloroethylvinylether	ug/l	ND	ND	
MBLK	2-Hexanone	ug/l	ND	ND	
MBLK	4-Methyl-2-Pentanone (MIBK)	ug/l	ND	ND	
MBLK	Acetone	ug/l	ND	ND	
MBLK	Acrolein	ug/l	ND	ND	
MBLK	Acrylonitrile	ug/l	ND	ND	
MBLK	Benzene	ug/l	ND	ND	
MBLK	cis-1,2-Dichloroethene	ug/l	ND	ND	
MBLK	Chlorobenzene	ug/l	ND	ND	
MBLK	cis-1,3-Dichloropropene	ug/l	ND	ND	
MBLK	Bromoform	ug/l	ND	ND	
MBLK	Chloroform (Trichloromethane)	ug/l	ND	ND	

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Sample Type Water Sampled 07-aug-1992 Received 08-aug-1992 Reported 14-aug-1992

Volatile Organics HSL (ML/SW 8240)
Quality Control

Control	Parameter	Units	Actual	Found	%Recv
MBLK	Chloroethane	ug/l	ND	ND	
MBLK	Carbon disulfide	ug/l	ND	ND	
MBLK	Carbon Tetrachloride	ug/l	ND	ND	
MBLK	Dibromochloromethane	ug/l	ND	ND	
MBLK	Dichlorobromomethane	ug/l	ND	ND	
MBLK	Ethyl benzene	ug/l	ND	ND	
MBLK	Methyl Bromide	ug/l	ND	ND	
MBLK	Methyl Chloride	ug/l	ND	ND	
MBLK	Methylene Chloride	ug/l	ND	ND	
MBLK	m,p-Xylenes	ug/l	ND	ND	
MBLK	o-Xylene	ug/l	ND	ND	
MBLK	1,1,2,2-Tetrachloroethane	ug/l	ND	ND	
MBLK	Tetrachloroethylene (PCE)	ug/l	ND	ND	
MBLK	Styrene	ug/l	ND	ND	
MBLK	trans-1,2-Dichloroethene	ug/l	ND	ND	
MBLK	1,1,1-Trichloroethane	ug/l	ND	ND	
MBLK	Trichloroethylene (TCE)	ug/l	ND	ND	
MBLK	Trichlorofluoromethane	ug/l	ND	ND	
MBLK	trans-1,3-Dichloropropene	ug/l	ND	ND	
MBLK	Tetrahydrofuran	ug/l	ND	ND	
MBLK	Toluene	ug/l	ND	ND	
MBLK	Vinyl Chloride (VC)	ug/l	ND	ND	
MBLK	Vinyl Acetate	ug/l	ND	ND	
MS	1,1-Dichloroethylene (1,1DCE)	ug/l	4	NA	
MS	Benzene	ug/l	4	NA	
MS	Chlorobenzene	ug/l	4	NA	
MS	Trichloroethylene (TCE)	ug/l	4	NA	
MS	Toluene	ug/l	4	NA	
MSD	1,1-Dichloroethylene (1,1DCE)	ug/l	4	NA	
MSD	Benzene	ug/l	4	NA	
MSD	Chlorobenzene	ug/l	4	NA	

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Volatile Organics HSL (ML/SW 8240)
Quality Control

Control	Parameter	Units	Actual	Found	%Recv
MSD	Trichloroethylene (TCE)	ug/l	4	NA	
MSD	Toluene	ug/l	4	NA	

Report #: 2253

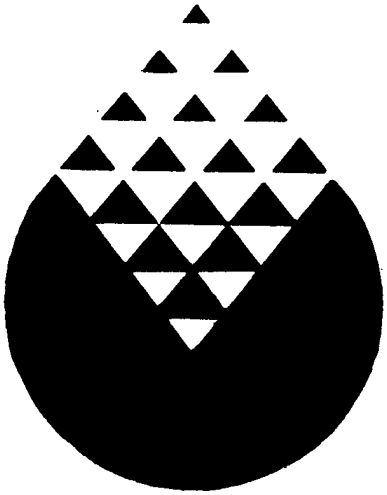
APPENDIX F

CPT SUMMARY REPORT

Environmental Site Assessment Bldg. 870 / Patriot Hills Area Hill Air Force Base, Utah

Prepared For

JMM James M. Montgomery
Consulting Engineers, Inc.



October 1992

Prepared By

TERRA TECHNOLOGIES – SOUTHWEST, INC.

TERRA TECHNOLOGIES - SOUTHWEST, INC.

Geotechnical & Environmental Site Investigations
Advanced In-Situ Technical Services

October 30, 1992
92-1016

James M. Montgomery Consulting Engineers, Inc.
4525 South Wasatch Blvd., Suite 200
Salt Lake City, Utah 84124

Attention: Mr. David A. Fulton
Project Manager

Reference: Environmental Site Assessment
Building 870 / Patriot Hills Area
Hill Air Force Base, Utah

Gentlemen:

Please find attached herewith four copies of our final report for the above referenced program. We have incorporated your comments to our draft report dated 09 October, 1992. As requested, this report consists of a factual presentation of data only. As such, any interpretation of the data and resulting conclusions and recommendations have been minimized.

Should you have any questions concerning the enclosed report or desire additional information, please do not hesitate to contact us.

Very truly yours,
TERRA TECHNOLOGIES - SOUTHWEST, INC.

Rick A. Klopp
President

Attachment:

RAK:smk

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DEFINITION OF TERMS

Aliquot. One of a number of equal-sized portions of a water sample that is being analyzed.

Aquifer. For this report, it is the formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water when pumped. Perched aquifers are not relevant to this study and the aquifer is considered to be unconfined.

Capillary Fringe. The zone immediately above the water table where water is drawn upward by capillary attraction.

Concentration. The weight of dissolved solids or sediment per unit volume of water expressed in micrograms per liter (ug/l or ppb) or milligrams per liter (mg/l or ppm). Concentration is also utilized for ground water quality and can be referenced to either weight or volume.

Cone Of Depression. The area around a discharging well where the hydraulic head in the aquifer has been lowered by pumping.

DIPE. Acronym for di-isopropyl ether

Direct Precipitation. Water that falls directly on a given surface without passing through any land phase of the runoff cycle.

Discharge Velocity. An apparent velocity, calculated from Darcy's Law, which represents the flow rate at which water moving through an aquifer if the aquifer where an open conduit. Also referred to as specific discharge.

Dispersion. The process by which groundwater containing a solute is diluted with uncontaminated ground water as it moves through an aquifer.

Drawdown. A lowering of the water table in an unconfined aquifer or the potentiometric surface in a confined aquifer caused by the pumping of ground water from wells.

Equivalent Density (Eq-Dr). The mass or quantity of a substance per unit volume based on a theoretical maximum of 100% and a minimum of 0%. Most soils are in the range of 60 to 80 percent.

Fs. Acronym for the local friction or drag measured during a cone penetration test.

Hydraulic Conductivity. The volume of water at the prevailing kinematic viscosity that will move in a unit time under a unit hydraulic gradient through a unit area measured at right angles to the direction of flow. In general terms, hydraulic conductivity is the ability of a porous media to transmit water.

Hydraulic Gradient. The change in total head with a change in distance in a given direction. The direction is that which yields a maximum rate of decrease in head.

Infiltration. The flow of water downward from the land surface into and through the upper unsaturated soil layers.

Isopleth. An imaginary line connecting points of equal quantity, ie. potentiometric surface, benzene concentration, or CPT friction ratio.

Isotropy. The condition in which hydraulic properties of an aquifer are equal in all directions.

Kinematic Viscosity. The ratio of dynamic viscosity to mass density. It is obtained by dividing dynamic viscosity by the fluid density. Units are typically square meters per second.

MTBE. Acronym for methyl tert-butyl ether

Nk. A derived relationship between the undrained shear strength of a soil and the measured tip resistance.

Nanogram/Cubic Centimeter (ng/cc). A measure of concentration equivalent to a part per billion.

PPBV And PPMV. A unit of concentration, either a part per billion (ug/l) or a part per million (mg/l) expressed as a percentage by volume to a known standard.

PPBW And PPMW. A unit of concentration, either a part per billion (ug/l) or a part per million (mg/l) expressed as a percentage by weight to a known standard.

Phi Angle (PHI). The angle of internal friction within a homogeneous soil mass. The flow of water is directly related to the phi angle of a soil given uniform hydraulic conditions

PID. Acronym for photo-ionization detector.

Porosity. The ratio of the volume of void spaces in a rock or sediment to the total volume.

Potentiometric Surface. In an aquifer, it is the level to which water will rise in tightly cased wells. More than one potentiometric surface is required to describe the distribution of head. The ground water table is a particular potentiometric surface.

Qc. Acronym for the measured tip resistance from the cone penetrometer uncorrected for unequal end area affects.

Rf. Acronym for the friction ratio of a soil. It is expressed as a percentage of local friction (Fs) divided by the tip resistance (Qc) multiplied by 100.

Radial Flow. The flow of water in an aquifer toward a vertically oriented well.

SPT. Acronym for standard penetration test.

Saturated Zone. The zone in which the voids in the soil are filled with water at a pressure greater than atmospheric. The water table is the top of the saturated zone in an unconfined aquifer and is at atmospheric pressure.

Seepage Velocity. The actual rate of movement of fluid particles through porous media.

Specific Storage. The amount of water released from or taken into storage per unit volume of a porous medium per unit change in head.

Specific Yield. The ratio of the volume of water that the formation, after being saturated, will yield by gravity, to the volume of the formation. Term used for unconfined or water-table aquifers.

Storativity. The volume of water an aquifer releases from or takes into storage per unit surface area of the aquifer per unit change in head. It is equal to the product of specific storage and aquifer thickness. In an unconfined aquifer, the storativity is equivalent to the specific yield. Also called storage coefficient.

Stratigraphic Unit. A formation, part of a formation, or a group of formations in which there are similar geologic and hydrologic characteristics allowing for grouping typically into aquifers or confining units.

Transmissivity. The rate at which water of the prevailing kinematic viscosity is transmitted through a unit width of the aquifer under a unit hydraulic gradient. It is a function of the liquid, the porous media, and the thickness of the porous media.

Unconfined Aquifer. An aquifer in which there are no confining beds between the zone of saturation and the surface. A water table exists in an unconfined aquifer.

Undrained Shear Strength (Su). A property reserved for cohesive soils in which their resistance to shearing is determined. Units are in tons per square foot.

Water Table. The surface in an unconfined aquifer at which the pressure is atmospheric.

CONVERSION FACTORS

The inch-pound / metric units used in this report can be converted to the metric / inch-pound system of units as follows:

Length Conversion

Inch-pound Unit		Metric Unit
1 in	=	25.4 mm
1 ft	=	30.48 cm
1 mile	=	1.6093 km

Area Conversion

Inch-pound Unit		Metric Unit
1 sq in	=	6.452 sq cm
1 sq ft	=	0.0929 sq m
1 sq mile	=	2.59 sq km
1 acre	=	0.4047 ha

Volume Conversion

Inch-pound Unit		Metric Unit
1 cu in	=	16.39 ml
1 cu ft	=	28.317 l
1 US gallon	=	3.785 l
1 acre-ft	=	1233.5 cu m

Time Conversion

Unit		Unit
1 sec	=	1.67 E-02 min
1 min	=	1.67 E-02 hrs
1 hr	=	360 sec
1 day	=	8.64 E 04 sec

Temperature Conversion

Temperature (C) = (Temperature (F) - 32)/1.8

EXECUTIVE SUMMARY

Hill Air Force Base (Hill AFB) is located west of the Wasatch Front in northern Utah. Building 870 and the Patriot Hills Area are located in the western portion of the base. Near-surface sediments consist of unconsolidated surficial basin-fill deposits of the Quaternary and Recent Age. These sediments were eroded from the Wasatch Front and were carried west and deposited. The base is located on a plateau-like bench or terrace which is a remnant delta that formed as the ancient Weber River entered Lake Bonneville. The sediments in the area of the investigation are typical of deltaic deposits and consist of gravels, sands, silts, and clays.

Ground water flow is generally to the southwest and hydraulic conductivities in the uppermost portion of the first water-bearing unit are in the range of range of E-03 to E-04 cm/sec. Aquifer transmissivity and storativity tests were not conducted as part of the investigation. The depth to ground water ranges from about four to forty feet below grade.

Previous chemical analyses conducted at the site indicated that the ground water was contaminated with soluble hydrocarbons. A ground water contaminant plume has been delineated and is approximately 250 feet in width and 750 feet in length and generally follows the ground water flow net.

The higher concentrations of soluble hydrocarbons occurs at the potentiometric surface although detectable concentrations were observed at slightly deeper depths; possibly due to vertical dispersion. The maximum concentrations of the major organic compounds including benzene, toluene, ethyl-benzene, and total xylenes (BTEX) were observed to be 26.092, 21.919, 0.753, and 3.906 mg/l, respectively. The near-surface soils at the site are generally free of these hydrocarbons; however, in the vicinity of the 870 Building elevated soil gas concentrations were observed in the unsaturated zone.

The ground water contaminant plume represents the current level of migration within the upper-most water bearing unit although interference from other sources, ie. leakage from other above or below ground storage tanks or buried pipelines and fuel transmission lines may have also contributed to the plume.

PROGRAM OBJECTIVES

Terra Technologies - Southwest, Inc., at the request of James M. Montgomery Consulting Engineers, Inc. (JMM), initiated an environmental site assessment of the Building 870 / Patriot Hills Area during August, 1992. The investigation was prompted by the results of previous studies conducted at the site by JMM. Due to the limited number of monitoring wells installed during of these studies, however, a more detailed evaluation of the near-surface soil and ground water conditions in the area was required.

JMM requested that the investigation be undertaken to locate the source or sources and to determine the extent and distribution of ground water contamination. This report describes the results of the environmental site assessment.

INTRODUCTION

Site Description

Hill Air Force Base is located west of the Wasatch Front in northern Utah. Building 870 and the Patriot Hills Area are located in the western portion of the base. Building 870 serves as a command center and logistical support for the dispensing of JP-4 through a series of fuel transmission lines to the major flightlines. Located just to the north of Building 870 are several large capacity above ground storage tanks. Diesel storage facilities and transfer systems are also located in the general vicinity. The area of principal investigation is illustrated on Plate 1.

The land surface at the facility is relatively flat in the area of Building 870, however, a significant slope exists to the southwest in the groundwater flow direction. This slope is due in part to the deltaic depositional system. Surveying was not conducted as part of the investigative activities.

The depth to ground water at the site is typically in the range of four to forty below grade with a ground water flow direction to the southwest.

Nature And Scope Of The Problem

Upon removal of an underground storage tank (UST) in the vicinity of Building 870 by JMM, contaminated soils were observed in the excavation, although the actual tank appeared to be in good condition. Soil samples collected from the excavation exhibited elevated Total Petroleum Hydrocarbon (TPH) levels. A new 1,000 gallon, double-walled steel UST with leak detection equipment was installed in the excavation. No attempts were made to excavate the contaminated soils due to the potential of damaging a retaining wall to the south of the excavation.

Subsequent to the installation of several monitoring wells by JMM, Terra Technologies was contracted to define to extent of contamination by use of cone penetrometer testing equipment and in-situ soil gas and ground water sampling capabilities. The purpose was to define the limits of the plume without the installation of additional wells. After definition had been achieved, conventional wells would then be placed at optimum depths and locations.

FIELD INVESTIGATION

Field investigations subsequent to the above discussed activities consisted primarily of routine ground water sampling from existing monitoring wells, conducting cone penetration testing, collecting in-situ soil gas and ground water samples, performing dissipation tests, and conducting in-field analytical testing.

Monitoring Well Sampling And Analysis

Ground water samples were collected from several existing monitoring wells at the site for "finger-printing" various contaminants. The samples were analyzed for BTEX and PCE on-site using a SRI portable gas chromatograph.

Prior to analysis, the static water level was measured in each well with an accuracy of $\pm$ 0.01 feet. Three casing volumes of ground water was removed with a PVC bailer prior to the collection of each sample. Ground water samples were retained in 40 ml volatile organic analysis (VOA) vials and were analyzed immediately after sampling. The bailer and water level indicator was thoroughly decontaminated between locations by the following procedure:

1. Rinse with potable water
2. Wash with distilled water and Alconox solution
3. Triple rinse with distilled water

Cone Penetration Testing

Terra Technologies conducted 38 3-Channel and one 4-Channel electronic cone penetration test soundings in conjunction with the site assessment. Locations were identified in the field by a JMM representative. Some of the originally scheduled locations were offset due to inaccessible conditions or the presence of rubble near the surface. Plate 2 presents the approximate CPT test locations.

Soundings were conducted using our truck-mounted electronic CPT unit. One of the advantages of the cone penetrometer is the speed of operation which permits soil stratigraphy to be determined quickly and economically. Another advantage is the continuous penetration record which permits the identification of thin strata which could influence the geohydrologic conditions in the area. These thin strata can easily be missed by conventional drilling and sampling techniques.

The entire system was mounted in a rugged mobile truck which contained the system components including the data processing equipment. The cone was hydraulically pushed into the soil and a continuous record of tip resistance (Qc), local friction (Fs), friction ratio (Rf), and inclination (In) was obtained. The data was available for immediate evaluation via a computer plotting system onboard the truck. The data was also stored on magnetic media for future processing.

Some of the more useful properties and parameters that can be obtained from cone penetrometer data include:

-Soil stratigraphy
-Undrained shear strength
-Compressibility
-Over-consolidation ratio (OCR)
-Correlation to N-value from standard penetration tests
-Relative density
-Liquefaction potential

In addition to the above, the 4-Channel cone was used to obtain pore water pressure measurements. Piezocone testing has many advantages over the conventional cone penetrometer test. The main advantages include:

a. the ability to distinguish between drained, partially drained, and undrained penetration,

b. the ability to correct measured cone data to account for unbalanced water forces due to unequal end areas in cone design,

c. the ability to evaluate flow and consolidation characteristics of the soil,

d. the ability to assess equilibrium ground water conditions, and

e. improved soil profiling and identification with improved evaluation of environmental parameters.

There is significant importance as to the placement of the pore pressure element during a 4-Channel cone penetration test. Pore pressures can be generated in saturated soils due to changes in both mean normal stresses and shear stresses. When saturated soils are subjected to increases in mean normal stresses, positive pore pressures are generated. When saturated soils are subjected to only shear stresses, pore pressures generated can be either positive or negative depending on the contractive or dilative response of the

soil. During cone penetration testing, soil particles adjacent to the cone experience changes in both normal and shear stresses. Pore pressures measured on the face of a penetrating cone are influenced by both normal and shear stresses, whereas, pore pressures measured behind the tip tend to be influenced predominantly by shear stresses. The importance of element placement therefore is important during the reduction of pore pressure data.

The 4-Channel cone penetrometer test sounding was also conducted for the determination of piezometric elevations and hydraulic conductivities of various lithologic units. Values of hydraulic conductivity are determined by measuring the rate of decay of the excess pore pressures generated by pushing the cone through the soil. This rate of decay is a function of the hydraulic conductivity of the soil medium. After conducting several decay tests in a single sounding, the static ground water table can be determined by review of the associated hydrostatic equilibrium pressures.

The cone penetrometer equipment was also utilized for the project due to the following environmental concerns:

- The cone penetrometer test and its associated sampling equipment produced its own hole. There were virtually no cuttings or soil at the ground surface which needed to be collected for proper disposal.

- The cone penetrometer test was a dry test and there were no contaminated drilling fluids requiring disposal.

- The cone and the sounding rods were the only equipment which came in contact with the contaminated soil. They were easily decontaminated in the field, as required.

- All sampling was conducted inside an environmentally controlled unit thereby greatly reducing personnel exposure to contaminants.

- Testing was very rapid.

The cone penetration tests were conducted in accordance with specifications as outlined in ASTM D 3341 and the sounding logs are presented in Appendix A.

Soil Gas & Ground Water Sampling (CPT System)

Soil Gas Sampling - Based on the known stratigraphy in the area, a single vertical soil gas profile was completed near Building 870. Sampling was conducted by hydraulically

advancing a grout tip to the desired depth using blank CPT rods. Soil gas samples were collected and analyzed in-field by three successive procedures. Upon reaching the desired depth, the sampling system was opened which allowed soil gas to enter the CPT rods. Initially, the soil gas within the blank CPT rods were monitored with an TECO Organic Vapor Monitor. The second method of sampling involved the installation of a 1/4-inch Teflon tubing to the desired sampling depth and allowing the sampling pump within the OVM to analyze the soil gas. The third method of in-field VOC analysis involved the use of a vacuum pump attached to the 1/4-inch Teflon tubing. Soil gas was then pulled through the Teflon tubing until a consistent pressure was noted on a series of gauges. At this point, any stagnant air within the system was evacuated and a suction was placed directly on the soil. Soil gas samples were collected in Tedlar bags through a specially designed sampling port.

The entire sampling system was purged with argon and blanks were analyzed between successive sampling methodologies. The OVM was used to verify that the decontamination process was complete.

In addition, a soil gas sample was also collected in the basement of a residence located on Hamilton Street. The analysis exhibited all compounds of interest to be less than the standard detection levels for this project.

Results of the soil gas sampling program are presented in Table 1.

Lateral Extent Of Soluble Hydrocarbons - Subsequent to the cone penetrometer tests, soil gas and/or ground water samples were collected for analytical testing. Since the soluble hydrocarbons of concern were benzene, toluene, ethyl-benzene, and the xylene isomers, a sampling depth at the potentiometric surface was selected.

Ground water samples were collected by one of two methods. In the first procedure, a sample was collected by inserting 0.5-inch ID 0.010-inch slotted PVC pipe in the hole caused by pushing the cone penetrometer. As soon as fluids were detected within the PVC by an electronic water level indicator, samples were withdrawn via a small diameter stainless steel bailer. The screened section of the PVC was placed across the water table to obtain the most representative BTEX analysis sample.

The second method was utilized if the remaining hole did not allow PVC to be installed due to its flexibility or if the hole had collapsed. In this method, a sacrificial tip was

placed on the end of blank GWS rods and the rods were pushed to the depth of interest. Sampling was accomplished by leaving the tip in the ground and pulling back the GWS rods. The influx of ground water into the GWS rods was measured by the electronic water level indicator and a sample was then collected with a stainless steel bailer.

All sampling tools and electronic indicators were thoroughly decontaminated between each sampling event and location.

Vertical Extent Of Soluble Hydrocarbons - A cone penetrometer capable of collecting in-situ ground water samples was used to determine the vertical extent of the soluble hydrocarbon plume.

When sampling with the ground water cone, each component of the system is sealed and hydraulic interconnections between components are accomplished through the use of hypodermic needles, flexible seals, and induced pressure gradients. Ground water samples are collected in sealed, pressurized, glass vials which can be sent directly to the laboratory.

The system makes it possible to collect pressurized ground water samples without the necessity of purging large amounts of well water or transferring samples to other containers, a procedure which often results in a loss of volatile chemical constituents through volatilization or external contamination.

The primary feature of the system is the filter tip, the standard configuration of which consists of a thermo-plastic body and a filter of high density polyethylene. The filter tip is reinforced with a core of teflon coated stainless steel and sealed with a flexible septa of resilient teflon or fluororubber depending upon the project QA/QC requirements.

Ground water samples are obtained by inserting a pre-sterilized, pre-evacuated glass sample vial into a sample container housing and then lowering it down the PVC extension pipes. At the lower end of the housing is a spring loaded "guide sleeve" assembly which houses a double-ended hypodermic needle. The glass vial contains a flexible septa similar to those in the filter tips. Contact between the guide sleeve and the filter tip causes the needle to puncture the septa in both the cap and the sample vial. The vacuum in the vial then draws ground water from the wells, through the filter tip and into the vial. Withdrawing the sampler housing allows the needle to withdraw from both the sample vial and the filter tip. The guide sleeve mechanism causes the needle to withdrawal from the sample vial first, thus preventing a loss of sample fluid. The septa in both the filter tip and the sample vial automatically reseal as the needle is

withdrawn.

One of the major advantages of the system is that only the small amount of ground water contained in the filter tip itself, must be purged from the system prior to sampling. The system essentially eliminated the sources of physical, chemical, and human error normally associated with ground water sampling.

In-Field Analytical Testing

The analysis of ground water in the field was accomplished by using a portable gas chromatograph (GC) to measure the concentration of volatile organics in the headspace above the ground water samples. The ability to reliably determine part per billion and part per million by volume (ppbv and ppmv) concentrations in the headspace was used to determine the concentration of these species in ground water. This can be done using information available on the partitioning of organics species between the aqueous and vapor phases (Henry's Law constants or solubility and vapor pressure data) or by preparing water standards and analyzing the headspace.

A SRI Model 8610 portable GC equipped with a photoionization detector (PID) was used for all field analyses.

Standard solutions of known concentrations were prepared and were used to periodically calibrate the gas chromatograph. Calibration of the GC was conducted at the start of each day and whenever the performance of the GC was in question.

The results of the ground water analytical testing program is summarized in Table 2 and attached in detail as Appendix B.

Dissipation Testing

Dissipation testing was conducted at location PCPT-01 in an effort to obtain general conductivity measurements and various physical hydrologic properties of the upper most water-bearing unit. The results of the cone penetration testing and associated dissipation tests yield hydraulic conductivities in the range of E-03 to E-04 cm/sec.

Quality Assurance / Quality Control (QA/QC) Program

To maintain a high level of QA/QC in the field, all personnel were briefed prior to the field investigation concerning the health and safety aspects associated with this program in

particular and to review sample collection, handling, and shipping procedures. Sampling personnel were also briefed on the local geological and hydrological aspects of the formations to be sampled.

Inherent to all soil gas and ground water sampling is the assumption that the soil gas and/or ground water removed is representative of the conditions remaining and therefore will yield information on the physical and chemical attributes of the area being sampled at that time and place of sampling. Another assumption is that when a sample is collected at a different location, you can infer what is taking place in the subsurface, not only over space, but also over time when the correct sampling points are determined. With these assumptions in mind, portions of the following QA/QC program were initiated for the field portion of the project:

Field Program

Step : Hydrologic measurement
Goal : Establish static water level
Action : Measure the water level to 0.01 foot

Step : Well purging
Goal : Removal of stagnant water which could bias ground water chemistry results
Action : Bail or pump water until purging parameters such as pH, Temperature, Ohms, Eh, or chemistry will stabilize to ± 10% over at least two well volumes.

Step : Soil gas and/or ground water sample collection
Goal : Collection of samples with minimal disturbance of sample chemistry
Action : Dedicated sample containers. Bailing or pumping rates less than 100 ml/min for volatile organics

Sampling equipment was thoroughly decontaminated between sampling events and locations. Equipment blanks were also analyzed to verify that cross-contamination had not occurred.

Step : Filtration / Preservation
Goal : Determination of soluble constituents
Action : Filter trace metals, inorganic anions/cations, alkalinity. Do not filter TOC, TOX, volatile organic compound samples.

Step : Field determinations
Goal : Field analysis of samples will avoid bias in determinations of samples which are highly volatile or do not keep well.
Action : Field screening was conducted on a select number of samples prior to analysis.

Step : Field analytical test equipment
Goal : To accurately monitor organic compounds
Action : Equipment used during the screening process is to be calibrated in a clean environment with specialty samples of organic compounds known to exist in the soil and ground water in the area.

Step : Field blanks / standards
Goal : To permit the correction of analytical results for changes which may occur after sample collection, preservation, storage, and transport.

Action : Where appropriate, at least one blank and one standard should be made up in the field during sampling. Spiked samples should also be sent to the laboratory for analysis.

Step : Sample storage / transport
Goal : To minimize any chemical alteration of samples prior to analysis.
Action : All samples shall be either refrigerated or placed on ice immediately upon collection. Maximum sample holding times or storage periods should be adhered to.

Step : Sample documentation
Goal : To determine the handling and liability of samples during shipment and analysis.
Action : All samples sent off-site shall be accompanied by a completed Chain Of Custody (COC) form, properly signed and dated.

Analytical Testing Program

The objective of the laboratory QA/QC program was to provide uniform conditions for sampling, instrument and method control, and performance evaluation.

The procedures are presented in terms of sampling, extraction analytical methodology, surrogate spike analysis, and sample analysis. It should be noted that not all methodologies were a requirement for this project.

Sampling -

As described in "USEPA CONTRACT LABORATORY PROGRAM - Statement of Work for Organic Analysis - Multi Media - Multi Concentration", July, 1987.

Extraction -

Methods involve solvent extraction of the matrix and subsequent analysis using GC or GC/MS.

Analytical Methodology -

1. GC/MS Calibration and Abundance Pattern - The analytical equipment is tuned and calibrated for both volatile organics and for semi-volatiles. The abundance criteria are demonstrated daily or if analyses are frequent; for each 12 hour period.

2. Calibration of GC/MS System - The system calibration is conducted after all tuning criteria have been met and before any samples or blanks are analyzed. The calibration is also verified for each 12 hour period.

    a. Linearity Response - The system is calibrated at five concentrations to determine the linearity response using standards. The concentrations of 20, 50, 100, 150, and 200 ug/l (ppb) are used together with internal standards and surrogates. The calibration also requires that the relative retention time of each calibration compound in each calibration run is within 0.06 retention time units. The internal standards and surrogates used are per the EPA-CLP protocol. It is also required that the percent relative standard deviation for each calibration check compound is less than or equal to 30 percent.

    b. Performance Check - The system performance check is performed each 12 hours during analyses using a calibration standard of 50 ug/l (ppb) concentration.

c. Initial Calibration Check - The validity of the initial calibration is checked using calibration check compounds listed as per EPA-CLP protocol. A minimum difference of 25 percent is allowed to have a valid calibration.

d. Method Blank Analysis - Blank analyses of deionized water or pure sample matrix is performed before sample analyses to minimize artifacts due to contaminants in solvents, reagents, glass ware, etc.

Surrogate Spike Analyses -

Surrogate standard determinations are performed on all samples and blanks by spiking each sample, matrix spike, and blanks prior to extraction. The surrogate spiking compounds used are per EPA-CLP protocol. The recovery is evaluated to ensure that the concentration is within the required recovery limits.

Sample Analysis -

1. Internal Standard Response - Internal standard responses are evaluated in all samples so that the changes in retention times are not more than a factor of two.

2. Concentration Readjustment - The sample is diluted and the internal standard concentration readjusted if any compound in the sample exceeds the initial calibration range. If dilution causes any compound to be undetectable, the results of both analyses are considered.

3. Qualitative Analysis - The two criteria which must be satisfied to verify the identification are (i) the elution of the sample component must be at the same GC relative retention time (within 0.06 units) as the standard component and (ii) the correspondence of the sample component mass spectra where the relative intensities of specific ions must agree within 20 percent of the standard spectra.

4. Quantification - The components are identified by the internal standard method and by surrogate standard recovery.

INTERPRETATION OF COLLECTED DATA

Cone Penetration Testing

Upon completion of the field program, results were interpreted via a computer program which determines soil behavior. Tabulated data is based on values averaged over a depth of 0.25 meters and therefore the influence of extreme values may be subdued. Due to this averaging technique, values of equivalent density, friction angle, SPT, and Su may vary from results obtained from laboratory testing on specific samples. From an environmental standpoint, this method is preferred over the conventional intermittent sampling and testing program which yields soil data at discrete points which may not be representative of the soil profile in terms of behavior. For the determination of thin lenses or layers, equally important for environmental studies, the digital CPT data should be reviewed.

Output parameters are defined in the "Definition Of Terms" section at the front of the report.

For determination of Su values, Nk factors of 18 to 29 were utilized based on known soil conditions in the area. Nk is generally obtained from empirical correlations. Reference undrained shear strengths are usually measured from field vane tests although half the unconfined compression test is often used. Values of Su determined from the cone data are in general agreement with results obtained from previous investigators in the area.

Based on the interpreted CPT profiles, the soil types at the site are composed of silty clays and clayey silts to sandy silts, sands, and occasional gravel lenses, pockets, and layers. The site stratigraphy varied at each of the CPT locations although three distinct zones can normally be identified. The first zone consists of clayey silts to silty clays. The unit varied in thickness from about five to 35 feet. Su values typically ranged between 0.5 and 3.5 tons per square foot (tsf) with an average of about 1.5 tsf representing a stiff to very stiff cohesive material. With the exception of a few minor silt and sand layers this material is considered to have low permeability.

The second zone is predominantly a sand to silty sand and can extend from near the surface to a depths greater than 50 feet. This cohesionless unit has equivalent densities which varied between < 40 and > 90% and associated phi angles of 36 to 48 degrees. This unit often resides within the saturated zone, the wide range in density and phi angle suggests that

there are layers of both low and high vertical hydraulic conductivity within this zone.

The third zone consists of silty clays . The unit varied in thickness from nonexistent to about 20 feet. Su values were typically lower than the upper zone and ranged between 0.3 and 2.0 tons per square foot (tsf) with an average of about 1.0 tsf representing a stiff soil. Again, with the exception of a few minor silt and sand layers this material is considered to have low permeability.

Changes in depositional environment have been shown to directly influence vertical as well as lateral migration of soluble hydrocarbons at this site. Based upon the CPT logs, a channel sand exists to the southwest of Building 870. Definition of this channel sand provided good definition of the ground water contaminant plume.

Interpretative cone penetrometer test data for each sounding is presented in conjunction with the CPT profiles in Appendix A.

Dissipation Testing

Values of hydraulic conductivity obtained from this test method proved to be reasonable for the known soils at the site and represents silty sands to silts.

Soil Gas Quality

Based upon the sampling methodology, analytical instrumentation, and ambient soil gas properties, samples of soil gas collected from a single location presented elevated levels of BTEX. Several other unknown volatile compounds were also detected in numerous samples. Additional locations would need to be investigated prior to drawing any firm conclusions regarding soil gas quality in the area.

Ground Water Quality

Based upon the sampling methodology, analytical instrumentation, and ambient ground water properties, samples of ground water collected from several locations presented elevated levels of BTEX.

The highest recorded combined BTEX value was observed at location CPT-07 located south southwest of Building 870. Benzene, toluene, ethyl-benzene, and xylenes concentrations for this location were 26.092, 21.919, 0.753, and 3.906 mg/l,

respectively at this location. Elevated BTEX levels (greater than a combined value of 1.000 mg/l) were also observed at locations CPT-01, CPT-02, CPT-03, CPT-09, CPT-10, CPT-12, CPT-14, CPT-20, and CPT-37.

Plate 3 presents a topographical view of the lateral extent of combined BTEX based on detection level of 0.100 mg/l.

The following observations can be drawn from Plate 3:

1. The source of the soluble hydrocarbons plume appears to be located in the area west of Building 870.

2. The plume configuration trends in a northeast-southwest direction.

3. Plume alignment mirrors both the general ground water flow direction as well as a depositional "channel" as noted on the CPT sounding logs.

4. The soluble hydrocarbon plume is approximately 250 feet in width and about 750 feet in length based on a lateral characterization only.

Plate 4 presents the lateral extent of the hydrocarbon plume in three dimensions.

The results of the vertical sampling program exhibited BTEX concentrations at depth below the static ground water table. At location PCPT-01, benzene, toluene, ethyl-benzene, and combined xylenes were detected to a depth of 10 feet below the potentiometric surface. The results at this depth were 0.195, 0.946, 0.072, and 0.089 mg/l, respectively.

CONCLUSIONS

Following the environmental site assessment at the Building 870 / Patriot Hills Area which included the installation of temporary piezometers and subsequent analytical analyses, a reasonable estimate of contaminant migration and transport from a probable source located west of Building 870 was determined. Based on the reviewed data, the plume is approximately 750 feet in length in a northeast-southwest direction and about 250 feet in width.

Soluble hydrocarbons in the area have been detected to depths of 10 feet within the saturated zone although the higher concentrations were detected within the upper portions of the aquifer. Detection at these depths, may be due in part, to vertical dispersion.

The ground water contaminant plume represents the current level of migration within the upper-most water bearing unit and appears to be primarily controlled by a depositional channel, although interference from other sources, ie. leakage from above ground storage tanks or buried pipelines and other fuel transmission lines may have also contributed to the plume.

TABLES

TABLE 1

SOIL GAS SAMPLING ANALYSES

Depth Below Grade (m)	Method A (mg/l)	Method B (mg/l)	Method C (mg/l)
1.00	1.2	26.4	72
2.00	0.6	24.0	17.4
4.00	0.6	26.1	64
5.00	1.2	67	>10,000
6.00	1.8	115	>10,000
8.00	2.0	208	>10,000

Note: All values are total VOC as isobutylene

TABLE 2

GROUND WATER SAMPLING ANALYSES

Location	Concentration, ppm (mg/l)				
	Benzene	Toluene	E-Benzene	Comb. Xyl.	PCE *
TP-01	0.741	2.273		1.027	0.425
TP-02	5.203	7.578	0.740	4.177	3.809
TP-03	2.701	3.112	0.322	1.655	2.447
TP-04					
TP-05					
TP-06					
TP-07	26.092	21.919	0.753	3.906	2.204
TP-08					
TP-09	0.992	2.128	0.173	0.301	1.269
TP-10	1.928	3.214		3.830	3.618
TP-11					
TP-12	1.163	0.565	0.062	0.265	0.636
TP-13		0.069		0.062	
TP-14	1.440	0.392	0.338	1.378	
TP-15					
TP-16					
TP-17			0.014	0.057	
TP-18					
TP-19	0.646		0.036	0.149	0.125
TP-20	0.124	2.699		0.504	0.303

[ ] = < 0.005 * Tetrachloroethylene

TABLE 2 (CONTINUED)

GROUND WATER SAMPLING ANALYSES

Location	Concentration, ppm (mg/l)				
	Benzene	Toluene	E-Benzene	Comb. Xyl.	PCE *
TP-21				0.057	
TP-22	0.056	0.090	0.022	0.104	
TP-23					
TP-24					
TP-25					
TP-26					
TP-27					
TP-28					
TP-29					
TP-30					
TP-31					
TP-32					
TP-33					
TP-34					
TP-35	N/A	N/A	N/A	N/A	N/A
TP-36				0.052	
TP-37	0.789	0.930		4.179	2.525
TP-38					
TP-39					
TWP-01	0.520	1.271	0.085	0.173	0.795

[ ] = < 0.005 * Tetrachloroethylene

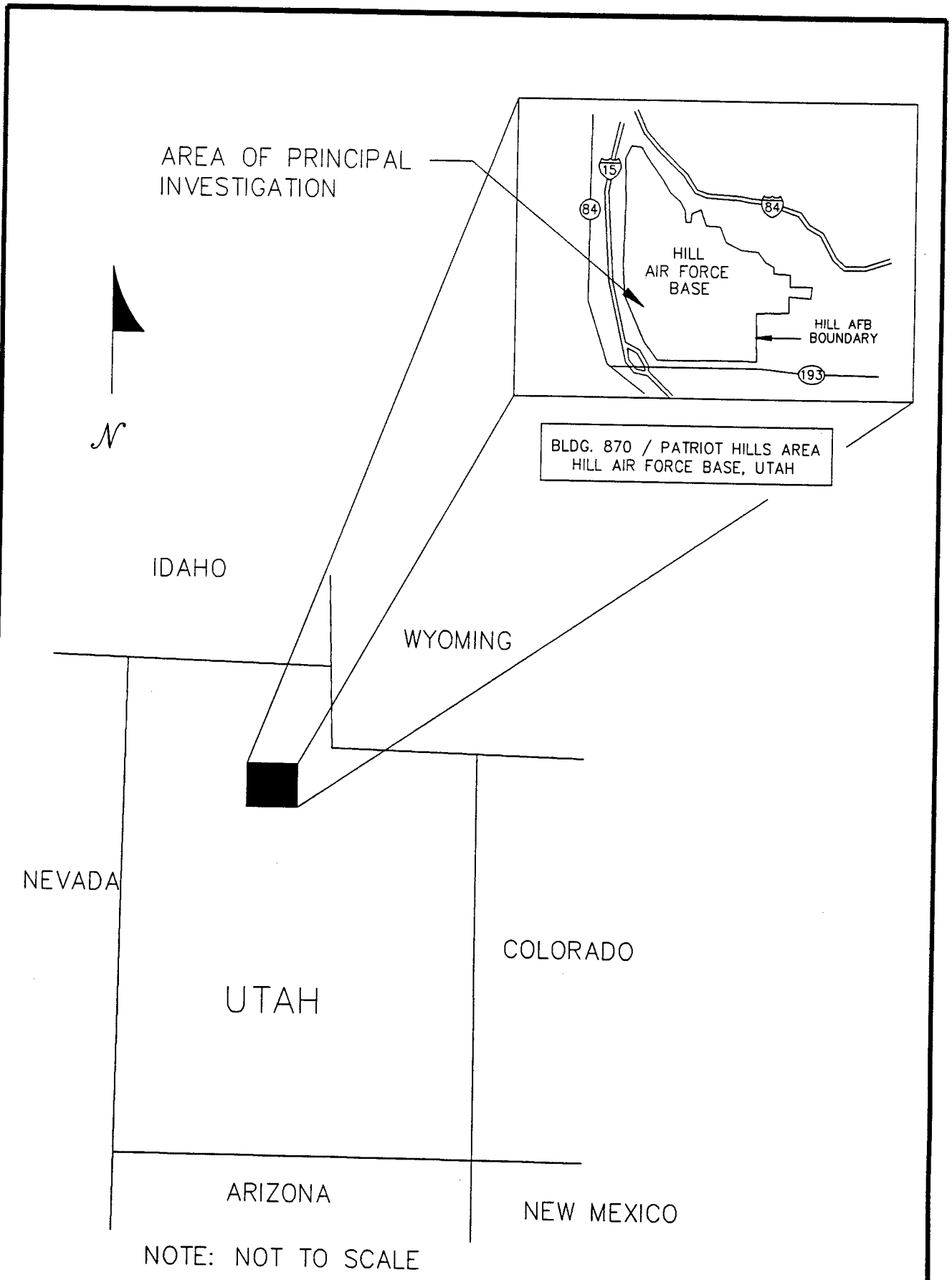
TABLE 2 (CONTINUED)

GROUND WATER SAMPLING ANALYSES

Location	Concentration, ppm (mg/l)				
	Benzene	Toluene	E-Benzene	Comb. Xyl.	PCE *
SGS-01	0.161	12.645	0.046	0.295	
GWS-01	0.195	0.946	0.072	0.089	
GWS-02					
MW-03	12.179	6.728		7.669	2.722
MW-07					

[ ] = < 0.005 * Tetrachloroethylene

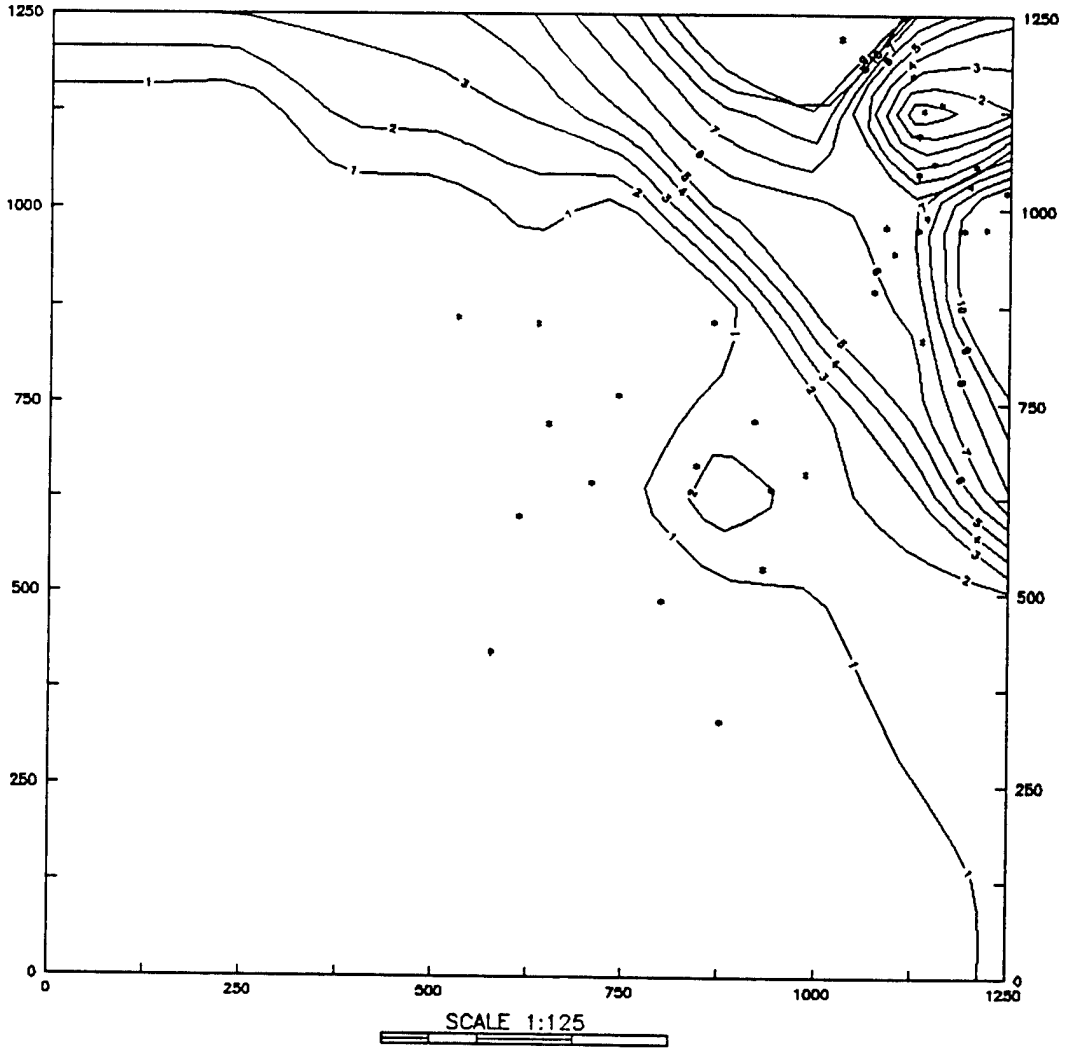
PLATES



TERRA TECHNOLOGIES – SOUTHWEST, INC.
GEOTECHNICAL & ENVIRONMENTAL SITE INVESTIGATIONS

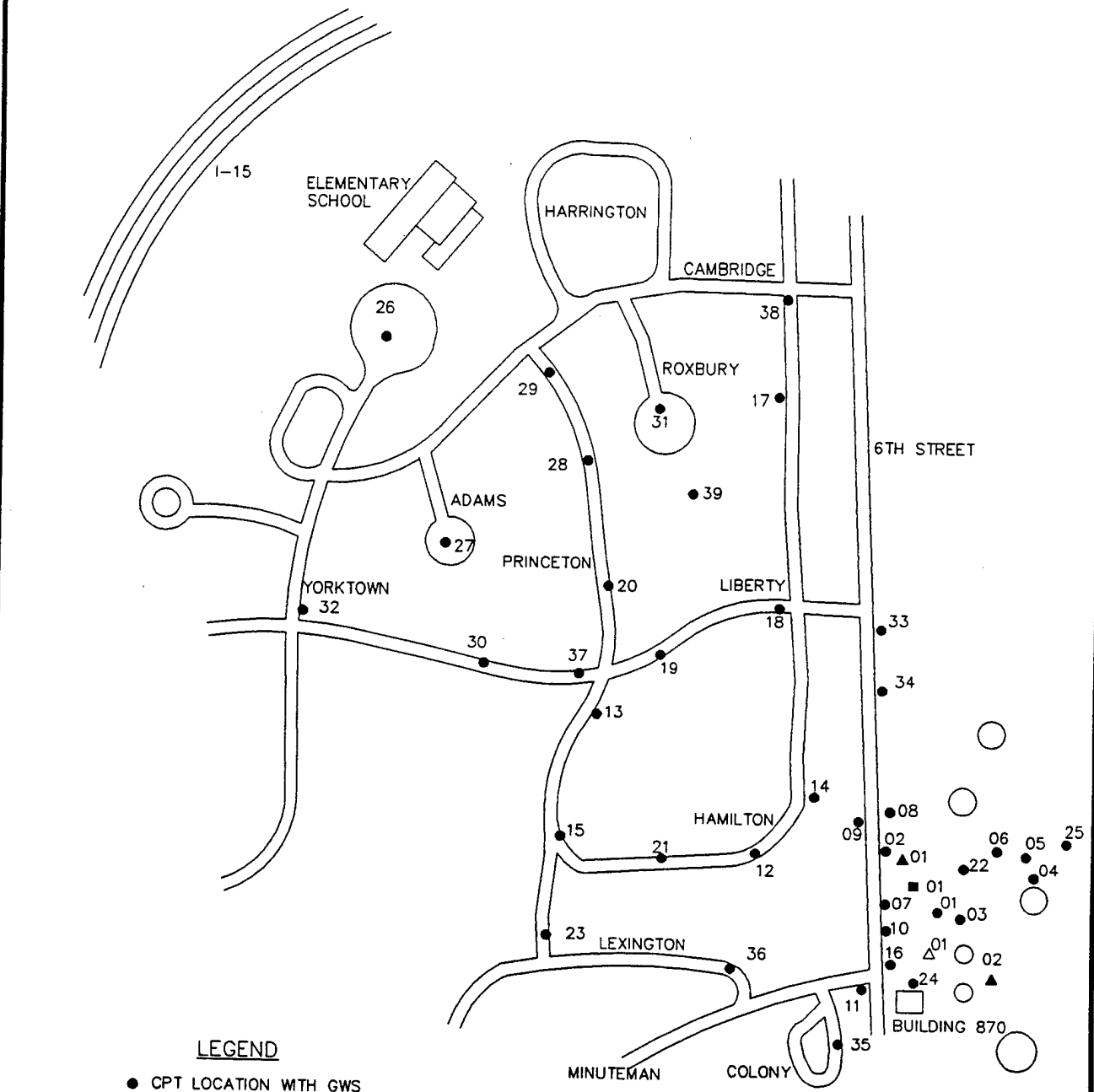
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PROJECT NO. : 92-1016	DRAWN BY : REJ	SCALE : NOT TO SCALE	REV. NO. : 0

COMBINED BTEX CONCENTRATION (mg/l)



TERRA TECHNOLOGIES – SOUTHWEST, INC.
GEOTECHNICAL & ENVIRONMENTAL SITE INVESTIGATIONS

TITLE: 2-D VIEW – COMBINED BTEX		11/2/92	PLATE NO. : 3
PROJECT NO. : 92-1016	DRAWN BY : REJ	SCALE : NOT TO SCALE	REV. NO. : 1

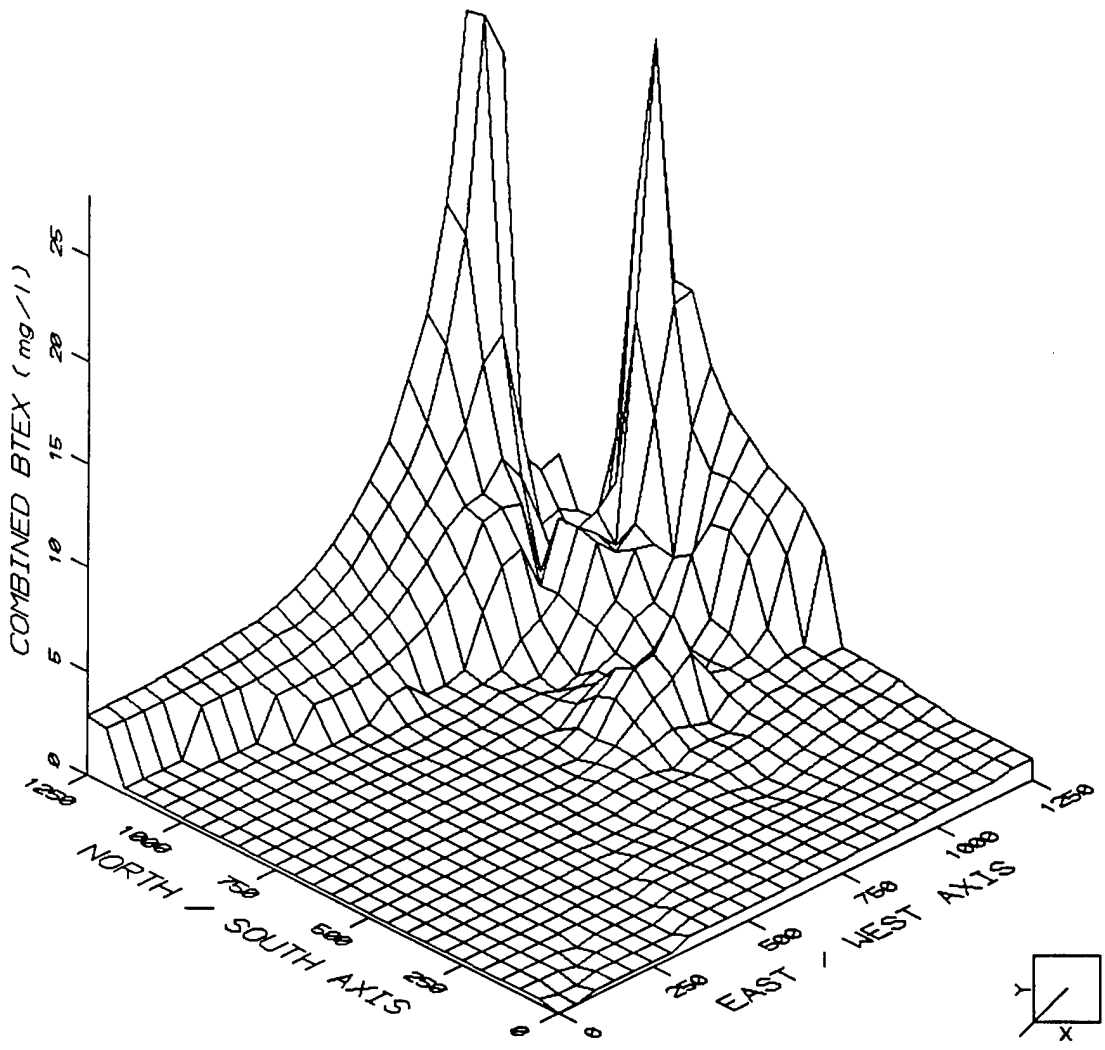


NOTE : GWS = GROUND WATER SAMPLING
SGS = SOIL GAS SAMPLING

TERRA TECHNOLOGIES - SOUTHWEST, INC.
GEOTECHNICAL & ENVIRONMENTAL SITE INVESTIGATIONS

TITLE: APPROXIMATE CONE PENETRATION TEST LOCATIONS		DATE : 11/02/92	PLATE NO. : 2
PROJECT NO. : 92-1016	DRAWN BY : REJ	SCALE : NOT TO SCALE	REV. NO. : 0

COMBINED BTEX CONCENTRATION



TERRA TECHNOLOGIES – SOUTHWEST, INC.
GEOTECHNICAL & ENVIRONMENTAL SITE INVESTIGATIONS

TITLE: 3-D VIEW – COMBINED BTEX		11/2/92	PLATE NO. : 4
PROJECT NO. : 92-1016	DRAWN BY : REJ	SCALE : NOT TO SCALE	REV. NO. : 1

APPENDIX A

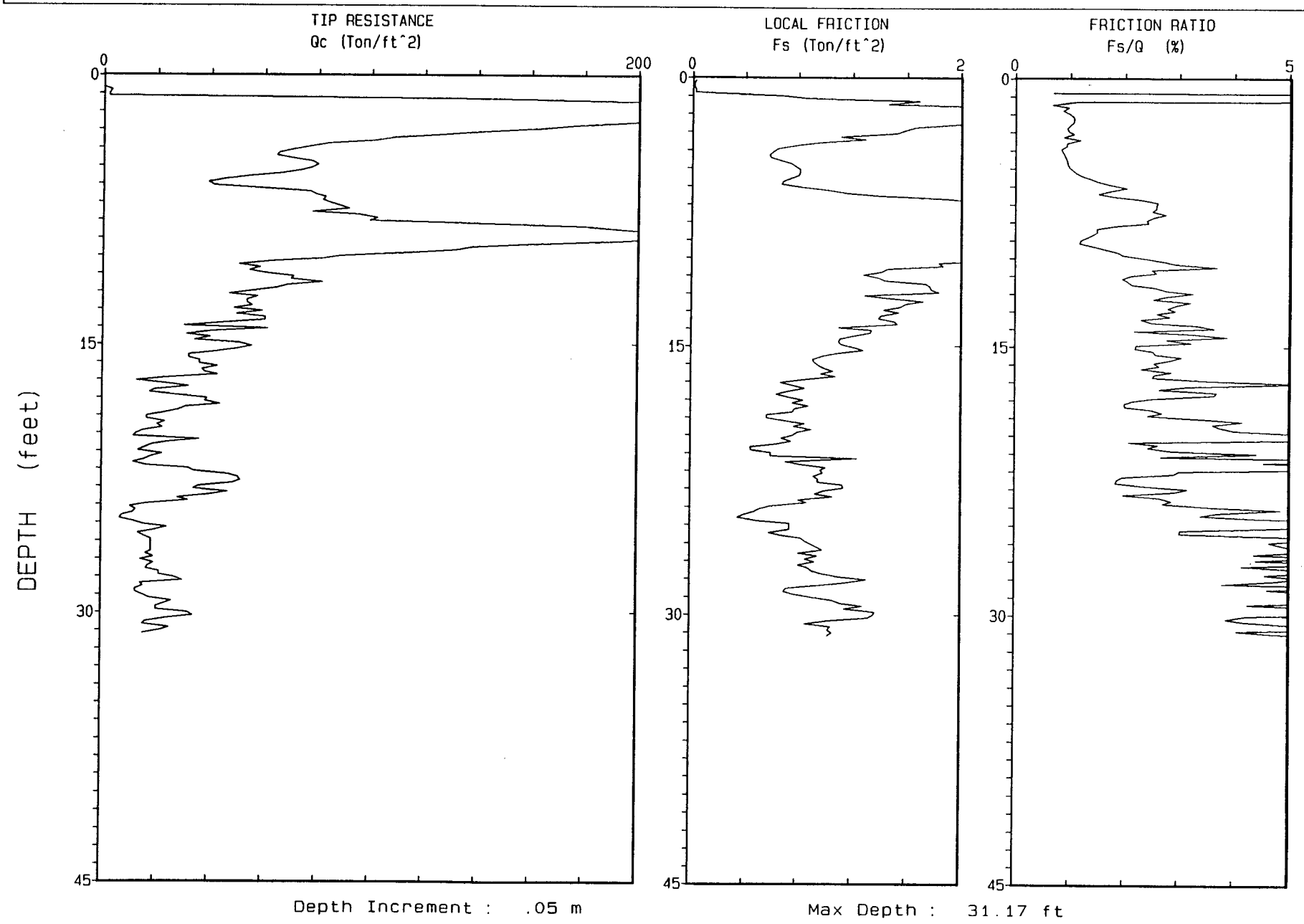
CPT SUMMARY REPORT

CPT PROFILES

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-04-92 SOUNDING NO. : CPT-01 Pg 1 / 1

LOCATION : BLDG. 870 DEPTH TO WATER : 43.65 FT BLS TERRA JOB NO. : 92-1016



Depth Increment : .05 m

Max Depth : 31.17 ft

1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date : 08-04-92

Location : CPT-01 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 6.95

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	0.58	0.02	2.76	0.02	undefined	UNDFND	UNDFD	UDF	UNDEFI
0.50	1.64	121.92	1.41	1.15	0.07	sand to silty sand	>90	>48	29	UNDEFINE
0.75	2.46	248.76	2.48	1.00	0.11	sand	>90	>48	48	UNDEFI
1.00	3.28	160.52	1.56	0.97	0.16	sand	>90	>48	31	UNDEFI
1.25	4.10	88.44	0.85	0.97	0.20	sand to silty sand	80-90	46-48	21	UNDEFINE
1.50	4.92	71.70	0.67	0.94	0.25	sand to silty sand	70-80	44-46	17	UNDEFI
1.75	5.74	63.48	0.77	1.21	0.29	silty sand to sandy silt	70-80	44-46	20	UNDEFI
2.00	6.56	58.64	1.02	1.73	0.34	silty sand to sandy silt	60-70	42-44	19	UNDEFINE
2.25	7.38	85.90	2.15	2.51	0.38	silty sand to sandy silt	70-80	44-46	27	UNDEFINE
2.50	8.20	103.64	2.41	2.32	0.43	silty sand to sandy silt	70-80	44-46	33	UNDEFI
2.75	9.02	201.82	2.76	1.37	0.47	sand to silty sand	>90	46-48	48	UNDEFI
3.00	9.84	147.48	2.30	1.56	0.52	sand to silty sand	80-90	44-46	35	UNDEFINE
3.25	10.66	68.34	1.90	2.78	0.56	sandy silt to clayey silt	UNDFND	UNDFD	26	3
3.50	11.48	67.58	1.45	2.15	0.61	silty sand to sandy silt	60-70	40-42	22	UNDEFI
3.75	12.30	58.86	1.63	2.77	0.65	sandy silt to clayey silt	UNDFND	UNDFD	23	3.2
4.00	13.12	54.16	1.57	2.89	0.70	sandy silt to clayey silt	UNDFND	UNDFD	21	2.97
4.25	13.94	49.30	1.39	2.82	0.74	sandy silt to clayey silt	UNDFND	UNDFD	19	2
4.50	14.76	41.50	1.22	2.93	0.79	sandy silt to clayey silt	UNDFND	UNDFD	16	2.2
4.75	15.58	46.14	1.14	2.46	0.83	sandy silt to clayey silt	UNDFND	UNDFD	18	2.51
5.00	16.40	36.80	0.97	2.63	0.88	sandy silt to clayey silt	UNDFND	UNDFD	14	1
5.25	17.22	28.28	0.87	3.06	0.92	clayey silt to silty clay	UNDFND	UNDFD	14	1
5.50	18.04	27.46	0.76	2.76	0.97	clayey silt to silty clay	UNDFND	UNDFD	13	1.47
5.75	18.86	32.92	0.75	2.28	1.01	sandy silt to clayey silt	UNDFND	UNDFD	13	1
6.00	19.69	19.90	0.76	3.80	1.06	silty clay to clay	UNDFND	UNDFD	13	1
6.25	20.51	20.08	0.73	3.62	1.11	silty clay to clay	UNDFND	UNDFD	13	1.05
6.50	21.33	17.72	0.67	3.77	1.15	silty clay to clay	UNDFND	UNDFD	11	.92
6.75	22.15	22.02	0.90	4.09	1.20	silty clay to clay	UNDFND	UNDFD	14	1
7.00	22.97	46.74	1.02	2.18	1.24	sandy silt to clayey silt	UNDFND	UNDFD	18	2.2
7.25	23.79	36.22	0.93	2.58	1.27	sandy silt to clayey silt	UNDFND	UNDFD	14	1.94
7.50	24.61	11.90	0.47	3.93	1.29	clay	UNDFND	UNDFD	11	
7.75	25.43	15.60	0.66	4.24	1.31	clay	UNDFND	UNDFD	15	
8.00	26.25	16.94	0.84	4.98	1.33	clay	UNDFND	UNDFD	16	.86
8.25	27.07	17.54	0.91	5.18	1.35	clay	UNDFND	UNDFD	17	
8.50	27.89	19.28	0.94	4.87	1.37	clay	UNDFND	UNDFD	18	
8.75	28.71	20.08	0.97	4.82	1.38	clay	UNDFND	UNDFD	19	1.02
9.00	29.53	19.10	1.03	5.38	1.40	clay	UNDFND	UNDFD	18	.97
9.25	30.35	26.32	1.25	4.73	1.42	clay	UNDFND	UNDFD	25	1
9.50	31.17	19.10	1.01	5.27	1.44	clay	UNDFND	UNDFD	18	

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 18

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf

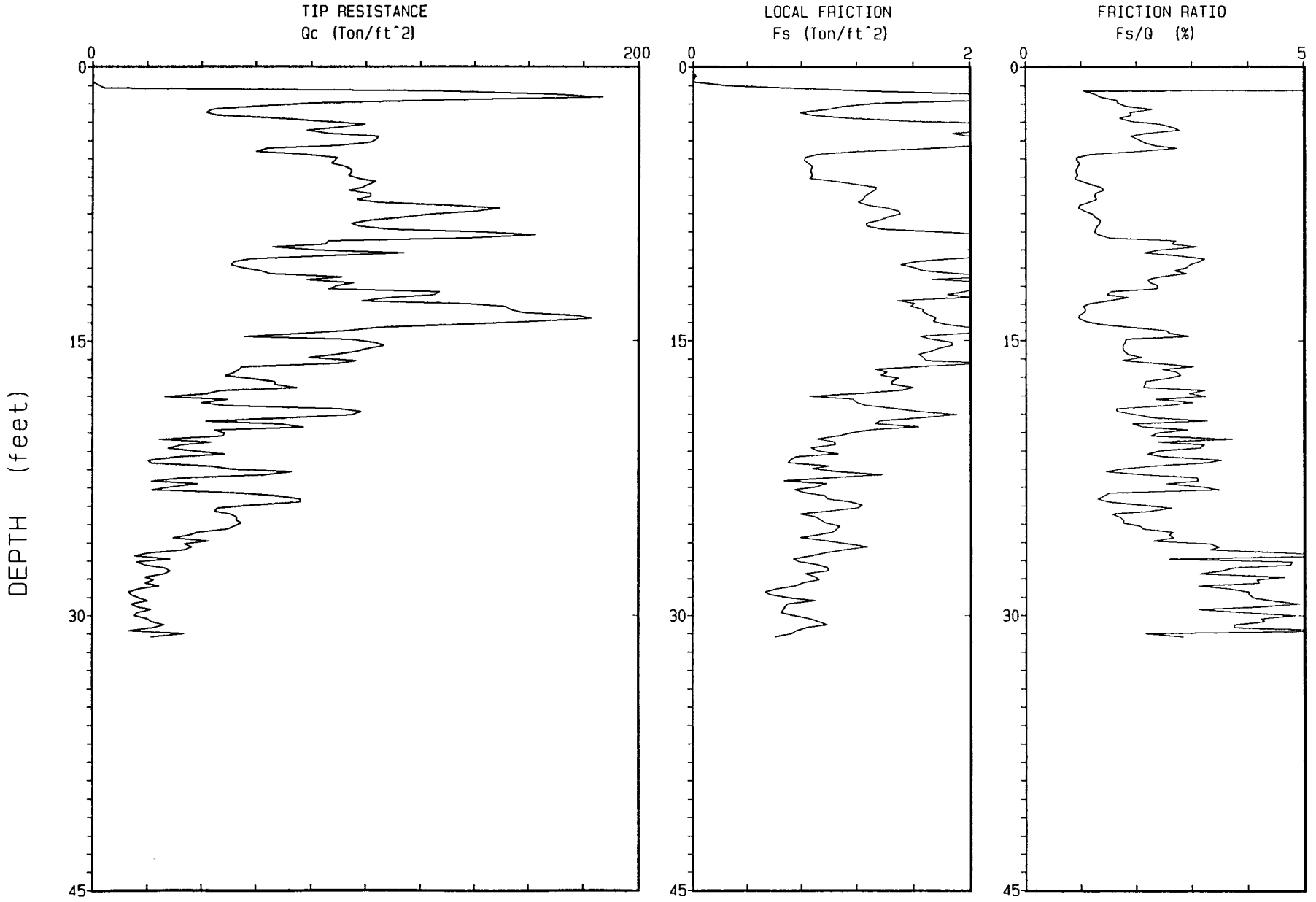
Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 18

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) *

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-04-92 SOUNDING NO. : CPT-02 Pg 1 / 1

LOCATION : BLDG. 870 DEPTH TO WATER : 23.29 FT BLS TERRA JOB NO. : 92-1016



Depth Increment : .05 m Max Depth : 31.17 ft

1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date : 08-04-92

Location : CPT-02 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 7.1

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	0.00	0.00	0.00	0.02	undefined	UNDFND	UNDFD	UDF	UNDEFINE
0.50	1.64	97.42	1.40	1.44	0.07	sand to silty sand	>90	>48	23	UNDEFINE
0.75	2.46	69.96	1.26	1.80	0.11	silty sand to sandy silt	80-90	>48	22	UNDEFINE
1.00	3.28	77.30	1.69	2.18	0.16	silty sand to sandy silt	80-90	46-48	25	UNDEFINE
1.25	4.10	94.96	2.07	2.18	0.20	silty sand to sandy silt	80-90	46-48	30	UNDEFINE
1.50	4.92	76.08	1.36	1.79	0.25	silty sand to sandy silt	70-80	44-46	24	UNDEFINE
1.75	5.74	91.52	0.86	0.94	0.29	sand to silty sand	80-90	44-46	22	UNDEFINE
2.00	6.56	98.84	1.06	1.08	0.34	sand to silty sand	80-90	44-46	24	UNDEFINE
2.25	7.38	99.66	1.27	1.27	0.38	sand to silty sand	80-90	44-46	24	UNDEFINE
2.50	8.20	131.60	1.43	1.08	0.43	sand to silty sand	80-90	44-46	32	UNDEFINE
2.75	9.02	109.22	1.41	1.29	0.47	sand to silty sand	70-80	44-46	26	UNDEFINE
3.00	9.84	107.58	2.18	2.02	0.52	silty sand to sandy silt	70-80	44-46	34	UNDEFINE
3.25	10.66	78.52	2.05	2.62	0.56	sandy silt to clayey silt	UNDFND	UNDFD	30	3.2
3.50	11.48	64.86	1.78	2.74	0.61	sandy silt to clayey silt	UNDFND	UNDFD	25	2.6
3.75	12.30	95.38	2.01	2.11	0.65	silty sand to sandy silt	70-80	42-44	30	UNDEFINE
4.00	13.12	124.06	1.71	1.38	0.70	sand to silty sand	70-80	42-44	30	UNDEFINE
4.25	13.94	166.12	1.71	1.03	0.74	sand	80-90	44-46	32	UNDEFINE
4.50	14.76	93.14	1.96	2.11	0.79	silty sand to sandy silt	60-70	40-42	30	UNDEFINE
4.75	15.58	100.48	1.80	1.79	0.83	silty sand to sandy silt	60-70	40-42	32	UNDEFINE
5.00	16.40	81.76	1.76	2.15	0.88	silty sand to sandy silt	60-70	40-42	26	UNDEFINE
5.25	17.22	55.94	1.41	2.53	0.92	sandy silt to clayey silt	UNDFND	UNDFD	21	2.2
5.50	18.04	51.44	1.33	2.59	0.97	sandy silt to clayey silt	UNDFND	UNDFD	20	2.1
5.75	18.86	65.48	1.35	2.06	1.01	silty sand to sandy silt	50-60	38-40	21	UNDEFINE
6.00	19.69	71.18	1.59	2.23	1.06	silty sand to sandy silt	50-60	38-40	23	UNDEFINE
6.25	20.51	41.88	1.10	2.63	1.11	sandy silt to clayey silt	UNDFND	UNDFD	16	1.6
6.50	21.33	35.38	0.93	2.63	1.15	sandy silt to clayey silt	UNDFND	UNDFD	14	1.4
6.75	22.15	41.88	0.87	2.08	1.20	sandy silt to clayey silt	UNDFND	UNDFD	16	1.6
7.00	22.97	37.02	1.00	2.69	1.24	sandy silt to clayey silt	UNDFND	UNDFD	14	1.4
7.25	23.79	59.40	0.94	1.58	1.28	silty sand to sandy silt	40-50	36-38	19	UNDEFINE
7.50	24.61	50.44	1.03	2.04	1.30	sandy silt to clayey silt	UNDFND	UNDFD	19	2.0
7.75	25.43	49.62	1.02	2.05	1.32	sandy silt to clayey silt	UNDFND	UNDFD	19	2.0
8.00	26.25	35.60	1.02	2.86	1.34	sandy silt to clayey silt	UNDFND	UNDFD	14	1.4
8.25	27.07	22.80	0.90	3.94	1.36	silty clay to clay	UNDFND	UNDFD	15	.8
8.50	27.89	23.98	0.93	3.87	1.38	silty clay to clay	UNDFND	UNDFD	15	.9
8.75	28.71	19.32	0.73	3.79	1.40	silty clay to clay	UNDFND	UNDFD	12	.7
9.00	29.53	16.46	0.71	4.33	1.42	clay	UNDFND	UNDFD	16	.6
9.25	30.35	18.94	0.77	4.05	1.44	silty clay to clay	UNDFND	UNDFD	12	.7
9.50	31.17	23.40	0.79	3.36	1.46	clayey silt to silty clay	UNDFND	UNDFD	11	.9

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) *

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	S

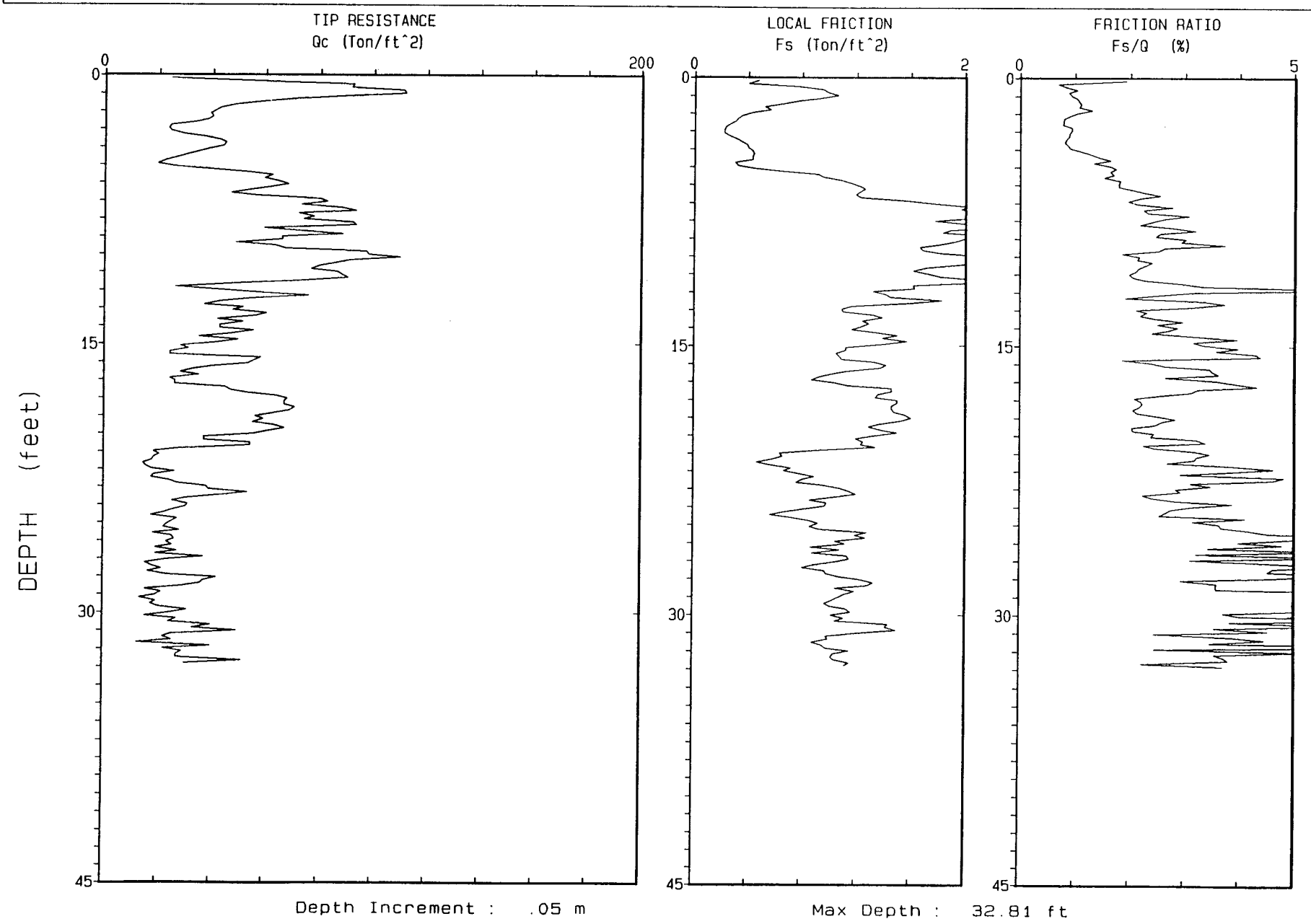
Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.0

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-05-92 SOUNDING NO. : CPT-03 Pg 1 / 1

LOCATION : BLDG. 870 DEPTH TO WATER : 23.12 FT BLS TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date : 08-05-92

Location : CPT-03 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 7.05

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	75.40	0.71	0.94	0.02	sand to silty sand	>90	>48	18	UNDEFI
0.50	1.64	76.36	0.79	1.03	0.07	sand to silty sand	>90	>48	18	UNDEFINE
0.75	2.46	40.14	0.39	0.98	0.11	silty sand to sandy silt	70-80	46-48	13	UNDEF
1.00	3.28	26.90	0.24	0.88	0.16	silty sand to sandy silt	50-60	42-44	9	UNDEF
1.25	4.10	41.50	0.38	0.91	0.20	silty sand to sandy silt	60-70	44-46	13	UNDEFINE
1.50	4.92	26.50	0.38	1.45	0.25	sandy silt to clayey silt	UNDFND	UNDFD	10	1
1.75	5.74	47.92	0.80	1.68	0.29	silty sand to sandy silt	60-70	42-44	15	UNDEFI
2.00	6.56	59.04	1.21	2.05	0.34	silty sand to sandy silt	60-70	42-44	19	UNDEFINE
2.25	7.38	76.00	1.71	2.25	0.38	silty sand to sandy silt	70-80	44-46	24	UNDEFINE
2.50	8.20	82.00	2.04	2.49	0.43	sandy silt to clayey silt	UNDFND	UNDFD	31	3
2.75	9.02	75.96	2.10	2.76	0.47	sandy silt to clayey silt	UNDFND	UNDFD	29	3
3.00	9.84	68.56	1.79	2.61	0.52	sandy silt to clayey silt	UNDFND	UNDFD	26	2.8
3.25	10.66	93.14	2.07	2.22	0.56	silty sand to sandy silt	70-80	42-44	30	UNDEFI
3.50	11.48	82.98	1.86	2.25	0.61	silty sand to sandy silt	60-70	42-44	26	UNDEFI
3.75	12.30	49.88	1.49	2.98	0.65	sandy silt to clayey silt	UNDFND	UNDFD	19	2.0
4.00	13.12	46.74	1.36	2.90	0.70	sandy silt to clayey silt	UNDFND	UNDFD	18	1
4.25	13.94	50.66	1.29	2.55	0.74	sandy silt to clayey silt	UNDFND	UNDFD	19	2
4.50	14.76	46.00	1.39	3.02	0.79	sandy silt to clayey silt	UNDFND	UNDFD	18	1
4.75	15.58	30.02	1.15	3.84	0.83	clayey silt to silty clay	UNDFND	UNDFD	14	1
5.00	16.40	48.00	1.27	2.65	0.88	sandy silt to clayey silt	UNDFND	UNDFD	18	1
5.25	17.22	28.06	1.00	3.56	0.92	clayey silt to silty clay	UNDFND	UNDFD	13	1
5.50	18.04	55.34	1.42	2.57	0.97	sandy silt to clayey silt	UNDFND	UNDFD	21	2.2
5.75	18.86	67.60	1.49	2.21	1.01	silty sand to sandy silt	50-60	38-40	22	UNDEFI
6.00	19.69	60.38	1.43	2.37	1.06	sandy silt to clayey silt	UNDFND	UNDFD	23	2
6.25	20.51	49.08	1.30	2.64	1.11	sandy silt to clayey silt	UNDFND	UNDFD	19	1.9
6.50	21.33	28.04	0.83	2.95	1.15	clayey silt to silty clay	UNDFND	UNDFD	13	1
6.75	22.15	18.30	0.64	3.49	1.20	silty clay to clay	UNDFND	UNDFD	12	
7.00	22.97	25.14	0.90	3.57	1.24	clayey silt to silty clay	UNDFND	UNDFD	12	
7.25	23.79	38.38	1.05	2.73	1.28	sandy silt to clayey silt	UNDFND	UNDFD	15	1.54
7.50	24.61	25.32	0.75	2.97	1.30	clayey silt to silty clay	UNDFND	UNDFD	12	
7.75	25.43	25.32	0.97	3.83	1.32	silty clay to clay	UNDFND	UNDFD	16	
8.00	26.25	23.76	1.10	4.63	1.34	clay	UNDFND	UNDFD	23	.93
8.25	27.07	25.34	1.06	4.18	1.36	silty clay to clay	UNDFND	UNDFD	16	
8.50	27.89	18.90	0.95	5.01	1.38	clay	UNDFND	UNDFD	18	
8.75	28.71	31.94	1.22	3.81	1.39	clayey silt to silty clay	UNDFND	UNDFD	15	1.26
9.00	29.53	18.30	1.04	5.68	1.41	clay	UNDFND	UNDFD	18	.4
9.25	30.35	23.98	1.09	4.56	1.43	clay	UNDFND	UNDFD	23	
9.50	31.17	34.48	1.31	3.81	1.45	clayey silt to silty clay	UNDFND	UNDFD	17	1

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02)

1 HILL AIRFORCE BASE - BUILDING 870
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Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	24.54	0.99	4.04	1.47	silty clay to clay	UNDFND	UNDFD	16	.
10.00	32.81	33.12	1.07	3.24	1.49	clayey silt to silty clay	UNDFND	UNDFD	16	1.

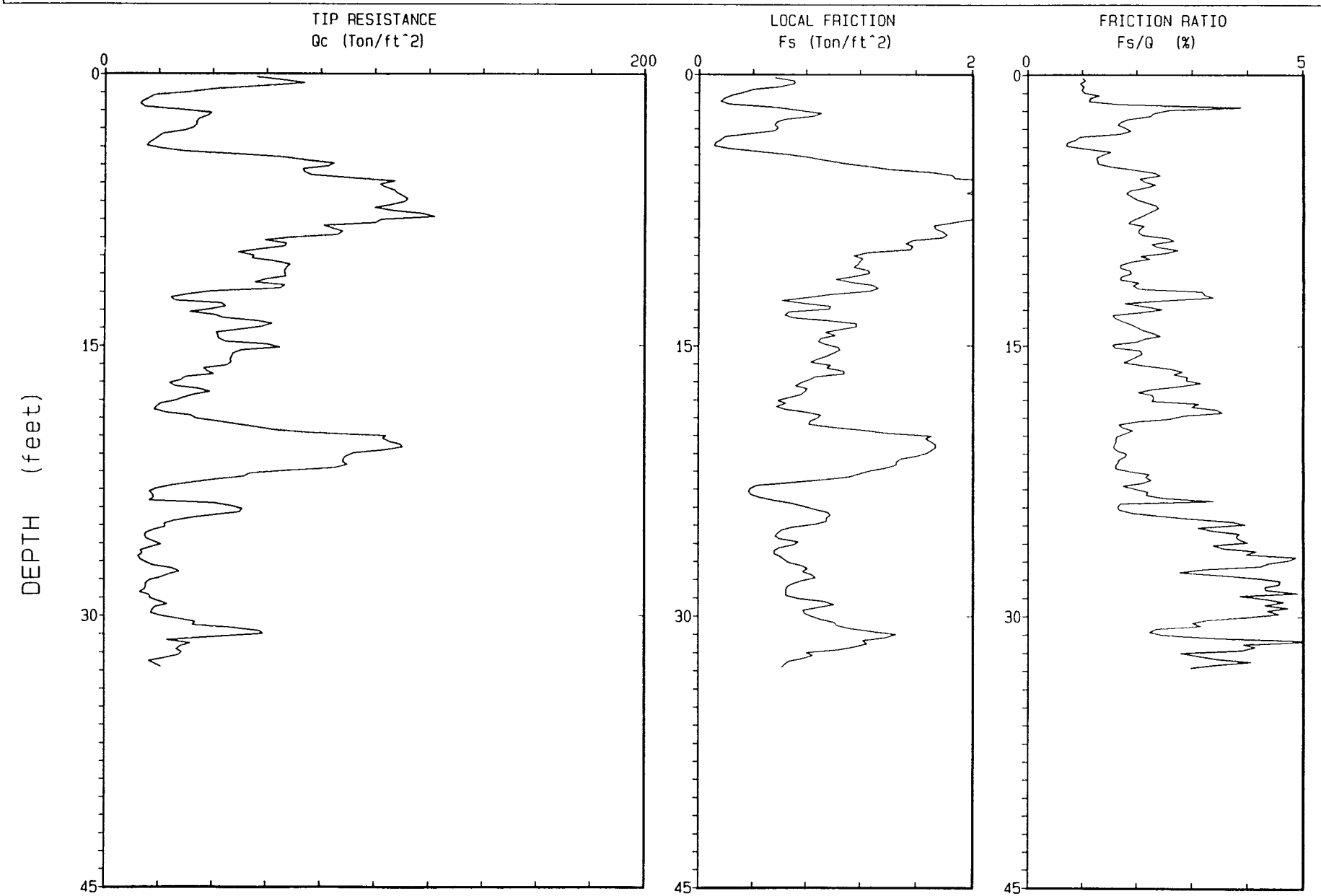
Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02)

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-05-92 SOUNDING NO. : CPT-04 Pg 1 / 1

LOCATION : BLDG. 870 DEPTH TO WATER : 20.34 FT BLS TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date : 08-05-92

Location : CPT-04 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 6.2

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	58.96	0.60	1.01	0.02	silty sand to sandy silt	>90	>48	19	UNDEFINED
0.50	1.64	18.54	0.23	1.22	0.07	sandy silt to clayey silt	UNDFND	UNDFD	7	.7(
0.75	2.46	31.06	0.74	2.39	0.11	sandy silt to clayey silt	UNDFND	UNDFD	12	1.2(
1.00	3.28	30.18	0.53	1.76	0.16	sandy silt to clayey silt	UNDFND	UNDFD	12	1.2[
1.25	4.10	18.06	0.16	0.89	0.20	sandy silt to clayey silt	UNDFND	UNDFD	7	.7(
1.50	4.92	60.80	0.80	1.32	0.25	silty sand to sandy silt	70-80	44-46	19	UNDEFINED
1.75	5.74	79.64	1.63	2.04	0.29	silty sand to sandy silt	70-80	44-46	25	UNDEFINED
2.00	6.56	105.64	2.18	2.07	0.34	silty sand to sandy silt	80-90	44-46	34	UNDEFINED
2.25	7.38	107.74	2.32	2.15	0.38	silty sand to sandy silt	80-90	44-46	34	UNDEFINED
2.50	8.20	109.80	2.27	2.06	0.43	silty sand to sandy silt	80-90	44-46	35	UNDEFINED
2.75	9.02	81.90	1.77	2.17	0.47	silty sand to sandy silt	70-80	42-44	26	UNDEFINED
3.00	9.84	59.84	1.50	2.51	0.52	sandy silt to clayey silt	UNDFND	UNDFD	23	2.47
3.25	10.66	61.80	1.18	1.91	0.56	silty sand to sandy silt	60-70	40-42	20	UNDEFINED
3.50	11.48	63.18	1.17	1.85	0.61	silty sand to sandy silt	60-70	40-42	20	UNDEFINED
3.75	12.30	45.26	1.14	2.52	0.65	sandy silt to clayey silt	UNDFND	UNDFD	17	1.85
4.00	13.12	37.02	0.80	2.17	0.70	sandy silt to clayey silt	UNDFND	UNDFD	14	1.51
4.25	13.94	52.22	0.93	1.78	0.74	silty sand to sandy silt	50-60	38-40	17	UNDEFINED
4.50	14.76	43.98	0.96	2.19	0.79	sandy silt to clayey silt	UNDFND	UNDFD	17	1.79
4.75	15.58	54.16	1.00	1.84	0.83	silty sand to sandy silt	50-60	38-40	17	UNDEFINED
5.00	16.40	42.74	0.94	2.21	0.88	sandy silt to clayey silt	UNDFND	UNDFD	16	1.74
5.25	17.22	29.68	0.85	2.86	0.92	clayey silt to silty clay	UNDFND	UNDFD	14	1.19
5.50	18.04	32.42	0.72	2.23	0.97	sandy silt to clayey silt	UNDFND	UNDFD	12	1.31
5.75	18.86	22.66	0.72	3.17	1.01	clayey silt to silty clay	UNDFND	UNDFD	11	.90
6.00	19.69	48.62	0.94	1.94	1.06	silty sand to sandy silt	40-50	36-38	16	UNDEFINED
6.25	20.51	99.66	1.64	1.65	1.11	silty sand to sandy silt	60-70	40-42	32	UNDEFINED
6.50	21.33	96.86	1.64	1.70	1.13	silty sand to sandy silt	60-70	40-42	31	UNDEFINED
6.75	22.15	77.06	1.35	1.76	1.15	silty sand to sandy silt	50-60	38-40	25	UNDEFINED
7.00	22.97	33.72	0.71	2.10	1.17	sandy silt to clayey silt	UNDFND	UNDFD	13	1.35
7.25	23.79	22.02	0.49	2.24	1.19	sandy silt to clayey silt	UNDFND	UNDFD	8	.86
7.50	24.61	44.46	0.91	2.04	1.21	sandy silt to clayey silt	UNDFND	UNDFD	17	1.79
7.75	25.43	20.78	0.75	3.60	1.23	silty clay to clay	UNDFND	UNDFD	13	.80
8.00	26.25	17.38	0.64	3.71	1.25	silty clay to clay	UNDFND	UNDFD	11	.66
8.25	27.07	13.78	0.61	4.41	1.27	clay	UNDFND	UNDFD	13	.51
8.50	27.89	23.14	0.81	3.51	1.29	clayey silt to silty clay	UNDFND	UNDFD	11	.90
8.75	28.71	15.12	0.69	4.54	1.31	clay	UNDFND	UNDFD	14	.56
9.00	29.53	19.20	0.84	4.40	1.33	clay	UNDFND	UNDFD	18	.73
9.25	30.35	23.46	0.87	3.69	1.35	silty clay to clay	UNDFND	UNDFD	15	.90
9.50	31.17	47.28	1.26	2.66	1.37	sandy silt to clayey silt	UNDFND	UNDFD	18	1.89

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) **

1 HILL AIRFORCE BASE - BUILDING 870

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Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	27.68	1.10	3.96	1.39	silty clay to clay	UNDFND	UNDFD	18	1.[illegible]
10.00	32.81	21.16	0.71	3.36	1.41	clayey silt to silty clay	UNDFND	UNDFD	10	

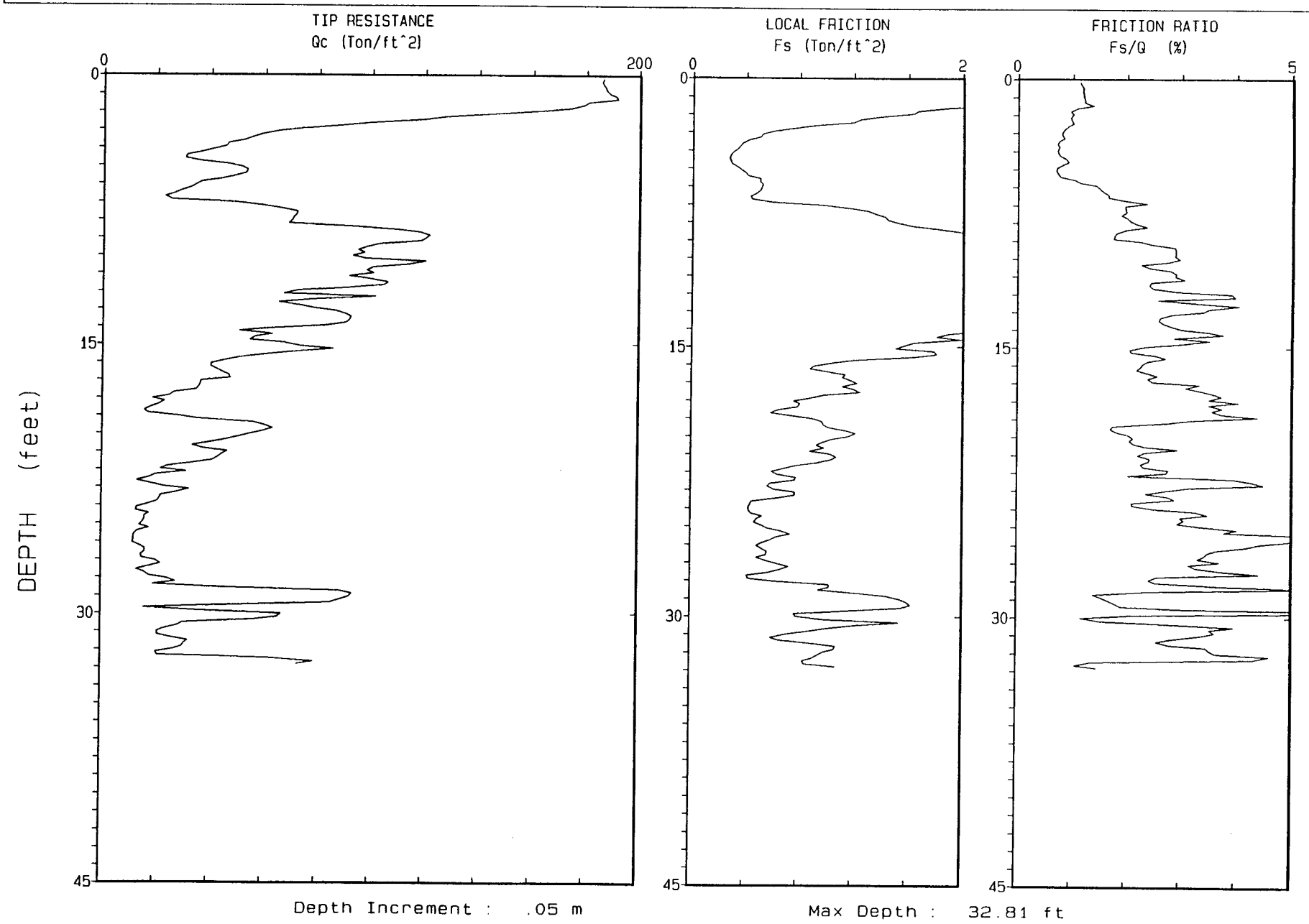
Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02)

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-05-92 SOUNDING NO. : CPT-05 Pg 1 / 1

LOCATION : BLDG. 870 DEPTH TO WATER : 22.14 FT BLS TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date : 08-05-92

Location : CPT-05 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 6.75

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	186.56	2.18	1.17	0.02	sand	>90	>48	36	UNDEFI
0.50	1.64	186.20	2.26	1.21	0.07	sand	>90	>48	36	UNDEFINEI
0.75	2.46	145.50	1.43	0.98	0.11	sand	>90	>48	28	UNDEFI
1.00	3.28	77.48	0.66	0.85	0.16	sand to silty sand	80-90	46-48	19	UNDEFI
1.25	4.10	48.06	0.35	0.74	0.20	sand to silty sand	60-70	44-46	12	UNDEFINEI
1.50	4.92	35.92	0.29	0.81	0.25	silty sand to sandy silt	50-60	42-44	11	UNDEFINEI
1.75	5.74	50.04	0.43	0.86	0.29	silty sand to sandy silt	60-70	42-44	16	UNDEFI
2.00	6.56	31.42	0.49	1.55	0.34	sandy silt to clayey silt	UNDFND	UNDFD	12	1
2.25	7.38	44.38	0.89	2.01	0.38	sandy silt to clayey silt	UNDFND	UNDFD	17	1.6
2.50	8.20	70.52	1.48	2.10	0.43	silty sand to sandy silt	60-70	42-44	23	UNDEFI
2.75	9.02	112.18	2.14	1.91	0.47	silty sand to sandy silt	80-90	44-46	36	UNDEFI
3.00	9.84	102.44	2.85	2.78	0.52	sandy silt to clayey silt	UNDFND	UNDFD	39	3.9
3.25	10.66	105.24	2.76	2.62	0.56	silty sand to sandy silt	70-80	42-44	34	UNDEFI
3.50	11.48	99.24	2.71	2.73	0.61	sandy silt to clayey silt	UNDFND	UNDFD	38	3
3.75	12.30	87.32	2.67	3.06	0.65	sandy silt to clayey silt	UNDFND	UNDFD	33	3
4.00	13.12	76.24	2.58	3.38	0.70	sandy silt to clayey silt	UNDFND	UNDFD	29	2.9
4.25	13.94	89.48	2.44	2.73	0.74	sandy silt to clayey silt	UNDFND	UNDFD	34	3
4.50	14.76	57.46	1.91	3.32	0.79	sandy silt to clayey silt	UNDFND	UNDFD	22	2
4.75	15.58	71.60	1.67	2.33	0.83	silty sand to sandy silt	50-60	40-42	23	UNDEFINEI
5.00	16.40	43.92	1.01	2.31	0.88	sandy silt to clayey silt	UNDFND	UNDFD	17	1
5.25	17.22	42.40	1.16	2.73	0.92	sandy silt to clayey silt	UNDFND	UNDFD	16	1
5.50	18.04	28.22	1.02	3.60	0.97	clayey silt to silty clay	UNDFND	UNDFD	14	1.04
5.75	18.86	19.00	0.72	3.77	1.01	silty clay to clay	UNDFND	UNDFD	12	
6.00	19.69	48.70	1.01	2.07	1.06	sandy silt to clayey silt	UNDFND	UNDFD	19	1
6.25	20.51	50.02	1.06	2.13	1.11	sandy silt to clayey silt	UNDFND	UNDFD	19	1.8
6.50	21.33	41.10	1.00	2.44	1.15	sandy silt to clayey silt	UNDFND	UNDFD	16	1.53
6.75	22.15	30.54	0.73	2.38	1.20	sandy silt to clayey silt	UNDFND	UNDFD	12	1
7.00	22.97	18.38	0.67	3.62	1.23	silty clay to clay	UNDFND	UNDFD	12	
7.25	23.79	24.92	0.61	2.46	1.25	sandy silt to clayey silt	UNDFND	UNDFD	10	.90
7.50	24.61	15.36	0.47	3.03	1.27	clayey silt to silty clay	UNDFND	UNDFD	7	
7.75	25.43	15.34	0.59	3.87	1.29	silty clay to clay	UNDFND	UNDFD	10	
8.00	26.25	12.50	0.56	4.46	1.31	clay	UNDFND	UNDFD	12	.42
8.25	27.07	16.56	0.56	3.41	1.33	silty clay to clay	UNDFND	UNDFD	11	.5
8.50	27.89	17.46	0.57	3.24	1.34	clayey silt to silty clay	UNDFND	UNDFD	8	
8.75	28.71	40.00	0.97	2.43	1.36	sandy silt to clayey silt	UNDFND	UNDFD	15	1
9.00	29.53	82.06	1.56	1.90	1.38	silty sand to sandy silt	50-60	38-40	26	UNDEFINED
9.25	30.35	48.38	1.06	2.20	1.40	sandy silt to clayey silt	UNDFND	UNDFD	19	1
9.50	31.17	25.04	0.88	3.51	1.42	clayey silt to silty clay	UNDFND	UNDFD	12	

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 26

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02)

1 HILL AIRFORCE BASE - BUILDING 870

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Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	29.32	0.94	3.21	1.44	clayey silt to silty clay	UNDFND	UNDFD	14	1.0
10.00	32.81	51.04	0.93	1.81	1.46	silty sand to sandy silt	40-50	34-36	16	UNDEFINED

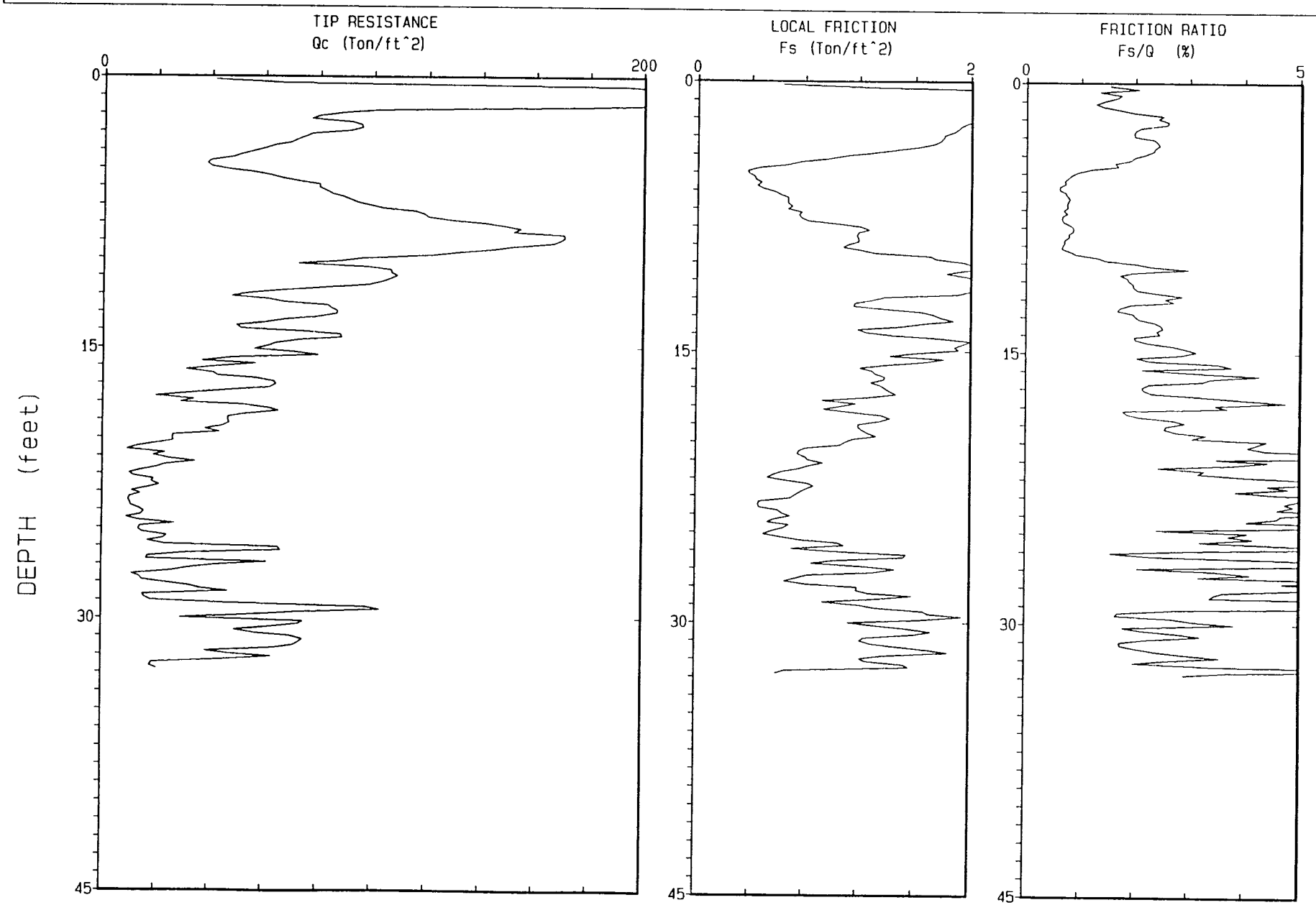
Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 26

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) **

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-05-92 SOUNDING NO. : CPT-06 Pg 1 / 1

LOCATION : BLDG. 870 DEPTH TO WATER : 22.14 FT BLS TERRA JOB NO. : 92-1016



Depth Increment : .05 m Max Depth : 32.81 ft

1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date : 08-05-92

Location : CPT-06 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 6.75

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	154.56	2.51	1.62	0.02	sand to silty sand	>90	>48	37	UNDEFINE
0.50	1.64	262.60	3.95	1.50	0.07	sand to silty sand	>90	>48	>50	UNDEFINE
0.75	2.46	87.74	2.13	2.43	0.11	silty sand to sandy silt	>90	>48	28	UNDEFINE
1.00	3.28	86.70	1.84	2.12	0.16	silty sand to sandy silt	80-90	>48	28	UNDEFINE
1.25	4.10	63.72	1.45	2.27	0.20	sandy silt to clayey silt	UNDFND	UNDFD	24	2.4
1.50	4.92	43.12	0.64	1.49	0.25	silty sand to sandy silt	60-70	42-44	14	UNDEFINE
1.75	5.74	60.26	0.43	0.71	0.29	sand to silty sand	60-70	44-46	14	UNDEFINE
2.00	6.56	82.96	0.60	0.72	0.34	sand to silty sand	70-80	44-46	20	UNDEFINE
2.25	7.38	100.50	0.71	0.71	0.38	sand to silty sand	80-90	44-46	24	UNDEFINE
2.50	8.20	131.36	1.02	0.78	0.43	sand	80-90	44-46	25	UNDEFINE
2.75	9.02	163.28	1.17	0.72	0.47	sand	>90	46-48	31	UNDEFINE
3.00	9.84	143.06	1.41	0.99	0.52	sand	80-90	44-46	27	UNDEFINE
3.25	10.66	92.22	1.98	2.14	0.56	silty sand to sandy silt	70-80	42-44	29	UNDEFINE
3.50	11.48	104.72	2.03	1.94	0.61	silty sand to sandy silt	70-80	42-44	33	UNDEFINE
3.75	12.30	62.66	1.55	2.48	0.65	sandy silt to clayey silt	UNDFND	UNDFD	24	2.3
4.00	13.12	81.74	1.55	1.89	0.70	silty sand to sandy silt	60-70	40-42	26	UNDEFINE
4.25	13.94	61.52	1.50	2.44	0.74	sandy silt to clayey silt	UNDFND	UNDFD	24	2.3
4.50	14.76	77.28	1.81	2.34	0.79	silty sand to sandy silt	60-70	40-42	25	UNDEFINE
4.75	15.58	63.08	1.69	2.68	0.83	sandy silt to clayey silt	UNDFND	UNDFD	24	2.3
5.00	16.40	41.22	1.32	3.21	0.88	clayey silt to silty clay	UNDFND	UNDFD	20	1.5
5.25	17.22	57.78	1.37	2.37	0.92	sandy silt to clayey silt	UNDFND	UNDFD	22	2.1
5.50	18.04	32.10	1.18	3.68	0.97	clayey silt to silty clay	UNDFND	UNDFD	15	1.1
5.75	18.86	55.74	1.25	2.24	1.01	sandy silt to clayey silt	UNDFND	UNDFD	21	2.1
6.00	19.69	43.94	1.25	2.84	1.06	sandy silt to clayey silt	UNDFND	UNDFD	17	1.6
6.25	20.51	21.86	0.98	4.48	1.11	clay	UNDFND	UNDFD	21	.7
6.50	21.33	22.04	0.83	3.78	1.15	silty clay to clay	UNDFND	UNDFD	14	.8
6.75	22.15	15.72	0.63	4.02	1.20	silty clay to clay	UNDFND	UNDFD	10	.5
7.00	22.97	17.06	0.80	4.70	1.23	clay	UNDFND	UNDFD	16	.6
7.25	23.79	10.80	0.54	5.02	1.25	clay	UNDFND	UNDFD	10	.3
7.50	24.61	12.98	0.63	4.84	1.27	clay	UNDFND	UNDFD	12	.44
7.75	25.43	18.64	0.62	3.34	1.29	clayey silt to silty clay	UNDFND	UNDFD	9	.6
8.00	26.25	38.92	1.09	2.79	1.31	sandy silt to clayey silt	UNDFND	UNDFD	15	1.44
8.25	27.07	33.80	1.23	3.63	1.33	clayey silt to silty clay	UNDFND	UNDFD	16	1.24
8.50	27.89	19.56	0.87	4.47	1.34	clay	UNDFND	UNDFD	19	.6
8.75	28.71	30.92	1.31	4.25	1.36	silty clay to clay	UNDFND	UNDFD	20	1.1
9.00	29.53	56.54	1.37	2.43	1.38	sandy silt to clayey silt	UNDFND	UNDFD	22	2.11
9.25	30.35	60.50	1.53	2.52	1.40	sandy silt to clayey silt	UNDFND	UNDFD	23	2.2
9.50	31.17	62.54	1.42	2.27	1.42	sandy silt to clayey silt	UNDFND	UNDFD	24	2.3

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 26

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) **

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	59.02	1.53	2.59	1.44	sandy silt to clayey silt	UNDFND	UNDFD	23	2.2
10.00	32.81	32.80	1.13	3.43	1.46	clayey silt to silty clay	UNDFND	UNDFD	16	1

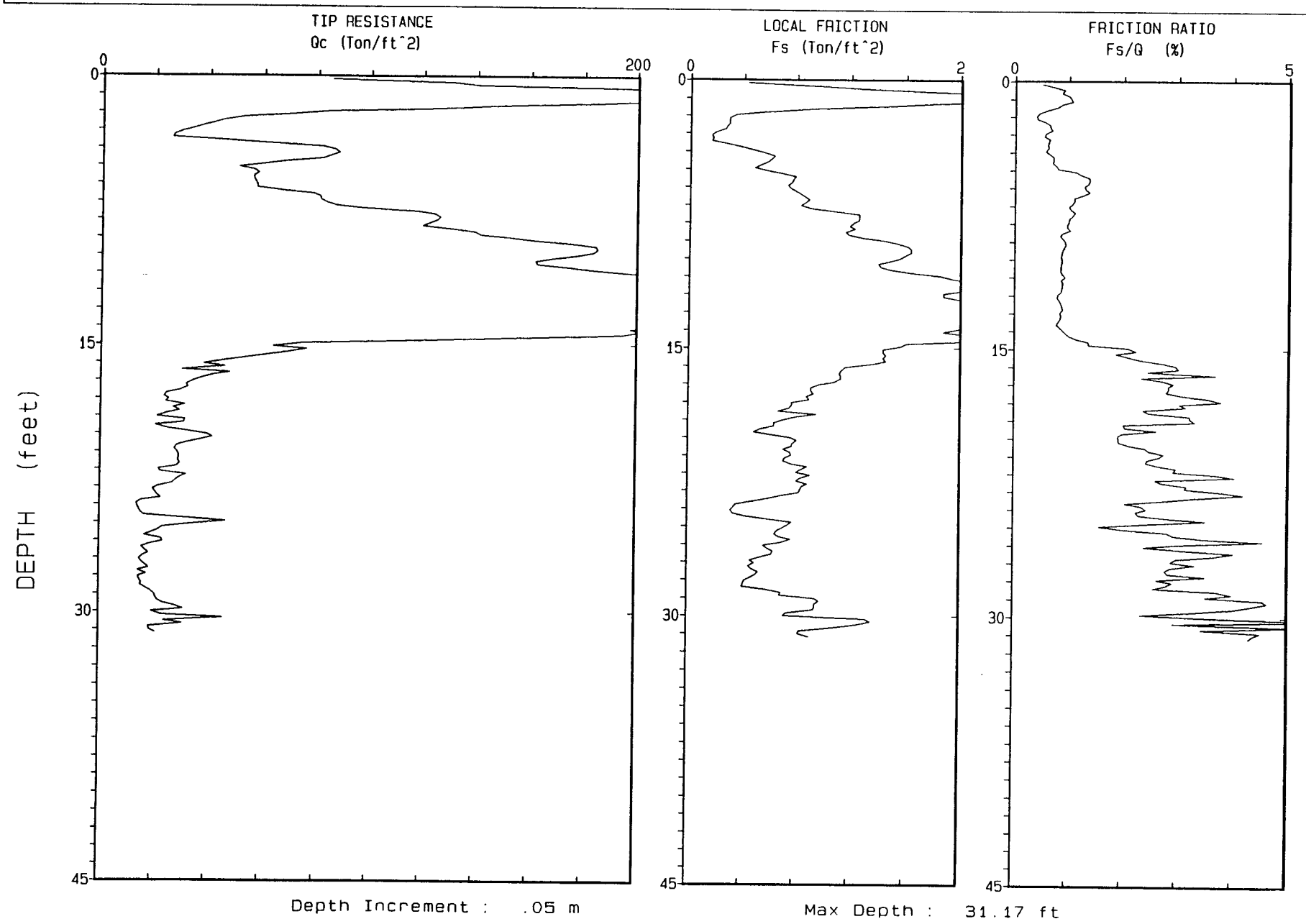
Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 26

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-05-92 SOUNDING NO. : CPT-07 Pg 1 / 1

LOCATION : BLDG. 870 DEPTH TO WATER : 21.16 FT BLS TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date : 08-05-92

Location : CPT-07 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 6.45

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su
0.25	0.82	163.16	1.39	0.85	0.02	sand	>90	>48	31	UNDEFINE
0.50	1.64	206.00	1.85	0.90	0.07	sand	>90	>48	39	UNDEFINE
0.75	2.46	75.80	0.35	0.47	0.11	sand to silty sand	80-90	>48	18	UNDEFINE
1.00	3.28	33.68	0.21	0.62	0.16	silty sand to sandy silt	60-70	44-46	11	UNDEFINE
1.25	4.10	60.24	0.37	0.61	0.20	sand to silty sand	70-80	44-46	14	UNDEFINE
1.50	4.92	76.70	0.57	0.74	0.25	sand to silty sand	70-80	44-46	18	UNDEFINE
1.75	5.74	55.42	0.71	1.29	0.29	silty sand to sandy silt	60-70	42-44	18	UNDEFINE
2.00	6.56	63.36	0.79	1.25	0.34	silty sand to sandy silt	60-70	42-44	20	UNDEFINE
2.25	7.38	85.96	0.91	1.06	0.38	sand to silty sand	70-80	44-46	21	UNDEFINE
2.50	8.20	123.18	1.24	1.01	0.43	sand to silty sand	80-90	44-46	29	UNDEFINE
2.75	9.02	136.96	1.26	0.92	0.47	sand	80-90	44-46	26	UNDEFINE
3.00	9.84	178.46	1.61	0.90	0.52	sand	>90	46-48	34	UNDEFINE
3.25	10.66	168.66	1.47	0.87	0.56	sand	80-90	44-46	32	UNDEFINE
3.50	11.48	213.58	1.92	0.90	0.61	sand	>90	46-48	41	UNDEFINE
3.75	12.30	234.12	1.96	0.84	0.65	sand	>90	46-48	45	UNDEFINE
4.00	13.12	257.02	2.25	0.87	0.70	sand	>90	46-48	49	UNDEFINE
4.25	13.94	253.00	2.13	0.84	0.74	sand	>90	46-48	48	UNDEFINE
4.50	14.76	173.86	1.99	1.14	0.79	sand	80-90	44-46	33	UNDEFINE
4.75	15.58	69.22	1.47	2.12	0.83	silty sand to sandy silt	50-60	40-42	22	UNDEFINE
5.00	16.40	42.76	1.25	2.92	0.88	sandy silt to clayey silt	UNDFND	UNDFD	16	[illegible]
5.25	17.22	38.62	1.05	2.71	0.92	sandy silt to clayey silt	UNDFND	UNDFD	15	[illegible]
5.50	18.04	27.20	0.88	3.23	0.97	clayey silt to silty clay	UNDFND	UNDFD	13	1.0
5.75	18.86	27.42	0.79	2.87	1.01	clayey silt to silty clay	UNDFND	UNDFD	13	[illegible]
6.00	19.69	25.82	0.60	2.33	1.06	sandy silt to clayey silt	UNDFND	UNDFD	10	[illegible]
6.25	20.51	36.46	0.75	2.06	1.11	sandy silt to clayey silt	UNDFND	UNDFD	14	1.3
6.50	21.33	28.64	0.73	2.56	1.15	sandy silt to clayey silt	UNDFND	UNDFD	11	[illegible]
6.75	22.15	26.36	0.84	3.20	1.18	clayey silt to silty clay	UNDFND	UNDFD	13	[illegible]
7.00	22.97	27.82	0.85	3.04	1.20	clayey silt to silty clay	UNDFND	UNDFD	13	1.0
7.25	23.79	19.98	0.59	2.95	1.22	clayey silt to silty clay	UNDFND	UNDFD	10	.7
7.50	24.61	14.92	0.40	2.69	1.24	clayey silt to silty clay	UNDFND	UNDFD	7	[illegible]
7.75	25.43	31.88	0.71	2.23	1.26	sandy silt to clayey silt	UNDFND	UNDFD	12	[illegible]
8.00	26.25	20.36	0.66	3.26	1.27	clayey silt to silty clay	UNDFND	UNDFD	10	.7
8.25	27.07	16.54	0.56	3.37	1.29	silty clay to clay	UNDFND	UNDFD	11	[illegible]
8.50	27.89	16.80	0.49	2.92	1.31	clayey silt to silty clay	UNDFND	UNDFD	8	[illegible]
8.75	28.71	15.74	0.51	3.23	1.33	silty clay to clay	UNDFND	UNDFD	10	.5
9.00	29.53	21.42	0.90	4.22	1.35	silty clay to clay	UNDFND	UNDFD	14	.7
9.25	30.35	29.84	1.02	3.40	1.37	clayey silt to silty clay	UNDFND	UNDFD	14	[illegible]
9.50	31.17	22.82	0.98	4.30	1.39	silty clay to clay	UNDFND	UNDFD	15	.8

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 26

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02)

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf

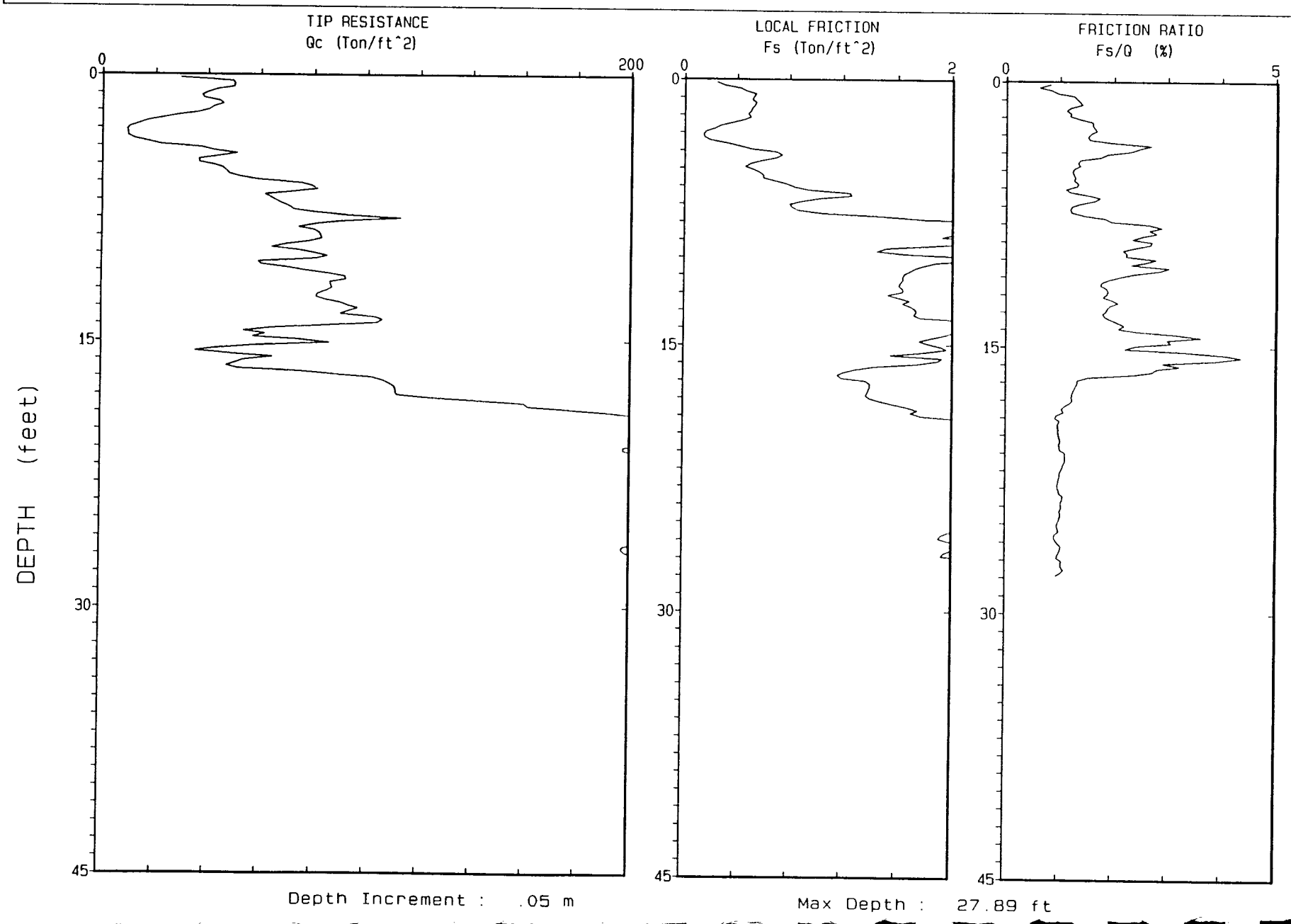
Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 26

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) *

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-06-92 SOUNDING NO. : CPT-08 Pg 1 / 1

LOCATION : BLDG. 870 DEPTH TO WATER : 23.29 FT BLS TERRA JOB NO. : 92-1016



Depth Increment : .05 m

Max Depth : 27.89 ft

1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date : 08-06-92

Location : CPT-08 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 7.1

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	44.18	0.39	0.89	0.02	silty sand to sandy silt	>90	>48	14	UNDEFINE
0.50	1.64	41.00	0.52	1.27	0.07	silty sand to sandy silt	70-80	>48	13	UNDEFINE
0.75	2.46	33.58	0.46	1.36	0.11	silty sand to sandy silt	60-70	44-46	11	UNDEFINE
1.00	3.28	11.86	0.19	1.60	0.16	clayey silt to silty clay	UNDFND	UNDFD	6	.8
1.25	4.10	19.48	0.43	2.19	0.20	sandy silt to clayey silt	UNDFND	UNDFD	7	1.3
1.50	4.92	41.94	0.60	1.42	0.25	silty sand to sandy silt	60-70	42-44	13	UNDEFINE
1.75	5.74	46.96	0.60	1.27	0.29	silty sand to sandy silt	60-70	42-44	15	UNDEFINE
2.00	6.56	73.48	1.01	1.38	0.34	silty sand to sandy silt	70-80	44-46	23	UNDEFINE
2.25	7.38	66.04	0.88	1.33	0.38	silty sand to sandy silt	60-70	42-44	21	UNDEFINE
2.50	8.20	89.72	1.99	2.21	0.43	silty sand to sandy silt	70-80	44-46	29	UNDEFINE
2.75	9.02	79.98	2.09	2.61	0.47	sandy silt to clayey silt	UNDFND	UNDFD	31	5.6
3.00	9.84	73.84	1.74	2.36	0.52	silty sand to sandy silt	60-70	42-44	24	UNDEFINE
3.25	10.66	73.22	1.97	2.70	0.56	sandy silt to clayey silt	UNDFND	UNDFD	28	5.1
3.50	11.48	83.12	1.65	1.98	0.61	silty sand to sandy silt	60-70	42-44	27	UNDEFINE
3.75	12.30	85.16	1.60	1.88	0.65	silty sand to sandy silt	60-70	42-44	27	UNDEFINE
4.00	13.12	89.02	1.70	1.91	0.70	silty sand to sandy silt	60-70	42-44	28	UNDEFINE
4.25	13.94	99.38	2.03	2.05	0.74	silty sand to sandy silt	70-80	42-44	32	UNDEFINE
4.50	14.76	64.42	1.93	3.00	0.79	sandy silt to clayey silt	UNDFND	UNDFD	25	4.5
4.75	15.58	60.02	1.81	3.01	0.83	sandy silt to clayey silt	UNDFND	UNDFD	23	4.2
5.00	16.40	53.40	1.66	3.10	0.88	sandy silt to clayey silt	UNDFND	UNDFD	20	3.7
5.25	17.22	84.86	1.27	1.49	0.92	silty sand to sandy silt	60-70	40-42	27	UNDEFINE
5.50	18.04	110.78	1.39	1.25	0.97	sand to silty sand	70-80	40-42	27	UNDEFINE
5.75	18.86	152.66	1.63	1.07	1.01	sand	70-80	42-44	29	UNDEFINE
6.00	19.69	206.12	2.01	0.98	1.06	sand	80-90	42-44	39	UNDEFINE
6.25	20.51	206.32	2.07	1.00	1.11	sand	80-90	42-44	40	UNDEFINE
6.50	21.33	203.24	2.19	1.08	1.15	sand	80-90	42-44	39	UNDEFINE
6.75	22.15	222.56	2.37	1.07	1.20	sand	80-90	42-44	43	UNDEFINE
7.00	22.97	250.42	2.49	0.99	1.24	sand	80-90	44-46	48	UNDEFINE
7.25	23.79	248.76	2.60	1.04	1.28	sand	80-90	42-44	48	UNDEFINE
7.50	24.61	254.18	2.63	1.04	1.30	sand	80-90	42-44	49	UNDEFINE
7.75	25.43	227.58	2.26	0.99	1.32	sand	80-90	42-44	44	UNDEFINE
8.00	26.25	205.56	1.98	0.97	1.34	sand	80-90	42-44	39	UNDEFINE
8.25	27.07	199.98	2.02	1.01	1.36	sand	80-90	42-44	38	UNDEFINE
8.50	27.89	217.36	2.25	1.04	1.38	sand	80-90	42-44	42	UNDEFINE

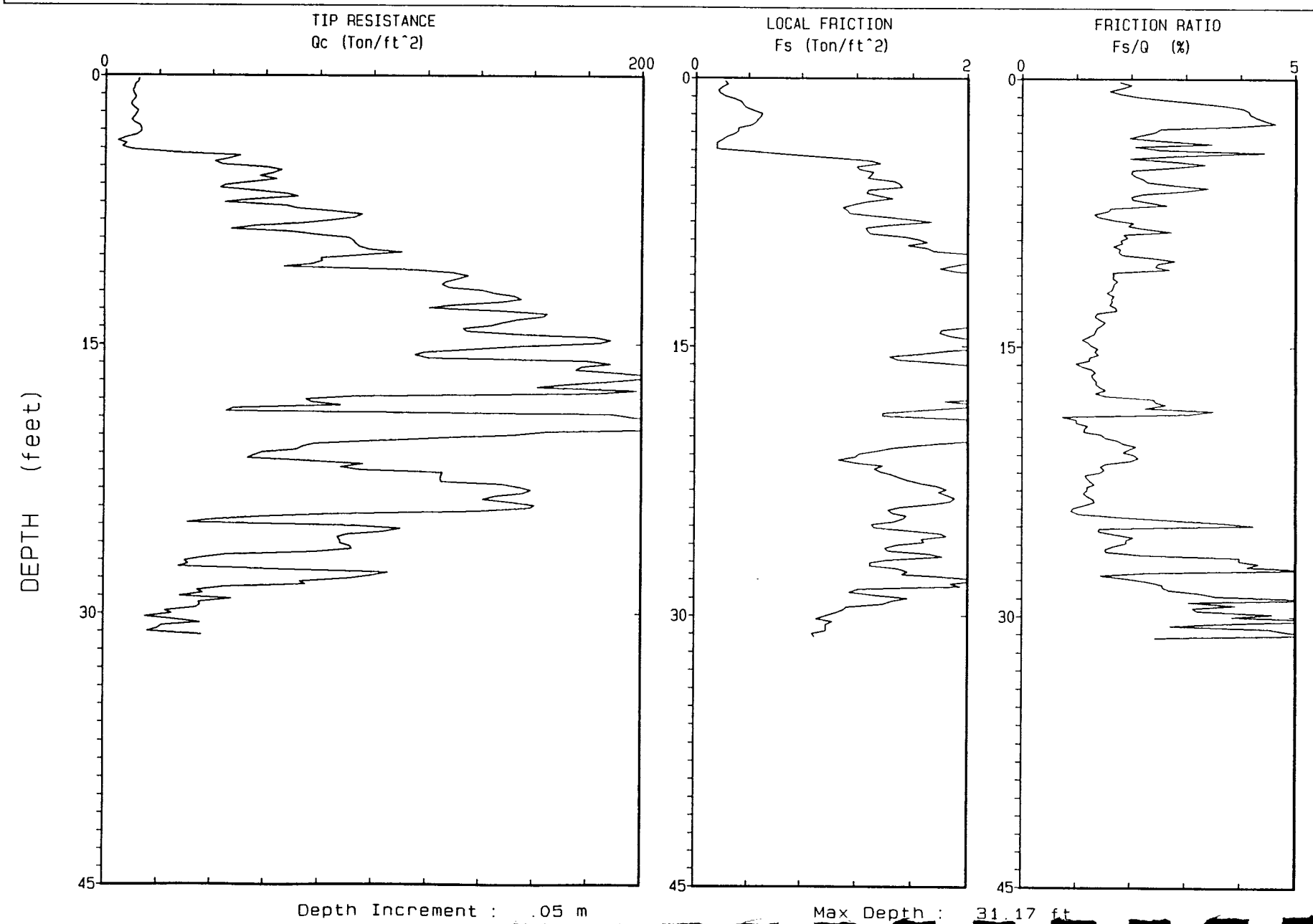
Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 14

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) *

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-06-92 SOUNDING NO. : CPT-09 Pg 1 / 1

LOCATION : BLDG. 870 DEPTH TO WATER : 27.06 FT BLS TERRA JOB NO. : 92-1016



Depth Increment : .05 m

Max Depth : 31.17 ft

1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date : 08-06-92

Location : CPT-09 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 8.25

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	11.14	0.20	1.81	0.02	clayey silt to silty clay	UNDFND	UNDFD	5	.4
0.50	1.64	10.26	0.32	3.10	0.07	silty clay to clay	UNDFND	UNDFD	7	.4
0.75	2.46	10.86	0.47	4.33	0.11	clay	UNDFND	UNDFD	10	.4
1.00	3.28	12.22	0.32	2.59	0.16	clayey silt to silty clay	UNDFND	UNDFD	6	.4
1.25	4.10	7.20	0.22	3.08	0.20	clay	UNDFND	UNDFD	7	.2
1.50	4.92	41.36	1.12	2.71	0.25	sandy silt to clayey silt	UNDFND	UNDFD	16	1.64
1.75	5.74	62.08	1.32	2.12	0.29	silty sand to sandy silt	70-80	44-46	20	UNDEFINED
2.00	6.56	53.48	1.39	2.60	0.34	sandy silt to clayey silt	UNDFND	UNDFD	20	2.1
2.25	7.38	61.92	1.23	1.99	0.38	silty sand to sandy silt	60-70	42-44	20	UNDEFINED
2.50	8.20	86.76	1.45	1.67	0.43	silty sand to sandy silt	70-80	44-46	28	UNDEFINED
2.75	9.02	68.68	1.41	2.05	0.47	silty sand to sandy silt	60-70	42-44	22	UNDEFINED
3.00	9.84	97.98	1.76	1.79	0.52	silty sand to sandy silt	70-80	42-44	31	UNDEFINED
3.25	10.66	80.08	2.06	2.57	0.56	sandy silt to clayey silt	UNDFND	UNDFD	31	3.18
3.50	11.48	127.90	2.17	1.70	0.61	sand to silty sand	80-90	44-46	31	UNDEFINED
3.75	12.30	138.58	2.28	1.64	0.65	sand to silty sand	80-90	44-46	33	UNDEFINED
4.00	13.12	139.88	2.26	1.61	0.70	sand to silty sand	80-90	44-46	33	UNDEFINED
4.25	13.94	155.16	2.21	1.42	0.74	sand to silty sand	80-90	44-46	37	UNDEFINED
4.50	14.76	158.68	1.96	1.24	0.79	sand to silty sand	80-90	44-46	38	UNDEFINED
4.75	15.58	142.98	1.90	1.33	0.83	sand to silty sand	70-80	42-44	34	UNDEFINED
5.00	16.40	168.60	2.00	1.19	0.88	sand to silty sand	80-90	42-44	40	UNDEFINED
5.25	17.22	191.18	2.58	1.35	0.92	sand to silty sand	80-90	44-46	46	UNDEFINED
5.50	18.04	142.54	2.42	1.70	0.97	sand to silty sand	70-80	42-44	34	UNDEFINED
5.75	18.86	89.66	1.70	1.90	1.01	silty sand to sandy silt	60-70	40-42	29	UNDEFINED
6.00	19.69	208.50	2.29	1.10	1.06	sand	80-90	42-44	40	UNDEFINED
6.25	20.51	124.58	2.10	1.68	1.11	sand to silty sand	70-80	40-42	30	UNDEFINED
6.50	21.33	62.78	1.26	2.00	1.15	silty sand to sandy silt	50-60	38-40	20	UNDEFINED
6.75	22.15	96.82	1.35	1.39	1.20	sand to silty sand	60-70	40-42	23	UNDEFINED
7.00	22.97	135.90	1.68	1.23	1.24	sand to silty sand	70-80	40-42	33	UNDEFINED
7.25	23.79	150.52	1.84	1.22	1.29	sand to silty sand	70-80	40-42	36	UNDEFINED
7.50	24.61	121.26	1.50	1.24	1.33	sand to silty sand	60-70	40-42	29	UNDEFINED
7.75	25.43	75.86	1.50	1.97	1.38	silty sand to sandy silt	50-60	38-40	24	UNDEFINED
8.00	26.25	89.08	1.62	1.82	1.42	silty sand to sandy silt	50-60	38-40	28	UNDEFINED
8.25	27.07	56.54	1.54	2.73	1.47	sandy silt to clayey silt	UNDFND	UNDFD	22	2.20
8.50	27.89	66.62	1.57	2.35	1.50	sandy silt to clayey silt	UNDFND	UNDFD	26	2.60
8.75	28.71	64.08	1.66	2.59	1.52	sandy silt to clayey silt	UNDFND	UNDFD	25	2.50
9.00	29.53	36.90	1.37	3.72	1.54	clayey silt to silty clay	UNDFND	UNDFD	18	1.41
9.25	30.35	24.86	1.02	4.09	1.56	silty clay to clay	UNDFND	UNDFD	16	.92
9.50	31.17	26.16	0.94	3.61	1.58	clayey silt to silty clay	UNDFND	UNDFD	13	.97

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ***

1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf

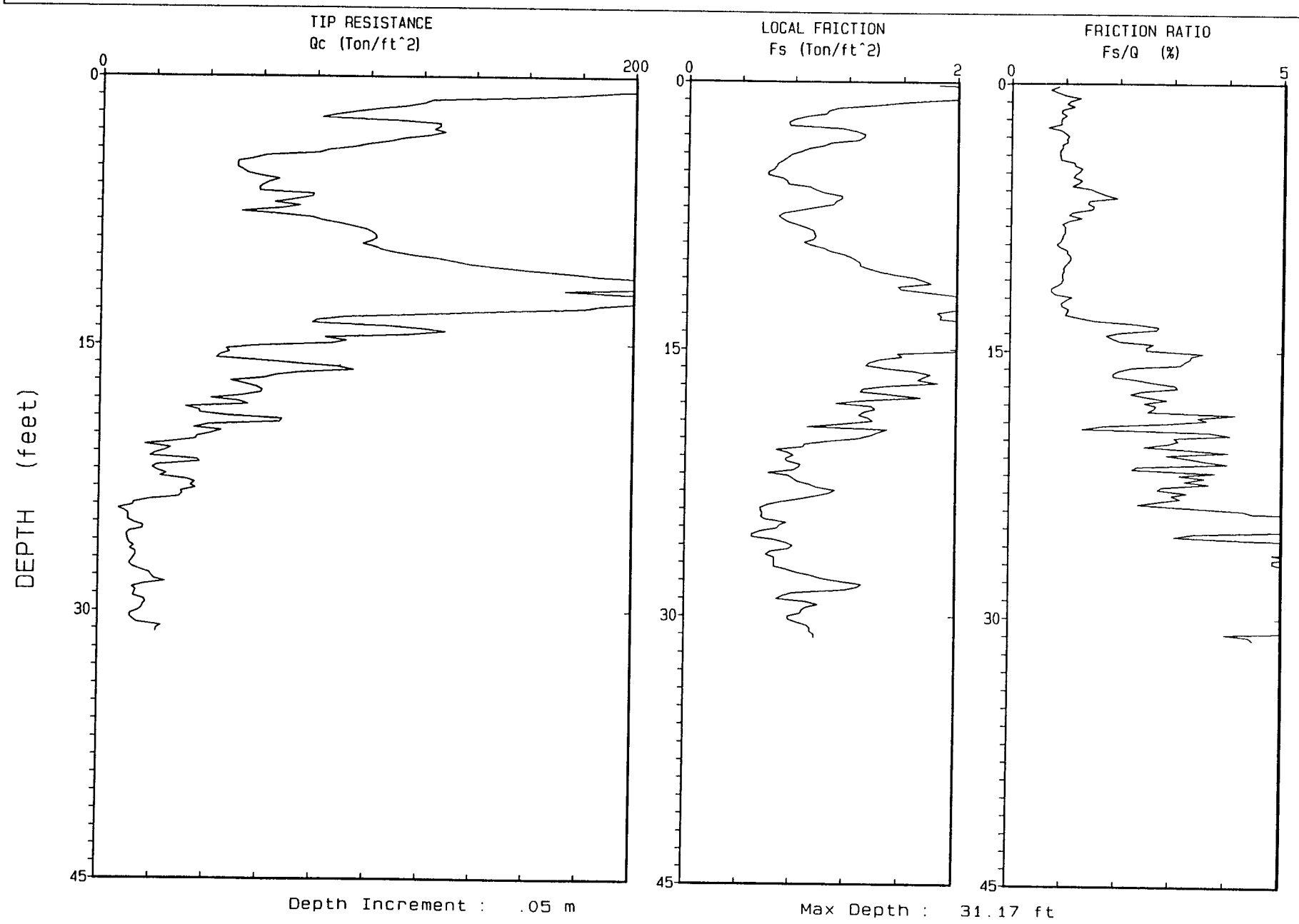
Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02)

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-06-92 SOUNDING NO. : CPT-10 Pg 1 / 1

LOCATION : BLDG. 870 DEPTH TO WATER : 22.14 FT BLS TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date : 08-06-92

Location : CPT-10 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 6.75

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	266.48	2.42	0.91	0.02	sand	>90	UNDFD	>50	UNDEFINED
0.50	1.64	138.86	1.42	1.02	0.07	sand to silty sand	>90	>48	33	UNDEFINED
0.75	2.46	95.68	0.84	0.88	0.11	sand to silty sand	>90	>48	23	UNDEFIN
1.00	3.28	125.46	1.26	1.00	0.16	sand to silty sand	>90	>48	30	UNDEFIN
1.25	4.10	99.84	0.92	0.92	0.20	sand to silty sand	80-90	46-48	24	UNDEFINED
1.50	4.92	59.88	0.68	1.14	0.25	silty sand to sandy silt	70-80	44-46	19	UNDEFIN
1.75	5.74	56.40	0.68	1.21	0.29	silty sand to sandy silt	60-70	42-44	18	UNDEFIN
2.00	6.56	63.74	1.04	1.63	0.34	silty sand to sandy silt	60-70	42-44	20	UNDEFINED
2.25	7.38	71.12	0.95	1.33	0.38	silty sand to sandy silt	70-80	42-44	23	UNDEFINED
2.50	8.20	73.44	0.77	1.05	0.43	sand to silty sand	60-70	42-44	18	UNDEFIN
2.75	9.02	99.72	0.93	0.93	0.47	sand to silty sand	70-80	44-46	24	UNDEFINED
3.00	9.84	103.04	1.08	1.04	0.52	sand to silty sand	70-80	44-46	25	UNDEFINED
3.25	10.66	132.44	1.33	1.00	0.56	sand to silty sand	80-90	44-46	32	UNDEFIN
3.50	11.48	187.26	1.68	0.90	0.61	sand	>90	44-46	36	UNDEFIN
3.75	12.30	206.02	1.92	0.93	0.65	sand	>90	44-46	39	UNDEFINED
4.00	13.12	191.76	2.03	1.06	0.70	sand	>90	44-46	37	UNDEFINED
4.25	13.94	96.02	2.11	2.20	0.74	silty sand to sandy silt	60-70	42-44	31	UNDEFIN
4.50	14.76	108.08	2.29	2.12	0.79	silty sand to sandy silt	70-80	42-44	35	UNDEFINED
4.75	15.58	56.64	1.76	3.11	0.83	sandy silt to clayey silt	UNDFND	UNDFD	22	2.93
5.00	16.40	72.04	1.54	2.14	0.88	silty sand to sandy silt	50-60	40-42	23	UNDEFIN
5.25	17.22	60.92	1.64	2.69	0.92	sandy silt to clayey silt	UNDFND	UNDFD	23	3.
5.50	18.04	54.48	1.40	2.58	0.97	sandy silt to clayey silt	UNDFND	UNDFD	21	2.81
5.75	18.86	42.66	1.35	3.17	1.01	clayey silt to silty clay	UNDFND	UNDFD	20	2.
6.00	19.69	51.94	1.28	2.47	1.06	sandy silt to clayey silt	UNDFND	UNDFD	20	2.
6.25	20.51	37.08	1.10	2.97	1.11	sandy silt to clayey silt	UNDFND	UNDFD	14	1.89
6.50	21.33	21.52	0.75	3.50	1.15	clayey silt to silty clay	UNDFND	UNDFD	10	1.
6.75	22.15	27.24	0.78	2.87	1.20	clayey silt to silty clay	UNDFND	UNDFD	13	1.
7.00	22.97	30.10	0.94	3.11	1.23	clayey silt to silty clay	UNDFND	UNDFD	14	1.
7.25	23.79	29.28	0.85	2.90	1.25	clayey silt to silty clay	UNDFND	UNDFD	14	1.47
7.50	24.61	10.76	0.58	5.35	1.27	clay	UNDFND	UNDFD	10	.
7.75	25.43	13.64	0.65	4.74	1.29	clay	UNDFND	UNDFD	13	.
8.00	26.25	11.02	0.70	6.39	1.31	clay	UNDFND	UNDFD	11	.50
8.25	27.07	13.16	0.65	4.95	1.33	clay	UNDFND	UNDFD	13	.
8.50	27.89	14.24	0.85	5.94	1.34	clay	UNDFND	UNDFD	14	.
8.75	28.71	19.02	1.15	6.07	1.36	clay	UNDFND	UNDFD	18	.91
9.00	29.53	15.10	0.85	5.63	1.38	clay	UNDFND	UNDFD	14	.
9.25	30.35	14.48	0.83	5.73	1.40	clay	UNDFND	UNDFD	14	.
9.50	31.17	18.96	0.95	5.00	1.42	clay	UNDFND	UNDFD	18	.90

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 19

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) *

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

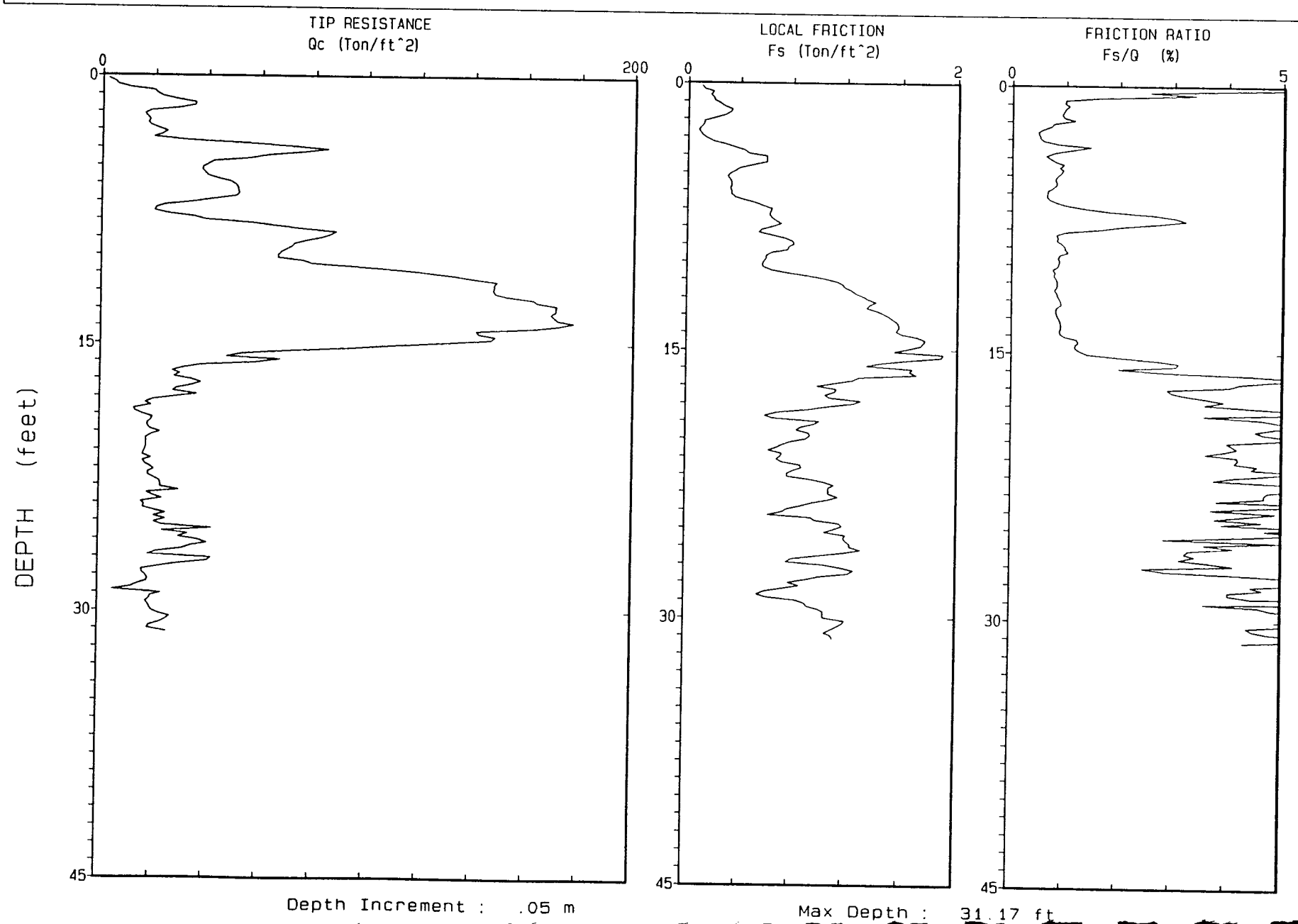
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 19

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) *

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-07-92
DEPTH TO WATER : 28.37 FT BLS
SOUNDING NO. : CPT-11 Pg 1 / 1
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date : 08-07-92

Location : CPT-11 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 8.65

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	8.40	0.15	1.83	0.02	clayey silt to silty clay	UNDFND	UNDFD	4	.4
0.50	1.64	27.98	0.27	0.97	0.07	silty sand to sandy silt	60-70	46-48	9	UNDEFINE
0.75	2.46	19.36	0.17	0.86	0.11	sandy silt to clayey silt	UNDFND	UNDFD	7	1.0
1.00	3.28	20.54	0.12	0.59	0.16	silty sand to sandy silt	40-50	42-44	7	UNDEFINE
1.25	4.10	52.70	0.43	0.81	0.20	sand to silty sand	70-80	44-46	13	UNDEFINE
1.50	4.92	54.76	0.49	0.89	0.25	sand to silty sand	60-70	44-46	13	UNDEFINE
1.75	5.74	39.52	0.32	0.81	0.29	silty sand to sandy silt	50-60	42-44	13	UNDEFINE
2.00	6.56	50.40	0.35	0.70	0.34	sand to silty sand	60-70	42-44	12	UNDEFINE
2.25	7.38	34.14	0.60	1.75	0.38	sandy silt to clayey silt	UNDFND	UNDFD	13	1.7
2.50	8.20	34.94	0.65	1.85	0.43	sandy silt to clayey silt	UNDFND	UNDFD	13	1.8
2.75	9.02	79.38	0.71	0.89	0.47	sand to silty sand	70-80	42-44	19	UNDEFINE
3.00	9.84	71.70	0.67	0.94	0.52	sand to silty sand	60-70	42-44	17	UNDEFINE
3.25	10.66	76.60	0.62	0.81	0.56	sand to silty sand	60-70	42-44	18	UNDEFINE
3.50	11.48	131.06	1.09	0.83	0.61	sand	80-90	44-46	25	UNDEFINE
3.75	12.30	148.68	1.32	0.89	0.65	sand	80-90	44-46	28	UNDEFINE
4.00	13.12	168.00	1.43	0.85	0.70	sand	80-90	44-46	32	UNDEFINE
4.25	13.94	172.08	1.57	0.91	0.74	sand	80-90	44-46	33	UNDEFINE
4.50	14.76	147.96	1.72	1.16	0.79	sand to silty sand	80-90	42-44	35	UNDEFINE
4.75	15.58	91.52	1.73	1.89	0.83	silty sand to sandy silt	60-70	40-42	29	UNDEFINE
5.00	16.40	48.22	1.57	3.26	0.88	sandy silt to clayey silt	UNDFND	UNDFD	18	2.49
5.25	17.22	31.30	1.16	3.71	0.92	clayey silt to silty clay	UNDFND	UNDFD	15	1.59
5.50	18.04	31.16	1.16	3.74	0.97	clayey silt to silty clay	UNDFND	UNDFD	15	1.58
5.75	18.86	16.52	0.79	4.78	1.01	clay	UNDFND	UNDFD	16	.81
6.00	19.69	18.26	0.92	5.06	1.06	clay	UNDFND	UNDFD	17	.90
6.25	20.51	19.18	0.81	4.24	1.11	silty clay to clay	UNDFND	UNDFD	12	.95
6.50	21.33	16.90	0.70	4.14	1.15	clay	UNDFND	UNDFD	16	.82
6.75	22.15	18.44	0.82	4.45	1.20	clay	UNDFND	UNDFD	18	.90
7.00	22.97	20.58	1.06	5.13	1.24	clay	UNDFND	UNDFD	20	1.01
7.25	23.79	22.94	1.03	4.48	1.29	clay	UNDFND	UNDFD	22	1.13
7.50	24.61	18.92	0.81	4.30	1.33	clay	UNDFND	UNDFD	18	.92
7.75	25.43	26.46	1.14	4.32	1.38	silty clay to clay	UNDFND	UNDFD	17	1.32
8.00	26.25	33.08	1.24	3.75	1.42	clayey silt to silty clay	UNDFND	UNDFD	16	1.66
8.25	27.07	29.82	0.96	3.22	1.47	clayey silt to silty clay	UNDFND	UNDFD	14	1.49
8.50	27.89	25.38	1.12	4.42	1.51	silty clay to clay	UNDFND	UNDFD	16	1.25
8.75	28.71	16.40	0.71	4.34	1.56	clay	UNDFND	UNDFD	16	.78
9.00	29.53	17.24	0.86	5.01	1.58	clay	UNDFND	UNDFD	17	.82
9.25	30.35	21.72	1.11	5.11	1.60	clay	UNDFND	UNDFD	21	1.05
9.50	31.17	22.58	1.11	4.92	1.62	clay	UNDFND	UNDFD	22	1.09

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 19

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ***

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

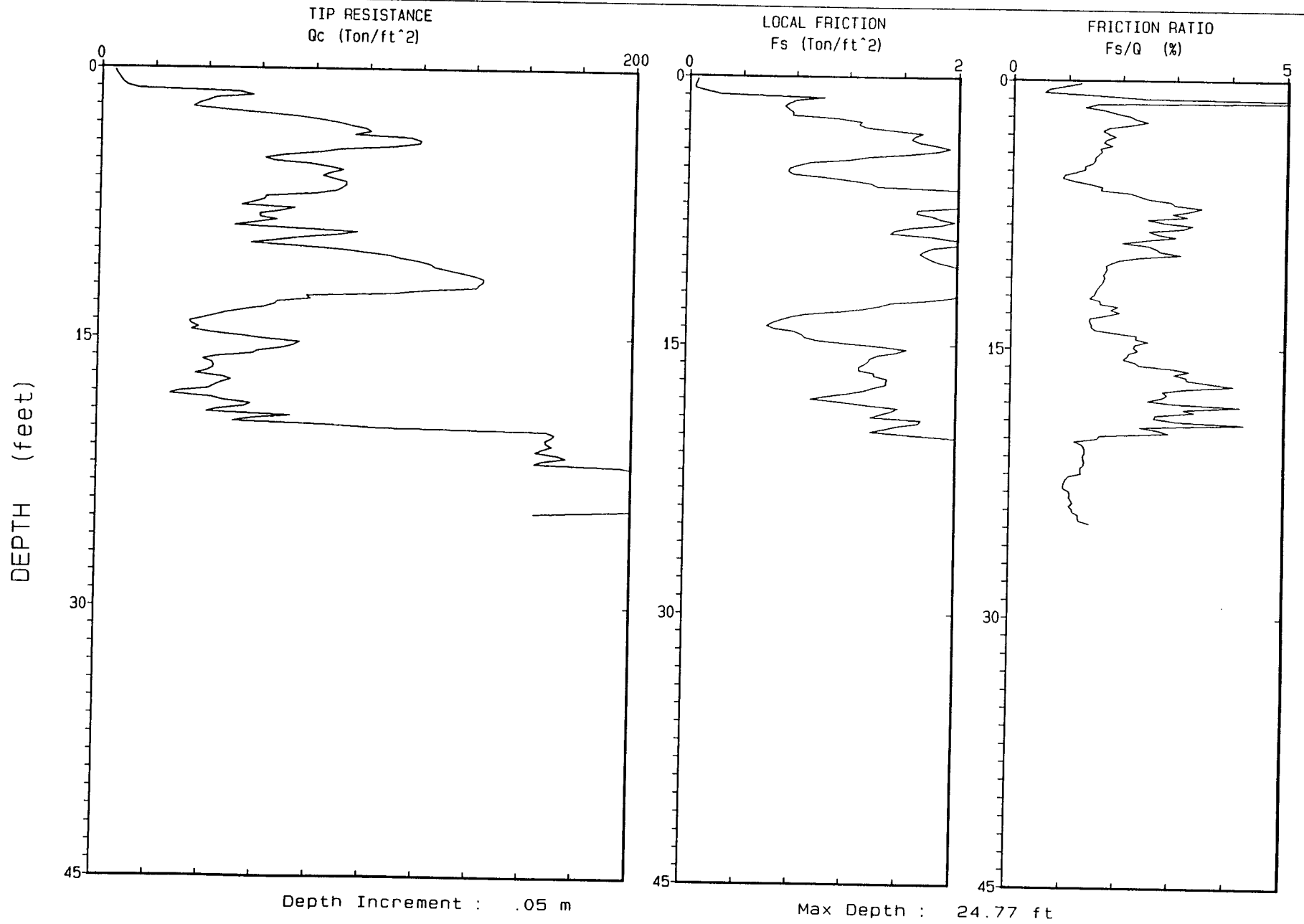
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 19

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02)

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-07-92
DEPTH TO WATER : 32.31 FT BLS
SOUNDING NO. : CPT-12A Pg 1 / 1
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date :A 08-07-92

Location : CPT-12 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 9.85

Tot. Unit Wt. (avg) : 110 pcf

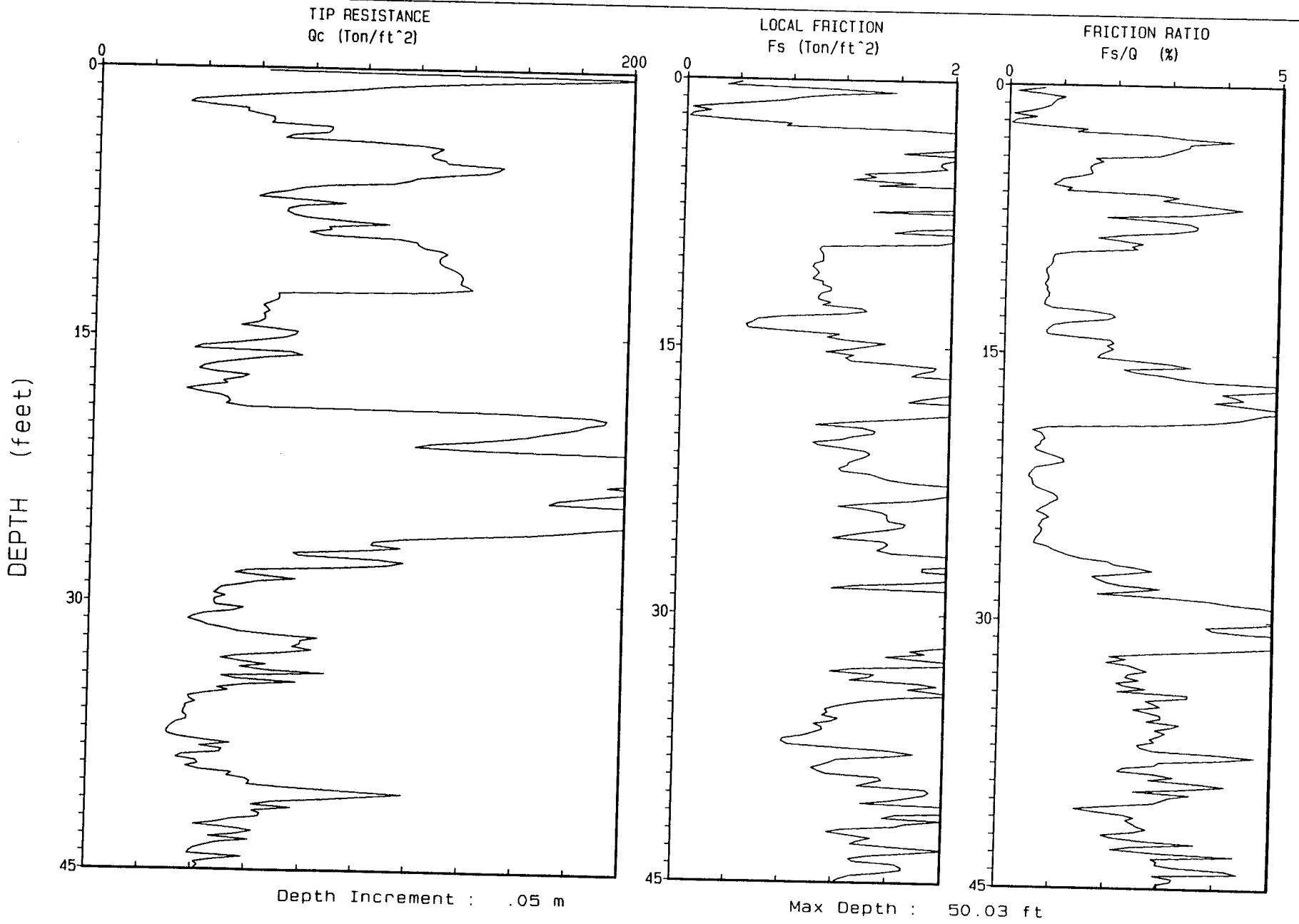
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	6.32	0.06	0.98	0.02	sensitive fine grained	UNDFND	UNDFD	3	.33
0.50	1.64	34.80	0.70	2.01	0.07	sandy silt to clayey silt	UNDFND	UNDFD	13	1.82
0.75	2.46	43.02	0.94	2.18	0.11	sandy silt to clayey silt	UNDFND	UNDFD	16	2.
1.00	3.28	86.72	1.51	1.74	0.16	silty sand to sandy silt	80-90	>48	28	UNDEFINE
1.25	4.10	109.82	1.80	1.64	0.20	silty sand to sandy silt	>90	>48	35	UNDEFINED
1.50	4.92	82.20	1.18	1.44	0.25	silty sand to sandy silt	80-90	46-48	26	UNDEFIN
1.75	5.74	80.98	0.90	1.11	0.29	sand to silty sand	70-80	44-46	19	UNDEFIN
2.00	6.56	88.78	1.83	2.06	0.34	silty sand to sandy silt	70-80	44-46	28	UNDEFINED
2.25	7.38	70.04	2.17	3.10	0.38	sandy silt to clayey silt	UNDFND	UNDFD	27	3.6
2.50	8.20	62.50	1.85	2.96	0.43	sandy silt to clayey silt	UNDFND	UNDFD	24	3.
2.75	9.02	68.98	1.70	2.46	0.47	sandy silt to clayey silt	UNDFND	UNDFD	26	3.60
3.00	9.84	72.32	1.91	2.64	0.52	sandy silt to clayey silt	UNDFND	UNDFD	28	3.77
3.25	10.66	105.86	1.89	1.79	0.56	silty sand to sandy silt	70-80	42-44	34	UNDEFINE
3.50	11.48	131.26	2.19	1.67	0.61	sand to silty sand	80-90	44-46	31	UNDEFINE
3.75	12.30	138.66	2.13	1.53	0.65	sand to silty sand	80-90	44-46	33	UNDEFINED
4.00	13.12	79.88	1.45	1.82	0.70	silty sand to sandy silt	60-70	40-42	26	UNDEFINE
4.25	13.94	49.32	0.72	1.46	0.74	silty sand to sandy silt	50-60	38-40	16	UNDEFINE
4.50	14.76	36.78	0.83	2.26	0.79	sandy silt to clayey silt	UNDFND	UNDFD	14	1.89
4.75	15.58	66.86	1.46	2.19	0.83	silty sand to sandy silt	50-60	40-42	21	UNDEFINED
5.00	16.40	48.84	1.33	2.72	0.88	sandy silt to clayey silt	UNDFND	UNDFD	19	2.5
5.25	17.22	42.08	1.46	3.46	0.92	clayey silt to silty clay	UNDFND	UNDFD	20	2.16
5.50	18.04	42.38	1.19	2.80	0.97	sandy silt to clayey silt	UNDFND	UNDFD	16	2.17
5.75	18.86	45.80	1.42	3.09	1.01	sandy silt to clayey silt	UNDFND	UNDFD	18	2.3
6.00	19.69	53.44	1.58	2.96	1.06	sandy silt to clayey silt	UNDFND	UNDFD	20	2.7
6.25	20.51	140.06	1.93	1.38	1.11	sand to silty sand	70-80	42-44	34	UNDEFINED
6.50	21.33	167.72	2.29	1.36	1.15	sand to silty sand	70-80	42-44	40	UNDEFINE
6.75	22.15	175.14	2.21	1.26	1.20	sand to silty sand	80-90	42-44	42	UNDEFINE
7.00	22.97	209.22	2.13	1.02	1.24	sand	80-90	42-44	40	UNDEFINED
7.25	23.79	258.34	2.89	1.12	1.29	sand	>90	44-46	49	UNDEFINED
7.50	24.61	217.10	2.65	1.22	1.33	sand	80-90	42-44	42	UNDEFINE

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 19

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

HILL AIR FORCE BASE

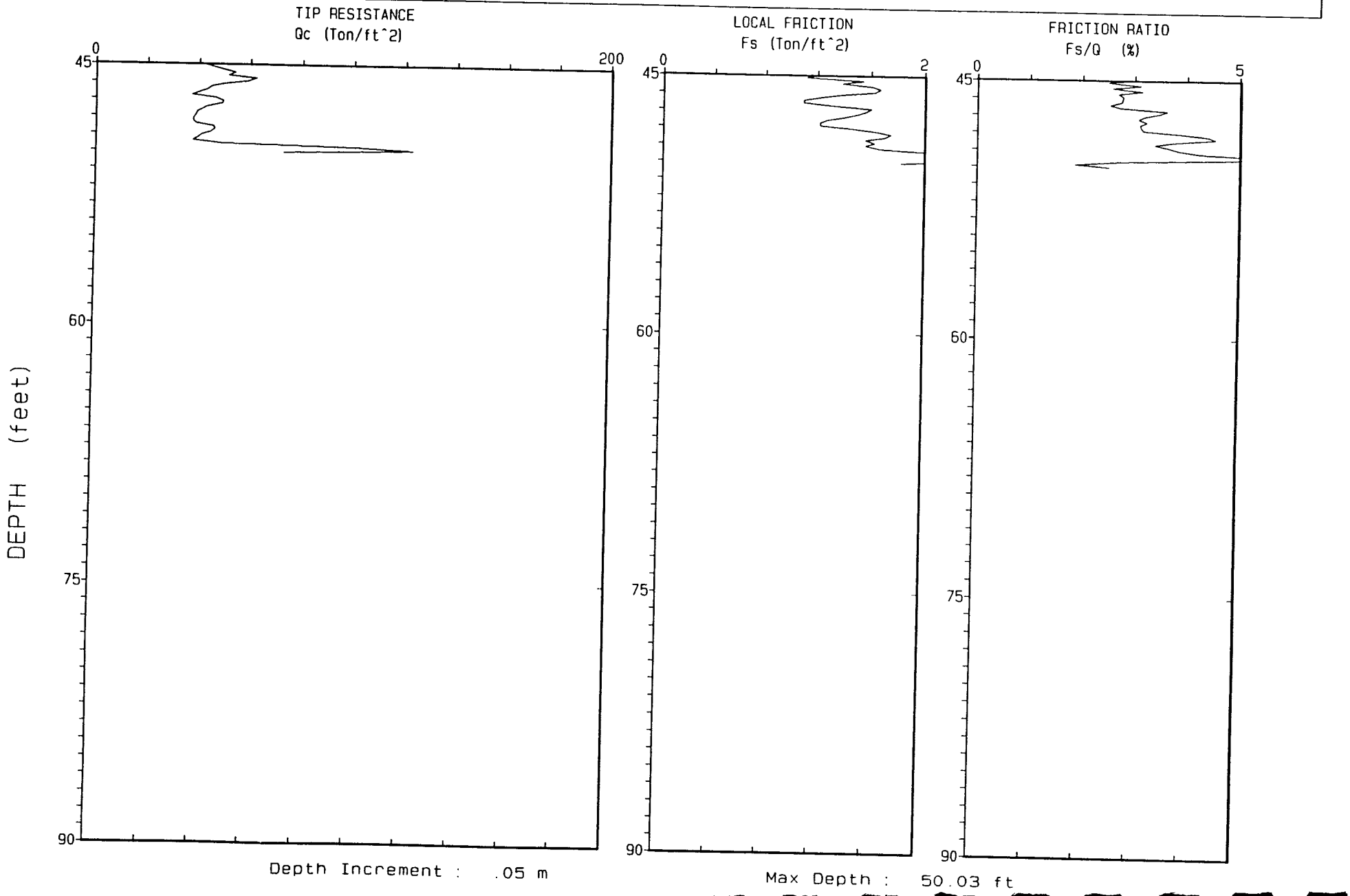
CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-07-92
DEPTH TO WATER : 32.31 FT BLS
SOUNDING NO. : CPT-12B Pg 1 / 2
TERRA JOB NO. : 92-1016



HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-07-92 SOUNDING NO. : CPT-12B Pg 2 / 2

LOCATION : BLDG. 870 DEPTH TO WATER : 32.31 FT BLS TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870
0

Contractor : TERRA TECH SW
Location : CPT-12
Job No. : 92-1016
Tot. Unit Wt. (avg) : 110 pcf

Test Date :B 08-07-92
Elevation : UNKNOWN
Water table (meters) : 9.85

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	146.90	0.90	0.61	0.02	sand	>90	>48	28	UNDEFINEI
0.50	1.64	81.04	0.49	0.60	0.07	sand to silty sand	>90	>48	19	UNDEFINEI
0.75	2.46	44.46	0.27	0.60	0.11	sand to silty sand	70-80	46-48	11	UNDEFINEI
1.00	3.28	67.94	2.03	2.99	0.16	sandy silt to clayey silt	UNDFND	UNDFD	26	3.56
1.25	4.10	83.00	2.25	2.71	0.20	sandy silt to clayey silt	UNDFND	UNDFD	32	4.35
1.50	4.92	125.46	1.98	1.58	0.25	sand to silty sand	>90	46-48	30	UNDEFINED
1.75	5.74	141.74	1.50	1.06	0.29	sand to silty sand	>90	46-48	34	UNDEFINED
2.00	6.56	113.04	2.88	2.55	0.34	silty sand to sandy silt	80-90	46-48	36	UNDEFINED
2.25	7.38	69.46	2.37	3.41	0.38	sandy silt to clayey silt	UNDFND	UNDFD	27	3.63
2.50	8.20	76.54	2.47	3.22	0.43	sandy silt to clayey silt	UNDFND	UNDFD	29	4.00
2.75	9.02	90.96	1.96	2.15	0.47	silty sand to sandy silt	70-80	42-44	29	UNDEFINED
3.00	9.84	103.46	1.21	1.17	0.52	sand to silty sand	70-80	44-46	25	UNDEFINED
3.25	10.66	128.30	1.01	0.79	0.56	sand	80-90	44-46	25	UNDEFINED
3.50	11.48	133.04	1.02	0.77	0.61	sand	80-90	44-46	25	UNDEFINED
3.75	12.30	138.40	1.06	0.77	0.65	sand	80-90	44-46	27	UNDEFINED
4.00	13.12	79.18	1.22	1.54	0.70	silty sand to sandy silt	60-70	40-42	25	UNDEFINED
4.25	13.94	63.40	0.57	0.89	0.74	sand to silty sand	50-60	40-42	15	UNDEFINED
4.50	14.76	63.80	1.17	1.83	0.79	silty sand to sandy silt	50-60	40-42	20	UNDEFINED
4.75	15.58	60.36	1.25	2.08	0.83	silty sand to sandy silt	50-60	38-40	19	UNDEFINED
5.00	16.40	61.02	1.69	2.76	0.88	sandy silt to clayey silt	UNDFND	UNDFD	23	3.16
5.25	17.22	45.68	2.10	4.59	0.92	silty clay to clay	UNDFND	UNDFD	29	2.35
5.50	18.04	45.58	1.98	4.34	0.97	silty clay to clay	UNDFND	UNDFD	29	2.34
5.75	18.86	47.42	2.17	4.58	1.01	silty clay to clay	UNDFND	UNDFD	30	2.44
6.00	19.69	156.64	1.35	0.86	1.06	sand	70-80	42-44	30	UNDEFINED
6.25	20.51	174.98	1.20	0.69	1.11	sand	80-90	42-44	34	UNDEFINED
6.50	21.33	137.74	1.35	0.98	1.15	sand to silty sand	70-80	40-42	33	UNDEFINED
6.75	22.15	232.42	1.28	0.55	1.20	sand	80-90	42-44	45	UNDEFINED
7.00	22.97	256.84	1.82	0.71	1.24	sand	>90	44-46	49	UNDEFINED
7.25	23.79	201.12	1.84	0.92	1.29	sand	80-90	42-44	39	UNDEFINED
7.50	24.61	189.10	1.45	0.76	1.33	sand	80-90	42-44	36	UNDEFINED
7.75	25.43	220.98	1.58	0.72	1.38	sand	80-90	42-44	42	UNDEFINED
8.00	26.25	173.96	1.42	0.81	1.42	sand	70-80	40-42	33	UNDEFINED
8.25	27.07	109.86	2.04	1.86	1.47	silty sand to sandy silt	60-70	38-40	35	UNDEFINED
8.50	27.89	98.14	2.02	2.06	1.51	silty sand to sandy silt	60-70	38-40	31	UNDEFINED
8.75	28.71	69.68	1.74	2.49	1.56	sandy silt to clayey silt	UNDFND	UNDFD	27	3.58
9.00	29.53	52.62	2.49	4.73	1.60	silty clay to clay	UNDFND	UNDFD	34	2.68
9.25	30.35	49.86	2.55	5.12	1.65	clay	UNDFND	UNDFD	48	2.53
9.50	31.17	42.96	2.48	5.77	1.69	clay	UNDFND	UNDFD	41	2.17

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 19

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

1 HILL AIRFORCE BASE - BUILDING 870
0

Contractor : TERRA TECH SW Location : BLDG. 870

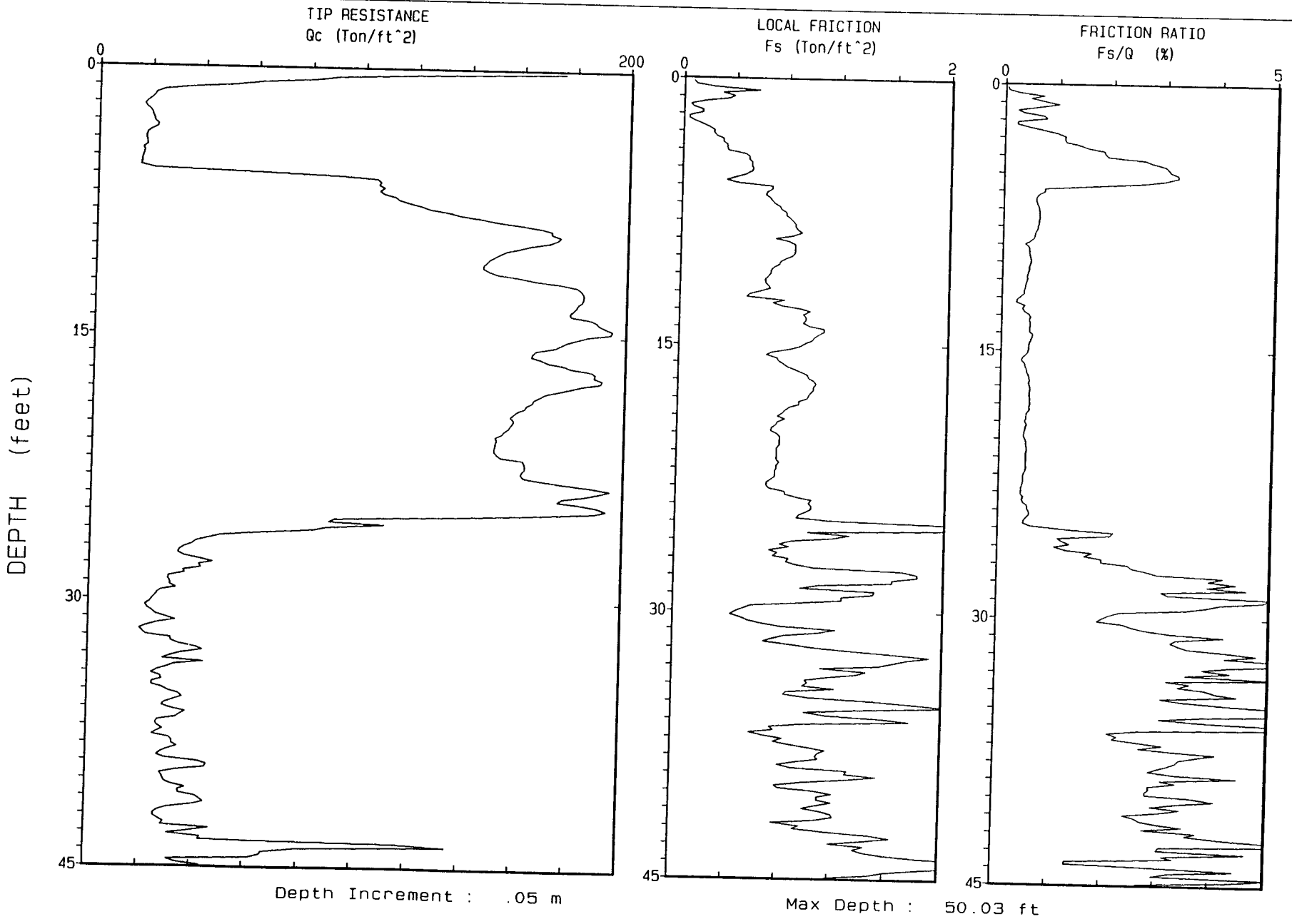
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	61.40	2.17	3.53	1.74	clayey silt to silty clay	UNDFND	UNDFD	29	3
10.00	32.81	78.26	1.88	2.41	1.78	silty sand to sandy silt	50-60	36-38	25	UNDEFI
10.25	33.63	57.26	1.35	2.36	1.80	sandy silt to clayey silt	UNDFND	UNDFD	22	2.9
10.50	34.45	67.64	1.91	2.82	1.82	sandy silt to clayey silt	UNDFND	UNDFD	26	3
10.75	35.27	48.12	1.35	2.81	1.84	sandy silt to clayey silt	UNDFND	UNDFD	18	2
11.00	36.09	37.64	1.14	3.04	1.86	clayey silt to silty clay	UNDFND	UNDFD	18	1.87
11.25	36.91	35.06	1.01	2.88	1.88	sandy silt to clayey silt	UNDFND	UNDFD	13	1.73
11.50	37.73	33.74	1.26	3.73	1.90	clayey silt to silty clay	UNDFND	UNDFD	16	1
11.75	38.55	46.48	1.23	2.65	1.92	sandy silt to clayey silt	UNDFND	UNDFD	18	2
12.00	39.37	39.16	1.36	3.47	1.94	clayey silt to silty clay	UNDFND	UNDFD	19	1.94
12.25	40.19	57.78	1.76	3.05	1.95	sandy silt to clayey silt	UNDFND	UNDFD	22	2
12.50	41.01	96.22	1.96	2.04	1.97	silty sand to sandy silt	50-60	36-38	31	UNDEFI
12.75	41.83	67.38	1.73	2.57	1.99	sandy silt to clayey silt	UNDFND	UNDFD	26	3.42
13.00	42.65	52.88	1.33	2.52	2.01	sandy silt to clayey silt	UNDFND	UNDFD	20	2.4
13.25	43.47	55.50	1.66	3.00	2.03	sandy silt to clayey silt	UNDFND	UNDFD	21	2
13.50	44.29	44.66	1.56	3.49	2.05	clayey silt to silty clay	UNDFND	UNDFD	21	2.22
13.75	45.11	43.52	1.30	2.99	2.07	sandy silt to clayey silt	UNDFND	UNDFD	17	2.16
14.00	45.93	55.10	1.57	2.84	2.09	sandy silt to clayey silt	UNDFND	UNDFD	21	2
14.25	46.75	42.98	1.23	2.85	2.11	sandy silt to clayey silt	UNDFND	UNDFD	16	2
14.50	47.57	45.60	1.46	3.21	2.13	sandy silt to clayey silt	UNDFND	UNDFD	17	2.26
14.75	48.39	38.32	1.46	3.80	2.15	clayey silt to silty clay	UNDFND	UNDFD	18	1
15.00	49.21	43.18	1.62	3.76	2.17	clayey silt to silty clay	UNDFND	UNDFD	21	2
15.25	50.03	76.72	2.26	2.95	2.19	sandy silt to clayey silt	UNDFND	UNDFD	29	3.89

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 19

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

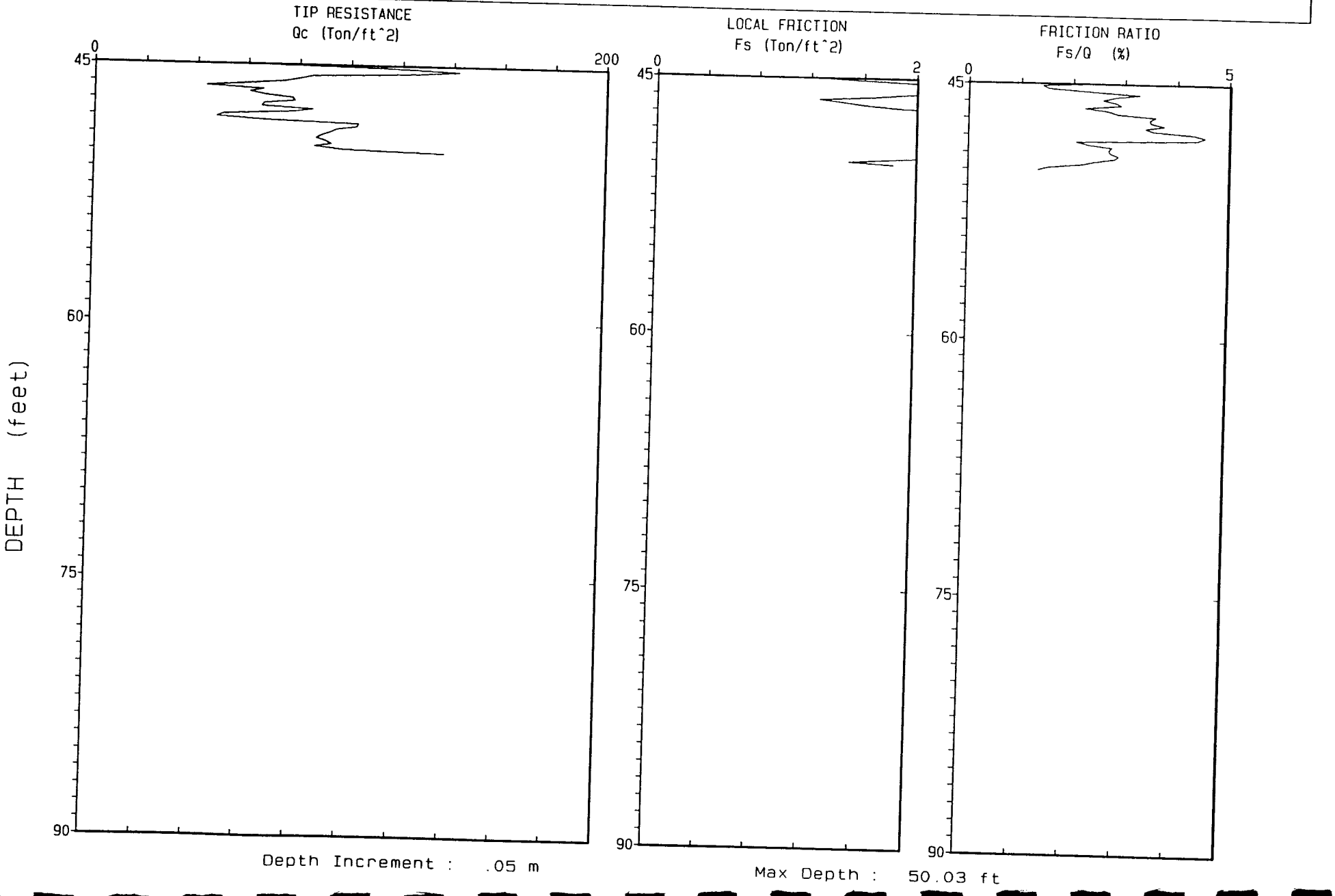
HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-07-92
DEPTH TO WATER : 28.37 FT BLS
SOUNDING NO. : CPT-13 Pg 1 / 2
TERRA JOB NO. : 92-1016



HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-07-92
DEPTH TO WATER : 28.37 FT BLS
SOUNDING NO. : CPT-13 Pg 2 / 2
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW
Location : CPT-13
Job No. : 92-1016
Tot. Unit Wt. (avg) : 105 pcf

Test Date : 08-07-92
Elevation : UNKNOWN
Water table (meters) : 8.65

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	105.92	0.25	0.24	0.02	sand	>90	>48	20	UNDEFINE
0.50	1.64	30.40	0.20	0.66	0.06	silty sand to sandy silt	70-80	46-48	10	UNDEFINE
0.75	2.46	18.18	0.09	0.50	0.11	sandy silt to clayey silt	UNDFND	UNDFD	7	.7
1.00	3.28	20.66	0.21	1.01	0.15	sandy silt to clayey silt	UNDFND	UNDFD	8	.8
1.25	4.10	19.02	0.32	1.68	0.19	sandy silt to clayey silt	UNDFND	UNDFD	7	.7
1.50	4.92	17.46	0.50	2.88	0.24	clayey silt to silty clay	UNDFND	UNDFD	8	.7
1.75	5.74	17.18	0.45	2.64	0.28	clayey silt to silty clay	UNDFND	UNDFD	8	.7
2.00	6.56	92.10	0.61	0.66	0.32	sand to silty sand	80-90	44-46	22	UNDEFINE
2.25	7.38	109.20	0.71	0.65	0.37	sand	80-90	44-46	21	UNDEFINE
2.50	8.20	126.30	0.82	0.65	0.41	sand	80-90	44-46	24	UNDEFINE
2.75	9.02	158.54	0.84	0.53	0.45	sand	>90	46-48	30	UNDEFINE
3.00	9.84	170.88	0.85	0.50	0.50	sand	>90	46-48	33	UNDEFINE
3.25	10.66	152.74	0.76	0.50	0.54	sand	80-90	44-46	29	UNDEFINE
3.50	11.48	147.42	0.66	0.45	0.58	sand	80-90	44-46	28	UNDEFINE
3.75	12.30	172.80	0.59	0.34	0.62	sand	80-90	44-46	33	UNDEFINE
4.00	13.12	183.34	0.83	0.45	0.67	sand	80-90	44-46	35	UNDEFINE
4.25	13.94	181.26	0.95	0.52	0.71	sand	80-90	44-46	35	UNDEFINE
4.50	14.76	192.12	1.05	0.55	0.75	sand	80-90	44-46	37	UNDEFINE
4.75	15.58	178.86	0.81	0.45	0.80	sand	80-90	44-46	34	UNDEFINE
5.00	16.40	167.04	0.80	0.48	0.84	sand	80-90	44-46	32	UNDEFINE
5.25	17.22	184.22	0.99	0.54	0.88	sand	80-90	44-46	35	UNDEFINE
5.50	18.04	184.12	1.00	0.54	0.93	sand	80-90	44-46	35	UNDEFINE
5.75	18.86	166.60	0.85	0.51	0.97	sand	80-90	42-44	32	UNDEFINE
6.00	19.69	159.24	0.75	0.47	1.01	sand	70-80	42-44	31	UNDEFINE
6.25	20.51	156.08	0.75	0.48	1.05	sand	70-80	42-44	30	UNDEFINE
6.50	21.33	151.54	0.75	0.50	1.10	sand	70-80	42-44	29	UNDEFINE
6.75	22.15	156.42	0.75	0.48	1.14	sand	70-80	42-44	30	UNDEFINE
7.00	22.97	162.44	0.71	0.44	1.18	sand	70-80	42-44	31	UNDEFINE
7.25	23.79	184.30	0.85	0.46	1.23	sand	80-90	42-44	35	UNDEFINE
7.50	24.61	182.80	0.99	0.54	1.27	sand	80-90	42-44	35	UNDEFINE
7.75	25.43	155.18	1.80	1.16	1.31	sand to silty sand	70-80	40-42	37	UNDEFINE
8.00	26.25	87.08	1.03	1.19	1.36	sand to silty sand	50-60	38-40	21	UNDEFINE
8.25	27.07	41.42	0.79	1.90	1.40	sandy silt to clayey silt	UNDFND	UNDFD	16	1.66
8.50	27.89	37.86	1.26	3.33	1.44	clayey silt to silty clay	UNDFND	UNDFD	18	1.51
8.75	28.71	36.82	1.42	3.86	1.49	clayey silt to silty clay	UNDFND	UNDFD	18	1.47
9.00	29.53	30.02	1.29	4.30	1.51	silty clay to clay	UNDFND	UNDFD	19	1.18
9.25	30.35	23.76	0.50	2.11	1.52	sandy silt to clayey silt	UNDFND	UNDFD	9	.92
9.50	31.17	26.58	0.87	3.27	1.54	clayey silt to silty clay	UNDFND	UNDFD	13	1.04

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ***

1 HILL AIRFORCE BASE - BUILDING 870
0

Contractor : TERRA TECH SW Location : BLDG. 870

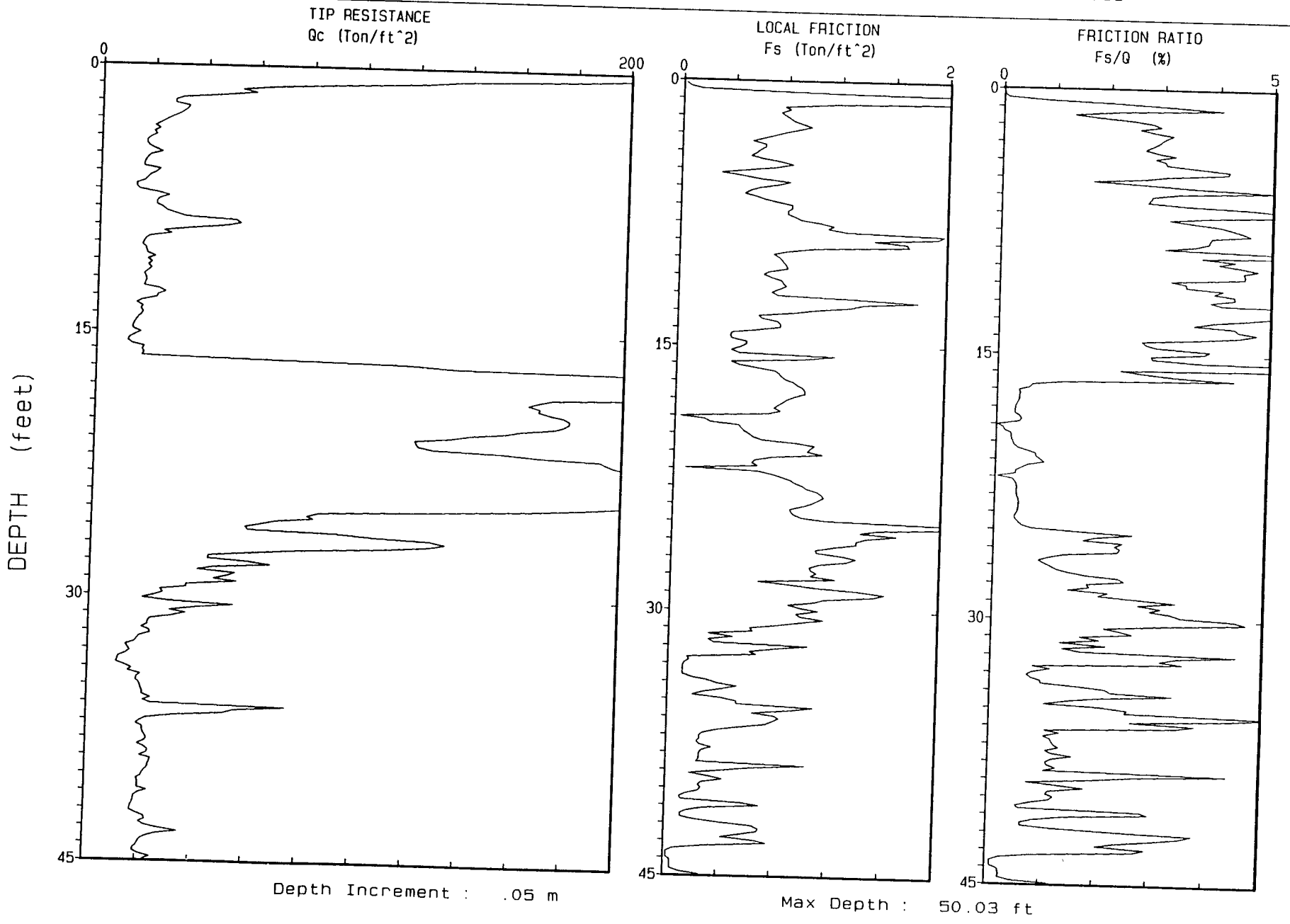
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	21.92	0.84	3.83	1.56	silty clay to clay	UNDFND	UNDFD	14	
10.00	32.81	35.98	1.65	4.59	1.58	silty clay to clay	UNDFND	UNDFD	23	
10.25	33.63	34.32	1.33	3.88	1.59	clayey silt to silty clay	UNDFND	UNDFD	16	1.3
10.50	34.45	27.08	1.02	3.75	1.61	clayey silt to silty clay	UNDFND	UNDFD	13	
10.75	35.27	28.48	1.45	5.11	1.63	clay	UNDFND	UNDFD	27	
11.00	36.09	31.48	1.38	4.38	1.64	silty clay to clay	UNDFND	UNDFD	20	
11.25	36.91	31.84	0.76	2.39	1.66	sandy silt to clayey silt	UNDFND	UNDFD	12	
11.50	37.73	27.68	0.93	3.37	1.68	clayey silt to silty clay	UNDFND	UNDFD	13	
11.75	38.55	31.56	1.01	3.20	1.70	clayey silt to silty clay	UNDFND	UNDFD	15	
12.00	39.37	37.82	1.28	3.37	1.71	clayey silt to silty clay	UNDFND	UNDFD	18	
12.25	40.19	30.14	0.98	3.26	1.73	clayey silt to silty clay	UNDFND	UNDFD	14	
12.50	41.01	36.40	1.11	3.04	1.75	clayey silt to silty clay	UNDFND	UNDFD	17	
12.75	41.83	37.46	1.09	2.90	1.77	sandy silt to clayey silt	UNDFND	UNDFD	14	1.47
13.00	42.65	27.78	1.25	4.49	1.78	silty clay to clay	UNDFND	UNDFD	18	
13.25	43.47	40.92	1.39	3.40	1.80	clayey silt to silty clay	UNDFND	UNDFD	20	
13.50	44.29	93.18	2.20	2.36	1.82	silty sand to sandy silt	50-60	36-38	30	UNDEFINED
13.75	45.11	56.78	1.54	2.71	1.84	sandy silt to clayey silt	UNDFND	UNDFD	22	2.26
14.00	45.93	101.40	2.39	2.36	1.85	silty sand to sandy silt	50-60	38-40	32	UNDEFI
14.25	46.75	59.10	1.58	2.68	1.87	sandy silt to clayey silt	UNDFND	UNDFD	23	
14.50	47.57	74.36	2.63	3.54	1.89	sandy silt to clayey silt	UNDFND	UNDFD	28	2.99
14.75	48.39	68.82	2.42	3.51	1.91	sandy silt to clayey silt	UNDFND	UNDFD	26	
15.00	49.21	92.96	2.47	2.65	1.92	sandy silt to clayey silt	UNDFND	UNDFD	36	
15.25	50.03	100.58	2.00	1.98	1.94	silty sand to sandy silt	50-60	36-38	32	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02)

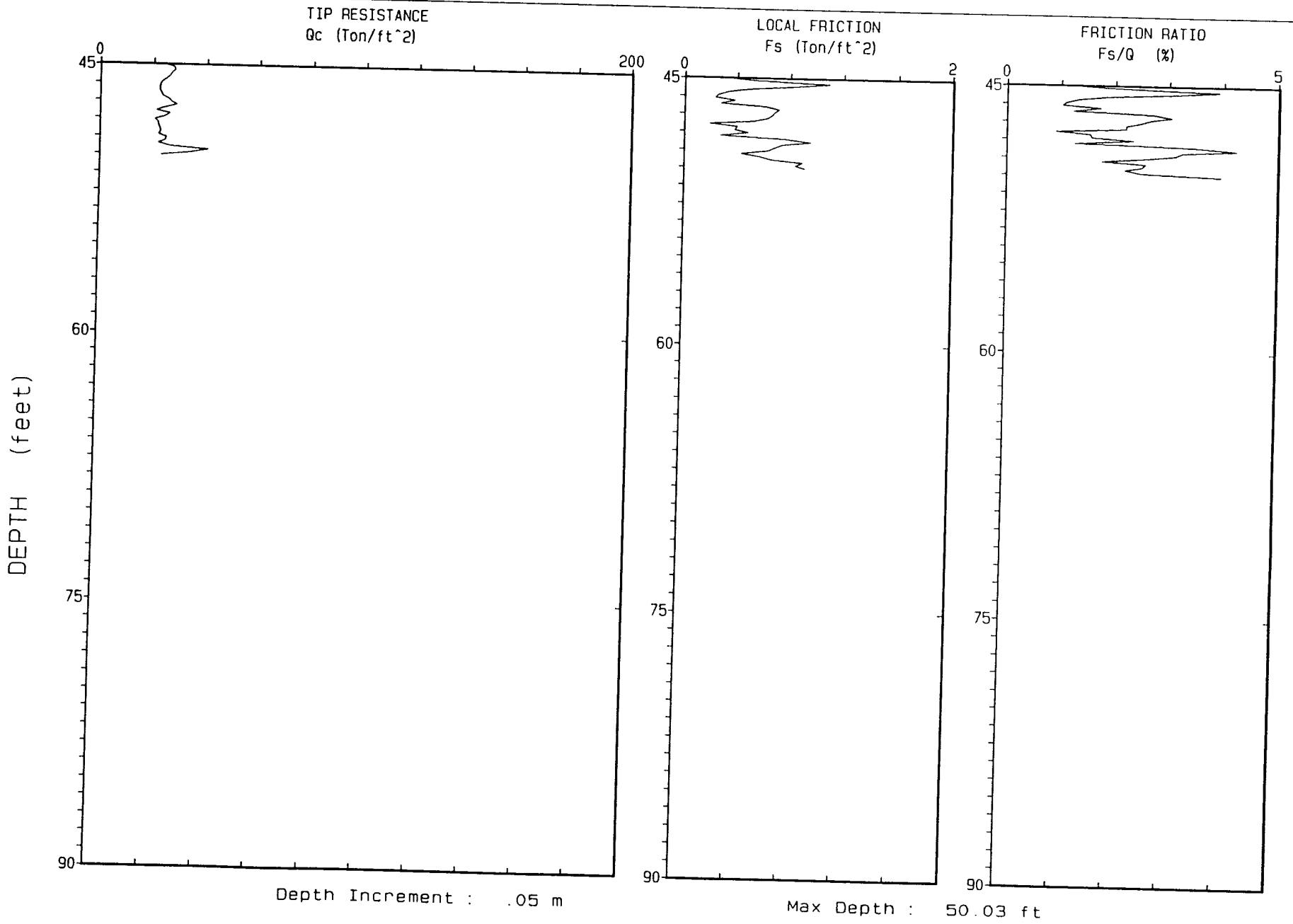
HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-07-92
DEPTH TO WATER : 25.42 FT BLS
SOUNDING NO. : CPT-14 Pg 1 / 2
TERRA JOB NO. : 92-1016



HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-07-92
DEPTH TO WATER : 25.42 FT BLS
SOUNDING NO. : CPT-14 Pg 2 / 2
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870
0

Contractor : TERRA TECH SW
Location : CPT-14
Job No. : 92-1016
Tot. Unit Wt. (avg) : 110 pcf

Test Date : 08-07-92
Elevation : UNKNOWN
Water table (meters) : 7.75

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	170.96	0.80	0.47	0.02	sand	>90	>48	33	UNDEFINE
0.50	1.64	62.32	1.67	2.67	0.07	sandy silt to clayey silt	UNDFND	UNDFD	24	2.3
0.75	2.46	30.10	0.81	2.70	0.11	sandy silt to clayey silt	UNDFND	UNDFD	12	1.1
1.00	3.28	26.40	0.79	2.98	0.16	clayey silt to silty clay	UNDFND	UNDFD	13	1.0
1.25	4.10	20.10	0.59	2.93	0.20	clayey silt to silty clay	UNDFND	UNDFD	10	.7
1.50	4.92	19.02	0.69	3.61	0.25	silty clay to clay	UNDFND	UNDFD	12	.7
1.75	5.74	17.10	0.54	3.13	0.29	clayey silt to silty clay	UNDFND	UNDFD	8	.6
2.00	6.56	19.24	0.58	3.01	0.34	clayey silt to silty clay	UNDFND	UNDFD	9	.7
2.25	7.38	17.82	0.77	4.33	0.38	clay	UNDFND	UNDFD	17	.6
2.50	8.20	22.72	0.96	4.21	0.43	silty clay to clay	UNDFND	UNDFD	15	.8
2.75	9.02	42.70	1.55	3.63	0.47	clayey silt to silty clay	UNDFND	UNDFD	20	1.6
3.00	9.84	24.74	1.19	4.82	0.52	clay	UNDFND	UNDFD	24	.9
3.25	10.66	17.34	0.79	4.54	0.56	clay	UNDFND	UNDFD	17	.6
3.50	11.48	19.72	0.72	3.63	0.61	silty clay to clay	UNDFND	UNDFD	13	.7
3.75	12.30	18.00	0.86	4.80	0.65	clay	UNDFND	UNDFD	17	.6
4.00	13.12	22.24	1.28	5.76	0.70	clay	UNDFND	UNDFD	21	.8
4.25	13.94	16.36	0.71	4.32	0.74	clay	UNDFND	UNDFD	16	.6
4.50	14.76	14.70	0.47	3.20	0.79	silty clay to clay	UNDFND	UNDFD	9	.5
4.75	15.58	13.64	0.61	4.47	0.83	clay	UNDFND	UNDFD	13	.4
5.00	16.40	16.62	0.63	3.80	0.88	silty clay to clay	UNDFND	UNDFD	11	.6
5.25	17.22	148.58	0.83	0.56	0.92	sand	70-80	42-44	28	UNDEFINED
5.50	18.04	236.20	0.92	0.39	0.97	gravelly sand to sand	>90	44-46	38	UNDEFINED
5.75	18.86	193.26	0.76	0.39	1.01	sand	80-90	42-44	37	UNDEFINED
6.00	19.69	173.34	0.30	0.17	1.06	sand	80-90	42-44	33	UNDEFINED
6.25	20.51	169.96	0.65	0.38	1.11	sand	80-90	42-44	33	UNDEFINED
6.50	21.33	128.66	0.98	0.76	1.15	sand	70-80	40-42	25	UNDEFINED
6.75	22.15	167.62	0.51	0.30	1.20	sand	70-80	42-44	32	UNDEFINED
7.00	22.97	214.86	0.86	0.40	1.24	sand	80-90	42-44	41	UNDEFINED
7.25	23.79	244.28	1.08	0.44	1.29	sand	80-90	42-44	47	UNDEFINED
7.50	24.61	227.26	0.94	0.41	1.33	sand	80-90	42-44	44	UNDEFINED
7.75	25.43	128.88	1.60	1.24	1.38	sand to silty sand	60-70	40-42	31	UNDEFINED
8.00	26.25	66.94	1.46	2.18	1.41	silty sand to sandy silt	50-60	36-38	21	UNDEFINED
8.25	27.07	117.80	1.21	1.03	1.43	sand to silty sand	60-70	40-42	28	UNDEFINED
8.50	27.89	67.46	1.12	1.66	1.45	silty sand to sandy silt	50-60	36-38	22	UNDEFINED
8.75	28.71	53.96	0.98	1.82	1.47	silty sand to sandy silt	40-50	36-38	17	UNDEFINED
9.00	29.53	45.52	1.35	2.96	1.49	sandy silt to clayey silt	UNDFND	UNDFD	17	1.68
9.25	30.35	25.92	0.98	3.79	1.51	clayey silt to silty clay	UNDFND	UNDFD	12	.93
9.50	31.17	38.74	0.84	2.16	1.52	sandy silt to clayey silt	UNDFND	UNDFD	15	1.42

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 26

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ***

1 HILL AIRFORCE BASE - BUILDING 870
0

Contractor : TERRA TECH SW Location : BLDG. 870

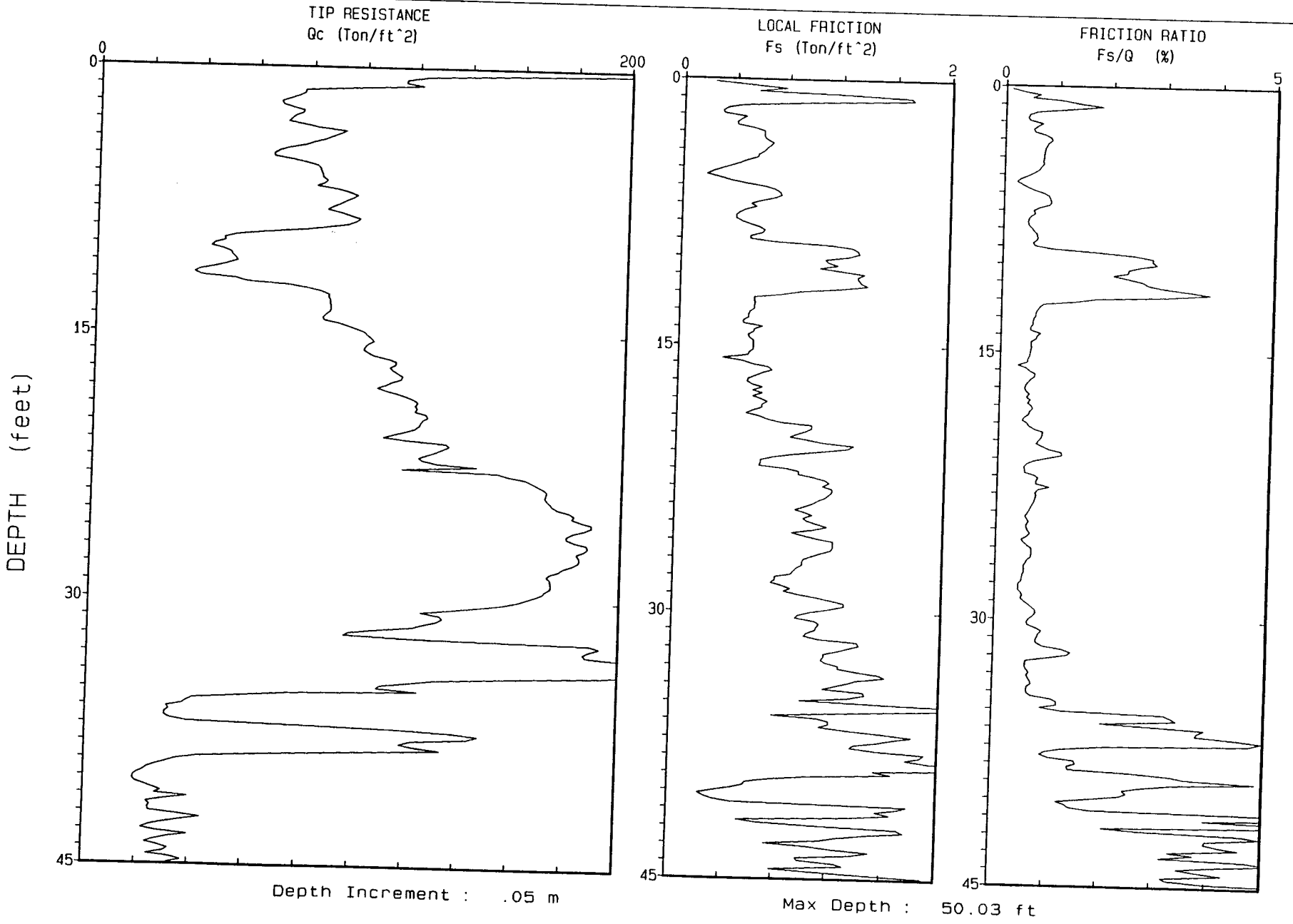
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	22.26	0.49	2.21	1.54	sandy silt to clayey silt	UNDFND	UNDFD	9	[illegible]
10.00	32.81	18.58	0.48	2.56	1.56	clayey silt to silty clay	UNDFND	UNDFD	9	[illegible]
10.25	33.63	13.66	0.11	0.82	1.58	sandy silt to clayey silt	UNDFND	UNDFD	5	.45
10.50	34.45	15.40	0.36	2.31	1.60	clayey silt to silty clay	UNDFND	UNDFD	7	[illegible]
10.75	35.27	19.50	0.38	1.95	1.62	sandy silt to clayey silt	UNDFND	UNDFD	7	[illegible]
11.00	36.09	22.34	0.86	3.86	1.64	silty clay to clay	UNDFND	UNDFD	14	.78
11.25	36.91	47.64	0.54	1.14	1.66	silty sand to sandy silt	<40	34-36	15	UNDEFINED
11.50	37.73	20.74	0.26	1.27	1.68	sandy silt to clayey silt	UNDFND	UNDFD	8	[illegible]
11.75	38.55	21.90	0.25	1.14	1.70	sandy silt to clayey silt	UNDFND	UNDFD	8	[illegible]
12.00	39.37	23.34	0.52	2.22	1.72	sandy silt to clayey silt	UNDFND	UNDFD	9	.81
12.25	40.19	22.66	0.29	1.30	1.74	sandy silt to clayey silt	UNDFND	UNDFD	9	[illegible]
12.50	41.01	20.70	0.33	1.61	1.76	sandy silt to clayey silt	UNDFND	UNDFD	8	[illegible]
12.75	41.83	18.86	0.18	0.97	1.78	sandy silt to clayey silt	UNDFND	UNDFD	7	.63
13.00	42.65	20.16	0.61	3.04	1.80	clayey silt to silty clay	UNDFND	UNDFD	10	[illegible]
13.25	43.47	26.92	0.45	1.67	1.82	sandy silt to clayey silt	UNDFND	UNDFD	10	[illegible]
13.50	44.29	21.14	0.03	0.15	1.84	silty sand to sandy silt	<40	<30	7	UNDEFINED
13.75	45.11	23.16	0.20	0.85	1.86	silty sand to sandy silt	<40	<30	7	UNDEFINED
14.00	45.93	25.62	0.60	2.33	1.88	sandy silt to clayey silt	UNDFND	UNDFD	10	[illegible]
14.25	46.75	22.52	0.44	1.95	1.90	sandy silt to clayey silt	UNDFND	UNDFD	9	[illegible]
14.50	47.57	25.08	0.54	2.14	1.91	sandy silt to clayey silt	UNDFND	UNDFD	10	.86
14.75	48.39	22.84	0.46	2.00	1.93	sandy silt to clayey silt	UNDFND	UNDFD	9	[illegible]
15.00	49.21	23.20	0.69	2.97	1.95	clayey silt to silty clay	UNDFND	UNDFD	11	[illegible]
15.25	50.03	29.12	0.77	2.65	1.97	sandy silt to clayey silt	UNDFND	UNDFD	11	1.01

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 26

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

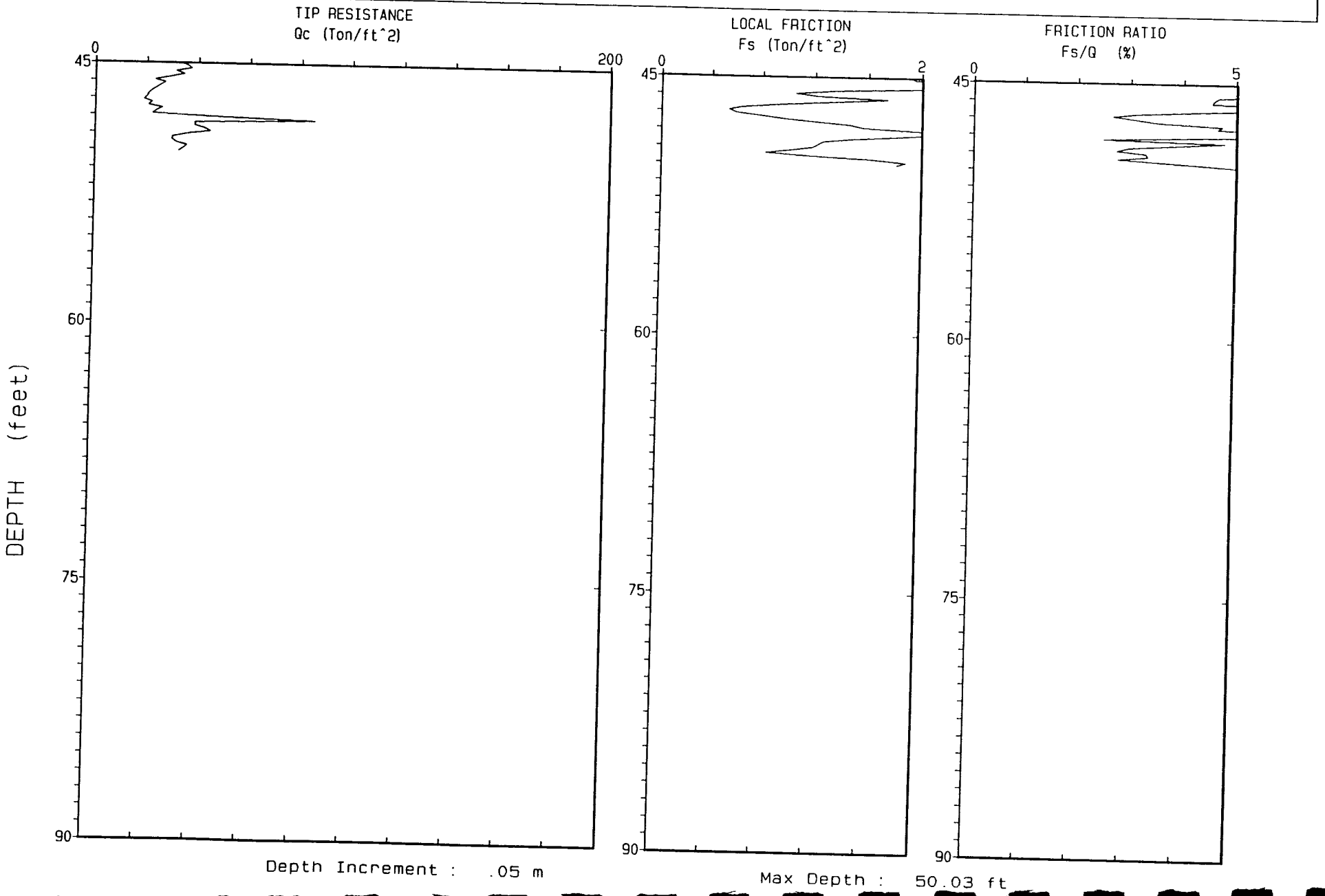
HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-07-92
DEPTH TO WATER : 32.96 FT BLS
SOUNDING NO. : CPT-15 Pg 1 / 2
TERRA JOB NO. : 92-1016



HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-07-92
DEPTH TO WATER : 32.96 FT BLS
SOUNDING NO. : CPT-15 Pg 2 / 2
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW
Location : CPT-15
Job No. : 92-1016
Tot. Unit Wt. (avg) : 100 pcf

Test Date : 08-07-92
Elevation : UNKNOWN
Water table (meters) : 10.05

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	146.48	0.66	0.45	0.02	sand	>90	>48	28	UNDEFINE
0.50	1.64	88.90	1.04	1.17	0.06	sand to silty sand	>90	>48	21	UNDEFINE
0.75	2.46	71.10	0.38	0.53	0.10	sand to silty sand	80-90	>48	17	UNDEFINE
1.00	3.28	73.72	0.55	0.75	0.14	sand to silty sand	80-90	46-48	18	UNDEFINE
1.25	4.10	87.28	0.64	0.74	0.18	sand to silty sand	80-90	46-48	21	UNDEFINE
1.50	4.92	72.38	0.48	0.66	0.23	sand to silty sand	70-80	44-46	17	UNDEFINE
1.75	5.74	76.26	0.27	0.35	0.27	sand to silty sand	70-80	44-46	18	UNDEFINE
2.00	6.56	84.38	0.66	0.78	0.31	sand to silty sand	70-80	44-46	20	UNDEFINE
2.25	7.38	91.78	0.57	0.62	0.35	sand to silty sand	70-80	44-46	22	UNDEFINED
2.50	8.20	89.86	0.44	0.49	0.39	sand to silty sand	70-80	44-46	22	UNDEFINED
2.75	9.02	94.18	0.57	0.61	0.43	sand to silty sand	70-80	44-46	23	UNDEFINED
3.00	9.84	58.00	1.16	2.00	0.47	silty sand to sandy silt	60-70	40-42	19	UNDEFINED
3.25	10.66	47.18	1.14	2.41	0.51	sandy silt to clayey silt	UNDFND	UNDFD	18	1.79
3.50	11.48	47.70	1.33	2.78	0.55	sandy silt to clayey silt	UNDFND	UNDFD	18	1.81
3.75	12.30	51.44	0.97	1.89	0.59	silty sand to sandy silt	50-60	40-42	16	UNDEFINED
4.00	13.12	85.40	0.56	0.65	0.64	sand to silty sand	60-70	42-44	20	UNDEFINED
4.25	13.94	87.76	0.53	0.60	0.68	sand to silty sand	60-70	42-44	21	UNDEFINED
4.50	14.76	91.26	0.55	0.60	0.72	sand to silty sand	60-70	42-44	22	UNDEFINED
4.75	15.58	103.02	0.55	0.53	0.76	sand	70-80	42-44	20	UNDEFINED
5.00	16.40	104.32	0.55	0.53	0.80	sand	70-80	42-44	20	UNDEFINED
5.25	17.22	113.04	0.57	0.50	0.84	sand	70-80	42-44	22	UNDEFINED
5.50	18.04	112.04	0.61	0.54	0.88	sand	70-80	42-44	21	UNDEFINED
5.75	18.86	117.04	0.61	0.52	0.92	sand	70-80	42-44	22	UNDEFINED
6.00	19.69	123.20	0.83	0.67	0.96	sand	70-80	42-44	24	UNDEFINED
6.25	20.51	121.94	0.97	0.80	1.00	sand	70-80	40-42	23	UNDEFINED
6.50	21.33	121.88	1.07	0.88	1.05	sand to silty sand	70-80	40-42	29	UNDEFINED
6.75	22.15	127.02	0.74	0.58	1.09	sand	70-80	40-42	24	UNDEFINED
7.00	22.97	140.66	1.07	0.76	1.13	sand	70-80	40-42	27	UNDEFINED
7.25	23.79	168.26	1.15	0.68	1.17	sand	70-80	42-44	32	UNDEFINED
7.50	24.61	172.58	0.99	0.57	1.21	sand	70-80	42-44	33	UNDEFINED
7.75	25.43	181.28	1.05	0.58	1.25	sand	80-90	42-44	35	UNDEFINED
8.00	26.25	185.40	1.07	0.58	1.29	sand	80-90	42-44	36	UNDEFINED
8.25	27.07	184.98	1.10	0.60	1.33	sand	80-90	42-44	35	UNDEFINED
8.50	27.89	183.98	0.93	0.51	1.37	sand	70-80	42-44	35	UNDEFINED
8.75	28.71	175.42	0.80	0.45	1.41	sand	70-80	40-42	34	UNDEFINED
9.00	29.53	173.28	1.07	0.62	1.46	sand	70-80	40-42	33	UNDEFINED
9.25	30.35	160.14	1.08	0.67	1.50	sand	70-80	40-42	31	UNDEFINED
9.50	31.17	132.04	1.08	0.81	1.54	sand	60-70	40-42	25	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 26

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	110.88	1.25	1.13	1.58	sand to silty sand	60-70	38-40	27	UNDEFI
10.00	32.81	176.42	1.17	0.66	1.62	sand	70-80	40-42	34	UNDEFI
10.25	33.63	209.18	1.42	0.68	1.65	sand	80-90	42-44	40	UNDEFINE
10.50	34.45	182.38	1.31	0.72	1.67	sand	70-80	40-42	35	UNDEFI
10.75	35.27	108.68	1.57	1.44	1.68	sand to silty sand	60-70	38-40	26	UNDEFI
11.00	36.09	40.52	1.27	3.14	1.70	clayey silt to silty clay	UNDFND	UNDFD	19	1.4
11.25	36.91	32.18	1.41	4.38	1.71	silty clay to clay	UNDFND	UNDFD	21	1.1
11.50	37.73	125.80	1.51	1.20	1.73	sand to silty sand	60-70	38-40	30	UNDEFI
11.75	38.55	120.46	2.04	1.69	1.75	sand to silty sand	60-70	38-40	29	UNDEFI
12.00	39.37	40.30	1.45	3.59	1.76	clayey silt to silty clay	UNDFND	UNDFD	19	1.4
12.25	40.19	20.70	0.45	2.15	1.78	sandy silt to clayey silt	UNDFND	UNDFD	8	
12.50	41.01	24.86	0.92	3.70	1.79	clayey silt to silty clay	UNDFND	UNDFD	12	
12.75	41.83	28.64	1.16	4.05	1.81	silty clay to clay	UNDFND	UNDFD	18	1.0
13.00	42.65	34.26	1.48	4.33	1.82	silty clay to clay	UNDFND	UNDFD	22	1.
13.25	43.47	29.44	1.15	3.89	1.84	clayey silt to silty clay	UNDFND	UNDFD	14	1.
13.50	44.29	28.52	1.19	4.18	1.85	silty clay to clay	UNDFND	UNDFD	18	1.0
13.75	45.11	32.68	1.45	4.43	1.87	silty clay to clay	UNDFND	UNDFD	21	1.17
14.00	45.93	30.92	1.90	6.14	1.88	clay	UNDFND	UNDFD	30	1.
14.25	46.75	23.50	1.18	5.00	1.90	clay	UNDFND	UNDFD	23	
14.50	47.57	21.38	0.81	3.80	1.91	silty clay to clay	UNDFND	UNDFD	14	.73
14.75	48.39	42.90	1.80	4.20	1.93	clayey silt to silty clay	UNDFND	UNDFD	21	1.
15.00	49.21	38.28	1.22	3.20	1.95	clayey silt to silty clay	UNDFND	UNDFD	18	1.
15.25	50.03	32.70	1.46	4.48	1.96	silty clay to clay	UNDFND	UNDFD	21	1.16

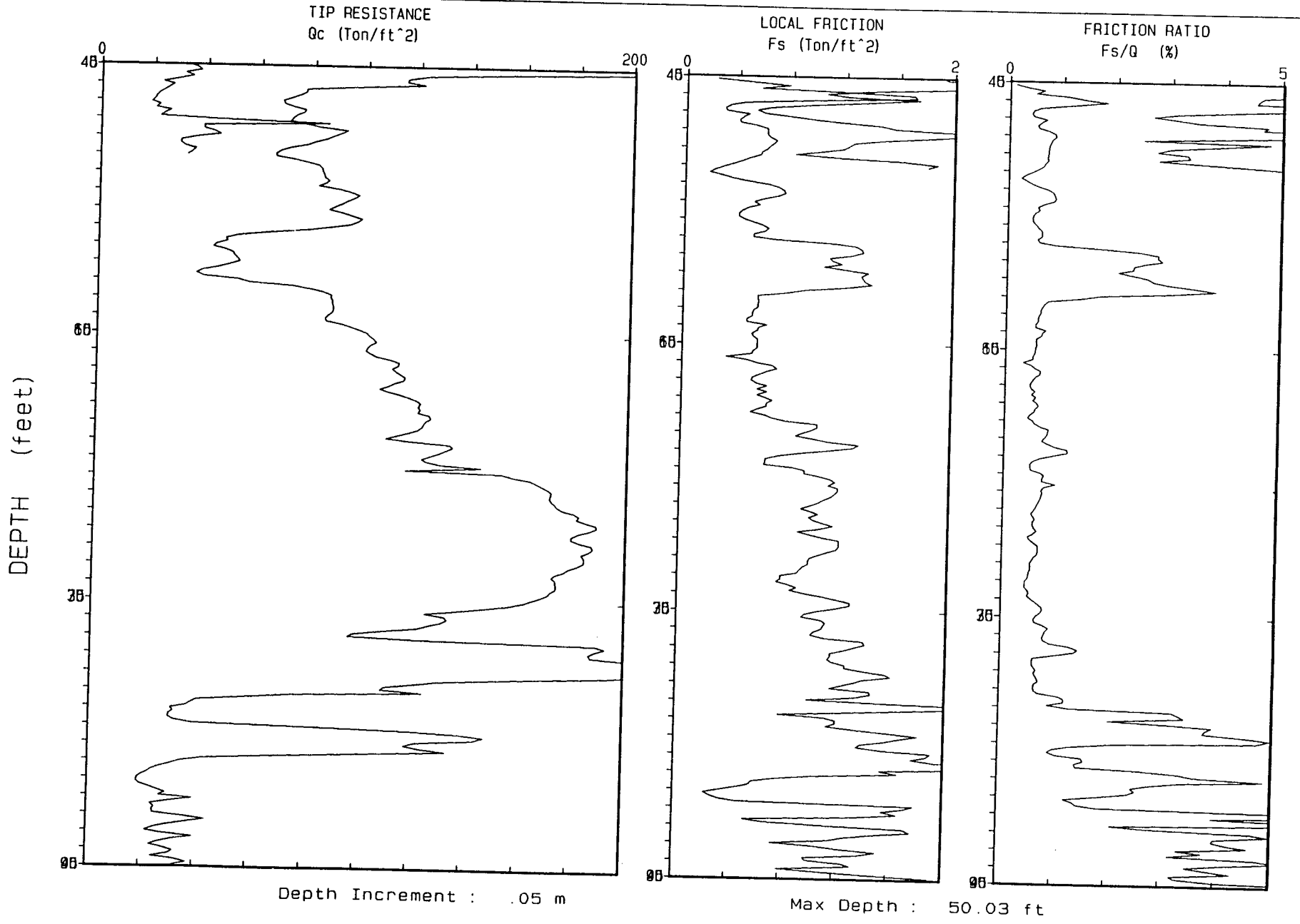
Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 26

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02)

HILL AIR FORCE BASE

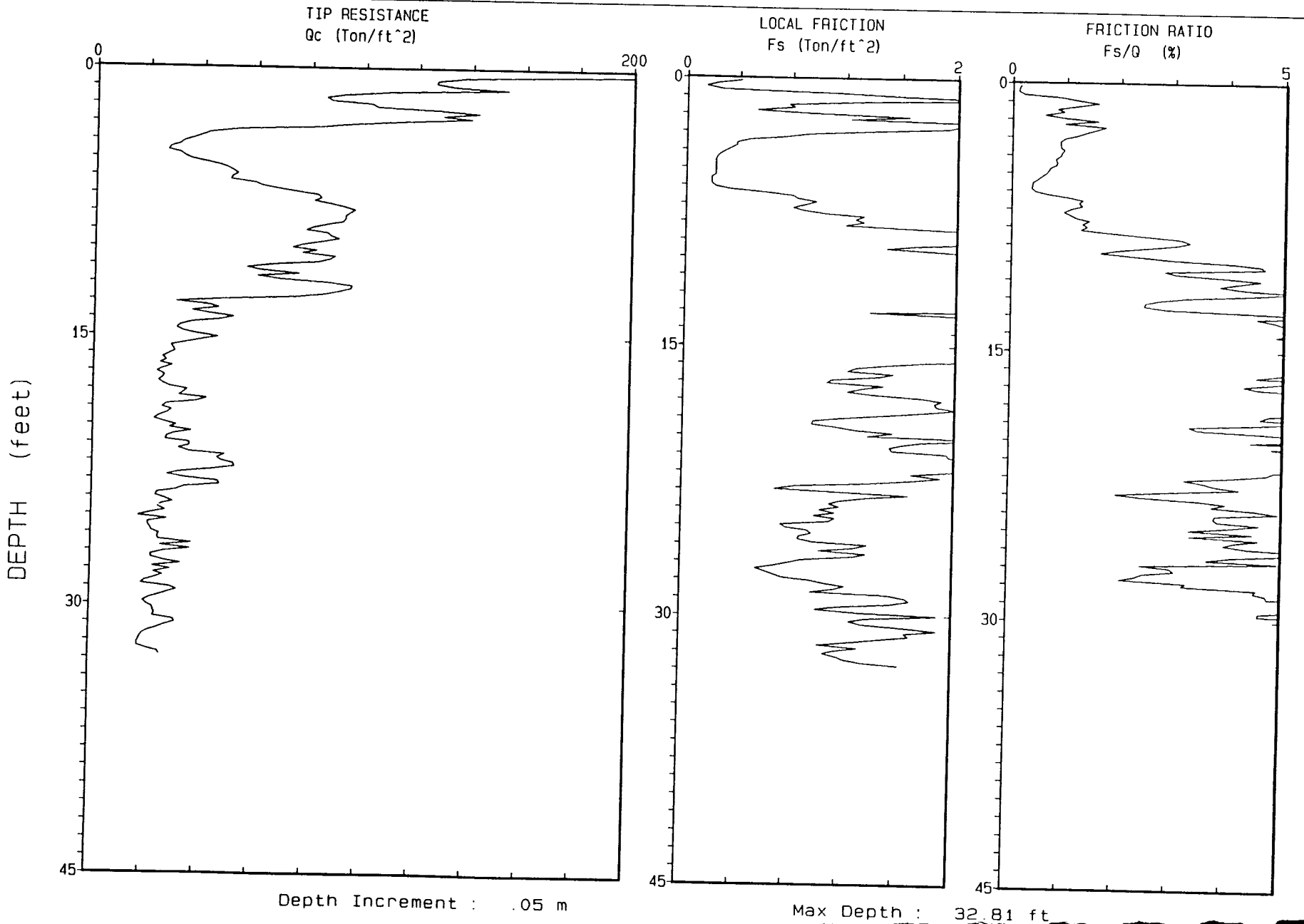
CONTRACTOR : TERRA TEST SW DATE : 08-08-92 SOUNDING NO. : CPT-15 Pg 2 / 2

LOCATION : BLDG 870 DEPTH TO WATER : 32.8 FT TERRA JOB NO. : 92-1016



HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-08-92
DEPTH TO WATER : 31.49 FT BLS
SOUNDING NO. : CPT-16 Pg 1 / 1
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870
0

Contractor : TERRA TECH SW
Location : CPT-16
Job No. : 92-1016
Tot. Unit Wt. (avg) : 110 pcf

Test Date : 08-08-92
Elevation : UNKNOWN
Water table (meters) : 9.6

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	171.68	0.43	0.25	0.02	sand	>90	>48	33	UNDEFINED
0.50	1.64	114.74	1.40	1.22	0.07	sand to silty sand	>90	>48	27	UNDEFINED
0.75	2.46	112.64	1.36	1.21	0.11	sand to silty sand	>90	>48	27	UNDEFINED
1.00	3.28	111.92	1.40	1.25	0.16	sand to silty sand	>90	>48	27	UNDEFINED
1.25	4.10	40.76	0.37	0.91	0.20	silty sand to sandy silt	60-70	44-46	13	UNDEFINED
1.50	4.92	29.74	0.23	0.77	0.25	silty sand to sandy silt	50-60	40-42	9	UNDEFINED
1.75	5.74	44.06	0.21	0.47	0.29	sand to silty sand	60-70	42-44	11	UNDEFINED
2.00	6.56	54.72	0.44	0.80	0.34	sand to silty sand	60-70	42-44	13	UNDEFINED
2.25	7.38	77.98	0.88	1.13	0.38	sand to silty sand	70-80	44-46	19	UNDEFINED
2.50	8.20	92.82	1.24	1.33	0.43	sand to silty sand	70-80	44-46	22	UNDEFINED
2.75	9.02	86.14	2.35	2.73	0.47	sandy silt to clayey silt	UNDFND	UNDFD	33	3.56
3.00	9.84	85.18	1.93	2.27	0.52	silty sand to sandy silt	70-80	42-44	27	UNDEFINED
3.25	10.66	81.92	3.11	3.80	0.56	clayey silt to silty clay	UNDFND	UNDFD	39	3.39
3.50	11.48	68.80	2.87	4.17	0.61	clayey silt to silty clay	UNDFND	UNDFD	33	2.84
3.75	12.30	81.44	2.81	3.45	0.65	sandy silt to clayey silt	UNDFND	UNDFD	31	3.36
4.00	13.12	65.92	2.47	3.75	0.70	clayey silt to silty clay	UNDFND	UNDFD	32	2.71
4.25	13.94	44.04	2.45	5.57	0.74	clay	UNDFND	UNDFD	42	1.80
4.50	14.76	35.88	2.35	6.54	0.79	clay	UNDFND	UNDFD	34	1.46
4.75	15.58	37.42	2.38	6.36	0.83	clay	UNDFND	UNDFD	36	1.52
5.00	16.40	28.16	1.66	5.89	0.88	clay	UNDFND	UNDFD	27	1.13
5.25	17.22	26.10	1.34	5.13	0.92	clay	UNDFND	UNDFD	25	1.04
5.50	18.04	28.04	1.53	5.46	0.97	clay	UNDFND	UNDFD	27	1.12
5.75	18.86	34.86	1.81	5.19	1.01	clay	UNDFND	UNDFD	33	1.41
6.00	19.69	26.18	1.11	4.26	1.06	silty clay to clay	UNDFND	UNDFD	17	1.04
6.25	20.51	30.68	1.73	5.64	1.11	clay	UNDFND	UNDFD	29	1.23
6.50	21.33	31.88	1.83	5.73	1.15	clay	UNDFND	UNDFD	31	1.28
6.75	22.15	46.44	2.11	4.54	1.20	silty clay to clay	UNDFND	UNDFD	30	1.88
7.00	22.97	38.84	1.31	3.38	1.24	clayey silt to silty clay	UNDFND	UNDFD	19	1.56
7.25	23.79	36.98	1.30	3.52	1.29	clayey silt to silty clay	UNDFND	UNDFD	18	1.48
7.50	24.61	26.40	1.10	4.18	1.33	silty clay to clay	UNDFND	UNDFD	17	1.04
7.75	25.43	23.40	0.92	3.91	1.38	silty clay to clay	UNDFND	UNDFD	15	.91
8.00	26.25	23.30	1.09	4.68	1.42	clay	UNDFND	UNDFD	22	.91
8.25	27.07	30.58	1.09	3.56	1.47	clayey silt to silty clay	UNDFND	UNDFD	15	1.21
8.50	27.89	25.90	0.68	2.61	1.51	clayey silt to silty clay	UNDFND	UNDFD	12	1.01
8.75	28.71	25.18	1.09	4.31	1.56	silty clay to clay	UNDFND	UNDFD	16	.98
9.00	29.53	27.22	1.53	5.62	1.60	clay	UNDFND	UNDFD	26	1.06
9.25	30.35	22.30	1.38	6.19	1.65	clay	UNDFND	UNDFD	21	.86
9.50	31.17	28.02	1.66	5.91	1.69	clay	UNDFND	UNDFD	27	1.09

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

1 HILL AIRFORCE BASE - BUILDING 870
0

Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

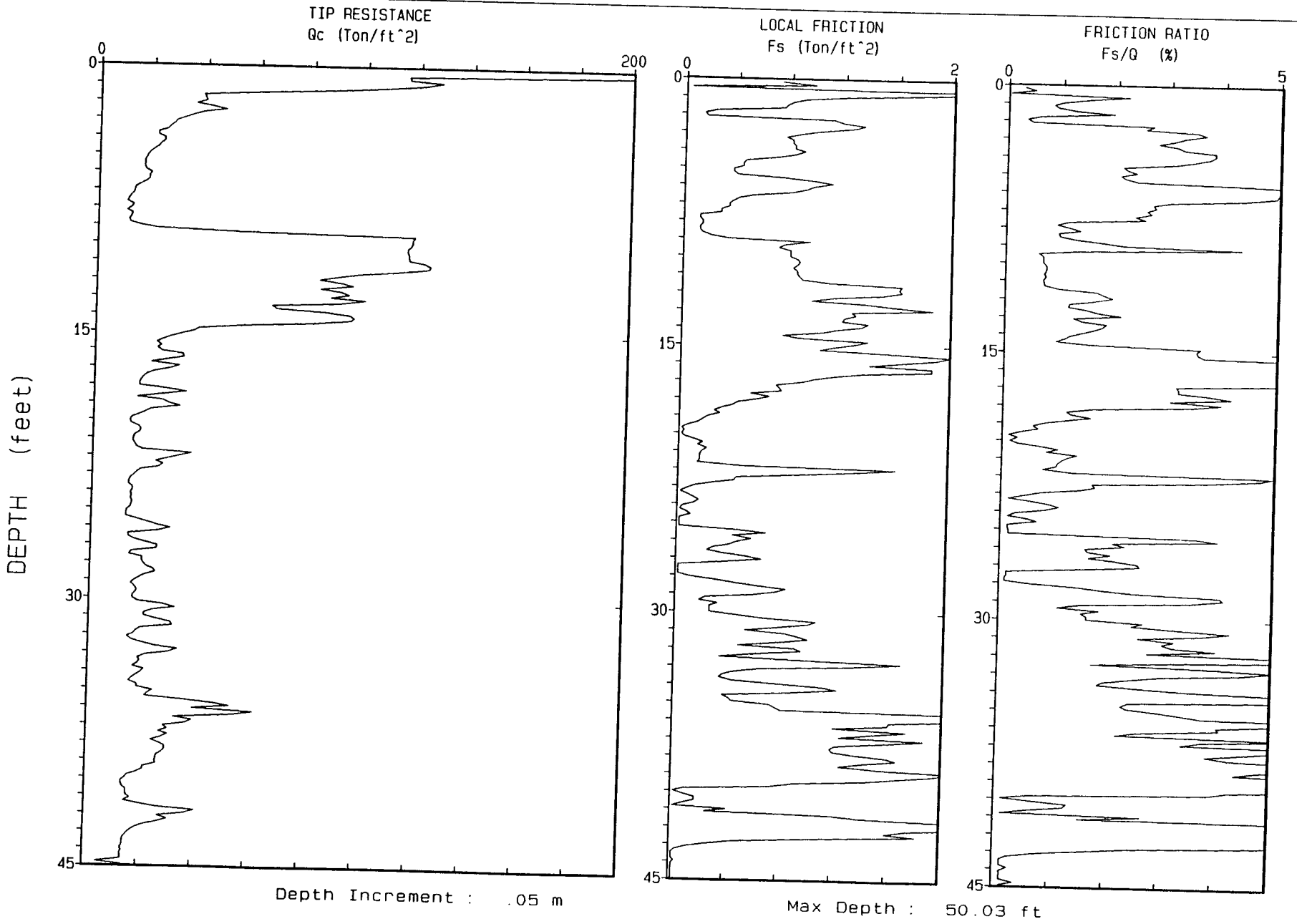
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	21.12	1.26	5.96	1.73	clay	UNDFND	UNDFD	20	
10.00	32.81	22.10	1.30	5.86	1.75	clay	UNDFND	UNDFD	21	

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 24

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02)

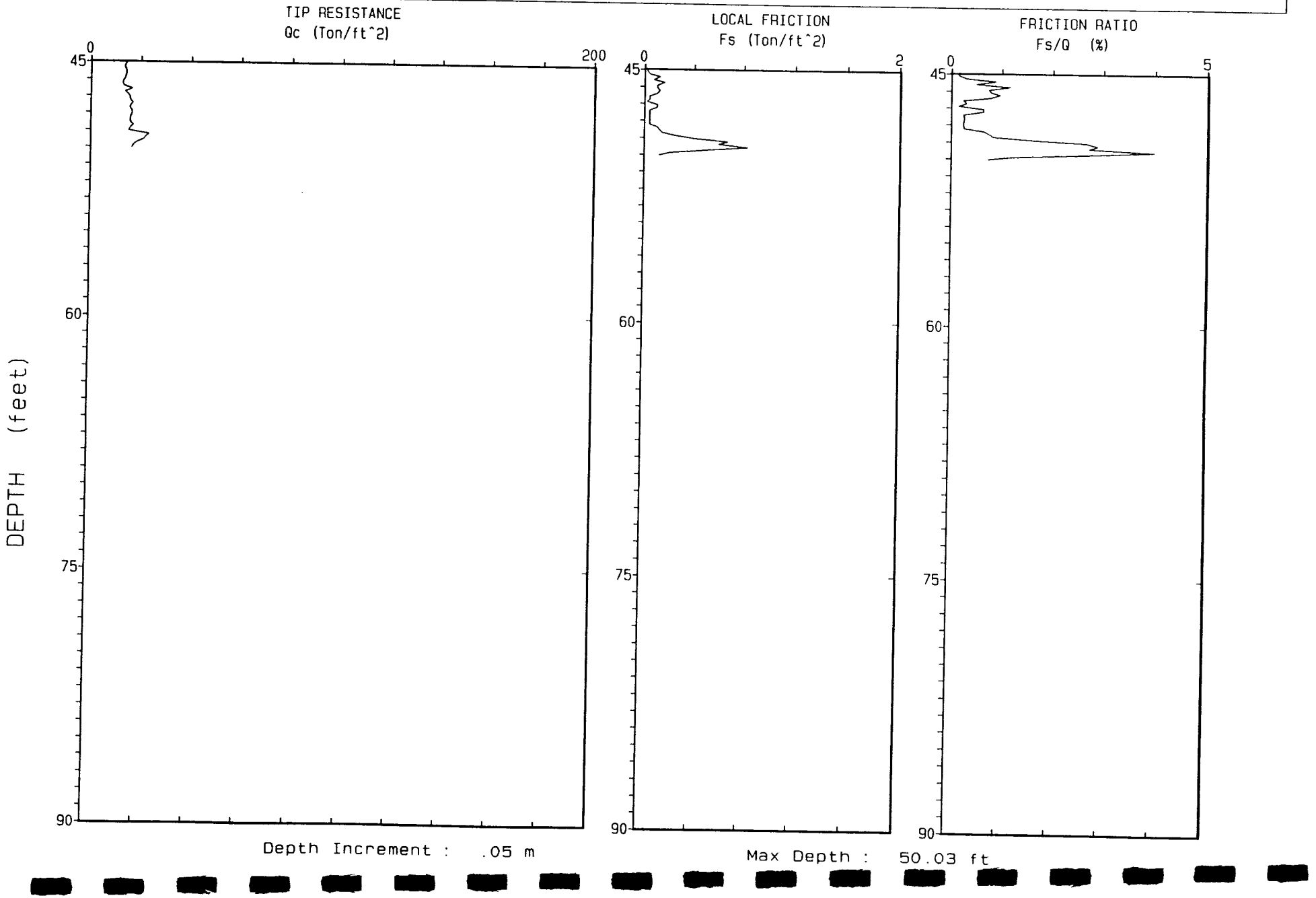
HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-08-92
DEPTH TO WATER : 11.81 FT BLS
SOUNDING NO. : CPT-17 Pg 1 / 2
TERRA JOB NO. : 92-1016



HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
DATE : 08-08-92
SOUNDING NO. : CPT-17 Pg 2 / 2
LOCATION : BLDG. 870
DEPTH TO WATER : 11.81 FT BLS
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date : 08-08-92

Location : CPT-17 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 3.6

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	160.74	1.24	0.77	0.02	sand	>90	>48	31	UNDEFINEI
0.50	1.64	83.56	0.89	1.06	0.07	sand to silty sand	>90	>48	20	UNDEFINEI
0.75	2.46	40.46	0.56	1.39	0.11	silty sand to sandy silt	70-80	46-48	13	UNDEFINEI
1.00	3.28	32.10	1.05	3.28	0.16	clayey silt to silty clay	UNDFND	UNDFD	15	1.1
1.25	4.10	23.66	0.84	3.53	0.20	clayey silt to silty clay	UNDFND	UNDFD	11	.83
1.50	4.92	21.42	0.57	2.68	0.25	clayey silt to silty clay	UNDFND	UNDFD	10	.75
1.75	5.74	17.02	0.57	3.35	0.29	silty clay to clay	UNDFND	UNDFD	11	.59
2.00	6.56	18.28	0.87	4.75	0.34	clay	UNDFND	UNDFD	18	.64
2.25	7.38	13.40	0.35	2.61	0.38	clayey silt to silty clay	UNDFND	UNDFD	6	.46
2.50	8.20	11.36	0.16	1.41	0.43	clayey silt to silty clay	UNDFND	UNDFD	5	.39
2.75	9.02	12.70	0.19	1.46	0.47	clayey silt to silty clay	UNDFND	UNDFD	6	.43
3.00	9.84	86.34	0.81	0.94	0.52	sand to silty sand	70-80	42-44	21	UNDEFINED
3.25	10.66	116.68	0.85	0.73	0.56	sand	70-80	44-46	22	UNDEFINED
3.50	11.48	120.18	0.92	0.77	0.61	sand	70-80	44-46	23	UNDEFINED
3.75	12.30	91.90	1.51	1.64	0.65	silty sand to sandy silt	70-80	42-44	29	UNDEFINED
4.00	13.12	91.78	1.42	1.54	0.67	silty sand to sandy silt	60-70	42-44	29	UNDEFINED
4.25	13.94	80.90	1.29	1.59	0.69	silty sand to sandy silt	60-70	40-42	26	UNDEFINED
4.50	14.76	73.44	1.05	1.43	0.71	silty sand to sandy silt	60-70	40-42	23	UNDEFINED
4.75	15.58	28.96	1.42	4.90	0.73	clay	UNDFND	UNDFD	28	1.00
5.00	16.40	27.64	1.74	6.31	0.75	clay	UNDFND	UNDFD	26	.95
5.25	17.22	26.04	1.03	3.96	0.77	silty clay to clay	UNDFND	UNDFD	17	.89
5.50	18.04	17.64	0.66	3.72	0.79	silty clay to clay	UNDFND	UNDFD	11	.59
5.75	18.86	25.54	0.34	1.35	0.81	sandy silt to clayey silt	UNDFND	UNDFD	10	.87
6.00	19.69	23.50	0.12	0.53	0.83	silty sand to sandy silt	<40	34-36	8	UNDEFINED
6.25	20.51	15.22	0.08	0.53	0.85	sandy silt to clayey silt	UNDFND	UNDFD	6	.50
6.50	21.33	15.56	0.17	1.09	0.87	sandy silt to clayey silt	UNDFND	UNDFD	6	.51
6.75	22.15	26.38	0.75	2.84	0.89	clayey silt to silty clay	UNDFND	UNDFD	13	.89
7.00	22.97	21.70	0.42	1.95	0.90	sandy silt to clayey silt	UNDFND	UNDFD	8	.73
7.25	23.79	14.28	0.09	0.62	0.92	sandy silt to clayey silt	UNDFND	UNDFD	5	.46
7.50	24.61	14.70	0.07	0.48	0.94	sandy silt to clayey silt	UNDFND	UNDFD	6	.47
7.75	25.43	13.54	0.11	0.80	0.96	sandy silt to clayey silt	UNDFND	UNDFD	5	.43
8.00	26.25	23.16	0.50	2.17	0.98	sandy silt to clayey silt	UNDFND	UNDFD	9	.77
8.25	27.07	17.94	0.40	2.25	1.00	clayey silt to silty clay	UNDFND	UNDFD	9	.58
8.50	27.89	18.52	0.08	0.43	1.02	silty sand to sandy silt	<40	30-32	6	UNDEFINED
8.75	28.71	21.78	0.45	2.08	1.04	sandy silt to clayey silt	UNDFND	UNDFD	8	.72
9.00	29.53	16.86	0.41	2.46	1.06	clayey silt to silty clay	UNDFND	UNDFD	8	.54
9.25	30.35	18.98	0.39	2.03	1.08	sandy silt to clayey silt	UNDFND	UNDFD	7	.61
9.50	31.17	24.40	0.84	3.43	1.10	clayey silt to silty clay	UNDFND	UNDFD	12	.81

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 28

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ***

1 HILL AIRFORCE BASE - BUILDING 870
0

Contractor : TERRA TECH SW Location : BLDG. 870

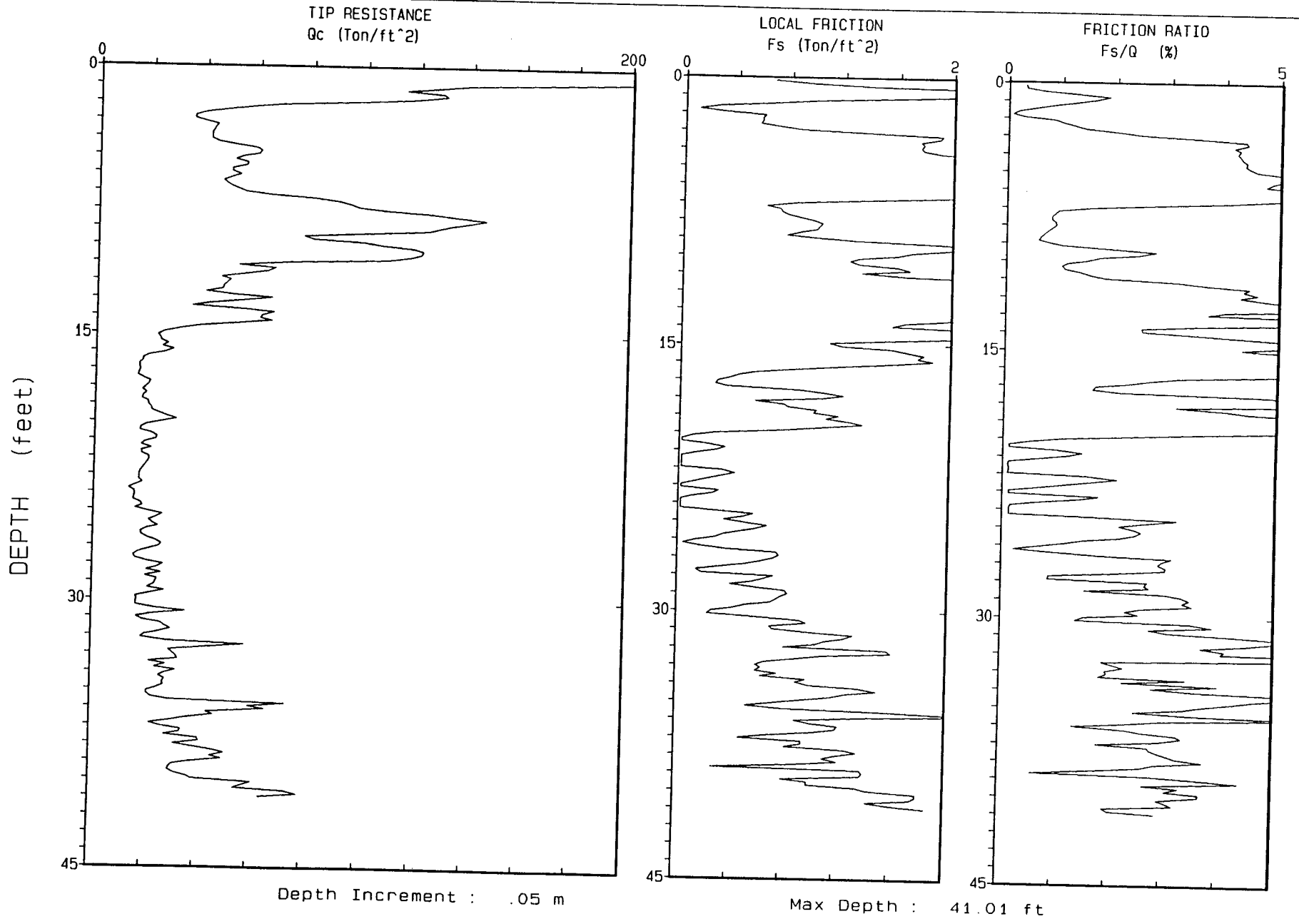
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	23.06	0.82	3.54	1.12	clayey silt to silty clay	UNDFND	UNDFD	11	.
10.00	32.81	21.68	0.91	4.21	1.14	silty clay to clay	UNDFND	UNDFD	14	.
10.25	33.63	21.54	0.62	2.89	1.16	clayey silt to silty clay	UNDFND	UNDFD	10	.7(
10.50	34.45	18.38	0.87	4.76	1.18	clay	UNDFND	UNDFD	18	.
10.75	35.27	19.80	0.54	2.74	1.20	clayey silt to silty clay	UNDFND	UNDFD	9	.
11.00	36.09	38.98	1.91	4.91	1.22	silty clay to clay	UNDFND	UNDFD	25	1.32
11.25	36.91	45.12	1.46	3.23	1.24	clayey silt to silty clay	UNDFND	UNDFD	22	1.5
11.50	37.73	28.92	1.40	4.85	1.26	clay	UNDFND	UNDFD	28	.
11.75	38.55	27.80	1.45	5.23	1.28	clay	UNDFND	UNDFD	27	.
12.00	39.37	25.32	1.74	6.87	1.29	clay	UNDFND	UNDFD	24	.82
12.25	40.19	16.92	0.38	2.22	1.31	clayey silt to silty clay	UNDFND	UNDFD	8	.
12.50	41.01	14.76	0.18	1.22	1.33	sandy silt to clayey silt	UNDFND	UNDFD	6	.
12.75	41.83	24.00	1.55	6.46	1.35	clay	UNDFND	UNDFD	23	.77
13.00	42.65	29.16	1.71	5.86	1.37	clay	UNDFND	UNDFD	28	.
13.25	43.47	16.68	0.18	1.10	1.39	sandy silt to clayey silt	UNDFND	UNDFD	6	.
13.50	44.29	14.34	0.02	0.17	1.41	sandy silt to clayey silt	UNDFND	UNDFD	5	.42
13.75	45.11	12.30	0.02	0.16	1.43	sandy silt to clayey silt	UNDFND	UNDFD	5	.35
14.00	45.93	13.68	0.10	0.72	1.45	sandy silt to clayey silt	UNDFND	UNDFD	5	.
14.25	46.75	13.64	0.08	0.59	1.47	sandy silt to clayey silt	UNDFND	UNDFD	5	.
14.50	47.57	15.68	0.06	0.38	1.49	sandy silt to clayey silt	UNDFND	UNDFD	6	.46
14.75	48.39	16.00	0.05	0.32	1.51	sandy silt to clayey silt	UNDFND	UNDFD	6	.
15.00	49.21	17.30	0.32	1.84	1.53	sandy silt to clayey silt	UNDFND	UNDFD	7	.
15.25	50.03	18.96	0.46	2.42	1.55	clayey silt to silty clay	UNDFND	UNDFD	9	.57

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 28

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) **

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-08-92
DEPTH TO WATER : 13.45 FT BLS
SOUNDING NO. : CPT-18 Pg 1 / 1
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date : 08-08-92

Location : CPT-18 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 4.1

Tot. Unit Wt. (avg) : 110 pcf

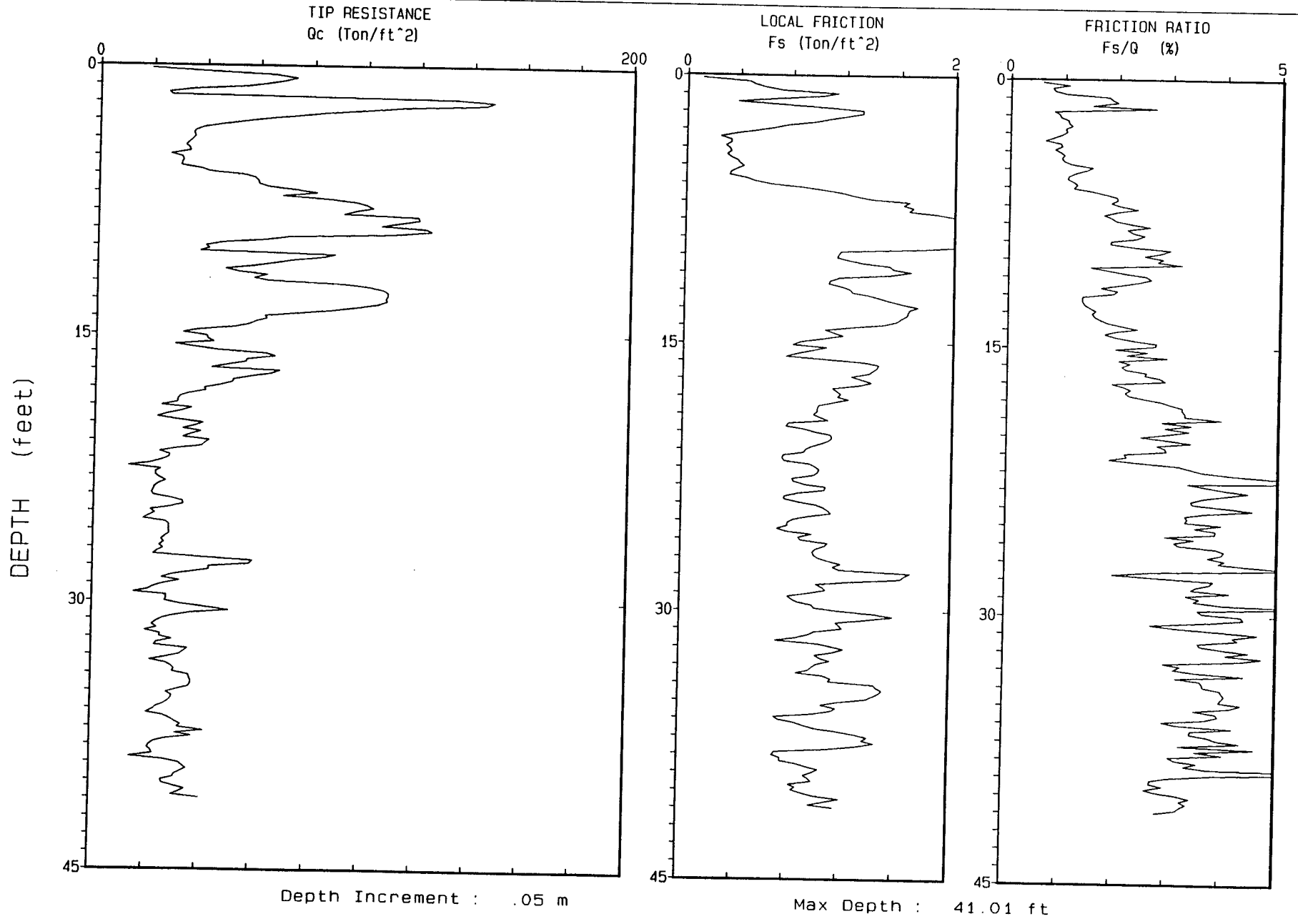
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	230.88	1.87	0.81	0.02	sand	>90	UNDFD	44	UNDEFINED
0.50	1.64	127.70	1.14	0.89	0.07	sand	>90	>48	24	UNDEFINED
0.75	2.46	78.08	0.43	0.55	0.11	sand to silty sand	>90	>48	19	UNDEFINE
1.00	3.28	38.66	1.08	2.80	0.16	sandy silt to clayey silt	UNDFND	UNDFD	15	1.42
1.25	4.10	42.20	1.80	4.26	0.20	silty clay to clay	UNDFND	UNDFD	27	1.55
1.50	4.92	54.90	2.43	4.42	0.25	silty clay to clay	UNDFND	UNDFD	35	2.0
1.75	5.74	53.00	2.68	5.05	0.29	silty clay to clay	UNDFND	UNDFD	34	1.9
2.00	6.56	49.34	2.66	5.38	0.34	clay	UNDFND	UNDFD	47	1.81
2.25	7.38	60.70	1.11	1.84	0.38	silty sand to sandy silt	60-70	42-44	19	UNDEFINE
2.50	8.20	102.80	0.88	0.86	0.43	sand to silty sand	70-80	44-46	25	UNDEFINE
2.75	9.02	136.12	0.94	0.69	0.47	sand	80-90	44-46	26	UNDEFINED
3.00	9.84	95.86	1.82	1.89	0.52	silty sand to sandy silt	70-80	42-44	31	UNDEFINED
3.25	10.66	117.16	1.42	1.21	0.56	sand to silty sand	70-80	44-46	28	UNDEFINE
3.50	11.48	73.22	2.00	2.73	0.61	sandy silt to clayey silt	UNDFND	UNDFD	28	2.6
3.75	12.30	49.72	2.31	4.65	0.65	silty clay to clay	UNDFND	UNDFD	32	1.81
4.00	13.12	52.16	2.58	4.95	0.70	silty clay to clay	UNDFND	UNDFD	33	1.9
4.25	13.94	52.44	2.01	3.84	0.74	clayey silt to silty clay	UNDFND	UNDFD	25	1.9
4.50	14.76	49.10	2.27	4.62	0.76	silty clay to clay	UNDFND	UNDFD	31	1.78
4.75	15.58	24.74	1.47	5.96	0.78	clay	UNDFND	UNDFD	24	.8
5.00	16.40	23.42	1.44	6.16	0.80	clay	UNDFND	UNDFD	22	.8
5.25	17.22	16.52	0.38	2.31	0.82	clayey silt to silty clay	UNDFND	UNDFD	8	.57
5.50	18.04	18.56	0.91	4.91	0.84	clay	UNDFND	UNDFD	18	.65
5.75	18.86	18.34	0.83	4.55	0.86	clay	UNDFND	UNDFD	18	.6
6.00	19.69	22.66	1.19	5.24	0.88	clay	UNDFND	UNDFD	22	.8
6.25	20.51	21.58	0.23	1.08	0.90	sandy silt to clayey silt	UNDFND	UNDFD	8	.75
6.50	21.33	20.80	0.19	0.93	0.92	sandy silt to clayey silt	UNDFND	UNDFD	8	.72
6.75	22.15	19.60	0.08	0.41	0.94	silty sand to sandy silt	<40	32-34	6	UNDEFINED
7.00	22.97	18.30	0.22	1.19	0.96	sandy silt to clayey silt	UNDFND	UNDFD	7	.63
7.25	23.79	16.10	0.14	0.87	0.98	sandy silt to clayey silt	UNDFND	UNDFD	6	.54
7.50	24.61	15.62	0.18	1.15	1.00	sandy silt to clayey silt	UNDFND	UNDFD	6	.52
7.75	25.43	20.98	0.52	2.46	1.01	clayey silt to silty clay	UNDFND	UNDFD	10	.72
8.00	26.25	21.08	0.25	1.20	1.03	sandy silt to clayey silt	UNDFND	UNDFD	8	.72
8.25	27.07	22.60	0.55	2.43	1.05	clayey silt to silty clay	UNDFND	UNDFD	11	.78
8.50	27.89	17.90	0.35	1.96	1.07	sandy silt to clayey silt	UNDFND	UNDFD	7	.60
8.75	28.71	23.42	0.58	2.49	1.09	clayey silt to silty clay	UNDFND	UNDFD	11	.80
9.00	29.53	23.96	0.77	3.22	1.11	clayey silt to silty clay	UNDFND	UNDFD	11	.82
9.25	30.35	17.78	0.40	2.25	1.13	clayey silt to silty clay	UNDFND	UNDFD	9	.59
9.50	31.17	23.54	0.86	3.66	1.15	clayey silt to silty clay	UNDFND	UNDFD	11	.80

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 27

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ***

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-10-92
DEPTH TO WATER : 32.80 FT BLS
SOUNDING NO. : CPT-25 Pg 1 / 1
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

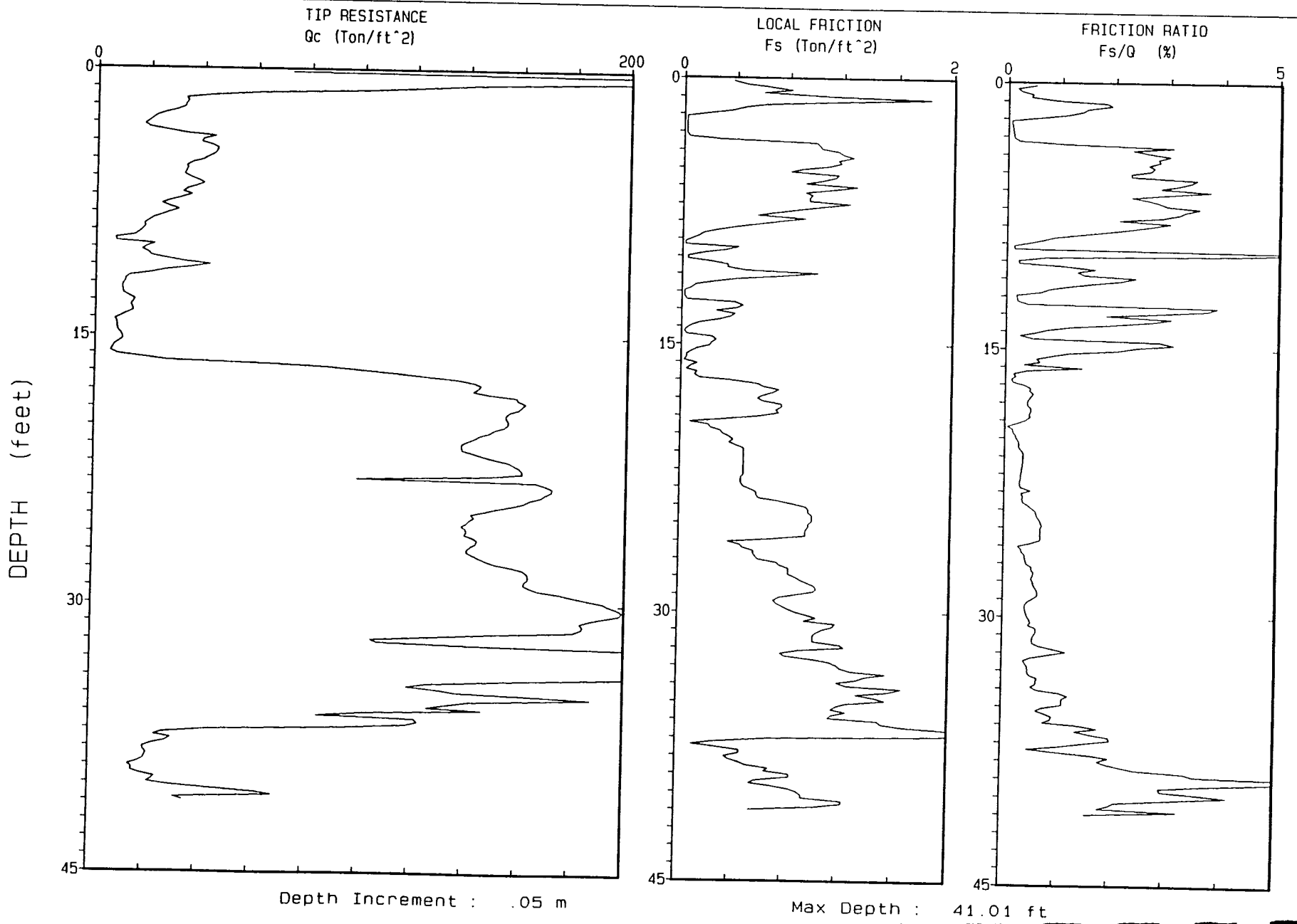
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	25.80	1.11	4.29	1.17	silty clay to clay	UNDFND	UNDFD	16	.8
10.00	32.81	35.34	1.16	3.29	1.19	clayey silt to silty clay	UNDFND	UNDFD	17	1.2
10.25	33.63	29.26	0.65	2.21	1.21	sandy silt to clayey silt	UNDFND	UNDFD	11	1.0
10.50	34.45	27.62	1.15	4.15	1.23	silty clay to clay	UNDFND	UNDFD	18	.9
10.75	35.27	24.50	0.93	3.78	1.25	silty clay to clay	UNDFND	UNDFD	16	.8
11.00	36.09	50.16	1.37	2.74	1.27	sandy silt to clayey silt	UNDFND	UNDFD	19	1.7
11.25	36.91	36.18	1.03	2.85	1.29	sandy silt to clayey silt	UNDFND	UNDFD	14	1.2
11.50	37.73	32.78	0.90	2.73	1.31	sandy silt to clayey silt	UNDFND	UNDFD	13	1.1
11.75	38.55	41.90	1.16	2.76	1.33	sandy silt to clayey silt	UNDFND	UNDFD	16	1.47
12.00	39.37	39.08	1.06	2.70	1.35	sandy silt to clayey silt	UNDFND	UNDFD	15	1.36
12.25	40.19	39.88	1.32	3.31	1.37	clayey silt to silty clay	UNDFND	UNDFD	19	1.39
12.50	41.01	65.96	1.70	2.57	1.39	sandy silt to clayey silt	UNDFND	UNDFD	25	2.36

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 27

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ***

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-08-92
DEPTH TO WATER : 30.67 FT BLS
SOUNDING NO. : CPT-19 Pg 1 / 1
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870
0

Contractor : TERRA TECH SW
Location : CPT-19
Job No. : 92-1016
Tot. Unit Wt. (avg) : 105 pcf

Test Date : 08-08-92
Elevation : UNKNOWN
Water table (meters) : 9.35

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	190.04	0.58	0.30	0.02	sand	>90	>48	36	UNDEFINEI
0.50	1.64	71.44	1.04	1.46	0.06	silty sand to sandy silt	>90	>48	23	UNDEFINEI
0.75	2.46	30.76	0.13	0.42	0.11	silty sand to sandy silt	60-70	44-46	10	UNDEFINEI
1.00	3.28	19.78	0.02	0.12	0.15	silty sand to sandy silt	40-50	42-44	6	UNDEFINEI
1.25	4.10	36.16	0.90	2.49	0.19	sandy silt to clayey silt	UNDFND	UNDFD	14	1.3E
1.50	4.92	43.52	1.18	2.71	0.24	sandy silt to clayey silt	UNDFND	UNDFD	17	1.6E
1.75	5.74	34.94	1.01	2.89	0.28	sandy silt to clayey silt	UNDFND	UNDFD	13	1.3E
2.00	6.56	36.44	1.05	2.88	0.32	sandy silt to clayey silt	UNDFND	UNDFD	14	1.3E
2.25	7.38	32.18	1.01	3.15	0.37	clayey silt to silty clay	UNDFND	UNDFD	15	1.2E
2.50	8.20	26.76	0.70	2.60	0.41	sandy silt to clayey silt	UNDFND	UNDFD	10	1.01
2.75	9.02	18.82	0.20	1.07	0.45	sandy silt to clayey silt	UNDFND	UNDFD	7	.70
3.00	9.84	13.40	0.19	1.40	0.50	sandy silt to clayey silt	UNDFND	UNDFD	5	.49
3.25	10.66	20.40	0.19	0.95	0.54	sandy silt to clayey silt	UNDFND	UNDFD	8	.76
3.50	11.48	31.46	0.58	1.84	0.58	sandy silt to clayey silt	UNDFND	UNDFD	12	1.18
3.75	12.30	10.92	0.05	0.42	0.62	sandy silt to clayey silt	UNDFND	UNDFD	4	.39
4.00	13.12	12.28	0.32	2.57	0.67	clayey silt to silty clay	UNDFND	UNDFD	6	.44
4.25	13.94	12.42	0.25	2.03	0.71	clayey silt to silty clay	UNDFND	UNDFD	6	.45
4.50	14.76	7.96	0.12	1.48	0.75	clayey silt to silty clay	UNDFND	UNDFD	4	.27
4.75	15.58	9.02	0.13	1.49	0.80	clayey silt to silty clay	UNDFND	UNDFD	4	.31
5.00	16.40	12.96	0.06	0.45	0.84	sandy silt to clayey silt	UNDFND	UNDFD	5	.46
5.25	17.22	97.86	0.27	0.27	0.88	sand	60-70	40-42	19	UNDEFINED
5.50	18.04	142.34	0.65	0.46	0.93	sand	70-80	42-44	27	UNDEFINED
5.75	18.86	157.98	0.72	0.46	0.97	sand	80-90	42-44	30	UNDEFINED
6.00	19.69	156.36	0.30	0.19	1.01	sand	70-80	42-44	30	UNDEFINED
6.25	20.51	150.98	0.35	0.23	1.05	sand	70-80	42-44	29	UNDEFINED
6.50	21.33	139.88	0.47	0.33	1.10	sand	70-80	42-44	27	UNDEFINED
6.75	22.15	150.72	0.48	0.32	1.14	sand	70-80	42-44	29	UNDEFINED
7.00	22.97	146.10	0.47	0.32	1.18	sand	70-80	40-42	28	UNDEFINED
7.25	23.79	170.26	0.61	0.36	1.23	sand	70-80	42-44	33	UNDEFINED
7.50	24.61	160.96	0.95	0.59	1.27	sand	70-80	42-44	31	UNDEFINED
7.75	25.43	143.06	0.98	0.68	1.31	sand	70-80	40-42	27	UNDEFINED
8.00	26.25	140.56	0.69	0.49	1.36	sand	70-80	40-42	27	UNDEFINED
8.25	27.07	142.60	0.56	0.39	1.40	sand	70-80	40-42	27	UNDEFINED
8.50	27.89	149.48	0.80	0.53	1.44	sand	70-80	40-42	29	UNDEFINED
8.75	28.71	163.20	0.97	0.59	1.49	sand	70-80	40-42	31	UNDEFINED
9.00	29.53	170.28	0.82	0.48	1.53	sand	70-80	40-42	33	UNDEFINED
9.25	30.35	193.84	0.90	0.46	1.57	sand	70-80	40-42	37	UNDEFINED
9.50	31.17	189.26	1.08	0.57	1.61	sand	70-80	40-42	36	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 26

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ***

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870

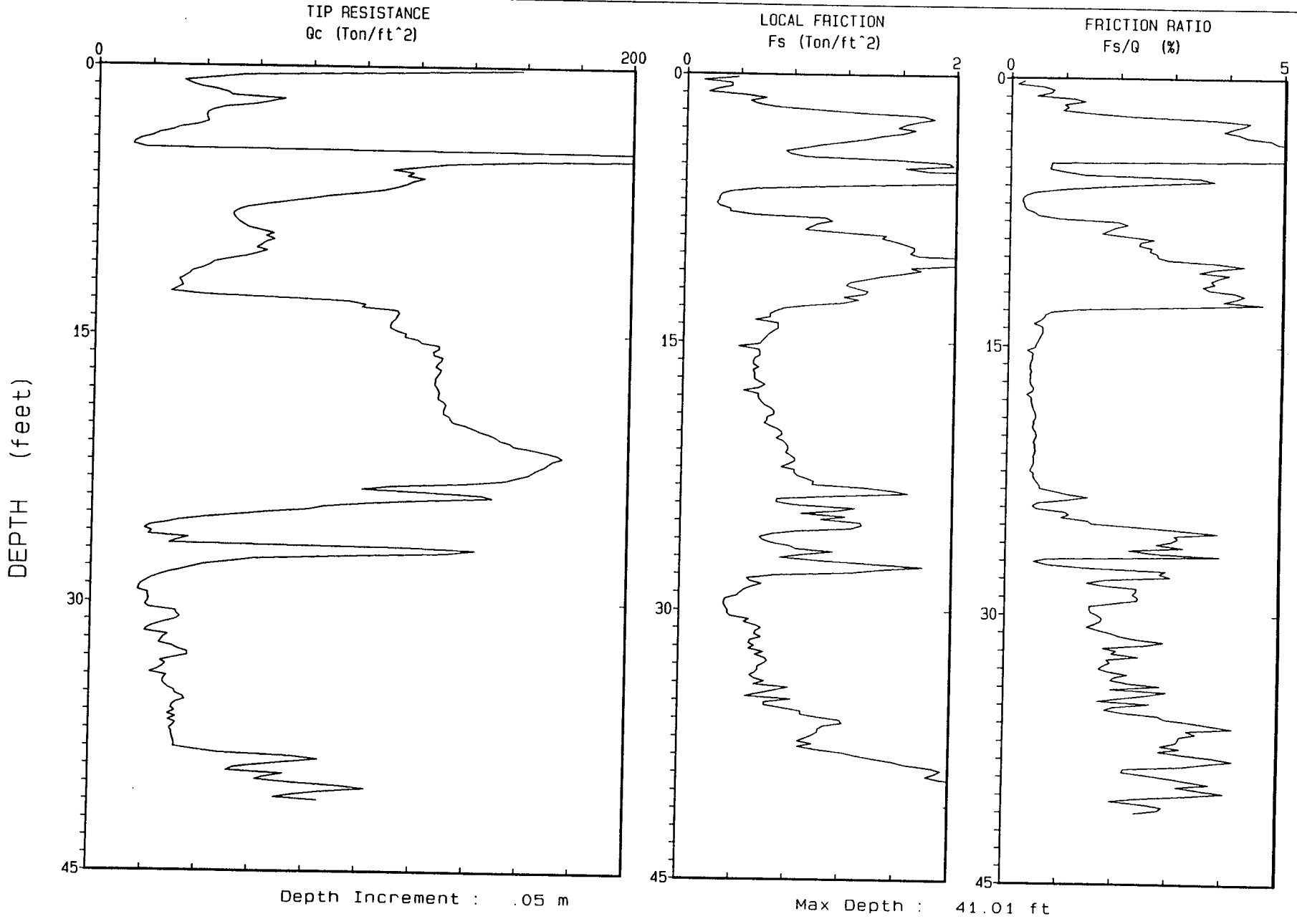
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	149.02	1.11	0.74	1.63	sand	70-80	40-42	29	UNDEFI
10.00	32.81	187.90	0.93	0.50	1.65	sand	70-80	40-42	36	UNDEFI
10.25	33.63	242.94	1.34	0.55	1.66	sand	80-90	42-44	47	UNDEFINED
10.50	34.45	182.06	1.41	0.77	1.68	sand	70-80	40-42	35	UNDEFI
10.75	35.27	148.72	1.37	0.92	1.70	sand	70-80	40-42	28	UNDEFI
11.00	36.09	130.96	1.25	0.95	1.72	sand to silty sand	60-70	38-40	31	UNDEFINED
11.25	36.91	108.92	1.92	1.76	1.73	silty sand to sandy silt	60-70	38-40	35	UNDEFINED
11.50	37.73	31.32	0.38	1.21	1.75	silty sand to sandy silt	<40	30-32	10	UNDEFI
11.75	38.55	21.56	0.45	2.10	1.77	sandy silt to clayey silt	UNDFND	UNDFD	8	
12.00	39.37	17.32	0.74	4.26	1.79	clay	UNDFND	UNDFD	17	.58
12.25	40.19	24.16	0.81	3.34	1.80	clayey silt to silty clay	UNDFND	UNDFD	12	
12.50	41.01	48.52	1.01	2.08	1.82	sandy silt to clayey silt	UNDFND	UNDFD	19	1.

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 26

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02)

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-08-92
DEPTH TO WATER : 25.09 FT BLS
SOUNDING NO. : CPT-20 Pg 1 / 1
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870
0

Contractor : TERRA TECH SW
Location : CPT-20
Job No. : 92-1016
Tot. Unit Wt. (avg) : 110 pcf

Test Date : 08-08-92
Elevation : UNKNOWN
Water table (meters) : 7.65

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	77.60	0.28	0.36	0.02	sand to silty sand	>90	>48	19	UNDEFINED
0.50	1.64	42.52	0.43	1.02	0.07	silty sand to sandy silt	80-90	>48	14	UNDEFINED
0.75	2.46	56.20	1.30	2.32	0.11	sandy silt to clayey silt	UNDFND	UNDFD	22	2.
1.00	3.28	39.68	1.64	4.14	0.16	clayey silt to silty clay	UNDFND	UNDFD	19	1.5
1.25	4.10	23.28	1.17	5.03	0.20	clay	UNDFND	UNDFD	22	.92
1.50	4.92	101.44	1.18	1.16	0.25	sand to silty sand	80-90	46-48	24	UNDEFIN
1.75	5.74	159.84	2.75	1.72	0.29	sand to silty sand	>90	>48	38	UNDEFIN
2.00	6.56	117.52	1.42	1.21	0.34	sand to silty sand	80-90	46-48	28	UNDEFINED
2.25	7.38	96.66	0.25	0.26	0.38	sand	70-80	44-46	19	UNDEFIN
2.50	8.20	58.76	0.66	1.13	0.43	silty sand to sandy silt	60-70	42-44	19	UNDEFIN
2.75	9.02	53.20	1.10	2.06	0.47	sandy silt to clayey silt	UNDFND	UNDFD	20	2.10
3.00	9.84	63.74	1.61	2.53	0.52	sandy silt to clayey silt	UNDFND	UNDFD	24	2.52
3.25	10.66	59.90	2.10	3.50	0.56	clayey silt to silty clay	UNDFND	UNDFD	29	2.3
3.50	11.48	41.74	1.57	3.76	0.61	clayey silt to silty clay	UNDFND	UNDFD	20	1.6
3.75	12.30	32.36	1.28	3.96	0.65	clayey silt to silty clay	UNDFND	UNDFD	15	1.26
4.00	13.12	52.58	1.06	2.02	0.70	silty sand to sandy silt	50-60	38-40	17	UNDEFIN
4.25	13.94	107.70	0.64	0.59	0.74	sand	70-80	42-44	21	UNDEFIN
4.50	14.76	111.08	0.66	0.59	0.79	sand	70-80	42-44	21	UNDEFINED
4.75	15.58	120.40	0.54	0.45	0.83	sand	70-80	42-44	23	UNDEFIN
5.00	16.40	127.98	0.54	0.42	0.88	sand	70-80	42-44	25	UNDEFIN
5.25	17.22	128.26	0.54	0.42	0.92	sand	70-80	42-44	25	UNDEFINED
5.50	18.04	127.46	0.55	0.43	0.97	sand	70-80	42-44	24	UNDEFINED
5.75	18.86	129.38	0.62	0.48	1.01	sand	70-80	42-44	25	UNDEFIN
6.00	19.69	131.40	0.64	0.49	1.06	sand	70-80	40-42	25	UNDEFIN
6.25	20.51	141.14	0.73	0.52	1.11	sand	70-80	42-44	27	UNDEFINED
6.50	21.33	155.64	0.79	0.51	1.15	sand	70-80	42-44	30	UNDEFIN
6.75	22.15	172.12	0.81	0.47	1.20	sand	70-80	42-44	33	UNDEFIN
7.00	22.97	163.86	0.92	0.56	1.24	sand	70-80	42-44	31	UNDEFINED
7.25	23.79	125.56	1.28	1.02	1.29	sand to silty sand	60-70	40-42	30	UNDEFIN
7.50	24.61	120.08	0.98	0.81	1.33	sand	60-70	40-42	23	UNDEFIN
7.75	25.43	55.24	1.24	2.24	1.38	sandy silt to clayey silt	UNDFND	UNDFD	21	2.15
8.00	26.25	22.34	0.68	3.06	1.40	clayey silt to silty clay	UNDFND	UNDFD	11	.83
8.25	27.07	71.24	0.89	1.24	1.42	silty sand to sandy silt	50-60	36-38	23	UNDEFINED
8.50	27.89	76.84	1.40	1.82	1.44	silty sand to sandy silt	50-60	36-38	25	UNDEFINED
8.75	28.71	29.42	0.57	1.94	1.46	sandy silt to clayey silt	UNDFND	UNDFD	11	1.11
9.00	29.53	19.06	0.41	2.13	1.48	sandy silt to clayey silt	UNDFND	UNDFD	7	.69
9.25	30.35	21.12	0.35	1.68	1.50	sandy silt to clayey silt	UNDFND	UNDFD	8	.77
9.50	31.17	31.00	0.55	1.77	1.51	sandy silt to clayey silt	UNDFND	UNDFD	12	1.17

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ***

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

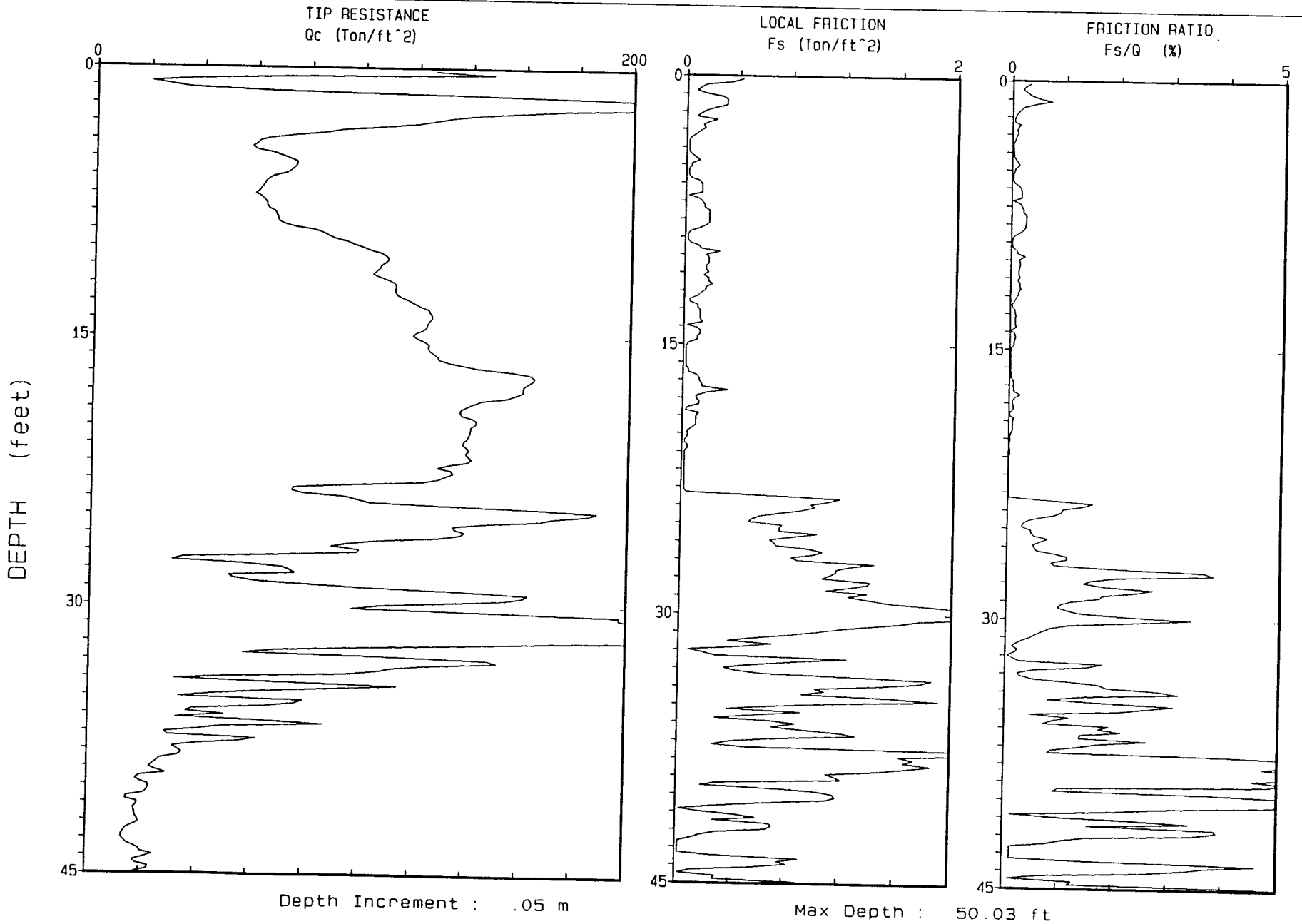
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	24.18	0.56	2.30	1.53	sandy silt to clayey silt	UNDFND	UNDFD	9	.89
10.00	32.81	30.26	0.60	2.00	1.55	sandy silt to clayey silt	UNDFND	UNDFD	12	1.13
10.25	33.63	29.70	0.58	1.96	1.57	sandy silt to clayey silt	UNDFND	UNDFD	11	1.11
10.50	34.45	26.08	0.66	2.53	1.59	sandy silt to clayey silt	UNDFND	UNDFD	10	.96
10.75	35.27	30.94	0.65	2.09	1.61	sandy silt to clayey silt	UNDFND	UNDFD	12	1.16
11.00	36.09	32.16	0.97	3.02	1.63	clayey silt to silty clay	UNDFND	UNDFD	15	1.20
11.25	36.91	30.76	1.08	3.50	1.65	clayey silt to silty clay	UNDFND	UNDFD	15	1.15
11.50	37.73	30.82	0.95	3.10	1.67	clayey silt to silty clay	UNDFND	UNDFD	15	1.15
11.75	38.55	45.22	1.46	3.22	1.69	clayey silt to silty clay	UNDFND	UNDFD	22	1.72
12.00	39.37	65.62	1.90	2.90	1.71	sandy silt to clayey silt	UNDFND	UNDFD	25	2.53
12.25	40.19	73.80	2.43	3.29	1.73	sandy silt to clayey silt	UNDFND	UNDFD	28	2.86
12.50	41.01	84.46	2.12	2.51	1.75	sandy silt to clayey silt	UNDFND	UNDFD	32	3.28

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ***

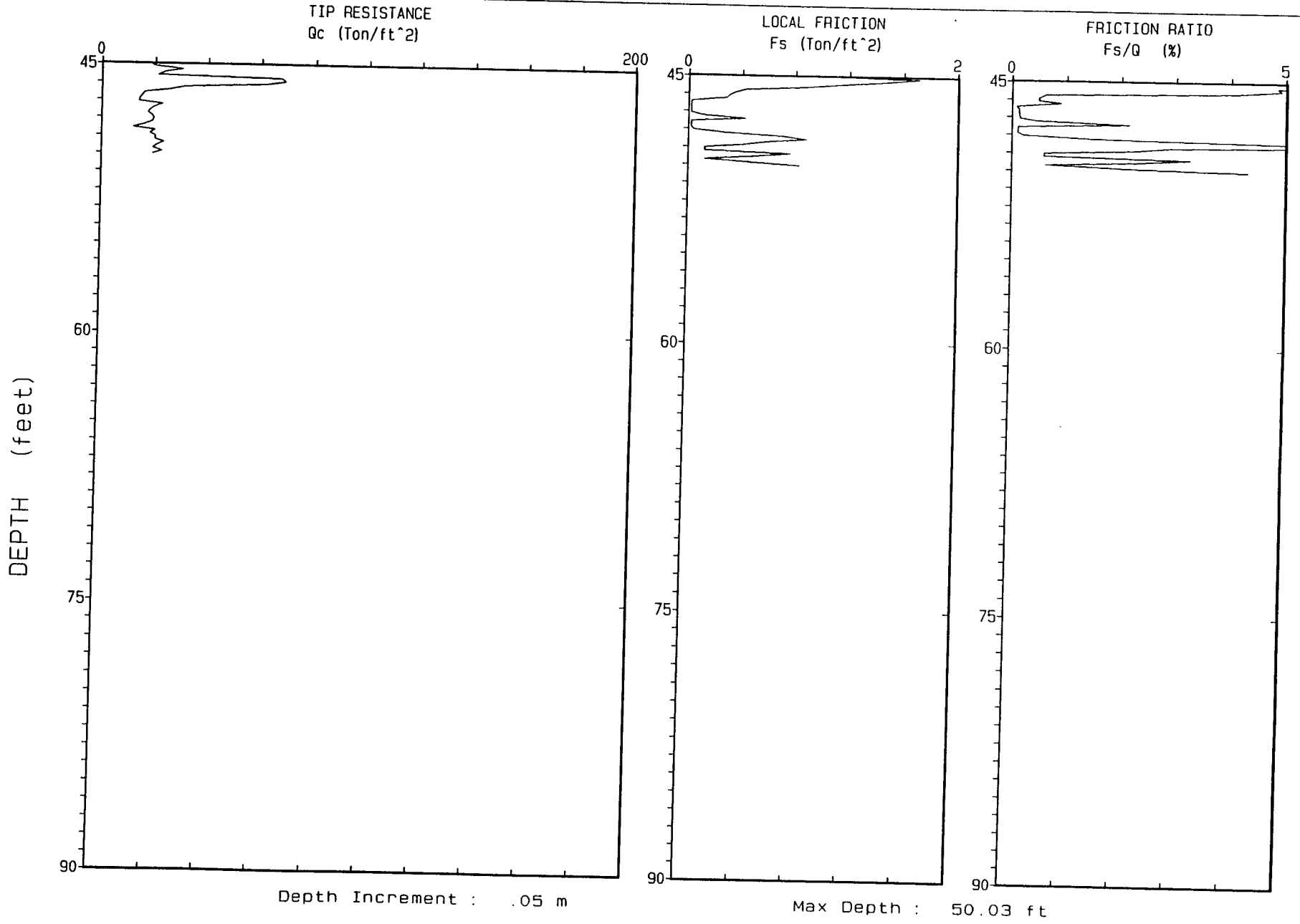
HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-08-92
DEPTH TO WATER : 31.82 FT BLS
SOUNDING NO. : CPT-21 Pg 1 / 2
TERRA JOB NO. : 92-1016



HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-08-92
DEPTH TO WATER : 31.82 FT BLS
SOUNDING NO. : CPT-21 Pg 2 / 2
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870
0

Contractor : TERRA TECH SW Test Date : 08-08-92
Location : CPT-21 Elevation : UNKNOWN
Job No. : 92-1016 Water table (meters) : 9.7
Tot. Unit Wt. (avg) : 100 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	80.32	0.21	0.27	0.02	sand to silty sand	>90	>48	19	UNDEFINED
0.50	1.64	92.88	0.26	0.28	0.06	sand	>90	>48	18	UNDEFIN
0.75	2.46	202.40	0.15	0.07	0.10	gravelly sand to sand	>90	>48	32	UNDEFIN
1.00	3.28	125.12	0.12	0.09	0.14	sand	>90	>48	24	UNDEFINED
1.25	4.10	75.42	0.02	0.03	0.18	sand	80-90	46-48	14	UNDEFINED
1.50	4.92	62.34	0.05	0.09	0.23	sand to silty sand	70-80	44-46	15	UNDEFIN
1.75	5.74	73.44	0.03	0.04	0.27	sand	70-80	44-46	14	UNDEFINED
2.00	6.56	65.22	0.12	0.18	0.31	sand to silty sand	70-80	44-46	16	UNDEFINED
2.25	7.38	61.20	0.10	0.17	0.35	sand to silty sand	60-70	42-44	15	UNDEFIN
2.50	8.20	65.18	0.18	0.28	0.39	sand to silty sand	60-70	42-44	16	UNDEFIN
2.75	9.02	72.22	0.07	0.09	0.43	sand to silty sand	60-70	42-44	17	UNDEFINED
3.00	9.84	90.24	0.11	0.12	0.47	sand	70-80	42-44	17	UNDEFINED
3.25	10.66	105.66	0.17	0.16	0.51	sand	70-80	44-46	20	UNDEFIN
3.50	11.48	106.00	0.17	0.16	0.55	sand	70-80	42-44	20	UNDEFINED
3.75	12.30	110.42	0.15	0.14	0.59	sand	70-80	42-44	21	UNDEFINED
4.00	13.12	115.28	0.08	0.07	0.64	sand	70-80	42-44	22	UNDEFINE
4.25	13.94	124.66	0.10	0.08	0.68	sand	70-80	42-44	24	UNDEFINE
4.50	14.76	123.24	0.11	0.09	0.72	sand	70-80	42-44	24	UNDEFINED
4.75	15.58	122.50	0.02	0.02	0.76	sand	70-80	42-44	23	UNDEFINE
5.00	16.40	128.26	0.02	0.02	0.80	sand	70-80	42-44	25	UNDEFINE
5.25	17.22	153.08	0.10	0.07	0.84	sand	80-90	42-44	29	UNDEFINED
5.50	18.04	161.46	0.17	0.11	0.88	sand	80-90	42-44	31	UNDEFINED
5.75	18.86	147.82	0.08	0.06	0.92	sand	70-80	42-44	28	UNDEFINE
6.00	19.69	139.36	0.09	0.07	0.96	sand	70-80	42-44	27	UNDEFINED
6.25	20.51	141.14	0.03	0.02	1.00	sand	70-80	42-44	27	UNDEFINED
6.50	21.33	139.36	0.03	0.02	1.05	sand	70-80	42-44	27	UNDEFINE
6.75	22.15	138.94	0.02	0.01	1.09	sand	70-80	42-44	27	UNDEFINE
7.00	22.97	131.70	0.02	0.02	1.13	sand	70-80	40-42	25	UNDEFINED
7.25	23.79	89.44	0.59	0.66	1.17	sand to silty sand	60-70	38-40	21	UNDEFINE
7.50	24.61	118.82	0.84	0.71	1.21	sand	60-70	40-42	23	UNDEFINED
7.75	25.43	172.00	0.66	0.38	1.25	sand	70-80	42-44	33	UNDEFINED
8.00	26.25	135.50	0.79	0.59	1.29	sand	70-80	40-42	26	UNDEFINED
8.25	27.07	98.58	0.94	0.96	1.33	sand to silty sand	60-70	38-40	24	UNDEFINED
8.50	27.89	52.28	1.23	2.35	1.37	sandy silt to clayey silt	UNDFND	UNDFD	20	2.03
8.75	28.71	63.50	1.24	1.96	1.41	silty sand to sandy silt	40-50	36-38	20	UNDEFINED
9.00	29.53	129.16	1.48	1.15	1.46	sand to silty sand	60-70	40-42	31	UNDEFINED
9.25	30.35	128.26	2.53	1.97	1.50	silty sand to sandy silt	60-70	40-42	41	UNDEFINED
9.50	31.17	213.12	1.20	0.56	1.54	sand	80-90	42-44	41	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

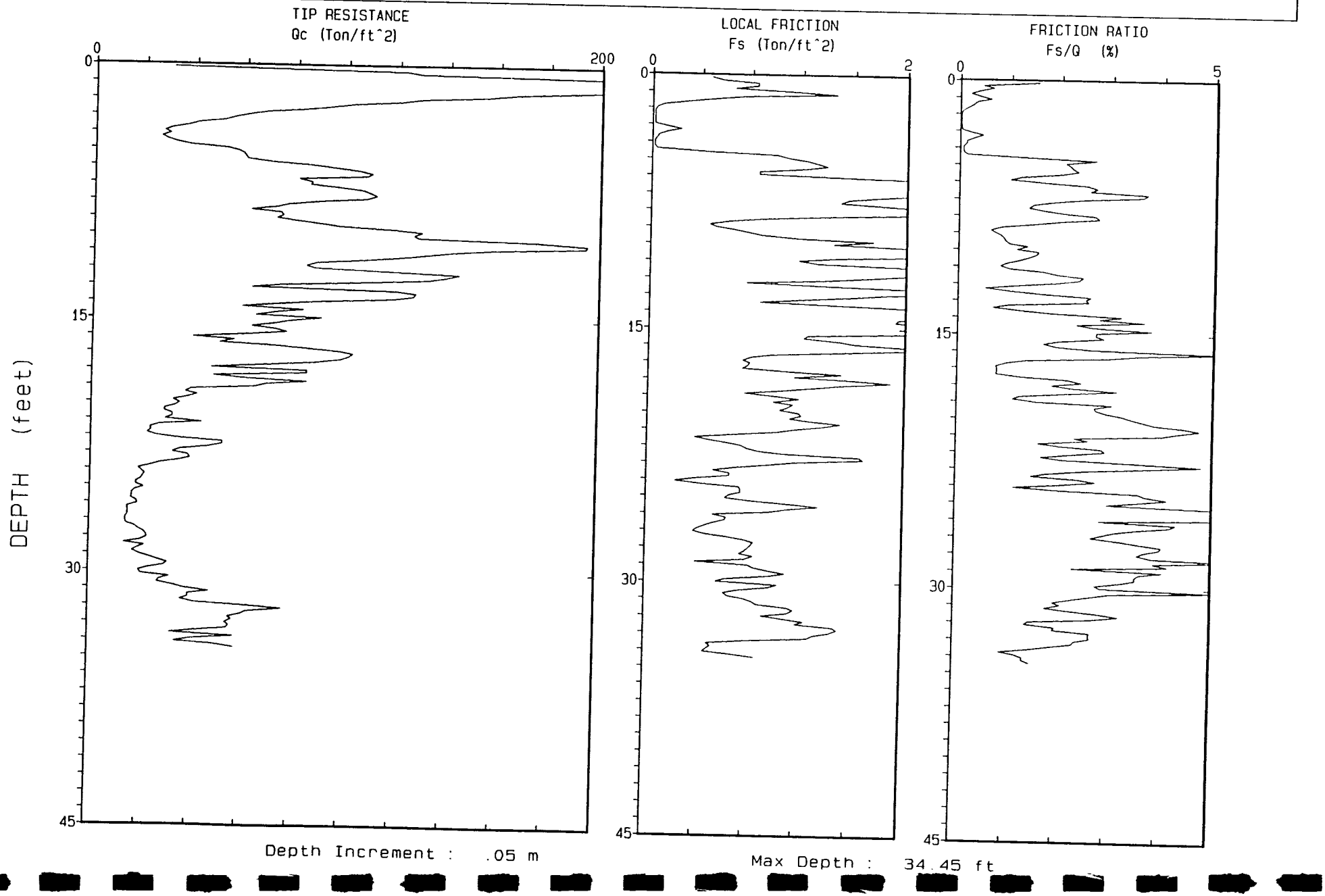
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	264.40	0.43	0.16	1.58	gravelly sand to sand	80-90	42-44	42	UNDEFINED
10.00	32.81	96.14	0.63	0.66	1.60	sand to silty sand	50-60	38-40	23	UNDEFINED
10.25	33.63	129.52	0.92	0.71	1.62	sand	60-70	40-42	25	UNDEFINED
10.50	34.45	73.62	1.26	1.71	1.63	silty sand to sandy silt	50-60	36-38	24	UNDEFINED
10.75	35.27	62.62	1.15	1.83	1.65	silty sand to sandy silt	40-50	36-38	20	UNDEFINED
11.00	36.09	53.70	0.68	1.26	1.66	silty sand to sandy silt	40-50	34-36	17	UNDEFINED
11.25	36.91	55.08	0.97	1.76	1.68	silty sand to sandy silt	40-50	34-36	18	UNDEFINED
11.50	37.73	43.46	1.15	2.65	1.69	sandy silt to clayey silt	UNDFND	UNDFD	17	1.66
11.75	38.55	32.14	1.72	5.36	1.71	clay	UNDFND	UNDFD	31	1.20
12.00	39.37	25.52	1.05	4.13	1.72	silty clay to clay	UNDFND	UNDFD	16	.94
12.25	40.19	20.60	0.86	4.17	1.74	silty clay to clay	UNDFND	UNDFD	13	.74
12.50	41.01	18.44	0.45	2.42	1.76	clayey silt to silty clay	UNDFND	UNDFD	9	.65
12.75	41.83	18.14	0.54	3.00	1.77	clayey silt to silty clay	UNDFND	UNDFD	9	.64
13.00	42.65	17.02	0.26	1.52	1.79	sandy silt to clayey silt	UNDFND	UNDFD	7	.59
13.25	43.47	14.80	0.07	0.49	1.80	sandy silt to clayey silt	UNDFND	UNDFD	6	.50
13.50	44.29	20.84	0.63	3.03	1.82	clayey silt to silty clay	UNDFND	UNDFD	10	.74
13.75	45.11	20.48	0.64	3.13	1.83	clayey silt to silty clay	UNDFND	UNDFD	10	.72
14.00	45.93	42.14	0.85	2.01	1.85	sandy silt to clayey silt	UNDFND	UNDFD	16	1.59
14.25	46.75	29.80	0.13	0.43	1.86	silty sand to sandy silt	<40	30-32	10	UNDEFINED
14.50	47.57	17.70	0.12	0.66	1.88	sandy silt to clayey silt	UNDFND	UNDFD	7	.61
14.75	48.39	18.22	0.21	1.16	1.89	sandy silt to clayey silt	UNDFND	UNDFD	7	.63
15.00	49.21	18.06	0.42	2.33	1.91	clayey silt to silty clay	UNDFND	UNDFD	9	.62
15.25	50.03	21.06	0.53	2.52	1.93	clayey silt to silty clay	UNDFND	UNDFD	10	.74

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-09-92
DEPTH TO WATER : 24.11 FT BLS
SOUNDING NO. : CPT-22 Pg 1 / 1
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870
0

Contractor : TERRA TECH SW
Location : CPT-22
Job No. : 92-1016
Tot. Unit Wt. (avg) : 110 pcf

Test Date : 08-09-92
Elevation : UNKNOWN
Water table (meters) : 7.35

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	165.04	0.67	0.41	0.02	sand	>90	>48	32	UNDEFINED
0.50	1.64	220.90	0.82	0.37	0.07	sand	>90	>48	42	UNDEFINED
0.75	2.46	120.06	0.04	0.03	0.11	sand	>90	>48	23	UNDEFINED
1.00	3.28	63.70	0.08	0.13	0.16	sand to silty sand	80-90	46-48	15	UNDEFINED
1.25	4.10	32.66	0.05	0.15	0.20	silty sand to sandy silt	50-60	42-44	10	UNDEFINED
1.50	4.92	35.00	0.52	1.49	0.25	silty sand to sandy silt	50-60	42-44	11	UNDEFINED
1.75	5.74	61.12	1.20	1.97	0.29	silty sand to sandy silt	70-80	44-46	20	UNDEFINED
2.00	6.56	100.66	2.18	2.17	0.34	silty sand to sandy silt	80-90	44-46	32	UNDEFINED
2.25	7.38	91.26	2.31	2.54	0.38	silty sand to sandy silt	70-80	44-46	29	UNDEFINED
2.50	8.20	99.06	2.02	2.04	0.43	silty sand to sandy silt	70-80	44-46	32	UNDEFINED
2.75	9.02	71.22	0.79	1.11	0.47	sand to silty sand	60-70	42-44	17	UNDEFINED
3.00	9.84	103.04	1.05	1.02	0.52	sand to silty sand	70-80	44-46	25	UNDEFINED
3.25	10.66	163.88	2.24	1.37	0.56	sand to silty sand	80-90	44-46	39	UNDEFINED
3.50	11.48	132.00	1.62	1.23	0.61	sand to silty sand	80-90	44-46	32	UNDEFINED
3.75	12.30	104.80	1.61	1.54	0.65	sand to silty sand	70-80	42-44	25	UNDEFINED
4.00	13.12	102.68	1.97	1.92	0.70	silty sand to sandy silt	70-80	42-44	33	UNDEFINED
4.25	13.94	115.92	1.73	1.50	0.74	sand to silty sand	70-80	42-44	28	UNDEFINED
4.50	14.76	70.46	2.11	2.99	0.79	sandy silt to clayey silt	UNDFND	UNDFD	27	2.78
4.75	15.58	75.40	1.84	2.44	0.83	sandy silt to clayey silt	UNDFND	UNDFD	29	2.98
5.00	16.40	57.10	1.74	3.05	0.88	sandy silt to clayey silt	UNDFND	UNDFD	22	2.24
5.25	17.22	91.72	0.83	0.90	0.92	sand to silty sand	60-70	40-42	22	UNDEFINED
5.50	18.04	77.68	1.23	1.59	0.97	silty sand to sandy silt	50-60	40-42	25	UNDEFINED
5.75	18.86	69.56	1.31	1.88	1.01	silty sand to sandy silt	50-60	38-40	22	UNDEFINED
6.00	19.69	44.00	1.10	2.49	1.06	sandy silt to clayey silt	UNDFND	UNDFD	17	1.71
6.25	20.51	31.66	1.18	3.72	1.11	clayey silt to silty clay	UNDFND	UNDFD	15	1.22
6.50	21.33	32.78	1.16	3.54	1.15	clayey silt to silty clay	UNDFND	UNDFD	16	1.26
6.75	22.15	25.74	0.61	2.36	1.20	sandy silt to clayey silt	UNDFND	UNDFD	10	.98
7.00	22.97	43.58	1.30	2.98	1.24	sandy silt to clayey silt	UNDFND	UNDFD	17	1.69
7.25	23.79	32.84	0.70	2.14	1.29	sandy silt to clayey silt	UNDFND	UNDFD	13	1.26
7.50	24.61	20.22	0.51	2.52	1.33	clayey silt to silty clay	UNDFND	UNDFD	10	.75
7.75	25.43	18.32	0.80	4.36	1.35	clay	UNDFND	UNDFD	18	.67
8.00	26.25	16.92	0.93	5.47	1.37	clay	UNDFND	UNDFD	16	.62
8.25	27.07	14.68	0.48	3.30	1.39	silty clay to clay	UNDFND	UNDFD	9	.52
8.50	27.89	19.16	0.72	3.76	1.41	silty clay to clay	UNDFND	UNDFD	12	.70
8.75	28.71	19.60	0.80	4.09	1.43	silty clay to clay	UNDFND	UNDFD	13	.72
9.00	29.53	23.96	0.83	3.48	1.45	clayey silt to silty clay	UNDFND	UNDFD	11	.89
9.25	30.35	25.10	0.84	3.36	1.46	clayey silt to silty clay	UNDFND	UNDFD	12	.93
9.50	31.17	34.88	0.74	2.11	1.48	sandy silt to clayey silt	UNDFND	UNDFD	13	1.32

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

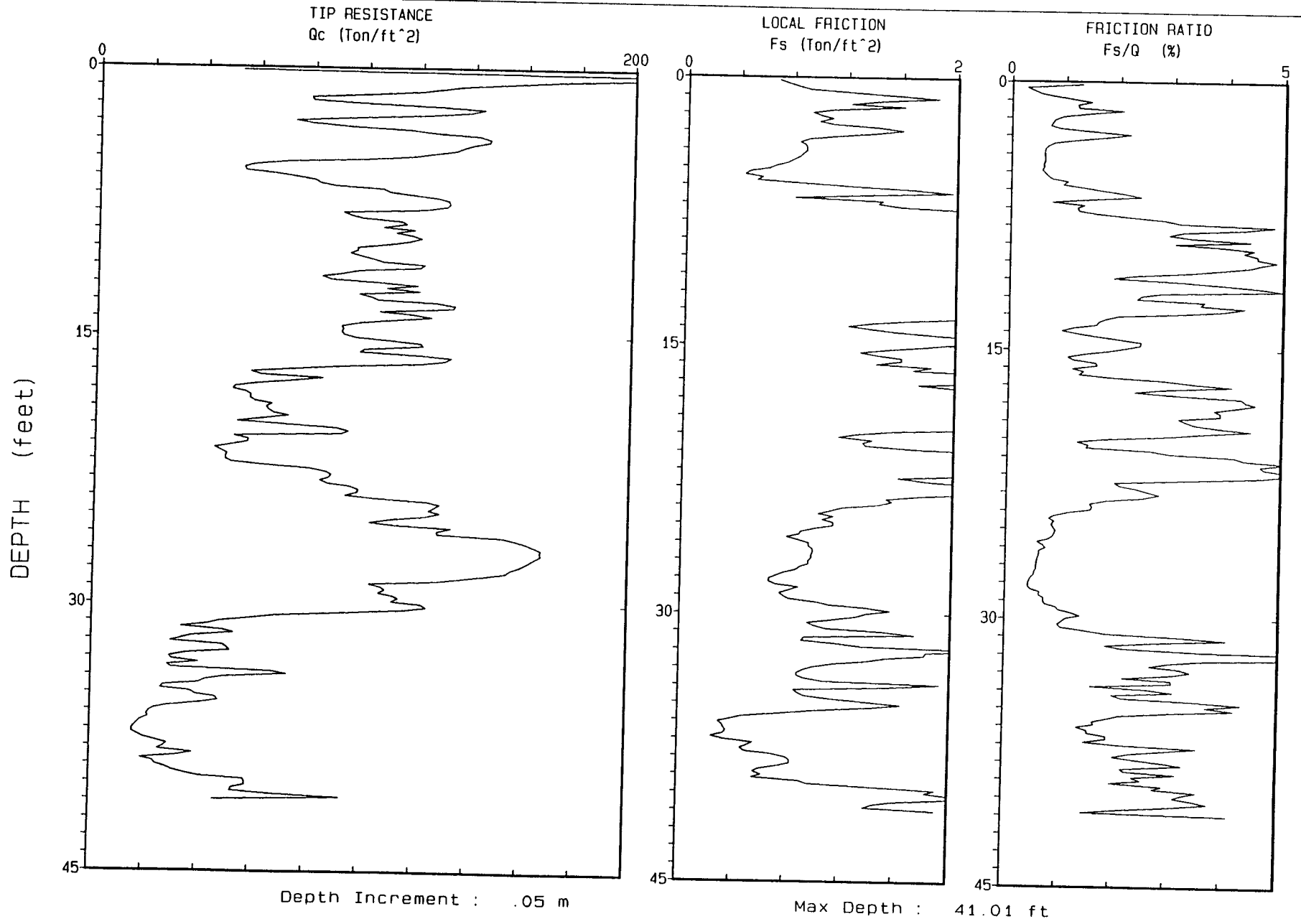
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	44.02	1.05	2.39	1.50	sandy silt to clayey silt	UNDFND	UNDFD	17	1
10.00	32.81	62.70	1.31	2.09	1.52	silty sand to sandy silt	40-50	36-38	20	UNDEFI
10.25	33.63	48.14	1.08	2.24	1.54	sandy silt to clayey silt	UNDFND	UNDFD	18	1.
10.50	34.45	48.28	0.61	1.27	1.56	silty sand to sandy silt	<40	34-36	15	UNDEFI

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) **

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-10-92
DEPTH TO WATER : 28.21 FT BLS
SOUNDING NO. : CPT-23 Pg 1 / 1
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870
0

Contractor : TERRA TECH SW
Location : CPT-23
Job No. : 92-1016
Tot. Unit Wt. (avg) : 110 pcf

Test Date : 08-10-92
Elevation : UNKNOWN
Water table (meters) : 8.6

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	170.94	0.88	0.51	0.02	sand	>90	>48	33	UNDEFINED
0.50	1.64	112.36	1.54	1.37	0.07	sand to silty sand	>90	>48	27	UNDEFINED
0.75	2.46	116.98	1.02	0.87	0.11	sand to silty sand	>90	>48	28	UNDEFINED
1.00	3.28	93.14	1.33	1.43	0.16	sand to silty sand	>90	>48	22	UNDEFINED
1.25	4.10	134.64	0.88	0.66	0.20	sand	>90	>48	26	UNDEFINED
1.50	4.92	129.76	0.78	0.60	0.25	sand	>90	46-48	25	UNDEFINED
1.75	5.74	66.92	0.52	0.77	0.29	sand to silty sand	70-80	44-46	16	UNDEFINED
2.00	6.56	77.84	1.42	1.82	0.34	silty sand to sandy silt	70-80	44-46	25	UNDEFINED
2.25	7.38	117.44	1.48	1.26	0.38	sand to silty sand	80-90	44-46	28	UNDEFINED
2.50	8.20	113.44	3.77	3.32	0.43	sandy silt to clayey silt	UNDFND	UNDFD	43	3.[illegible]
2.75	9.02	110.00	3.71	3.37	0.47	sandy silt to clayey silt	UNDFND	UNDFD	42	3.77
3.00	9.84	114.44	4.96	4.34	0.52	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
3.25	10.66	97.60	4.09	4.19	0.56	clayey silt to silty clay	UNDFND	UNDFD	47	3.[illegible]
3.50	11.48	107.46	3.32	3.09	0.61	sandy silt to clayey silt	UNDFND	UNDFD	41	3.[illegible]
3.75	12.30	100.34	3.16	3.15	0.65	sandy silt to clayey silt	UNDFND	UNDFD	38	3.43
4.00	13.12	110.20	3.67	3.33	0.70	sandy silt to clayey silt	UNDFND	UNDFD	42	3.[illegible]
4.25	13.94	122.70	1.78	1.45	0.74	sand to silty sand	70-80	42-44	29	UNDEFINED
4.50	14.76	96.62	1.86	1.92	0.79	silty sand to sandy silt	60-70	40-42	31	UNDEFINED
4.75	15.58	107.96	1.62	1.50	0.83	sand to silty sand	70-80	42-44	26	UNDEFINED
5.00	16.40	116.18	1.64	1.41	0.88	sand to silty sand	70-80	42-44	28	UNDEFINED
5.25	17.22	81.12	2.30	2.83	0.92	sandy silt to clayey silt	UNDFND	UNDFD	31	2.76
5.50	18.04	64.40	2.30	3.58	0.97	clayey silt to silty clay	UNDFND	UNDFD	31	2.18
5.75	18.86	59.18	2.23	3.77	1.01	clayey silt to silty clay	UNDFND	UNDFD	28	2.[illegible]
6.00	19.69	65.66	2.46	3.74	1.06	clayey silt to silty clay	UNDFND	UNDFD	31	2.[illegible]
6.25	20.51	80.30	1.35	1.69	1.11	silty sand to sandy silt	50-60	38-40	26	UNDEFINED
6.50	21.33	52.14	1.98	3.80	1.15	clayey silt to silty clay	UNDFND	UNDFD	25	1.[illegible]
6.75	22.15	48.78	2.37	4.86	1.20	silty clay to clay	UNDFND	UNDFD	31	1.[illegible]
7.00	22.97	81.20	1.98	2.44	1.24	silty sand to sandy silt	50-60	38-40	26	UNDEFINED
7.25	23.79	92.68	1.88	2.03	1.29	silty sand to sandy silt	60-70	38-40	30	UNDEFINED
7.50	24.61	115.72	1.18	1.02	1.33	sand to silty sand	60-70	40-42	28	UNDEFINED
7.75	25.43	118.34	1.04	0.88	1.38	sand to silty sand	60-70	40-42	28	UNDEFINED
8.00	26.25	131.12	0.89	0.68	1.42	sand	60-70	40-42	25	UNDEFINED
8.25	27.07	163.80	0.97	0.59	1.47	sand	70-80	40-42	31	UNDEFINED
8.50	27.89	163.30	0.84	0.51	1.51	sand	70-80	40-42	31	UNDEFINED
8.75	28.71	144.82	0.74	0.51	1.55	sand	70-80	40-42	28	UNDEFINED
9.00	29.53	107.80	0.89	0.83	1.57	sand to silty sand	60-70	38-40	26	UNDEFINED
9.25	30.35	117.96	1.36	1.15	1.59	sand to silty sand	60-70	38-40	28	UNDEFINED
9.50	31.17	61.72	1.26	2.03	1.61	silty sand to sandy silt	40-50	36-38	20	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 29

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Location : BLDG. 870

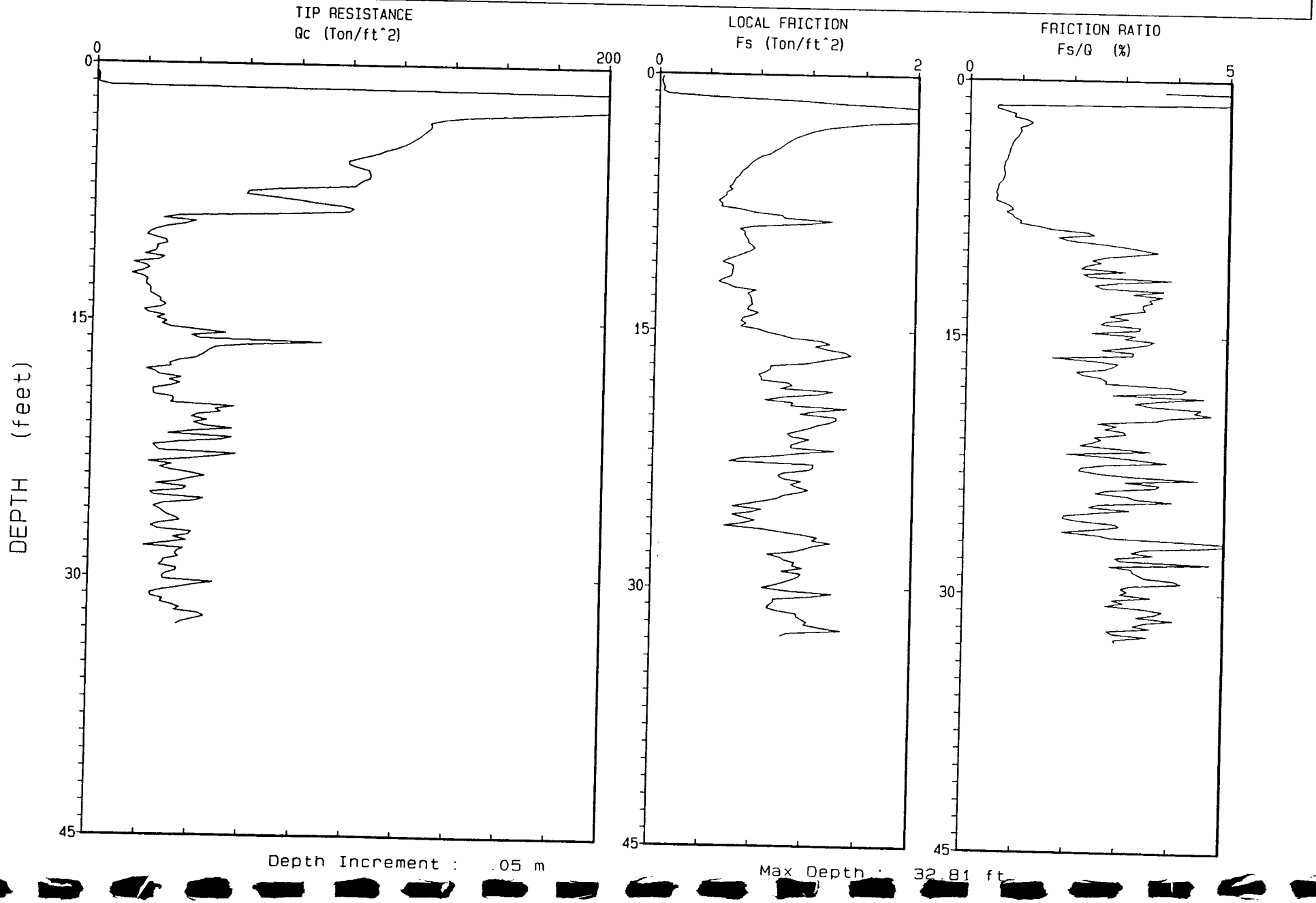
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	41.16	1.34	3.26	1.63	clayey silt to silty clay	UNDFND	UNDFD	20	1.3
10.00	32.81	43.18	1.54	3.58	1.65	clayey silt to silty clay	UNDFND	UNDFD	21	1.4
10.25	33.63	31.50	0.92	2.93	1.67	clayey silt to silty clay	UNDFND	UNDFD	15	1.0
10.50	34.45	54.56	1.26	2.31	1.69	sandy silt to clayey silt	UNDFND	UNDFD	21	1.8
10.75	35.27	35.16	1.30	3.71	1.71	clayey silt to silty clay	UNDFND	UNDFD	17	1.1
11.00	36.09	32.58	0.60	1.84	1.73	sandy silt to clayey silt	UNDFND	UNDFD	12	1.0
11.25	36.91	19.18	0.32	1.69	1.75	sandy silt to clayey silt	UNDFND	UNDFD	7	.5
11.50	37.73	18.72	0.48	2.55	1.77	clayey silt to silty clay	UNDFND	UNDFD	9	.5
11.75	38.55	30.60	0.79	2.58	1.79	sandy silt to clayey silt	UNDFND	UNDFD	12	.9
12.00	39.37	25.22	0.66	2.60	1.81	clayey silt to silty clay	UNDFND	UNDFD	12	.7
12.25	40.19	49.94	1.65	3.30	1.83	clayey silt to silty clay	UNDFND	UNDFD	24	1.6
12.50	41.01	62.62	1.68	2.68	1.85	sandy silt to clayey silt	UNDFND	UNDFD	24	2.0

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 29

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) **

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-10-92
DEPTH TO WATER : 24.93 FT BLS
SOUNDING NO. : CPT-24 Pg 1 / 1
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW
Location : CPT-24
Job No. : 92-1016
Tot. Unit Wt. (avg) : 110 pcf

Test Date : 08-10-92
Elevation : UNKNOWN
Water table (meters) : 7.6

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	0.28	0.03	10.00	0.02	undefined	UNDFND	UNDFD	UDF	UNDEFINE
0.50	1.64	96.44	0.61	0.63	0.07	sand to silty sand	>90	>48	23	UNDEFINE
0.75	2.46	247.00	2.32	0.94	0.11	sand	>90	>48	47	UNDEFINE
1.00	3.28	155.18	1.55	1.00	0.16	sand	>90	>48	30	UNDEFINE
1.25	4.10	129.02	1.06	0.82	0.20	sand	>90	>48	25	UNDEFINE
1.50	4.92	119.70	0.86	0.72	0.25	sand	>90	46-48	23	UNDEFINE
1.75	5.74	103.58	0.70	0.67	0.29	sand to silty sand	80-90	46-48	25	UNDEFINE
2.00	6.56	106.04	0.60	0.57	0.34	sand	80-90	44-46	20	UNDEFINE
2.25	7.38	88.18	0.53	0.60	0.38	sand to silty sand	70-80	44-46	21	UNDEFINE
2.50	8.20	78.22	0.68	0.87	0.43	sand to silty sand	70-80	42-44	19	UNDEFINE
2.75	9.02	66.98	0.99	1.48	0.47	silty sand to sandy silt	60-70	42-44	21	UNDEFINE
3.00	9.84	29.86	0.70	2.36	0.52	sandy silt to clayey silt	UNDFND	UNDFD	11	1.12
3.25	10.66	25.10	0.71	2.84	0.56	clayey silt to silty clay	UNDFND	UNDFD	12	.94
3.50	11.48	24.18	0.58	2.39	0.61	sandy silt to clayey silt	UNDFND	UNDFD	9	.90
3.75	12.30	18.18	0.55	3.05	0.65	clayey silt to silty clay	UNDFND	UNDFD	9	.67
4.00	13.12	20.74	0.72	3.49	0.70	clayey silt to silty clay	UNDFND	UNDFD	10	.77
4.25	13.94	24.16	0.75	3.12	0.74	clayey silt to silty clay	UNDFND	UNDFD	12	.90
4.50	14.76	24.88	0.70	2.81	0.79	clayey silt to silty clay	UNDFND	UNDFD	12	.92
4.75	15.58	30.48	1.01	3.30	0.83	clayey silt to silty clay	UNDFND	UNDFD	15	1.14
5.00	16.40	56.70	1.39	2.46	0.88	sandy silt to clayey silt	UNDFND	UNDFD	22	2.14
5.25	17.22	44.54	1.15	2.58	0.92	sandy silt to clayey silt	UNDFND	UNDFD	17	1.67
5.50	18.04	28.30	0.89	3.13	0.97	clayey silt to silty clay	UNDFND	UNDFD	14	1.05
5.75	18.86	31.40	1.15	3.67	1.01	clayey silt to silty clay	UNDFND	UNDFD	15	1.16
6.00	19.69	27.24	1.16	4.24	1.06	silty clay to clay	UNDFND	UNDFD	17	1.00
6.25	20.51	45.52	1.32	2.90	1.11	sandy silt to clayey silt	UNDFND	UNDFD	17	1.70
6.50	21.33	44.86	1.14	2.54	1.15	sandy silt to clayey silt	UNDFND	UNDFD	17	1.68
6.75	22.15	41.88	1.17	2.80	1.20	sandy silt to clayey silt	UNDFND	UNDFD	16	1.56
7.00	22.97	36.38	0.95	2.61	1.24	sandy silt to clayey silt	UNDFND	UNDFD	14	1.35
7.25	23.79	30.26	1.08	3.57	1.29	clayey silt to silty clay	UNDFND	UNDFD	14	1.11
7.50	24.61	36.64	1.12	3.06	1.33	clayey silt to silty clay	UNDFND	UNDFD	18	1.35
7.75	25.43	33.42	0.82	2.45	1.37	sandy silt to clayey silt	UNDFND	UNDFD	13	1.23
8.00	26.25	30.06	0.73	2.43	1.39	sandy silt to clayey silt	UNDFND	UNDFD	12	1.10
8.25	27.07	30.08	0.98	3.26	1.41	clayey silt to silty clay	UNDFND	UNDFD	14	1.10
8.50	27.89	35.26	1.24	3.52	1.43	clayey silt to silty clay	UNDFND	UNDFD	17	1.29
8.75	28.71	31.28	1.04	3.31	1.45	clayey silt to silty clay	UNDFND	UNDFD	15	1.14
9.00	29.53	30.94	1.12	3.63	1.47	clayey silt to silty clay	UNDFND	UNDFD	15	1.12
9.25	30.35	34.26	1.07	3.12	1.49	clayey silt to silty clay	UNDFND	UNDFD	16	1.25
9.50	31.17	30.30	1.00	3.31	1.51	clayey silt to silty clay	UNDFND	UNDFD	15	1.10

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 26

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	31.84	1.13	3.56	1.53	clayey silt to silty clay	UNDFND	UNDFD	15	1
10.00	32.81	40.32	1.22	3.03	1.55	sandy silt to clayey silt	UNDFND	UNDFD	15	1

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 26

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02)

1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW
Location : CPT-25
Job No. : 92-1016
Tot. Unit Wt. (avg) : 110 pcf

Test Date : 08-10-92
Elevation : UNKNOWN
Water table (meters) : 10

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	53.90	0.47	0.88	0.02	sand to silty sand	>90	>48	13	UNDEFINED
0.50	1.64	40.80	0.79	1.93	0.07	sandy silt to clayey silt	UNDFND	UNDFD	16	1.62
0.75	2.46	127.48	1.19	0.94	0.11	sand to silty sand	>90	>48	31	UNDEFINED
1.00	3.28	64.50	0.65	1.00	0.16	sand to silty sand	80-90	46-48	15	UNDEFINED
1.25	4.10	35.90	0.30	0.85	0.20	silty sand to sandy silt	60-70	42-44	11	UNDEFINED
1.50	4.92	31.66	0.35	1.10	0.25	silty sand to sandy silt	50-60	42-44	10	UNDEFINED
1.75	5.74	32.16	0.38	1.19	0.29	silty sand to sandy silt	50-60	40-42	10	UNDEFINED
2.00	6.56	54.68	0.85	1.55	0.34	silty sand to sandy silt	60-70	42-44	17	UNDEFINED
2.25	7.38	74.48	1.53	2.05	0.38	silty sand to sandy silt	70-80	42-44	24	UNDEFINED
2.50	8.20	97.38	2.02	2.07	0.43	silty sand to sandy silt	70-80	44-46	31	UNDEFINED
2.75	9.02	116.30	2.59	2.23	0.47	silty sand to sandy silt	80-90	44-46	37	UNDEFINED
3.00	9.84	83.18	2.00	2.40	0.52	silty sand to sandy silt	70-80	42-44	27	UNDEFINED
3.25	10.66	58.54	1.28	2.18	0.56	sandy silt to clayey silt	UNDFND	UNDFD	22	2.31
3.50	11.48	59.54	1.41	2.36	0.61	sandy silt to clayey silt	UNDFND	UNDFD	23	2.35
3.75	12.30	75.88	1.23	1.62	0.65	silty sand to sandy silt	60-70	40-42	24	UNDEFINED
4.00	13.12	108.18	1.61	1.49	0.70	sand to silty sand	70-80	42-44	26	UNDEFINED
4.25	13.94	86.22	1.61	1.86	0.74	silty sand to sandy silt	60-70	40-42	28	UNDEFINED
4.50	14.76	53.82	1.13	2.11	0.79	sandy silt to clayey silt	UNDFND	UNDFD	21	2.12
4.75	15.58	37.50	0.92	2.45	0.83	sandy silt to clayey silt	UNDFND	UNDFD	14	1.46
5.00	16.40	54.14	1.21	2.24	0.88	sandy silt to clayey silt	UNDFND	UNDFD	21	2.13
5.25	17.22	56.46	1.36	2.41	0.92	sandy silt to clayey silt	UNDFND	UNDFD	22	2.22
5.50	18.04	49.52	1.19	2.40	0.97	sandy silt to clayey silt	UNDFND	UNDFD	19	1.94
5.75	18.86	33.64	1.08	3.21	1.01	clayey silt to silty clay	UNDFND	UNDFD	16	1.30
6.00	19.69	28.56	0.94	3.28	1.06	clayey silt to silty clay	UNDFND	UNDFD	14	1.10
6.25	20.51	36.06	1.05	2.91	1.11	sandy silt to clayey silt	UNDFND	UNDFD	14	1.39
6.50	21.33	38.42	0.92	2.40	1.15	sandy silt to clayey silt	UNDFND	UNDFD	15	1.49
6.75	22.15	26.92	0.90	3.35	1.20	clayey silt to silty clay	UNDFND	UNDFD	13	1.02
7.00	22.97	20.78	0.92	4.43	1.24	clay	UNDFND	UNDFD	20	.78
7.25	23.79	23.96	0.91	3.81	1.29	silty clay to clay	UNDFND	UNDFD	15	.90
7.50	24.61	27.84	1.04	3.72	1.33	clayey silt to silty clay	UNDFND	UNDFD	13	1.06
7.75	25.43	22.28	0.82	3.68	1.38	silty clay to clay	UNDFND	UNDFD	14	.83
8.00	26.25	27.86	0.93	3.34	1.42	clayey silt to silty clay	UNDFND	UNDFD	13	1.05
8.25	27.07	25.84	1.02	3.96	1.47	silty clay to clay	UNDFND	UNDFD	17	.97
8.50	27.89	41.30	1.27	3.08	1.51	sandy silt to clayey silt	UNDFND	UNDFD	16	1.59
8.75	28.71	35.60	1.34	3.75	1.56	clayey silt to silty clay	UNDFND	UNDFD	17	1.36
9.00	29.53	23.68	0.91	3.86	1.60	silty clay to clay	UNDFND	UNDFD	15	.88
9.25	30.35	31.46	1.25	3.96	1.65	clayey silt to silty clay	UNDFND	UNDFD	15	1.19
9.50	31.17	33.56	1.20	3.56	1.69	clayey silt to silty clay	UNDFND	UNDFD	16	1.27

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

1 HILL AIRFORCE BASE - BUILDING 870

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Contractor : TERRA TECH SW Location : BLDG. 870

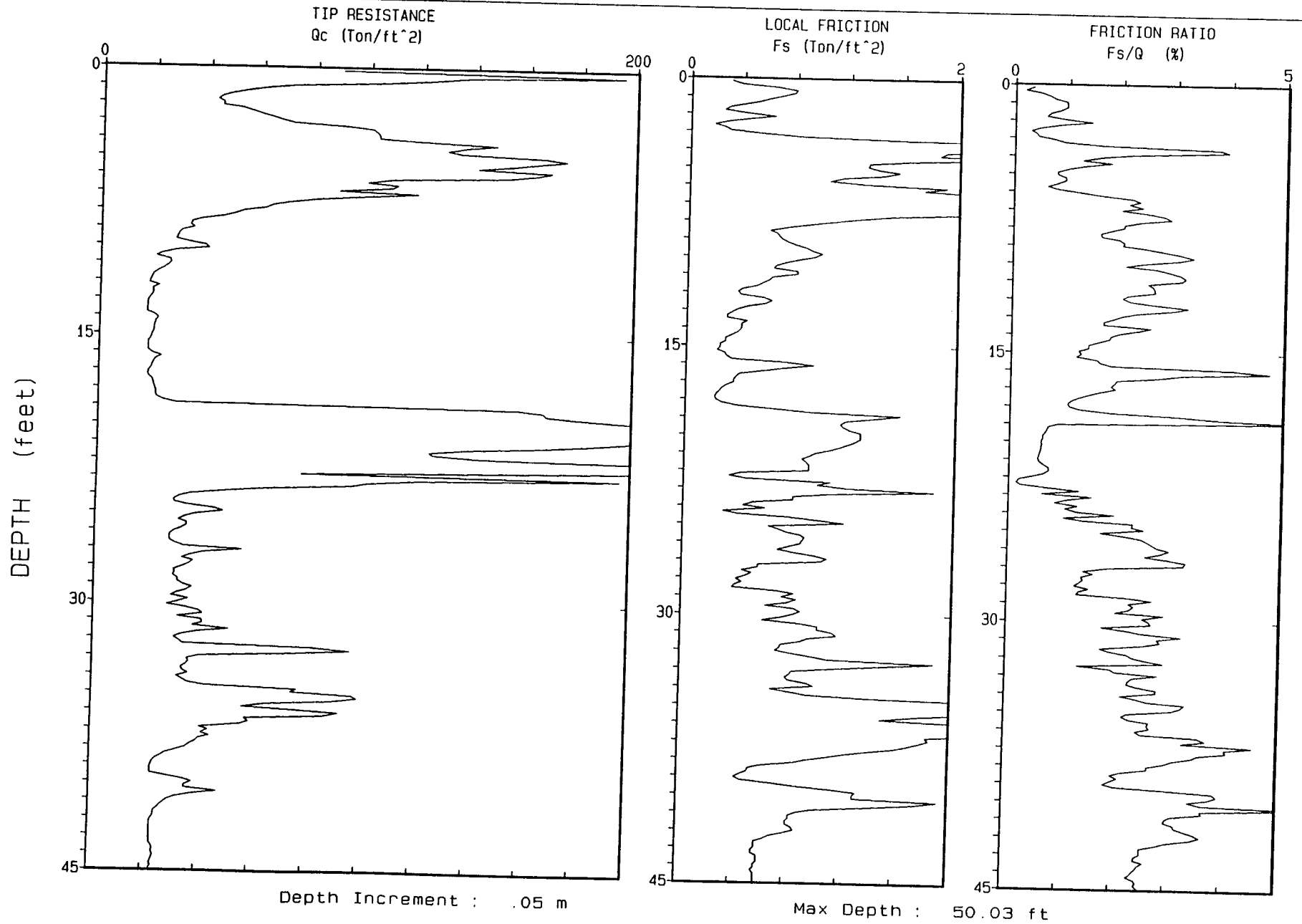
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	S t
9.75	31.99	23.48	0.95	4.04	1.74	silty clay to clay	UNDFND	UNDFD	15	
10.00	32.81	29.58	1.12	3.78	1.78	clayey silt to silty clay	UNDFND	UNDFD	14	
10.25	33.63	28.02	0.99	3.54	1.81	clayey silt to silty clay	UNDFND	UNDFD	13	1.0
10.50	34.45	34.30	1.34	3.92	1.83	clayey silt to silty clay	UNDFND	UNDFD	16	
10.75	35.27	32.84	1.32	4.03	1.85	silty clay to clay	UNDFND	UNDFD	21	
11.00	36.09	26.74	0.96	3.60	1.87	clayey silt to silty clay	UNDFND	UNDFD	13	
11.25	36.91	28.50	1.07	3.77	1.89	clayey silt to silty clay	UNDFND	UNDFD	14	1.0
11.50	37.73	34.38	1.35	3.92	1.91	clayey silt to silty clay	UNDFND	UNDFD	16	
11.75	38.55	22.70	0.77	3.41	1.93	clayey silt to silty clay	UNDFND	UNDFD	11	
12.00	39.37	29.08	1.00	3.43	1.95	clayey silt to silty clay	UNDFND	UNDFD	14	1.0
12.25	40.19	30.10	0.91	3.02	1.97	clayey silt to silty clay	UNDFND	UNDFD	14	
12.50	41.01	34.36	1.10	3.21	1.99	clayey silt to silty clay	UNDFND	UNDFD	16	

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02)

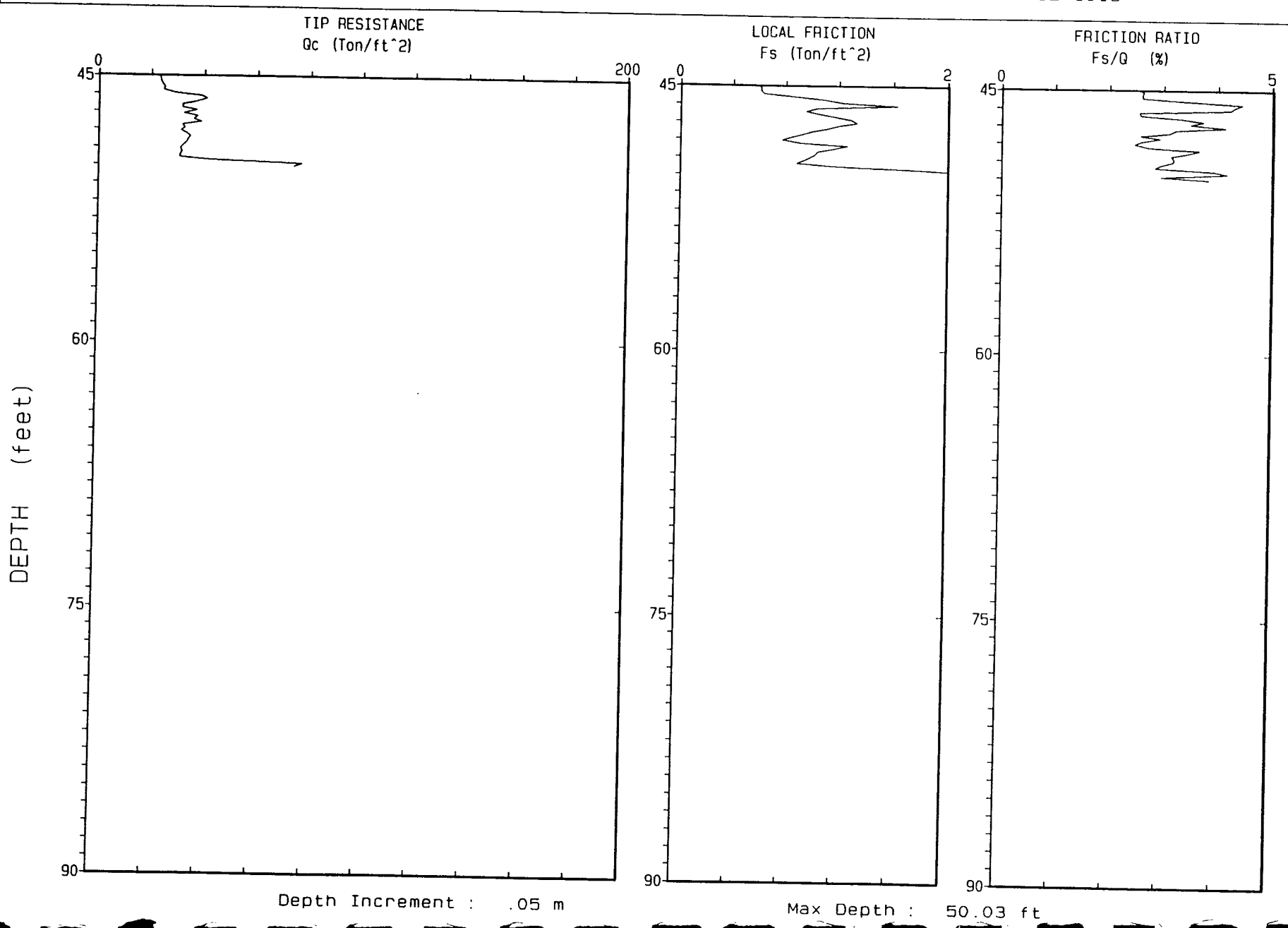
HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-10-92
DEPTH TO WATER : 12.14 FT BLS
SOUNDING NO. : CPT-26 Pg 1 / 2
TERRA JOB NO. : 92-1016



HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-10-92
DEPTH TO WATER : 12.14 FT BLS
SOUNDING NO. : CPT-26 Pg 2 / 2
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW
Location : CPT-26
Job No. : 92-1016
Tot. Unit Wt. (avg) : 110 pcf

Test Date : 08-10-92
Elevation : UNKNOWN
Water table (meters) : 3.7

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	130.14	0.58	0.44	0.02	sand	>90	>48	25	UNDEFINE
0.50	1.64	55.72	0.50	0.89	0.07	sand to silty sand	80-90	>48	13	UNDEFINE
0.75	2.46	47.86	0.40	0.84	0.11	silty sand to sandy silt	70-80	46-48	15	UNDEFINE
1.00	3.28	70.56	0.42	0.60	0.16	sand to silty sand	80-90	46-48	17	UNDEFINE
1.25	4.10	106.02	2.76	2.60	0.20	silty sand to sandy silt	>90	46-48	34	UNDEFINE
1.50	4.92	142.56	1.72	1.21	0.25	sand to silty sand	>90	>48	34	UNDEFINE
1.75	5.74	159.92	1.32	0.83	0.29	sand	>90	>48	31	UNDEFINE
2.00	6.56	126.62	1.94	1.54	0.34	sand to silty sand	80-90	46-48	30	UNDEFINE
2.25	7.38	98.46	2.29	2.33	0.38	silty sand to sandy silt	70-80	44-46	31	UNDEFINE
2.50	8.20	59.76	1.36	2.28	0.43	sandy silt to clayey silt	UNDFND	UNDFD	23	2.19
2.75	9.02	36.86	0.68	1.84	0.47	sandy silt to clayey silt	UNDFND	UNDFD	14	1.34
3.00	9.84	29.56	0.87	2.95	0.52	clayey silt to silty clay	UNDFND	UNDFD	14	1.07
3.25	10.66	30.10	0.77	2.54	0.56	sandy silt to clayey silt	UNDFND	UNDFD	12	1.09
3.50	11.48	24.36	0.69	2.82	0.61	clayey silt to silty clay	UNDFND	UNDFD	12	.87
3.75	12.30	19.50	0.46	2.34	0.65	clayey silt to silty clay	UNDFND	UNDFD	9	.69
4.00	13.12	19.02	0.48	2.51	0.68	clayey silt to silty clay	UNDFND	UNDFD	9	.67
4.25	13.94	18.22	0.37	2.05	0.70	sandy silt to clayey silt	UNDFND	UNDFD	7	.64
4.50	14.76	20.82	0.34	1.62	0.72	sandy silt to clayey silt	UNDFND	UNDFD	8	.74
4.75	15.58	19.02	0.26	1.39	0.74	sandy silt to clayey silt	UNDFND	UNDFD	7	.67
5.00	16.40	20.16	0.67	3.31	0.76	clayey silt to silty clay	UNDFND	UNDFD	10	.71
5.25	17.22	19.26	0.36	1.87	0.78	sandy silt to clayey silt	UNDFND	UNDFD	7	.67
5.50	18.04	20.12	0.24	1.19	0.80	sandy silt to clayey silt	UNDFND	UNDFD	8	.70
5.75	18.86	23.62	0.78	3.29	0.82	clayey silt to silty clay	UNDFND	UNDFD	11	.83
6.00	19.69	174.38	1.23	0.71	0.84	sand	80-90	44-46	33	UNDEFINED
6.25	20.51	216.28	1.28	0.59	0.86	sand	>90	44-46	41	UNDEFINED
6.50	21.33	178.90	1.01	0.56	0.88	sand	80-90	44-46	34	UNDEFINED
6.75	22.15	162.98	0.83	0.51	0.90	sand	80-90	42-44	31	UNDEFINED
7.00	22.97	174.48	0.82	0.47	0.92	sand	80-90	42-44	33	UNDEFINED
7.25	23.79	86.24	1.02	1.19	0.93	sand to silty sand	60-70	40-42	21	UNDEFINED
7.50	24.61	31.94	0.51	1.60	0.95	sandy silt to clayey silt	UNDFND	UNDFD	12	1.13
7.75	25.43	38.90	0.87	2.23	0.97	sandy silt to clayey silt	UNDFND	UNDFD	15	1.38
8.00	26.25	31.64	0.87	2.75	0.99	sandy silt to clayey silt	UNDFND	UNDFD	12	1.11
8.25	27.07	34.86	0.93	2.67	1.01	sandy silt to clayey silt	UNDFND	UNDFD	13	1.23
8.50	27.89	36.28	0.52	1.42	1.03	silty sand to sandy silt	<40	34-36	12	UNDEFINED
8.75	28.71	30.68	0.47	1.53	1.05	sandy silt to clayey silt	UNDFND	UNDFD	12	1.07
9.00	29.53	33.36	0.77	2.32	1.07	sandy silt to clayey silt	UNDFND	UNDFD	13	1.17
9.25	30.35	31.64	0.78	2.48	1.09	sandy silt to clayey silt	UNDFND	UNDFD	12	1.11
9.50	31.17	38.58	1.04	2.70	1.11	sandy silt to clayey silt	UNDFND	UNDFD	15	1.36

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 27

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ***

1 HILL AIRFORCE BASE - BUILDING 870
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Contractor : TERRA TECH SW Location : BLDG. 870

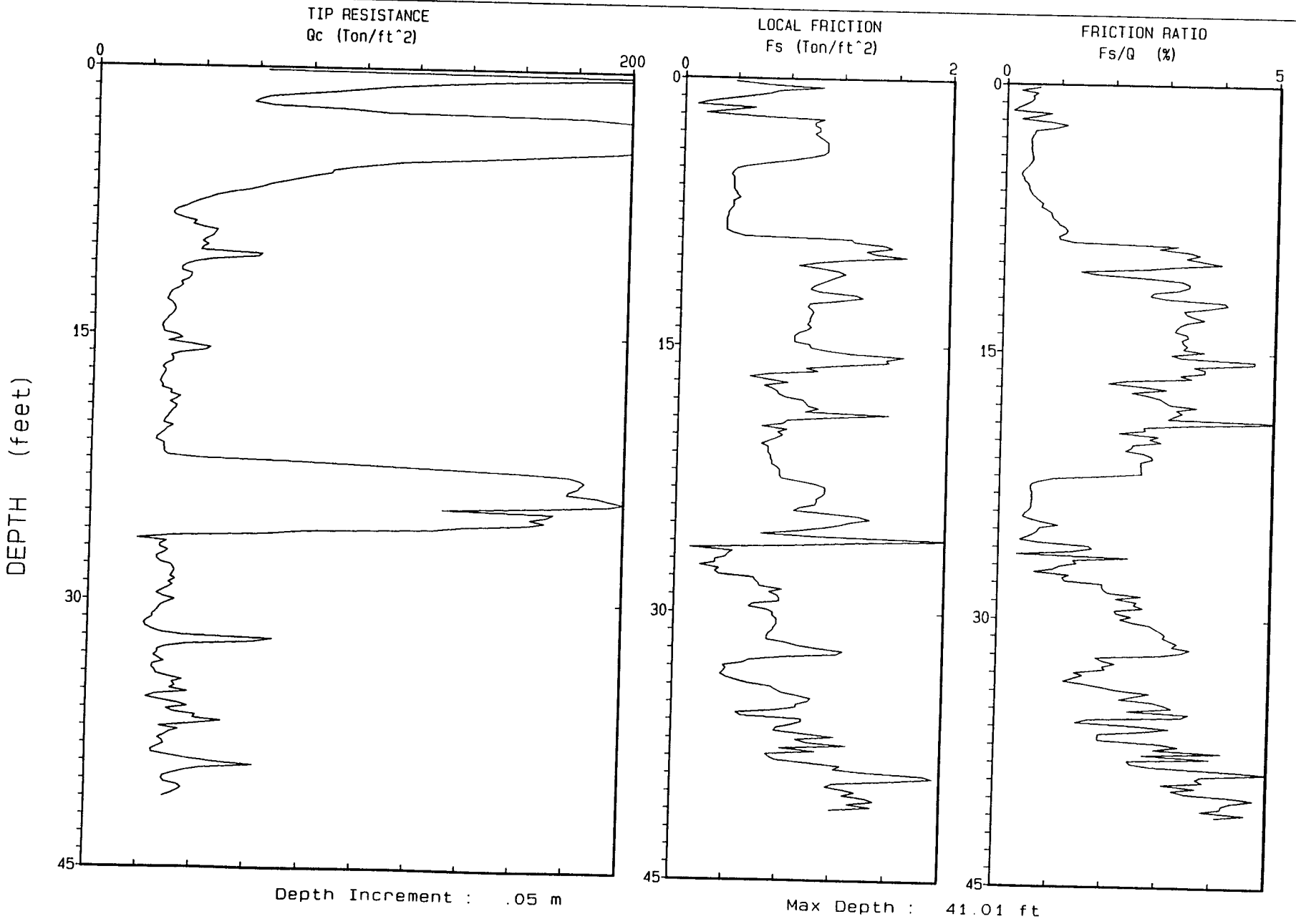
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	38.12	0.81	2.12	1.13	sandy silt to clayey silt	UNDFND	UNDFD	15	1
10.00	32.81	63.70	1.26	1.97	1.15	silty sand to sandy silt	50-60	38-40	20	UNDEFI
10.25	33.63	36.00	0.88	2.44	1.17	sandy silt to clayey silt	UNDFND	UNDFD	14	1.
10.50	34.45	34.16	0.88	2.57	1.19	sandy silt to clayey silt	UNDFND	UNDFD	13	1
10.75	35.27	78.16	2.12	2.72	1.21	sandy silt to clayey silt	UNDFND	UNDFD	30	2
11.00	36.09	76.04	1.93	2.54	1.23	sandy silt to clayey silt	UNDFND	UNDFD	29	2.74
11.25	36.91	60.06	2.03	3.38	1.25	sandy silt to clayey silt	UNDFND	UNDFD	23	2.
11.50	37.73	41.94	1.55	3.69	1.27	clayey silt to silty clay	UNDFND	UNDFD	20	1.
11.75	38.55	31.92	0.81	2.54	1.29	sandy silt to clayey silt	UNDFND	UNDFD	12	1.
12.00	39.37	23.26	0.52	2.23	1.31	sandy silt to clayey silt	UNDFND	UNDFD	9	.78
12.25	40.19	32.16	1.20	3.72	1.32	clayey silt to silty clay	UNDFND	UNDFD	15	1.
12.50	41.01	36.78	1.40	3.81	1.34	clayey silt to silty clay	UNDFND	UNDFD	18	1.
12.75	41.83	25.82	0.84	3.24	1.36	clayey silt to silty clay	UNDFND	UNDFD	12	.87
13.00	42.65	23.26	0.73	3.13	1.38	clayey silt to silty clay	UNDFND	UNDFD	11	.
13.25	43.47	23.08	0.59	2.54	1.40	clayey silt to silty clay	UNDFND	UNDFD	11	.
13.50	44.29	24.32	0.59	2.44	1.42	sandy silt to clayey silt	UNDFND	UNDFD	9	.81
13.75	45.11	23.50	0.59	2.53	1.44	clayey silt to silty clay	UNDFND	UNDFD	11	.
14.00	45.93	25.14	0.89	3.53	1.46	clayey silt to silty clay	UNDFND	UNDFD	12	.
14.25	46.75	35.92	1.17	3.26	1.48	clayey silt to silty clay	UNDFND	UNDFD	17	1.
14.50	47.57	36.18	1.19	3.28	1.50	clayey silt to silty clay	UNDFND	UNDFD	17	1.2
14.75	48.39	32.64	0.94	2.89	1.52	clayey silt to silty clay	UNDFND	UNDFD	16	1.
15.00	49.21	32.20	1.02	3.18	1.54	clayey silt to silty clay	UNDFND	UNDFD	15	1.
15.25	50.03	50.90	1.79	3.52	1.56	clayey silt to silty clay	UNDFND	UNDFD	24	1.78

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 27

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-11-92
DEPTH TO WATER : 8.69 FT BLS
SOUNDING NO. : CPT-27 Pg 1 / 1
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date : 08-11-92

Location : CPT-27 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 2.65

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	155.20	0.68	0.44	0.02	sand	>90	>48	30	UNDEFINED
0.50	1.64	87.44	0.32	0.37	0.07	sand	>90	>48	17	UNDEFINED
0.75	2.46	77.34	0.62	0.80	0.11	sand to silty sand	>90	>48	19	UNDEFIN
1.00	3.28	206.28	1.00	0.49	0.16	sand	>90	>48	40	UNDEFINED
1.25	4.10	226.28	1.07	0.47	0.20	sand	>90	>48	43	UNDEFINED
1.50	4.92	189.08	0.79	0.42	0.25	sand	>90	>48	36	UNDEFIN
1.75	5.74	108.20	0.38	0.35	0.29	sand	80-90	46-48	21	UNDEFIN
2.00	6.56	75.74	0.39	0.51	0.34	sand to silty sand	70-80	44-46	18	UNDEFINED
2.25	7.38	51.18	0.39	0.75	0.38	sand to silty sand	60-70	42-44	12	UNDEFIN
2.50	8.20	33.06	0.33	1.01	0.43	silty sand to sandy silt	40-50	38-40	11	UNDEFIN
2.75	9.02	34.98	0.56	1.59	0.47	sandy silt to clayey silt	UNDFND	UNDFD	13	1.32
3.00	9.84	42.82	1.44	3.37	0.50	clayey silt to silty clay	UNDFND	UNDFD	21	1.62
3.25	10.66	48.86	1.18	2.42	0.52	sandy silt to clayey silt	UNDFND	UNDFD	19	1.
3.50	11.48	36.12	1.15	3.17	0.53	clayey silt to silty clay	UNDFND	UNDFD	17	1.
3.75	12.30	34.38	1.14	3.30	0.55	clayey silt to silty clay	UNDFND	UNDFD	16	1.2
4.00	13.12	28.68	1.02	3.54	0.57	clayey silt to silty clay	UNDFND	UNDFD	14	1.
4.25	13.94	29.56	0.97	3.28	0.59	clayey silt to silty clay	UNDFND	UNDFD	14	1.
4.50	14.76	26.34	0.88	3.36	0.61	clayey silt to silty clay	UNDFND	UNDFD	13	.98
4.75	15.58	30.88	1.20	3.89	0.63	clayey silt to silty clay	UNDFND	UNDFD	15	1.
5.00	16.40	35.22	1.26	3.57	0.65	clayey silt to silty clay	UNDFND	UNDFD	17	1.
5.25	17.22	27.18	0.67	2.47	0.67	sandy silt to clayey silt	UNDFND	UNDFD	10	1.
5.50	18.04	25.66	0.79	3.06	0.69	clayey silt to silty clay	UNDFND	UNDFD	12	.94
5.75	18.86	30.22	1.10	3.63	0.71	clayey silt to silty clay	UNDFND	UNDFD	14	1.
6.00	19.69	29.88	0.83	2.79	0.73	clayey silt to silty clay	UNDFND	UNDFD	14	1.
6.25	20.51	27.94	0.72	2.57	0.75	sandy silt to clayey silt	UNDFND	UNDFD	11	1.03
6.50	21.33	25.68	0.69	2.68	0.77	clayey silt to silty clay	UNDFND	UNDFD	12	.9
6.75	22.15	40.08	0.74	1.85	0.79	sandy silt to clayey silt	UNDFND	UNDFD	15	1.
7.00	22.97	153.62	0.93	0.60	0.81	sand	80-90	42-44	29	UNDEFINED
7.25	23.79	182.22	1.08	0.59	0.83	sand	80-90	44-46	35	UNDEFINED
7.50	24.61	190.20	1.07	0.56	0.85	sand	80-90	44-46	36	UNDEFINE
7.75	25.43	162.82	1.19	0.73	0.87	sand	80-90	42-44	31	UNDEFINED
8.00	26.25	115.64	1.21	1.05	0.89	sand to silty sand	70-80	42-44	28	UNDEFINED
8.25	27.07	26.32	0.32	1.23	0.91	sandy silt to clayey silt	UNDFND	UNDFD	10	.9
8.50	27.89	26.96	0.29	1.08	0.92	silty sand to sandy silt	<40	34-36	9	UNDEFINE
8.75	28.71	31.30	0.66	2.10	0.94	sandy silt to clayey silt	UNDFND	UNDFD	12	1.14
9.00	29.53	30.12	0.73	2.42	0.96	sandy silt to clayey silt	UNDFND	UNDFD	12	1.0
9.25	30.35	28.60	0.70	2.45	0.98	sandy silt to clayey silt	UNDFND	UNDFD	11	1.0
9.50	31.17	24.50	0.75	3.05	1.00	clayey silt to silty clay	UNDFND	UNDFD	12	.87

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 26

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

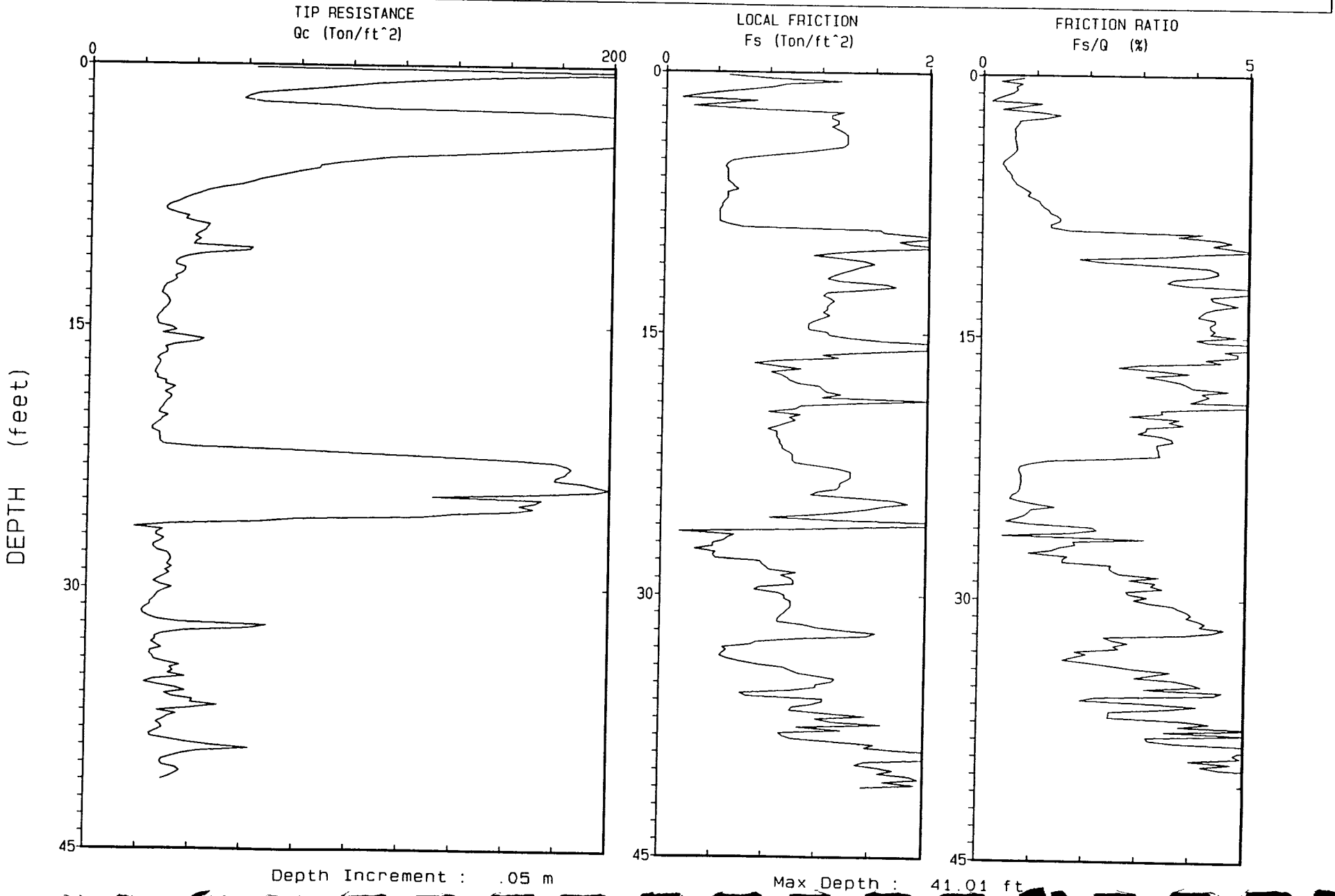
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	25.88	0.85	3.28	1.02	clayey silt to silty clay	UNDFND	UNDFD	12	.5
10.00	32.81	44.88	0.88	1.97	1.04	sandy silt to clayey silt	UNDFND	UNDFD	17	1.6
10.25	33.63	26.40	0.38	1.45	1.06	sandy silt to clayey silt	UNDFND	UNDFD	10	.9
10.50	34.45	28.36	0.68	2.38	1.08	sandy silt to clayey silt	UNDFND	UNDFD	11	1.0
10.75	35.27	32.22	0.97	3.01	1.10	clayey silt to silty clay	UNDFND	UNDFD	15	1.1
11.00	36.09	30.70	0.74	2.42	1.12	sandy silt to clayey silt	UNDFND	UNDFD	12	1.1
11.25	36.91	41.04	0.93	2.26	1.14	sandy silt to clayey silt	UNDFND	UNDFD	16	1.5
11.50	37.73	30.20	1.03	3.42	1.16	clayey silt to silty clay	UNDFND	UNDFD	14	1.0
11.75	38.55	27.06	0.91	3.37	1.18	clayey silt to silty clay	UNDFND	UNDFD	13	.9
12.00	39.37	45.06	1.62	3.59	1.20	clayey silt to silty clay	UNDFND	UNDFD	22	1.6
12.25	40.19	31.60	1.27	4.01	1.22	silty clay to clay	UNDFND	UNDFD	20	1.1
12.50	41.01	33.58	1.40	4.18	1.24	silty clay to clay	UNDFND	UNDFD	21	1.2

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 26

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) **

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-11-92
DEPTH TO WATER : 8.53 FT BLS
SOUNDING NO. : CPT-28A Pg 1 / 1
TERRA JOB NO. : 92-1016



Depth Increment : .05 m

Max Depth : 41.01 ft

1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date :A 08-11-92

Location : CPT-28 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 2.6

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	155.20	0.88	0.57	0.02	sand	>90	>48	30	UNDEFIN
0.50	1.64	87.44	0.42	0.48	0.07	sand to silty sand	>90	>48	21	UNDEFIN
0.75	2.46	77.34	0.80	1.03	0.11	sand to silty sand	>90	>48	19	UNDEFIN
1.00	3.28	206.28	1.30	0.63	0.16	sand	>90	>48	40	UNDEFIN
1.25	4.10	226.28	1.38	0.61	0.20	sand	>90	>48	43	UNDEFIN
1.50	4.92	189.08	1.01	0.54	0.25	sand	>90	>48	36	UNDEFIN
1.75	5.74	108.20	0.48	0.45	0.29	sand	80-90	46-48	21	UNDEFIN
2.00	6.56	75.74	0.50	0.65	0.34	sand to silty sand	70-80	44-46	18	UNDEFIN
2.25	7.38	51.18	0.49	0.96	0.38	silty sand to sandy silt	60-70	42-44	16	UNDEFIN
2.50	8.20	33.06	0.43	1.29	0.43	silty sand to sandy silt	40-50	38-40	11	UNDEFIN
2.75	9.02	34.98	0.71	2.04	0.47	sandy silt to clayey silt	UNDFND	UNDFD	13	1.2
3.00	9.84	42.82	1.87	4.36	0.49	silty clay to clay	UNDFND	UNDFD	27	1.5
3.25	10.66	48.86	1.53	3.12	0.51	sandy silt to clayey silt	UNDFND	UNDFD	19	1.7
3.50	11.48	36.12	1.49	4.11	0.53	silty clay to clay	UNDFND	UNDFD	23	1.3
3.75	12.30	34.38	1.47	4.27	0.55	silty clay to clay	UNDFND	UNDFD	22	1.2
4.00	13.12	28.68	1.31	4.58	0.57	silty clay to clay	UNDFND	UNDFD	18	1.0
4.25	13.94	29.56	1.25	4.24	0.59	silty clay to clay	UNDFND	UNDFD	19	1.0
4.50	14.76	26.34	1.14	4.34	0.61	silty clay to clay	UNDFND	UNDFD	17	.9
4.75	15.58	30.88	1.55	5.02	0.63	clay	UNDFND	UNDFD	30	1.1
5.00	16.40	35.22	1.62	4.61	0.65	silty clay to clay	UNDFND	UNDFD	22	1.2
5.25	17.22	27.18	0.87	3.20	0.67	clayey silt to silty clay	UNDFND	UNDFD	13	.9
5.50	18.04	25.66	1.01	3.94	0.69	silty clay to clay	UNDFND	UNDFD	16	.9
5.75	18.86	30.22	1.42	4.69	0.71	silty clay to clay	UNDFND	UNDFD	19	1.0
6.00	19.69	29.88	1.08	3.61	0.72	clayey silt to silty clay	UNDFND	UNDFD	14	1.0
6.25	20.51	27.94	0.93	3.31	0.74	clayey silt to silty clay	UNDFND	UNDFD	13	.9
6.50	21.33	25.68	0.89	3.46	0.76	clayey silt to silty clay	UNDFND	UNDFD	12	.9
6.75	22.15	40.08	0.96	2.40	0.78	sandy silt to clayey silt	UNDFND	UNDFD	15	1.4
7.00	22.97	153.62	1.20	0.78	0.80	sand	80-90	42-44	29	UNDEFINE
7.25	23.79	182.22	1.40	0.77	0.82	sand	80-90	44-46	35	UNDEFINE
7.50	24.61	190.20	1.38	0.73	0.84	sand	80-90	44-46	36	UNDEFINE
7.75	25.43	162.82	1.54	0.95	0.86	sand	80-90	42-44	31	UNDEFINE
8.00	26.25	115.64	1.56	1.35	0.88	sand to silty sand	70-80	42-44	28	UNDEFINE
8.25	27.07	26.32	0.42	1.59	0.90	sandy silt to clayey silt	UNDFND	UNDFD	10	.9
8.50	27.89	26.96	0.38	1.41	0.92	sandy silt to clayey silt	UNDFND	UNDFD	10	.9
8.75	28.71	31.30	0.84	2.70	0.94	sandy silt to clayey silt	UNDFND	UNDFD	12	1.1
9.00	29.53	30.12	0.94	3.13	0.96	clayey silt to silty clay	UNDFND	UNDFD	14	1.0
9.25	30.35	28.60	0.90	3.16	0.98	clayey silt to silty clay	UNDFND	UNDFD	14	.9
9.50	31.17	24.50	0.97	3.95	1.00	silty clay to clay	UNDFND	UNDFD	16	.8

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 27

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) **

1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Location : BLDG. 870

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	25.88	1.10	4.23	1.02	silty clay to clay	UNDFND	UNDFD	17	
10.00	32.81	44.88	1.14	2.54	1.04	sandy silt to clayey silt	UNDFND	UNDFD	17	1
10.25	33.63	26.40	0.49	1.85	1.06	sandy silt to clayey silt	UNDFND	UNDFD	10	.9
10.50	34.45	28.36	0.87	3.08	1.08	clayey silt to silty clay	UNDFND	UNDFD	14	[illegible]
10.75	35.27	32.22	1.25	3.89	1.10	clayey silt to silty clay	UNDFND	UNDFD	15	1
11.00	36.09	30.70	0.96	3.12	1.11	clayey silt to silty clay	UNDFND	UNDFD	15	1
11.25	36.91	41.04	1.20	2.92	1.13	sandy silt to clayey silt	UNDFND	UNDFD	16	1.4
11.50	37.73	30.20	1.33	4.41	1.15	silty clay to clay	UNDFND	UNDFD	19	1
11.75	38.55	27.06	1.18	4.35	1.17	silty clay to clay	UNDFND	UNDFD	17	
12.00	39.37	45.06	2.09	4.63	1.19	silty clay to clay	UNDFND	UNDFD	29	1.5
12.25	40.19	31.60	1.64	5.18	1.21	clay	UNDFND	UNDFD	30	1
12.50	41.01	33.58	1.81	5.40	1.23	clay	UNDFND	UNDFD	32	1

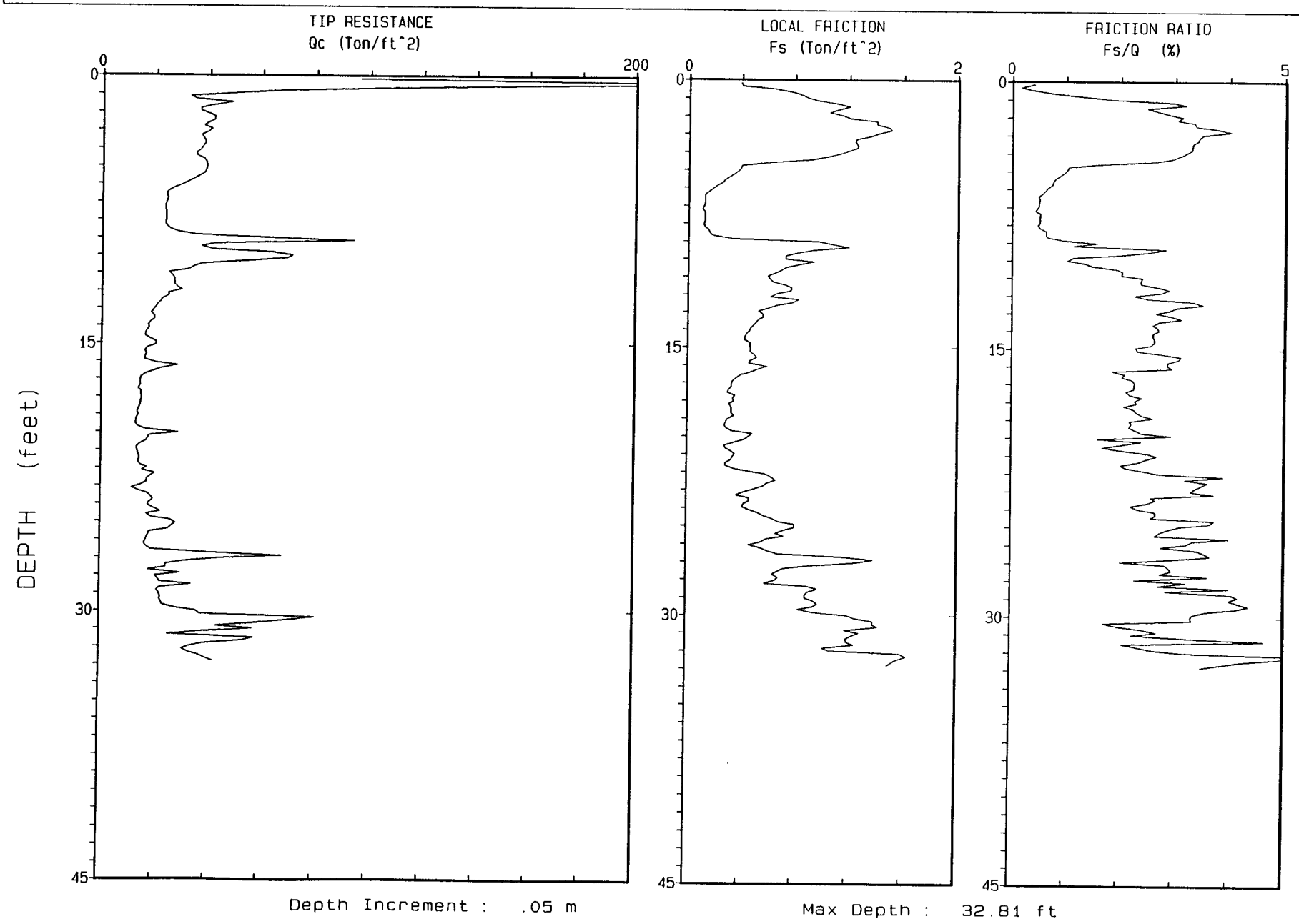
Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 27

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02)

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-11-92 SOUNDING NO. : CPT-28B Pg 1 / 1

LOCATION : BLDG. 870 DEPTH TO WATER : 8.53 FT BLS TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date :B 08-11-92

Location : CPT-28 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 2.6

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	136.64	0.61	0.44	0.02	sand	>90	>48	26	UNDEFINE
0.50	1.64	41.16	1.05	2.56	0.07	sandy silt to clayey silt	UNDFND	UNDFD	16	1.5
0.75	2.46	39.18	1.24	3.16	0.11	clayey silt to silty clay	UNDFND	UNDFD	19	
1.00	3.28	38.74	1.41	3.63	0.16	clayey silt to silty clay	UNDFND	UNDFD	19	
1.25	4.10	37.38	1.22	3.25	0.20	clayey silt to silty clay	UNDFND	UNDFD	18	1.3
1.50	4.92	36.86	0.67	1.81	0.25	sandy silt to clayey silt	UNDFND	UNDFD	14	
1.75	5.74	36.94	0.31	0.83	0.29	silty sand to sandy silt	50-60	42-44	12	UNDEF
2.00	6.56	27.18	0.16	0.57	0.34	silty sand to sandy silt	40-50	40-42	9	UNDEFINE
2.25	7.38	23.72	0.11	0.48	0.38	silty sand to sandy silt	<40	38-40	8	UNDEFINE
2.50	8.20	23.54	0.12	0.50	0.43	silty sand to sandy silt	<40	38-40	8	UNDEF
2.75	9.02	34.80	0.36	1.03	0.47	silty sand to sandy silt	40-50	38-40	11	UNDEF
3.00	9.84	55.62	0.95	1.71	0.49	silty sand to sandy silt	60-70	40-42	18	UNDEFINE
3.25	10.66	53.78	0.79	1.47	0.51	silty sand to sandy silt	50-60	40-42	17	UNDEF
3.50	11.48	27.40	0.65	2.36	0.53	sandy silt to clayey silt	UNDFND	UNDFD	10	
3.75	12.30	26.84	0.73	2.73	0.55	clayey silt to silty clay	UNDFND	UNDFD	13	.9
4.00	13.12	20.80	0.63	3.03	0.57	clayey silt to silty clay	UNDFND	UNDFD	10	
4.25	13.94	18.54	0.51	2.77	0.59	clayey silt to silty clay	UNDFND	UNDFD	9	
4.50	14.76	17.06	0.45	2.61	0.61	clayey silt to silty clay	UNDFND	UNDFD	8	.6
4.75	15.58	18.14	0.49	2.68	0.63	clayey silt to silty clay	UNDFND	UNDFD	9	
5.00	16.40	20.70	0.51	2.44	0.65	clayey silt to silty clay	UNDFND	UNDFD	10	
5.25	17.22	16.06	0.35	2.20	0.67	clayey silt to silty clay	UNDFND	UNDFD	8	
5.50	18.04	14.64	0.33	2.27	0.69	clayey silt to silty clay	UNDFND	UNDFD	7	.5
5.75	18.86	14.18	0.33	2.33	0.71	clayey silt to silty clay	UNDFND	UNDFD	7	
6.00	19.69	13.22	0.30	2.25	0.72	clayey silt to silty clay	UNDFND	UNDFD	6	
6.25	20.51	19.44	0.40	2.07	0.74	sandy silt to clayey silt	UNDFND	UNDFD	7	.6
6.50	21.33	13.70	0.33	2.41	0.76	clayey silt to silty clay	UNDFND	UNDFD	7	
6.75	22.15	15.02	0.40	2.68	0.78	clayey silt to silty clay	UNDFND	UNDFD	7	
7.00	22.97	17.54	0.60	3.41	0.80	silty clay to clay	UNDFND	UNDFD	11	.8
7.25	23.79	16.32	0.43	2.66	0.82	clayey silt to silty clay	UNDFND	UNDFD	8	.5
7.50	24.61	19.04	0.53	2.78	0.84	clayey silt to silty clay	UNDFND	UNDFD	9	
7.75	25.43	24.96	0.74	2.97	0.86	clayey silt to silty clay	UNDFND	UNDFD	12	
8.00	26.25	17.32	0.58	3.37	0.88	silty clay to clay	UNDFND	UNDFD	11	.5
8.25	27.07	37.24	1.02	2.74	0.90	sandy silt to clayey silt	UNDFND	UNDFD	14	
8.50	27.89	25.70	0.73	2.86	0.92	clayey silt to silty clay	UNDFND	UNDFD	12	
8.75	28.71	24.26	0.81	3.34	0.94	clayey silt to silty clay	UNDFND	UNDFD	12	.8
9.00	29.53	22.30	0.93	4.18	0.96	silty clay to clay	UNDFND	UNDFD	14	
9.25	30.35	41.20	1.13	2.74	0.98	sandy silt to clayey silt	UNDFND	UNDFD	16	
9.50	31.17	53.48	1.30	2.44	1.00	sandy silt to clayey silt	UNDFND	UNDFD	20	

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 27

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02)

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	41.90	1.15	2.74	1.02	sandy silt to clayey silt	UNDFND	UNDFD	16	1.4
10.00	32.81	36.76	1.57	4.26	1.04	silty clay to clay	UNDFND	UNDFD	23	1.2

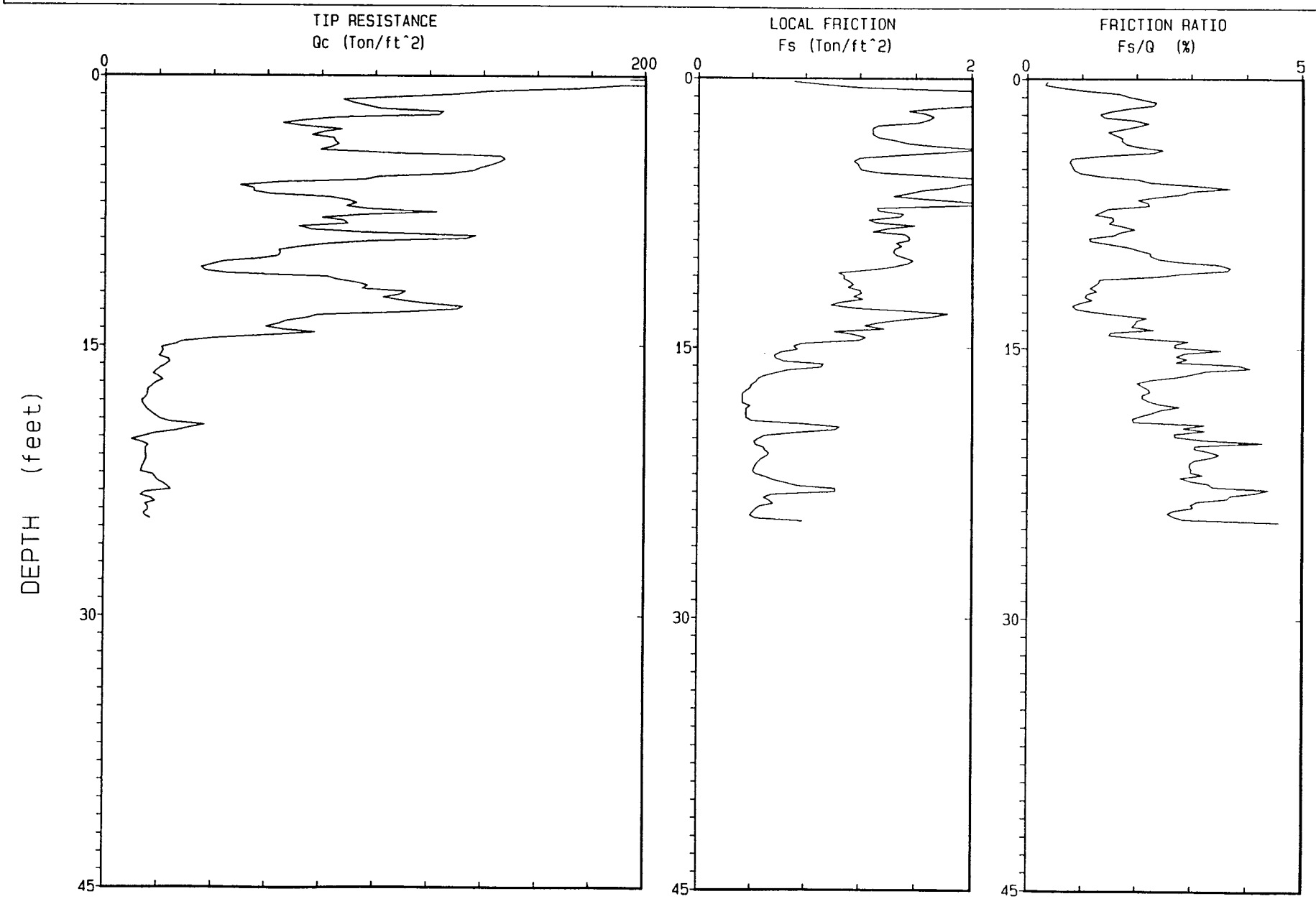
Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 27

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) *

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-11-92 SOUNDING NO. : CPT-29 Pg 1 / 1

LOCATION : BLDG. 870 DEPTH TO WATER : 6.07 FT BLS TERRA JOB NO. : 92-1016



Depth Increment : .05 m Max Depth : 24.61 ft

1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date : 08-11-92

Location : CPT-29 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 1.85

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	199.34	1.44	0.72	0.02	sand	>90	>48	38	UNDEFINE
0.50	1.64	102.92	2.14	2.08	0.07	silty sand to sandy silt	>90	>48	33	UNDEFINE
0.75	2.46	102.16	1.65	1.62	0.11	silty sand to sandy silt	>90	>48	33	UNDEFINE
1.00	3.28	76.62	1.31	1.70	0.16	silty sand to sandy silt	80-90	46-48	24	UNDEFINE
1.25	4.10	83.80	1.73	2.06	0.20	silty sand to sandy silt	80-90	46-48	27	UNDEFINE
1.50	4.92	138.02	1.24	0.90	0.25	sand	>90	>48	26	UNDEFINE
1.75	5.74	119.96	1.69	1.41	0.29	sand to silty sand	80-90	46-48	29	UNDEFINE
2.00	6.56	57.06	1.68	2.95	0.34	sandy silt to clayey silt	UNDFND	UNDFD	22	2.2
2.25	7.38	90.46	1.68	1.85	0.36	silty sand to sandy silt	70-80	44-46	29	UNDEFINE
2.50	8.20	95.34	1.43	1.50	0.37	silty sand to sandy silt	70-80	44-46	30	UNDEFINE
2.75	9.02	103.04	1.46	1.42	0.39	sand to silty sand	80-90	44-46	25	UNDEFINE
3.00	9.84	76.04	1.46	1.92	0.41	silty sand to sandy silt	70-80	42-44	24	UNDEFINE
3.25	10.66	47.74	1.48	3.09	0.43	sandy silt to clayey silt	UNDFND	UNDFD	18	1.8
3.50	11.48	68.68	1.09	1.59	0.45	silty sand to sandy silt	60-70	42-44	22	UNDEFINE
3.75	12.30	103.12	1.18	1.14	0.47	sand to silty sand	70-80	44-46	25	UNDEFINE
4.00	13.12	120.56	1.32	1.09	0.49	sand to silty sand	80-90	44-46	29	UNDEFINE
4.25	13.94	68.88	1.43	2.07	0.51	silty sand to sandy silt	60-70	42-44	22	UNDEFINE
4.50	14.76	54.34	1.07	1.97	0.53	silty sand to sandy silt	50-60	40-42	17	UNDEFINE
4.75	15.58	21.90	0.64	2.94	0.55	clayey silt to silty clay	UNDFND	UNDFD	10	.84
5.00	16.40	21.90	0.74	3.40	0.57	clayey silt to silty clay	UNDFND	UNDFD	10	.84
5.25	17.22	19.18	0.43	2.25	0.59	clayey silt to silty clay	UNDFND	UNDFD	9	.73
5.50	18.04	15.18	0.34	2.21	0.61	clayey silt to silty clay	UNDFND	UNDFD	7	.56
5.75	18.86	16.10	0.37	2.27	0.63	clayey silt to silty clay	UNDFND	UNDFD	8	.60
6.00	19.69	27.78	0.79	2.84	0.65	clayey silt to silty clay	UNDFND	UNDFD	13	1.06
6.25	20.51	14.46	0.46	3.17	0.67	silty clay to clay	UNDFND	UNDFD	9	.53
6.50	21.33	15.16	0.49	3.25	0.69	silty clay to clay	UNDFND	UNDFD	10	.56
6.75	22.15	14.70	0.44	2.98	0.71	clayey silt to silty clay	UNDFND	UNDFD	7	.54
7.00	22.97	21.58	0.80	3.70	0.73	silty clay to clay	UNDFND	UNDFD	14	.81
7.25	23.79	15.80	0.52	3.28	0.75	silty clay to clay	UNDFND	UNDFD	10	.58
7.50	24.61	15.72	0.49	3.10	0.76	clayey silt to silty clay	UNDFND	UNDFD	8	.57

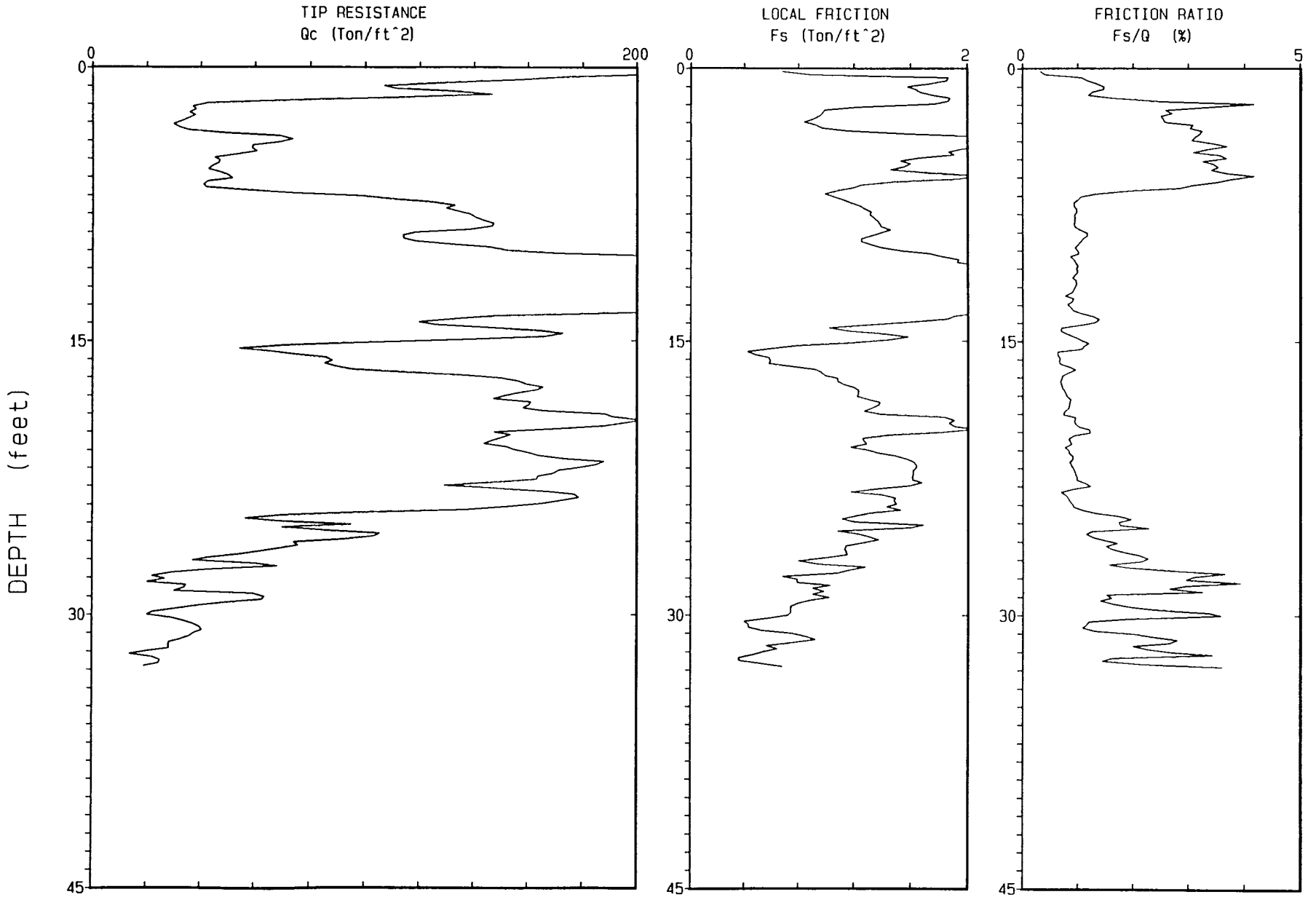
Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) **

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-11-92 SOUNDING NO. : CPT-30 Pg 1 / 1

LOCATION : BLDG. 870 DEPTH TO WATER : 18.37 FT BLS TERRA JOB NO. : 92-1016



Depth Increment : .05 m

Max Depth : 32.81 ft

1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date : 08-11-92

Location : CPT-30 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 5.6

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	177.50	1.41	0.79	0.02	sand	>90	>48	34	UNDEFINEI
0.50	1.64	122.48	1.71	1.39	0.07	sand to silty sand	>90	>48	29	UNDEFINEI
0.75	2.46	45.60	1.36	2.99	0.11	sandy silt to clayey silt	UNDFND	UNDFD	17	1.8
1.00	3.28	33.56	0.92	2.74	0.16	sandy silt to clayey silt	UNDFND	UNDFD	13	1.3
1.25	4.10	59.32	1.90	3.21	0.20	sandy silt to clayey silt	UNDFND	UNDFD	23	2.3
1.50	4.92	55.36	1.92	3.46	0.25	clayey silt to silty clay	UNDFND	UNDFD	27	2.2
1.75	5.74	45.40	1.58	3.47	0.29	clayey silt to silty clay	UNDFND	UNDFD	22	1.8
2.00	6.56	45.26	1.59	3.51	0.34	clayey silt to silty clay	UNDFND	UNDFD	22	1.7
2.25	7.38	93.12	1.08	1.16	0.38	sand to silty sand	70-80	44-46	22	UNDEFINEI
2.50	8.20	135.26	1.30	0.96	0.43	sand to silty sand	80-90	44-46	32	UNDEFINEI
2.75	9.02	138.80	1.40	1.01	0.47	sand to silty sand	80-90	44-46	33	UNDEFINEI
3.00	9.84	124.88	1.31	1.05	0.52	sand to silty sand	80-90	44-46	30	UNDEFINED
3.25	10.66	187.76	1.79	0.95	0.56	sand	>90	46-48	36	UNDEFINED
3.50	11.48	227.40	2.21	0.97	0.61	sand	>90	46-48	44	UNDEFINED
3.75	12.30	285.42	2.70	0.95	0.65	sand	>90	46-48	>50	UNDEFINED
4.00	13.12	285.80	2.45	0.86	0.70	sand	>90	46-48	>50	UNDEFINED
4.25	13.94	167.48	1.93	1.15	0.74	sand to silty sand	80-90	44-46	40	UNDEFINED
4.50	14.76	154.58	1.29	0.83	0.79	sand	80-90	42-44	30	UNDEFINED
4.75	15.58	85.48	0.89	1.04	0.83	sand to silty sand	60-70	40-42	20	UNDEFINED
5.00	16.40	84.80	0.60	0.71	0.88	sand to silty sand	60-70	40-42	20	UNDEFINED
5.25	17.22	130.52	1.01	0.77	0.92	sand	70-80	42-44	25	UNDEFINED
5.50	18.04	158.96	1.20	0.75	0.97	sand	80-90	42-44	30	UNDEFINED
5.75	18.86	158.50	1.33	0.84	1.01	sand	70-80	42-44	30	UNDEFINED
6.00	19.69	193.04	1.78	0.92	1.03	sand	80-90	42-44	37	UNDEFINED
6.25	20.51	153.60	1.57	1.02	1.05	sand	70-80	42-44	29	UNDEFINED
6.50	21.33	155.02	1.32	0.85	1.07	sand	70-80	42-44	30	UNDEFINED
6.75	22.15	179.32	1.62	0.90	1.09	sand	80-90	42-44	34	UNDEFINED
7.00	22.97	154.74	1.62	1.05	1.11	sand	70-80	42-44	30	UNDEFINED
7.25	23.79	168.52	1.38	0.82	1.13	sand	70-80	42-44	32	UNDEFINED
7.50	24.61	124.78	1.40	1.12	1.15	sand to silty sand	70-80	40-42	30	UNDEFINED
7.75	25.43	75.10	1.33	1.78	1.17	silty sand to sandy silt	50-60	38-40	24	UNDEFINED
8.00	26.25	90.22	1.26	1.40	1.19	sand to silty sand	60-70	38-40	22	UNDEFINED
8.25	27.07	53.20	1.04	1.95	1.21	silty sand to sandy silt	40-50	36-38	17	UNDEFINED
8.50	27.89	44.40	1.03	2.32	1.23	sandy silt to clayey silt	UNDFND	UNDFD	17	1.71
8.75	28.71	29.08	0.90	3.09	1.25	clayey silt to silty clay	UNDFND	UNDFD	14	1.10
9.00	29.53	54.24	0.87	1.60	1.27	silty sand to sandy silt	40-50	36-38	17	UNDEFINED
9.25	30.35	27.16	0.63	2.33	1.29	sandy silt to clayey silt	UNDFND	UNDFD	10	1.02
9.50	31.17	38.08	0.60	1.58	1.30	silty sand to sandy silt	<40	34-36	12	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ***

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	27.54	0.68	2.48	1.32	sandy silt to clayey silt	UNDFND	UNDFD	11	[illegible]
10.00	32.81	20.84	0.48	2.30	1.34	clayey silt to silty clay	UNDFND	UNDFD	10	

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02)

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	6.26	0.17	2.68	1.03	silty clay to clay	UNDFND	UNDFD	4	.18
10.00	32.81	10.24	0.24	2.38	1.05	clayey silt to silty clay	UNDFND	UNDFD	5	.33
10.25	33.63	14.94	0.35	2.34	1.07	clayey silt to silty clay	UNDFND	UNDFD	7	.52
10.50	34.45	23.84	0.73	3.06	1.09	clayey silt to silty clay	UNDFND	UNDFD	11	.87
10.75	35.27	22.18	0.68	3.05	1.11	clayey silt to silty clay	UNDFND	UNDFD	11	.81
11.00	36.09	22.46	0.74	3.31	1.12	clayey silt to silty clay	UNDFND	UNDFD	11	.82
11.25	36.91	24.56	0.76	3.09	1.14	clayey silt to silty clay	UNDFND	UNDFD	12	.90
11.50	37.73	23.32	0.73	3.11	1.16	clayey silt to silty clay	UNDFND	UNDFD	11	.85
11.75	38.55	42.24	1.34	3.17	1.18	clayey silt to silty clay	UNDFND	UNDFD	20	1.60
12.00	39.37	21.24	0.92	4.34	1.20	silty clay to clay	UNDFND	UNDFD	14	.76
12.25	40.19	27.82	1.17	4.19	1.22	silty clay to clay	UNDFND	UNDFD	18	1.02
12.50	41.01	60.42	1.38	2.29	1.24	sandy silt to clayey silt	UNDFND	UNDFD	23	2.32

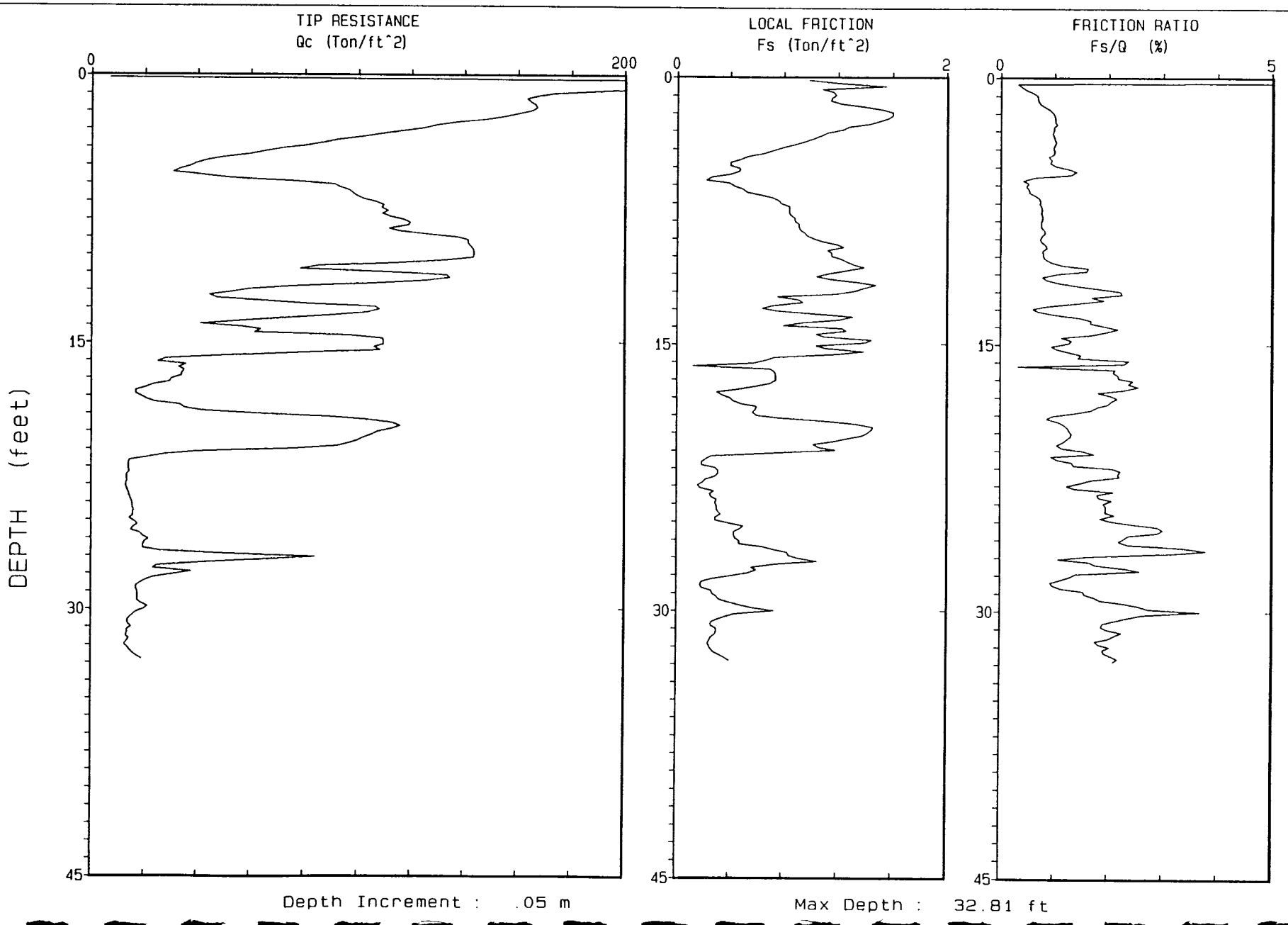
Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ***

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-12-92 SOUNDING NO. : CPT-32 Pg 1 / 1

LOCATION : BLDG. 870 DEPTH TO WATER : 10.17 FT BLS TERRA JOB NO. : 92-1016



Depth Increment : .05 m

Max Depth : 32.81 ft

1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date : 08-12-92

Location : CPT-32 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 3.1

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	247.84	1.20	0.48	0.02	sand	>90	UNDFD	47	UNDEFINED
0.50	1.64	167.08	1.21	0.73	0.07	sand	>90	>48	32	UNDEFINED
0.75	2.46	159.10	1.56	0.98	0.11	sand	>90	>48	30	UNDEFINED
1.00	3.28	123.48	1.23	0.99	0.16	sand to silty sand	>90	>48	30	UNDEFINED
1.25	4.10	86.94	0.87	1.00	0.20	sand to silty sand	80-90	46-48	21	UNDEFINED
1.50	4.92	51.44	0.49	0.95	0.25	silty sand to sandy silt	60-70	44-46	16	UNDEFINED
1.75	5.74	39.04	0.36	0.93	0.29	silty sand to sandy silt	50-60	42-44	12	UNDEFINED
2.00	6.56	90.60	0.49	0.54	0.34	sand to silty sand	70-80	44-46	22	UNDEFINED
2.25	7.38	105.24	0.79	0.75	0.38	sand to silty sand	80-90	44-46	25	UNDEFINED
2.50	8.20	113.74	0.87	0.77	0.43	sand to silty sand	80-90	44-46	27	UNDEFINED
2.75	9.02	121.96	0.95	0.78	0.47	sand	80-90	44-46	23	UNDEFINED
3.00	9.84	142.34	1.16	0.81	0.52	sand	80-90	44-46	27	UNDEFINED
3.25	10.66	123.80	1.27	1.02	0.56	sand to silty sand	80-90	44-46	30	UNDEFINED
3.50	11.48	115.78	1.19	1.02	0.58	sand to silty sand	70-80	44-46	28	UNDEFINED
3.75	12.30	67.52	1.23	1.82	0.60	silty sand to sandy silt	60-70	40-42	22	UNDEFINED
4.00	13.12	81.78	0.79	0.97	0.62	sand to silty sand	60-70	42-44	20	UNDEFINED
4.25	13.94	72.70	1.06	1.46	0.64	silty sand to sandy silt	60-70	40-42	23	UNDEFINED
4.50	14.76	77.46	1.22	1.57	0.66	silty sand to sandy silt	60-70	40-42	25	UNDEFINED
4.75	15.58	102.68	1.23	1.20	0.68	sand to silty sand	70-80	42-44	25	UNDEFINED
5.00	16.40	34.42	0.56	1.62	0.70	sandy silt to clayey silt	UNDFND	UNDFD	13	1.15
5.25	17.22	32.44	0.73	2.25	0.72	sandy silt to clayey silt	UNDFND	UNDFD	12	1.08
5.50	18.04	18.98	0.42	2.21	0.74	clayey silt to silty clay	UNDFND	UNDFD	9	.62
5.75	18.86	30.74	0.53	1.73	0.76	sandy silt to clayey silt	UNDFND	UNDFD	12	1.02
6.00	19.69	96.72	1.06	1.09	0.78	sand to silty sand	60-70	40-42	23	UNDEFINED
6.25	20.51	105.54	1.33	1.26	0.80	sand to silty sand	70-80	42-44	25	UNDEFINED
6.50	21.33	66.60	0.84	1.26	0.81	silty sand to sandy silt	50-60	40-42	21	UNDEFINED
6.75	22.15	15.30	0.24	1.57	0.83	sandy silt to clayey silt	UNDFND	UNDFD	6	.48
7.00	22.97	13.32	0.24	1.77	0.85	clayey silt to silty clay	UNDFND	UNDFD	6	.41
7.25	23.79	13.76	0.25	1.85	0.87	clayey silt to silty clay	UNDFND	UNDFD	7	.43
7.50	24.61	15.44	0.31	1.98	0.89	clayey silt to silty clay	UNDFND	UNDFD	7	.48
7.75	25.43	15.76	0.39	2.47	0.91	clayey silt to silty clay	UNDFND	UNDFD	8	.49
8.00	26.25	18.66	0.45	2.40	0.93	clayey silt to silty clay	UNDFND	UNDFD	9	.59
8.25	27.07	40.00	0.79	1.98	0.95	sandy silt to clayey silt	UNDFND	UNDFD	15	1.32
8.50	27.89	37.98	0.70	1.83	0.97	sandy silt to clayey silt	UNDFND	UNDFD	15	1.25
8.75	28.71	22.02	0.25	1.12	0.99	sandy silt to clayey silt	UNDFND	UNDFD	8	.70
9.00	29.53	17.12	0.31	1.80	1.01	sandy silt to clayey silt	UNDFND	UNDFD	7	.53
9.25	30.35	18.36	0.52	2.82	1.03	clayey silt to silty clay	UNDFND	UNDFD	9	.57
9.50	31.17	14.02	0.28	2.03	1.05	clayey silt to silty clay	UNDFND	UNDFD	7	.42

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 29

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ***

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	13.22	0.26	1.95	1.07	clayey silt to silty clay	UNDFND	UNDFD	6	.
10.00	32.81	15.94	0.33	2.05	1.09	clayey silt to silty clay	UNDFND	UNDFD	8	.

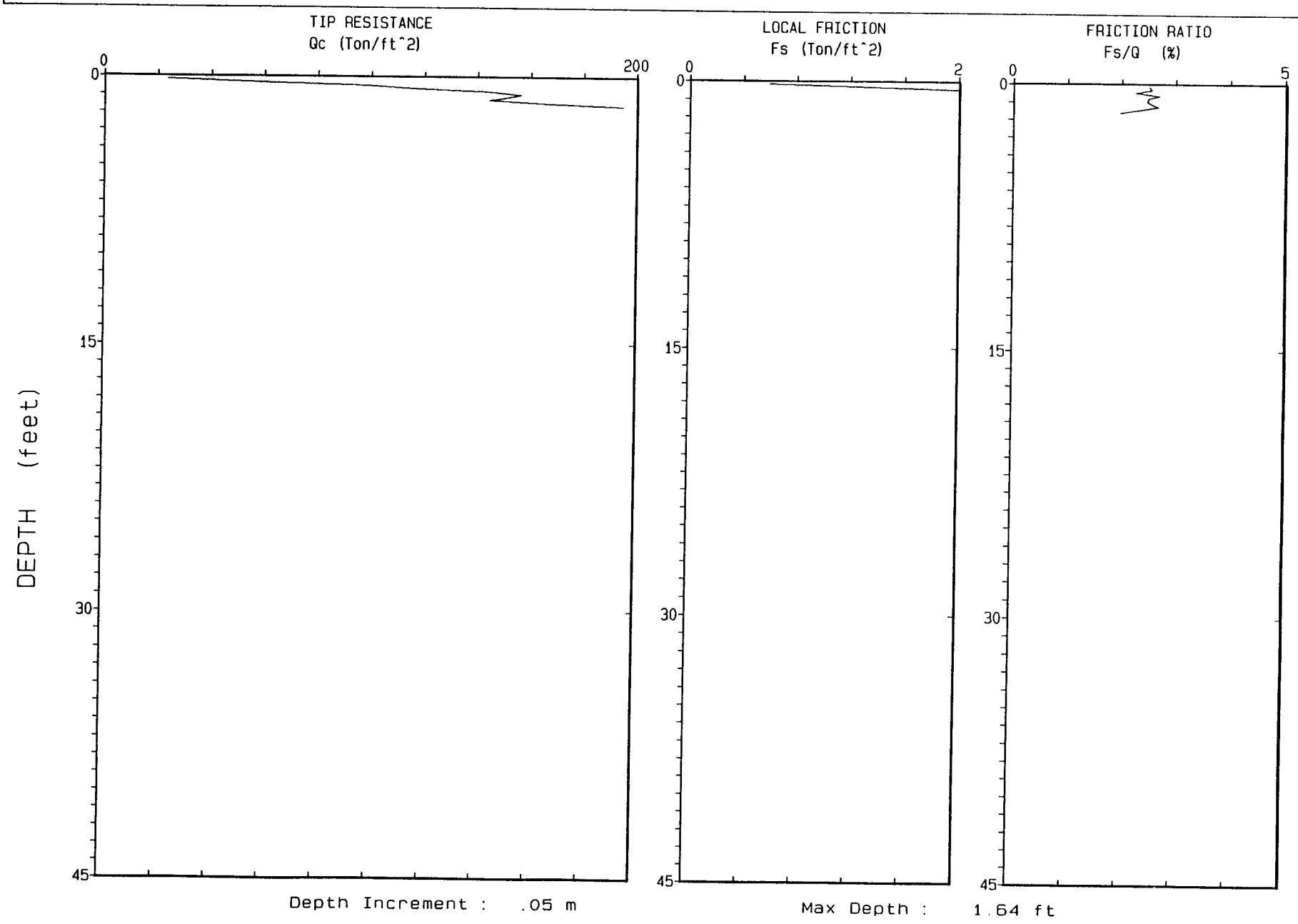
Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 29

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02)

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-12-92 SOUNDING NO. : CPT-33A Pg 1 / 1

LOCATION : BLDG. 870 DEPTH TO WATER : 23.29 FT BLS TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date :A 08-12-92

Location : CPT-33 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 7.1

Tot. Unit Wt. (avg) : 110 pcf

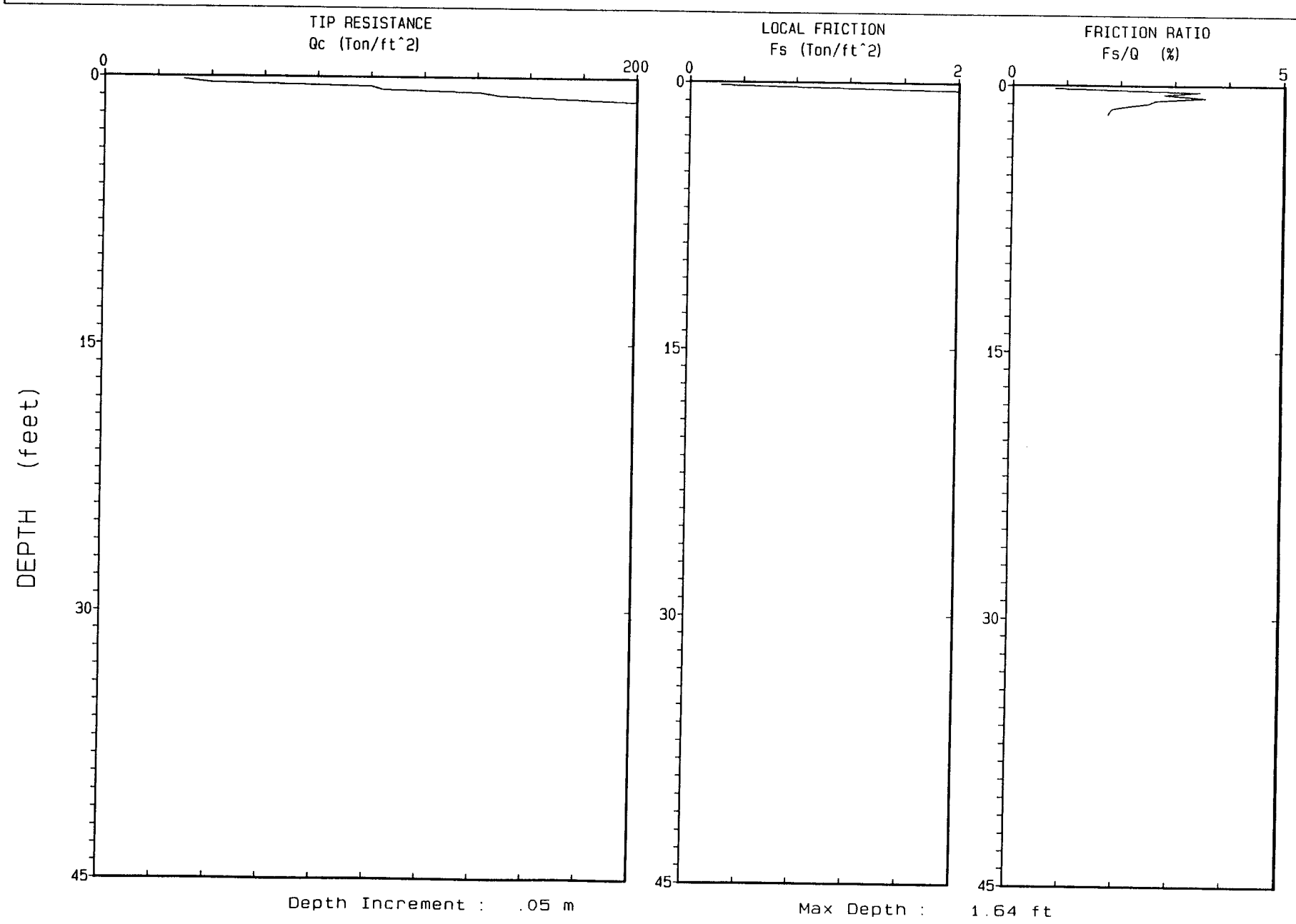
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	88.50	2.21	2.50	0.02	silty sand to sandy silt	>90	>48	28	UNDEFINED
0.50	1.64	162.56	3.85	2.37	0.07	silty sand to sandy silt	>90	>48	>50	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
DATE : 08-12-92
SOUNDING NO. : CPT-33B Pg 1 / 1
LOCATION : BLDG. 870
DEPTH TO WATER : 23.29 FT BLS
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date :B 08-12-92

Location : CPT-33 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 7.1

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	82.98	2.37	2.86	0.02	sandy silt to clayey silt	UNDFND	UNDFD	32	3.5
0.50	1.64	189.16	3.72	1.97	0.07	sand to silty sand	>90	>48	45	UNDEFINED

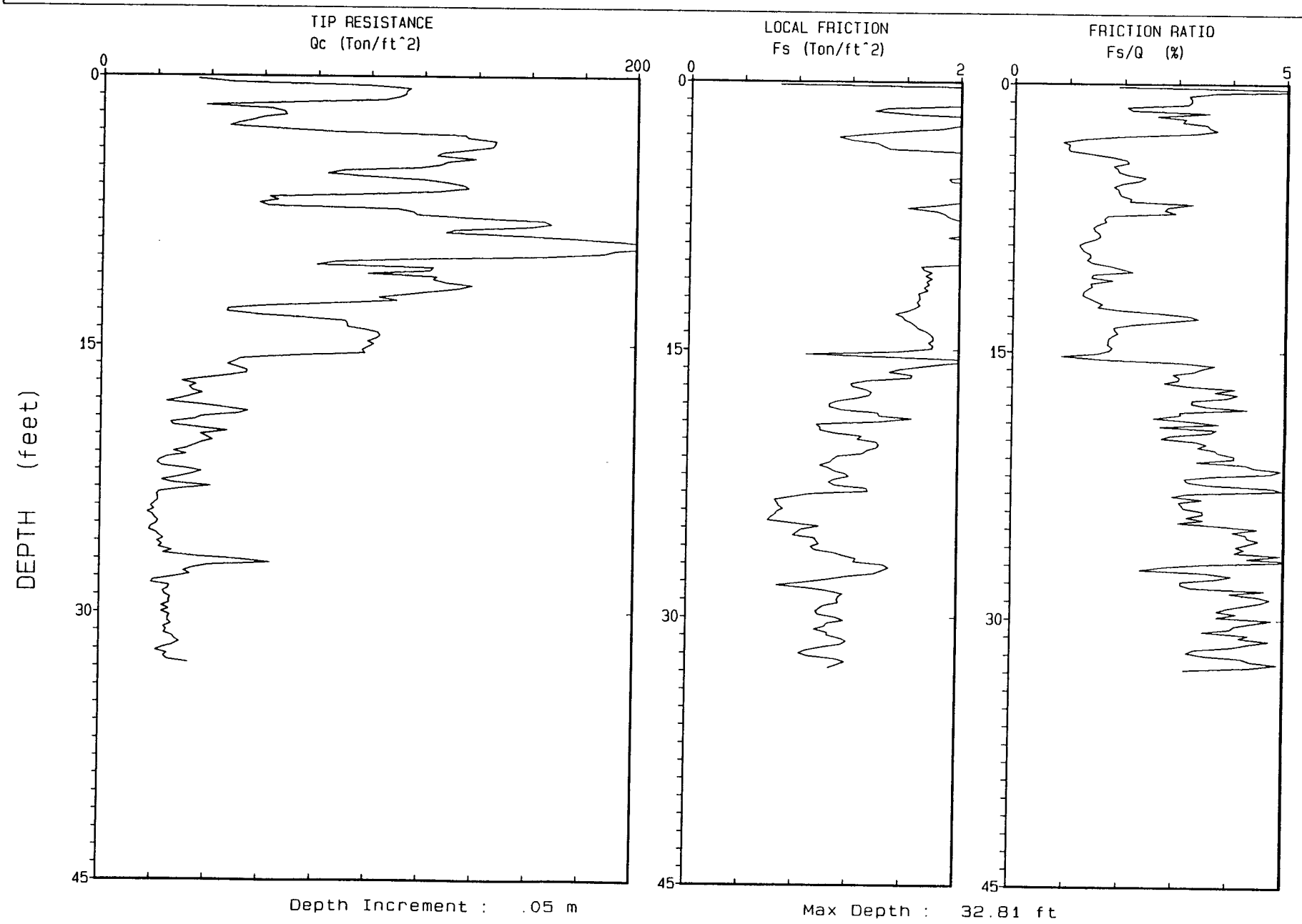
Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-12-92 SOUNDING NO. : CPT-33C Pg 1 / 1

LOCATION : BLDG. 870 DEPTH TO WATER : 23.29 FT BLS TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date :C 08-12-92

Location : CPT-33 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 7.1

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	82.06	2.96	3.61	0.02	sandy silt to clayey silt	UNDFND	UNDFD	31	3.28
0.50	1.64	86.98	2.43	2.79	0.07	sandy silt to clayey silt	UNDFND	UNDFD	33	3.47
0.75	2.46	62.60	1.99	3.17	0.11	sandy silt to clayey silt	UNDFND	UNDFD	24	2.49
1.00	3.28	77.38	1.40	1.81	0.16	silty sand to sandy silt	80-90	46-48	25	UNDEFINED
1.25	4.10	142.34	1.76	1.24	0.20	sand to silty sand	>90	>48	34	UNDEFINED
1.50	4.92	129.10	2.51	1.94	0.25	silty sand to sandy silt	>90	46-48	41	UNDEFINED
1.75	5.74	102.08	2.13	2.09	0.29	silty sand to sandy silt	80-90	46-48	33	UNDEFINED
2.00	6.56	125.18	2.50	2.00	0.34	silty sand to sandy silt	80-90	46-48	40	UNDEFINED
2.25	7.38	71.58	1.84	2.57	0.38	sandy silt to clayey silt	UNDFND	UNDFD	27	2.84
2.50	8.20	141.32	2.19	1.55	0.43	sand to silty sand	80-90	46-48	34	UNDEFINED
2.75	9.02	151.96	2.14	1.41	0.47	sand to silty sand	80-90	44-46	36	UNDEFINED
3.00	9.84	197.98	2.64	1.33	0.52	sand to silty sand	>90	46-48	47	UNDEFINED
3.25	10.66	115.04	1.94	1.69	0.56	silty sand to sandy silt	70-80	44-46	37	UNDEFINED
3.50	11.48	119.92	1.77	1.47	0.61	sand to silty sand	70-80	42-44	29	UNDEFINED
3.75	12.30	122.40	1.72	1.40	0.65	sand to silty sand	70-80	42-44	29	UNDEFINED
4.00	13.12	70.16	1.62	2.31	0.70	silty sand to sandy silt	60-70	40-42	22	UNDEFINED
4.25	13.94	81.56	1.68	2.06	0.74	silty sand to sandy silt	60-70	40-42	26	UNDEFINED
4.50	14.76	101.68	1.80	1.77	0.79	silty sand to sandy silt	70-80	42-44	32	UNDEFINED
4.75	15.58	93.90	1.61	1.72	0.83	silty sand to sandy silt	60-70	40-42	30	UNDEFINED
5.00	16.40	50.78	1.68	3.31	0.88	clayey silt to silty clay	UNDFND	UNDFD	24	1.99
5.25	17.22	40.96	1.35	3.29	0.92	clayey silt to silty clay	UNDFND	UNDFD	20	1.60
5.50	18.04	33.50	1.22	3.64	0.97	clayey silt to silty clay	UNDFND	UNDFD	16	1.30
5.75	18.86	42.68	1.34	3.13	1.01	sandy silt to clayey silt	UNDFND	UNDFD	16	1.66
6.00	19.69	32.68	1.09	3.32	1.06	clayey silt to silty clay	UNDFND	UNDFD	16	1.26
6.25	20.51	40.56	1.35	3.34	1.11	clayey silt to silty clay	UNDFND	UNDFD	19	1.57
6.50	21.33	30.12	1.18	3.90	1.15	clayey silt to silty clay	UNDFND	UNDFD	14	1.15
6.75	22.15	27.14	1.10	4.05	1.20	silty clay to clay	UNDFND	UNDFD	17	1.03
7.00	22.97	30.74	1.18	3.85	1.24	clayey silt to silty clay	UNDFND	UNDFD	15	1.18
7.25	23.79	23.42	0.74	3.14	1.28	clayey silt to silty clay	UNDFND	UNDFD	11	.88
7.50	24.61	19.32	0.65	3.36	1.30	clayey silt to silty clay	UNDFND	UNDFD	9	.71
7.75	25.43	20.04	0.85	4.23	1.32	silty clay to clay	UNDFND	UNDFD	13	.74
8.00	26.25	22.24	0.95	4.28	1.34	silty clay to clay	UNDFND	UNDFD	14	.83
8.25	27.07	31.98	1.24	3.89	1.36	clayey silt to silty clay	UNDFND	UNDFD	15	1.22
8.50	27.89	40.68	1.32	3.24	1.38	clayey silt to silty clay	UNDFND	UNDFD	19	1.56
8.75	28.71	23.86	0.93	3.91	1.40	silty clay to clay	UNDFND	UNDFD	15	.89
9.00	29.53	25.28	1.08	4.26	1.42	silty clay to clay	UNDFND	UNDFD	16	.94
9.25	30.35	24.78	1.05	4.25	1.44	silty clay to clay	UNDFND	UNDFD	16	.92
9.50	31.17	25.12	1.05	4.16	1.46	silty clay to clay	UNDFND	UNDFD	16	.93

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

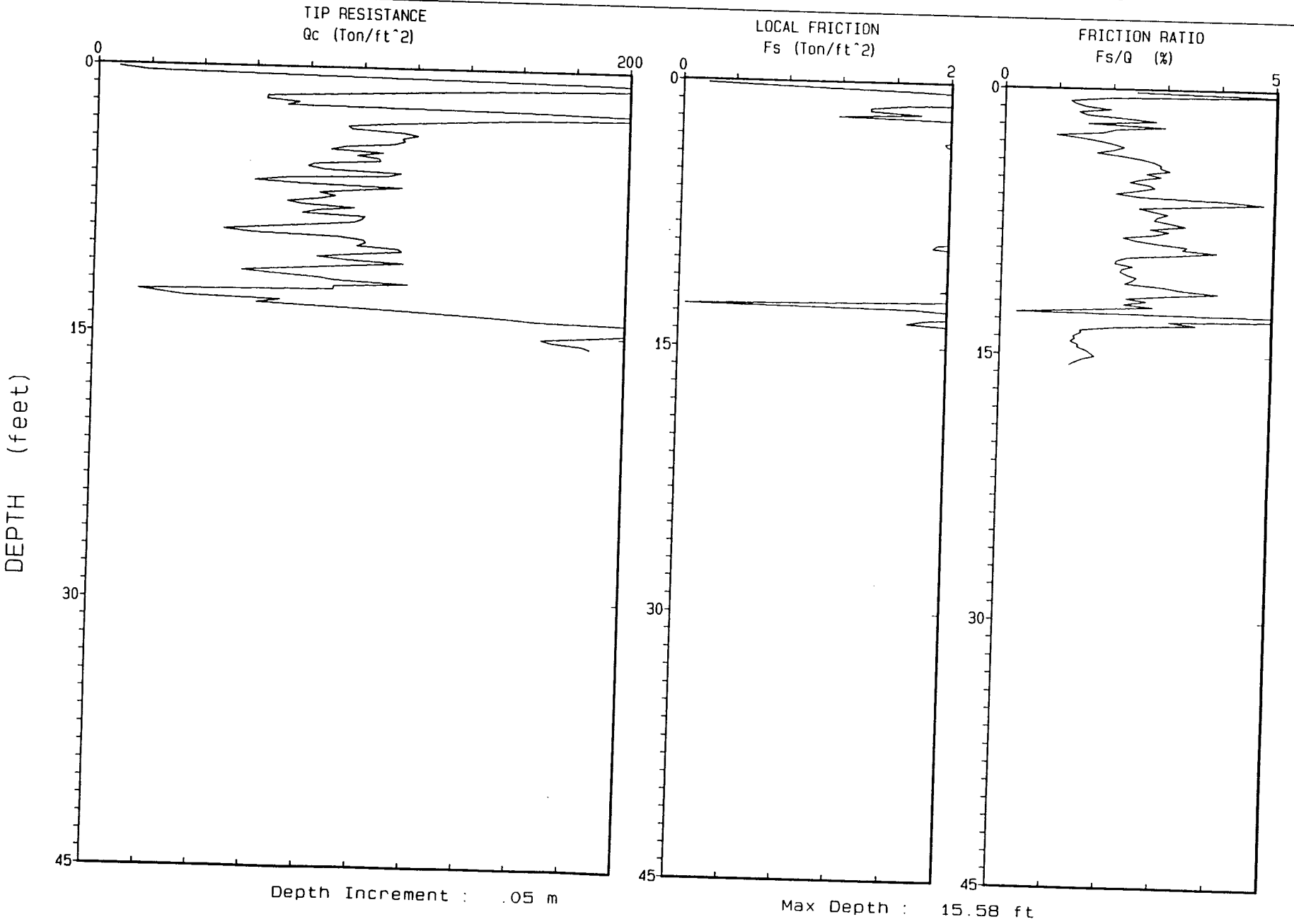
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	27.30	1.02	3.72	1.48	clayey silt to silty clay	UNDFND	UNDFD	13	1.02
10.00	32.81	25.84	1.08	4.16	1.50	silty clay to clay	UNDFND	UNDFD	17	.96

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ***

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-12-92
DEPTH TO WATER : 23.45 FT BLS
SOUNDING NO. : CPT-34A Pg 1 / 1
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW
Location : CPT-34
Job No. : 92-1016
Tot. Unit Wt. (avg) : 110 pcf

Test Date :A 08-12-92
Elevation : UNKNOWN
Water table (meters) : 7.1

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	105.30	1.63	1.55	0.02	sand to silty sand	>90	>48	25	UNDEFINEI
0.50	1.64	127.08	2.11	1.66	0.07	sand to silty sand	>90	>48	30	UNDEFINEI
0.75	2.46	116.32	2.44	2.10	0.11	silty sand to sandy silt	>90	>48	37	UNDEFINEI
1.00	3.28	143.78	2.21	1.53	0.16	sand to silty sand	>90	>48	34	UNDEFINEI
1.25	4.10	112.36	2.53	2.25	0.20	silty sand to sandy silt	>90	>48	36	UNDEFINEI
1.50	4.92	99.66	2.86	2.87	0.25	sandy silt to clayey silt	UNDFND	UNDFD	38	3.97
1.75	5.74	92.10	2.35	2.55	0.29	silty sand to sandy silt	80-90	44-46	29	UNDEFINED
2.00	6.56	86.72	2.75	3.18	0.34	sandy silt to clayey silt	UNDFND	UNDFD	33	3.45
2.25	7.38	94.28	2.63	2.79	0.38	sandy silt to clayey silt	UNDFND	UNDFD	36	3.75
2.50	8.20	81.64	2.46	3.01	0.43	sandy silt to clayey silt	UNDFND	UNDFD	31	3.24
2.75	9.02	88.52	2.47	2.79	0.47	sandy silt to clayey silt	UNDFND	UNDFD	34	3.52
3.00	9.84	80.28	2.04	2.54	0.52	sandy silt to clayey silt	UNDFND	UNDFD	31	3.19
3.25	10.66	101.78	2.37	2.32	0.56	silty sand to sandy silt	70-80	42-44	32	UNDEFINED
3.50	11.48	87.86	2.52	2.87	0.61	sandy silt to clayey silt	UNDFND	UNDFD	34	3.49
3.75	12.30	90.00	2.34	2.60	0.65	sandy silt to clayey silt	UNDFND	UNDFD	34	3.57
4.00	13.12	47.38	1.47	3.09	0.70	sandy silt to clayey silt	UNDFND	UNDFD	18	1.86
4.25	13.94	109.92	1.98	1.80	0.74	silty sand to sandy silt	70-80	42-44	35	UNDEFINED
4.50	14.76	205.22	2.96	1.44	0.79	sand to silty sand	>90	44-46	49	UNDEFINED
4.75	15.58	180.32	2.77	1.53	0.83	sand.to silty sand	80-90	44-46	43	UNDEFINED

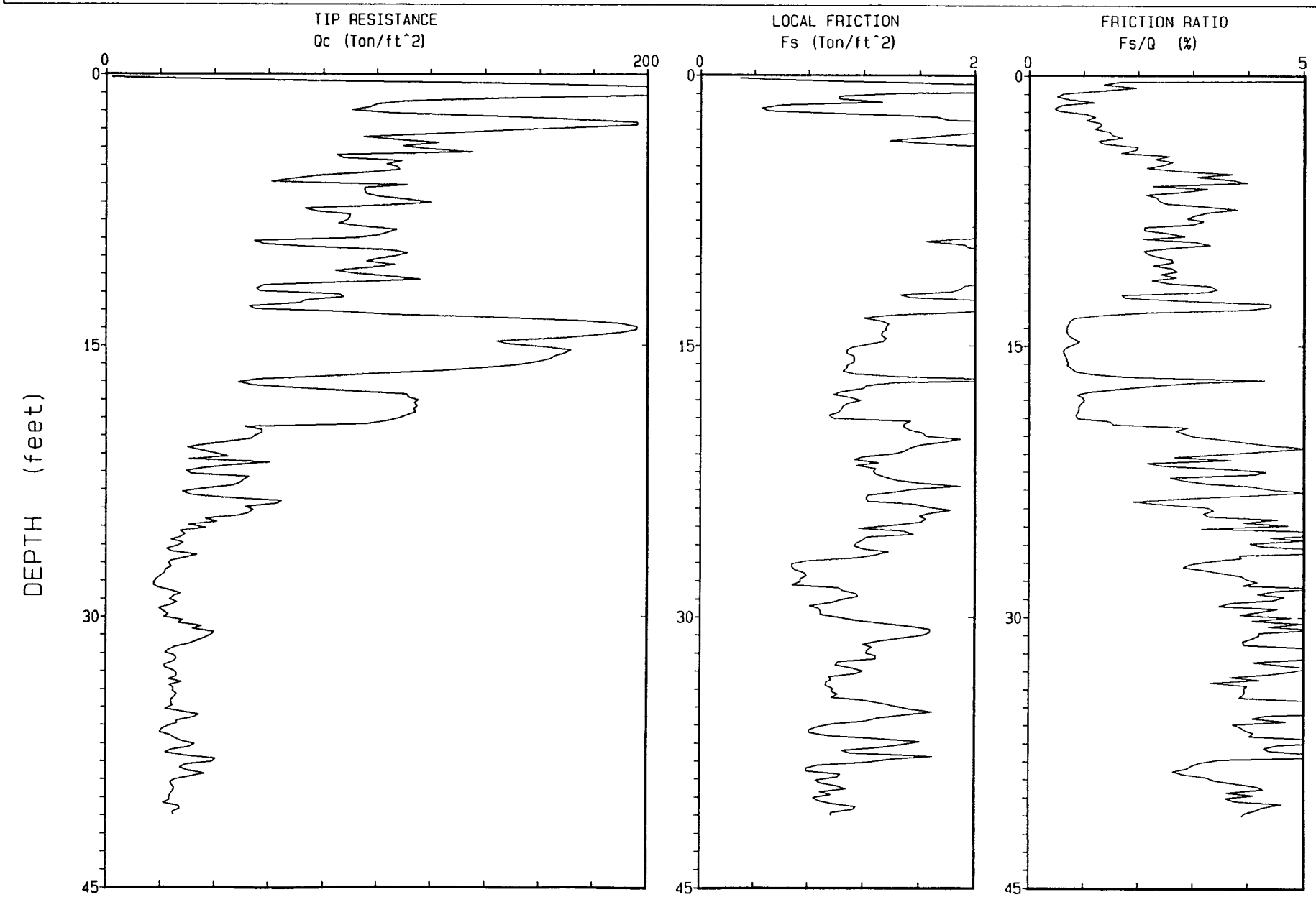
Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-12-92 SOUNDING NO. : CPT-34B Pg 1 / 1

LOCATION : BLDG. 870 DEPTH TO WATER : 23.45 FT BLS TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date :B 08-12-92

Location : CPT-34 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 7.15

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	131.06	2.13	1.62	0.02	sand to silty sand	>90	>48	31	UNDEFINED
0.50	1.64	157.50	1.09	0.69	0.07	sand	>90	>48	30	UNDEFINED
0.75	2.46	121.62	1.12	0.92	0.11	sand to silty sand	>90	>48	29	UNDEFINED
1.00	3.28	164.84	2.23	1.35	0.16	sand to silty sand	>90	>48	39	UNDEFINED
1.25	4.10	110.94	1.84	1.66	0.20	silty sand to sandy silt	>90	>48	35	UNDEFINED
1.50	4.92	104.22	2.38	2.29	0.25	silty sand to sandy silt	80-90	46-48	33	UNDEFINED
1.75	5.74	91.24	2.74	3.00	0.29	sandy silt to clayey silt	UNDFND	UNDFD	35	3.63
2.00	6.56	91.82	2.56	2.79	0.34	sandy silt to clayey silt	UNDFND	UNDFD	35	3.65
2.25	7.38	101.42	2.82	2.78	0.38	sandy silt to clayey silt	UNDFND	UNDFD	39	4.04
2.50	8.20	86.42	2.66	3.08	0.43	sandy silt to clayey silt	UNDFND	UNDFD	33	3.44
2.75	9.02	99.34	2.34	2.35	0.47	silty sand to sandy silt	70-80	44-46	32	UNDEFINED
3.00	9.84	80.58	2.03	2.52	0.52	sandy silt to clayey silt	UNDFND	UNDFD	31	3.20
3.25	10.66	101.62	2.54	2.50	0.56	silty sand to sandy silt	70-80	42-44	32	UNDEFINED
3.50	11.48	96.78	2.44	2.52	0.61	silty sand to sandy silt	70-80	42-44	31	UNDEFINED
3.75	12.30	68.70	1.73	2.52	0.65	sandy silt to clayey silt	UNDFND	UNDFD	26	2.72
4.00	13.12	67.58	2.35	3.47	0.70	sandy silt to clayey silt	UNDFND	UNDFD	26	2.67
4.25	13.94	163.02	1.33	0.82	0.74	sand	80-90	44-46	31	UNDEFINED
4.50	14.76	175.64	1.34	0.77	0.79	sand	80-90	44-46	34	UNDEFINED
4.75	15.58	163.46	1.13	0.69	0.83	sand	80-90	42-44	31	UNDEFINED
5.00	16.40	147.70	1.09	0.74	0.88	sand	70-80	42-44	28	UNDEFINED
5.25	17.22	67.92	1.53	2.25	0.92	silty sand to sandy silt	50-60	38-40	22	UNDEFINED
5.50	18.04	100.26	1.10	1.10	0.97	sand to silty sand	60-70	40-42	24	UNDEFINED
5.75	18.86	113.78	1.03	0.91	1.01	sand to silty sand	70-80	40-42	27	UNDEFINED
6.00	19.69	83.32	1.41	1.69	1.06	silty sand to sandy silt	60-70	38-40	27	UNDEFINED
6.25	20.51	49.20	1.71	3.48	1.11	clayey silt to silty clay	UNDFND	UNDFD	24	1.92
6.50	21.33	36.08	1.36	3.77	1.15	clayey silt to silty clay	UNDFND	UNDFD	17	1.39
6.75	22.15	40.60	1.26	3.11	1.20	sandy silt to clayey silt	UNDFND	UNDFD	16	1.57
7.00	22.97	46.86	1.57	3.35	1.24	clayey silt to silty clay	UNDFND	UNDFD	22	1.82
7.25	23.79	45.80	1.33	2.91	1.29	sandy silt to clayey silt	UNDFND	UNDFD	18	1.78
7.50	24.61	48.50	1.69	3.48	1.31	clayey silt to silty clay	UNDFND	UNDFD	23	1.88
7.75	25.43	32.86	1.45	4.41	1.33	silty clay to clay	UNDFND	UNDFD	21	1.25
8.00	26.25	25.82	1.18	4.57	1.35	silty clay to clay	UNDFND	UNDFD	16	.97
8.25	27.07	26.82	1.06	3.94	1.37	silty clay to clay	UNDFND	UNDFD	17	1.01
8.50	27.89	21.30	0.74	3.46	1.39	clayey silt to silty clay	UNDFND	UNDFD	10	.79
8.75	28.71	21.00	0.93	4.42	1.41	clay	UNDFND	UNDFD	20	.77
9.00	29.53	23.44	0.97	4.15	1.42	silty clay to clay	UNDFND	UNDFD	15	.87
9.25	30.35	24.02	1.06	4.40	1.44	silty clay to clay	UNDFND	UNDFD	15	.89
9.50	31.17	36.34	1.60	4.40	1.46	silty clay to clay	UNDFND	UNDFD	23	1.38

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ***

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	26.88	1.24	4.63	1.48	silty clay to clay	UNDFND	UNDFD	17	1.00
10.00	32.81	23.86	1.14	4.79	1.50	clay	UNDFND	UNDFD	23	.8
10.25	33.63	25.54	1.04	4.07	1.52	silty clay to clay	UNDFND	UNDFD	16	.94
10.50	34.45	24.80	0.97	3.93	1.54	silty clay to clay	UNDFND	UNDFD	16	.91
10.75	35.27	24.44	1.44	5.89	1.56	clay	UNDFND	UNDFD	23	.9
11.00	36.09	28.30	1.18	4.16	1.58	silty clay to clay	UNDFND	UNDFD	18	1.0
11.25	36.91	23.40	1.09	4.68	1.60	clay	UNDFND	UNDFD	22	.85
11.50	37.73	27.66	1.33	4.82	1.62	clay	UNDFND	UNDFD	26	1.0
11.75	38.55	33.18	1.02	3.07	1.64	clayey silt to silty clay	UNDFND	UNDFD	16	1.2
12.00	39.37	28.20	0.97	3.43	1.66	clayey silt to silty clay	UNDFND	UNDFD	14	1.04
12.25	40.19	24.00	0.93	3.88	1.68	silty clay to clay	UNDFND	UNDFD	15	.87
12.50	41.01	24.92	1.04	4.17	1.70	silty clay to clay	UNDFND	UNDFD	16	.9

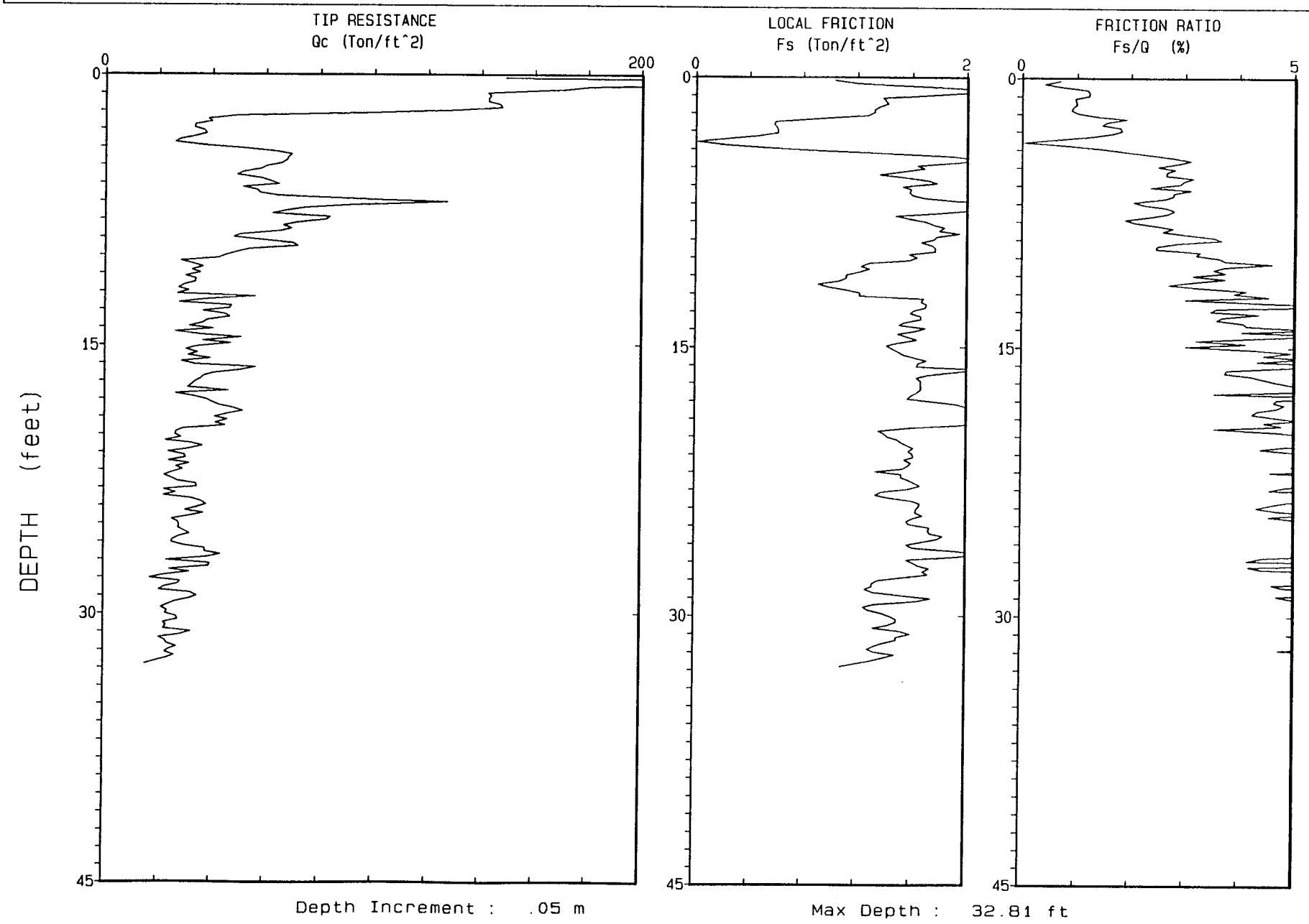
Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 25

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ***

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-13-92 SOUNDING NO. : CPT-35 Pg 1 / 1

LOCATION : BLDG. 870 DEPTH TO WATER : 36.08 FT BLS TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date : 08-13-92

Location : CPT-35 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 11

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	205.62	1.62	0.79	0.02	sand	>90	>48	39	UNDEFINED
0.50	1.64	143.52	1.46	1.02	0.07	sand to silty sand	>90	>48	34	UNDEFINED
0.75	2.46	92.12	1.09	1.18	0.11	sand to silty sand	>90	>48	22	UNDEFINE
1.00	3.28	36.14	0.57	1.58	0.16	silty sand to sandy silt	60-70	44-46	12	UNDEFINED
1.25	4.10	34.86	0.38	1.08	0.20	silty sand to sandy silt	50-60	42-44	11	UNDEFINED
1.50	4.92	66.72	1.82	2.72	0.25	sandy silt to clayey silt	UNDFND	UNDFD	26	3.3
1.75	5.74	55.24	1.57	2.84	0.29	sandy silt to clayey silt	UNDFND	UNDFD	21	2.7
2.00	6.56	58.32	1.62	2.77	0.34	sandy silt to clayey silt	UNDFND	UNDFD	22	2.89
2.25	7.38	90.72	2.20	2.43	0.38	silty sand to sandy silt	70-80	44-46	29	UNDEFINED
2.50	8.20	73.32	1.67	2.27	0.43	silty sand to sandy silt	60-70	42-44	23	UNDEFINE
2.75	9.02	59.80	1.83	3.05	0.47	sandy silt to clayey silt	UNDFND	UNDFD	23	2.96
3.00	9.84	60.66	1.71	2.82	0.52	sandy silt to clayey silt	UNDFND	UNDFD	23	3.00
3.25	10.66	36.98	1.41	3.80	0.56	clayey silt to silty clay	UNDFND	UNDFD	18	1.8
3.50	11.48	33.04	1.09	3.29	0.61	clayey silt to silty clay	UNDFND	UNDFD	16	1.6
3.75	12.30	34.24	1.25	3.64	0.65	clayey silt to silty clay	UNDFND	UNDFD	16	1.67
4.00	13.12	38.98	1.66	4.25	0.70	silty clay to clay	UNDFND	UNDFD	25	1.9
4.25	13.94	39.52	1.62	4.10	0.74	clayey silt to silty clay	UNDFND	UNDFD	19	1.9
4.50	14.76	37.96	1.57	4.13	0.79	clayey silt to silty clay	UNDFND	UNDFD	18	1.85
4.75	15.58	35.42	1.51	4.26	0.83	silty clay to clay	UNDFND	UNDFD	23	1.72
5.00	16.40	41.72	1.80	4.32	0.88	silty clay to clay	UNDFND	UNDFD	27	2.0
5.25	17.22	35.92	1.67	4.66	0.92	silty clay to clay	UNDFND	UNDFD	23	1.7
5.50	18.04	34.92	1.65	4.71	0.97	silty clay to clay	UNDFND	UNDFD	22	1.69
5.75	18.86	45.68	2.07	4.53	1.01	silty clay to clay	UNDFND	UNDFD	29	2.2
6.00	19.69	40.54	1.82	4.48	1.06	silty clay to clay	UNDFND	UNDFD	26	1.9
6.25	20.51	27.34	1.49	5.44	1.11	clay	UNDFND	UNDFD	26	1.31
6.50	21.33	30.42	1.60	5.25	1.15	clay	UNDFND	UNDFD	29	1.4
6.75	22.15	27.52	1.52	5.52	1.20	clay	UNDFND	UNDFD	26	1.3
7.00	22.97	28.68	1.60	5.57	1.24	clay	UNDFND	UNDFD	27	1.37
7.25	23.79	28.08	1.49	5.31	1.29	clay	UNDFND	UNDFD	27	1.33
7.50	24.61	34.58	1.65	4.77	1.33	silty clay to clay	UNDFND	UNDFD	22	1.6
7.75	25.43	27.72	1.67	6.04	1.38	clay	UNDFND	UNDFD	27	1.3
8.00	26.25	28.16	1.70	6.04	1.42	clay	UNDFND	UNDFD	27	1.33
8.25	27.07	36.00	1.84	5.10	1.47	clay	UNDFND	UNDFD	34	1.7
8.50	27.89	31.44	1.67	5.31	1.51	clay	UNDFND	UNDFD	30	1.4
8.75	28.71	23.34	1.32	5.66	1.56	clay	UNDFND	UNDFD	22	1.08
9.00	29.53	29.94	1.50	5.02	1.60	clay	UNDFND	UNDFD	29	1.4
9.25	30.35	24.62	1.43	5.79	1.65	clay	UNDFND	UNDFD	24	1.1
9.50	31.17	25.86	1.48	5.72	1.69	clay	UNDFND	UNDFD	25	1.20

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 20

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

1 HILL AIRFORCE BASE - BUILDING 870
0

Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	23.76	1.37	5.78	1.74	clay	UNDFND	UNDFD	23	1.10
10.00	32.81	21.46	1.30	6.06	1.78	clay	UNDFND	UNDFD	21	.98

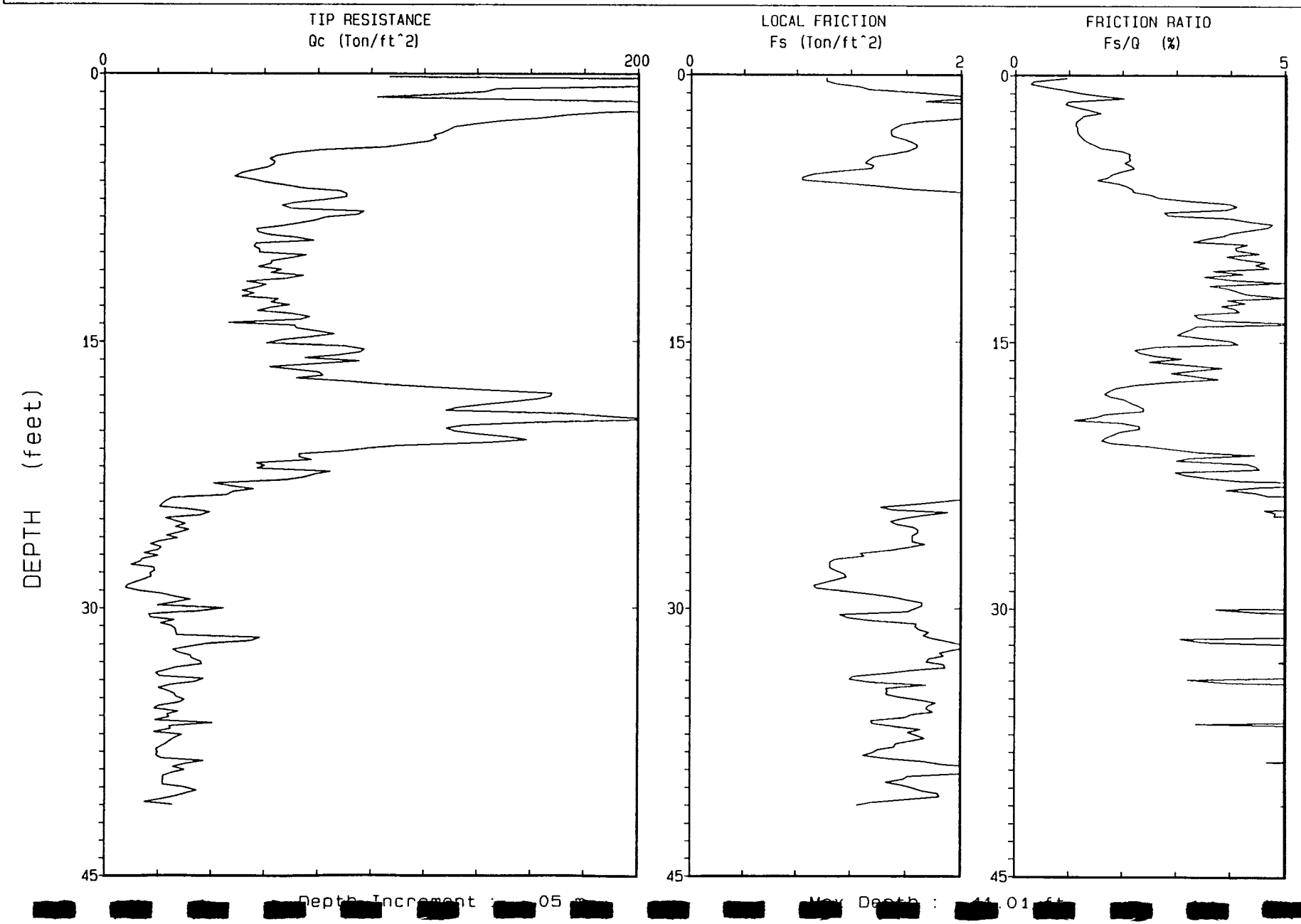
Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 20

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ***

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW DATE : 08-13-92 SOUNDING NO. : CPT-36 Pg 1 / 1

LOCATION : BLDG. 870 DEPTH TO WATER : 34.11 FT BLS TERRA JOB NO. : 92-1016



Depth Increment : .05 ft Max Depth : 44.01 ft

1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Test Date : 08-13-92

Location : CPT-36 Elevation : UNKNOWN

Job No. : 92-1016 Water table (meters) : 10.4

Tot. Unit Wt. (avg) : 110 pcf

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	228.58	1.15	0.50	0.02	sand	>90	UNDFD	44	UNDEFINED
0.50	1.64	154.98	1.93	1.25	0.07	sand to silty sand	>90	>48	37	UNDEFINED
0.75	2.46	204.98	2.69	1.31	0.11	sand to silty sand	>90	>48	49	UNDEFINED
1.00	3.28	135.54	1.55	1.15	0.16	sand to silty sand	>90	>48	32	UNDEFINED
1.25	4.10	117.72	1.61	1.37	0.20	sand to silty sand	>90	>48	28	UNDEFINED
1.50	4.92	68.42	1.42	2.08	0.25	silty sand to sandy silt	70-80	44-46	22	UNDEFINED
1.75	5.74	55.78	1.11	1.99	0.29	silty sand to sandy silt	60-70	42-44	18	UNDEFINED
2.00	6.56	69.00	1.39	2.01	0.34	silty sand to sandy silt	70-80	44-46	22	UNDEFINED
2.25	7.38	80.54	2.59	3.22	0.38	sandy silt to clayey silt	UNDFND	UNDFD	31	3.48
2.50	8.20	84.92	2.97	3.50	0.43	sandy silt to clayey silt	UNDFND	UNDFD	33	3.67
2.75	9.02	63.06	2.75	4.37	0.47	clayey silt to silty clay	UNDFND	UNDFD	30	2.72
3.00	9.84	64.18	2.45	3.82	0.52	clayey silt to silty clay	UNDFND	UNDFD	31	2.76
3.25	10.66	65.80	2.84	4.32	0.56	clayey silt to silty clay	UNDFND	UNDFD	32	2.83
3.50	11.48	65.74	2.63	4.00	0.61	clayey silt to silty clay	UNDFND	UNDFD	31	2.83
3.75	12.30	55.72	2.33	4.19	0.65	clayey silt to silty clay	UNDFND	UNDFD	27	2.39
4.00	13.12	62.14	2.60	4.19	0.70	clayey silt to silty clay	UNDFND	UNDFD	30	2.67
4.25	13.94	64.82	2.52	3.89	0.74	clayey silt to silty clay	UNDFND	UNDFD	31	2.78
4.50	14.76	77.18	2.51	3.26	0.79	sandy silt to clayey silt	UNDFND	UNDFD	30	3.32
4.75	15.58	82.18	2.39	2.91	0.83	sandy silt to clayey silt	UNDFND	UNDFD	31	3.53
5.00	16.40	80.10	2.38	2.97	0.88	sandy silt to clayey silt	UNDFND	UNDFD	31	3.44
5.25	17.22	79.42	2.56	3.23	0.92	sandy silt to clayey silt	UNDFND	UNDFD	30	3.41
5.50	18.04	141.40	2.60	1.84	0.97	silty sand to sandy silt	70-80	42-44	45	UNDEFINED
5.75	18.86	143.72	3.21	2.23	1.01	silty sand to sandy silt	70-80	42-44	46	UNDEFINED
6.00	19.69	174.20	2.89	1.66	1.06	sand to silty sand	80-90	42-44	42	UNDEFINED
6.25	20.51	142.16	2.65	1.87	1.11	silty sand to sandy silt	70-80	42-44	45	UNDEFINED
6.50	21.33	103.22	2.91	2.82	1.15	sandy silt to clayey silt	UNDFND	UNDFD	40	4.43
6.75	22.15	65.00	2.49	3.83	1.20	clayey silt to silty clay	UNDFND	UNDFD	31	2.77
7.00	22.97	69.50	2.71	3.90	1.24	clayey silt to silty clay	UNDFND	UNDFD	33	2.96
7.25	23.79	44.44	2.15	4.84	1.29	silty clay to clay	UNDFND	UNDFD	28	1.87
7.50	24.61	27.52	1.69	6.13	1.33	clay	UNDFND	UNDFD	26	1.13
7.75	25.43	28.36	1.60	5.63	1.38	clay	UNDFND	UNDFD	27	1.17
8.00	26.25	26.24	1.67	6.35	1.42	clay	UNDFND	UNDFD	25	1.07
8.25	27.07	18.76	1.48	7.90	1.47	clay	UNDFND	UNDFD	18	.75
8.50	27.89	14.94	1.07	7.15	1.51	clay	UNDFND	UNDFD	14	.58
8.75	28.71	14.06	1.07	7.64	1.56	clay	UNDFND	UNDFD	13	.54
9.00	29.53	20.20	1.32	6.53	1.60	clay	UNDFND	UNDFD	19	.80
9.25	30.35	28.66	1.57	5.47	1.65	clay	UNDFND	UNDFD	27	1.17
9.50	31.17	23.20	1.51	6.53	1.69	clay	UNDFND	UNDFD	22	.93

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 23

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ***

1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW Location : BLDG. 870

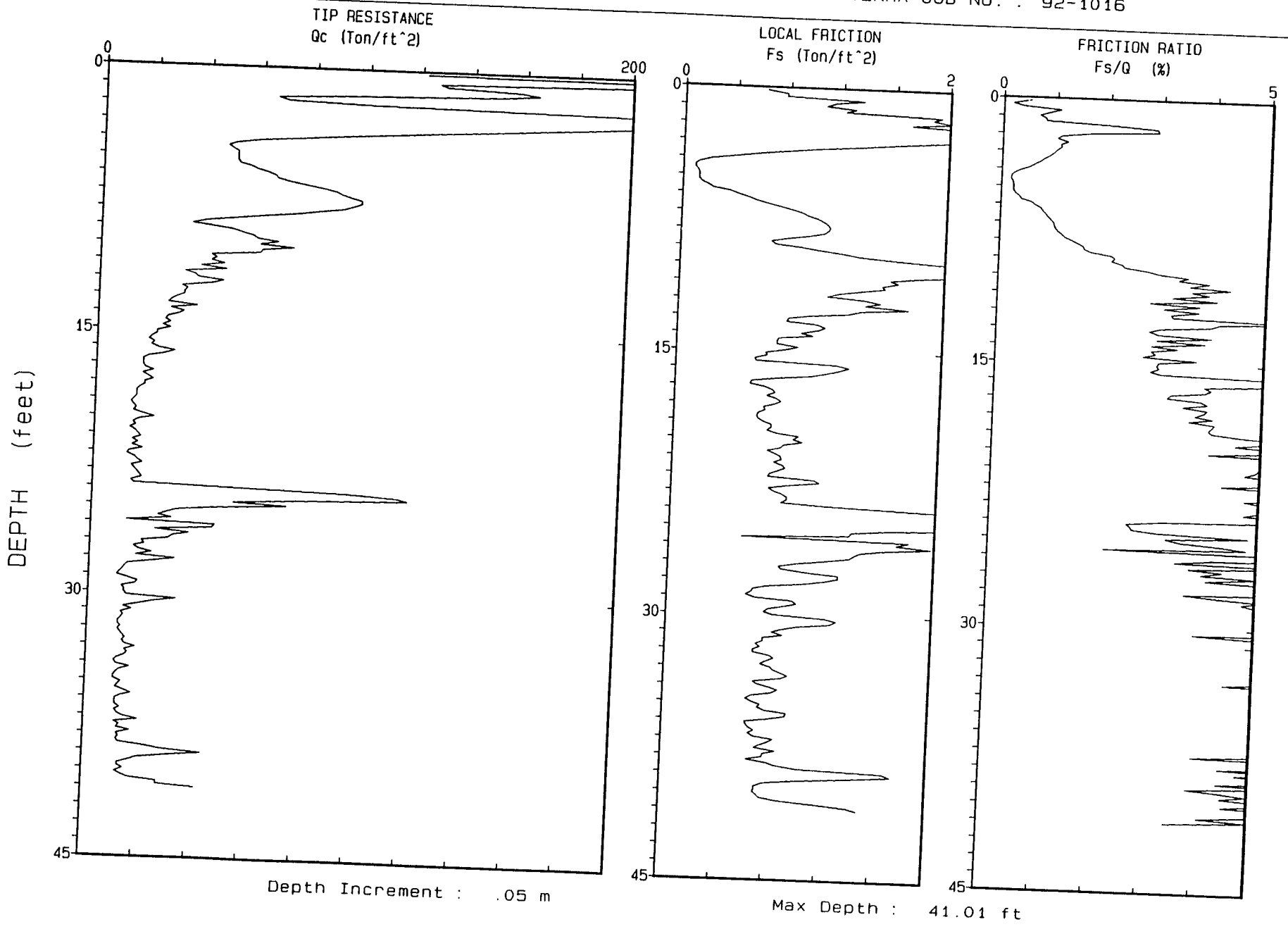
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	41.12	1.84	4.47	1.74	silty clay to clay	UNDFND	UNDFD	26	1.7
10.00	32.81	30.08	1.90	6.32	1.78	clay	UNDFND	UNDFD	29	1.2
10.25	33.63	28.24	1.73	6.12	1.83	clay	UNDFND	UNDFD	27	1.14
10.50	34.45	27.32	1.39	5.10	1.87	clay	UNDFND	UNDFD	26	1.10
10.75	35.27	26.88	1.60	5.96	1.89	clay	UNDFND	UNDFD	26	1.0
11.00	36.09	22.84	1.71	7.49	1.91	clay	UNDFND	UNDFD	22	.9
11.25	36.91	25.26	1.51	5.99	1.93	clay	UNDFND	UNDFD	24	1.01
11.50	37.73	24.78	1.62	6.55	1.95	clay	UNDFND	UNDFD	24	.9
11.75	38.55	23.18	1.45	6.27	1.97	clay	UNDFND	UNDFD	22	.9
12.00	39.37	26.52	2.01	7.57	1.99	clay	UNDFND	UNDFD	25	1.06
12.25	40.19	25.84	1.60	6.18	2.01	clay	UNDFND	UNDFD	25	1.03
12.50	41.01	23.80	1.58	6.65	2.03	clay	UNDFND	UNDFD	23	.9

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 23

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-15-92
DEPTH TO WATER : 13.12 FT BLS
SOUNDING NO. : CPT-38 Pg 1 / 1
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870
0

Contractor : TERRA TECH SW
Location : CPT-38
Job No. : 92-1016
Tot. Unit Wt. (avg) : 110 pcf

Test Date : 08-15-92
Elevation : UNKNOWN
Water table (meters) : 4

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	201.62	0.93	0.46	0.02	sand	>90	>48	39	UNDEFINED
0.50	1.64	125.84	1.48	1.18	0.07	sand to silty sand	>90	>48	30	UNDEFI[illegible]
0.75	2.46	178.44	2.36	1.32	0.11	sand to silty sand	>90	>48	43	UNDEFI[illegible]
1.00	3.28	186.06	1.91	1.03	0.16	sand	>90	>48	36	UNDEFINED
1.25	4.10	92.34	0.59	0.64	0.20	sand to silty sand	80-90	46-48	22	UNDEFINED
1.50	4.92	49.28	0.11	0.22	0.25	sand to silty sand	60-70	44-46	12	UNDEFI[illegible]
1.75	5.74	53.34	0.16	0.30	0.29	sand to silty sand	60-70	42-44	13	UNDEFINED
2.00	6.56	68.36	0.50	0.73	0.34	sand to silty sand	70-80	44-46	16	UNDEFINED
2.25	7.38	90.98	0.90	0.98	0.38	sand to silty sand	70-80	44-46	22	UNDEFI[illegible]
2.50	8.20	88.46	1.11	1.25	0.43	sand to silty sand	70-80	44-46	21	UNDEFI[illegible]
2.75	9.02	45.76	0.82	1.80	0.47	silty sand to sandy silt	50-60	40-42	15	UNDEFINED
3.00	9.84	57.48	1.47	2.55	0.52	sandy silt to clayey silt	UNDFND	UNDFD	22	2.[illegible]
3.25	10.66	59.44	2.21	3.72	0.56	clayey silt to silty clay	UNDFND	UNDFD	28	2.[illegible]
3.50	11.48	43.64	1.55	3.54	0.61	clayey silt to silty clay	UNDFND	UNDFD	21	1.53
3.75	12.30	38.96	1.34	3.44	0.65	clayey silt to silty clay	UNDFND	UNDFD	19	1.36
4.00	13.12	31.54	1.25	3.96	0.70	clayey silt to silty clay	UNDFND	UNDFD	15	1.[illegible]
4.25	13.94	30.00	1.00	3.35	0.73	clayey silt to silty clay	UNDFND	UNDFD	14	1.[illegible]
4.50	14.76	26.70	0.85	3.18	0.75	clayey silt to silty clay	UNDFND	UNDFD	13	.92
4.75	15.58	22.42	0.68	3.05	0.77	clayey silt to silty clay	UNDFND	UNDFD	11	.[illegible]
5.00	16.40	23.96	1.19	4.97	0.79	clay	UNDFND	UNDFD	23	.[illegible]
5.25	17.22	18.10	0.67	3.69	0.81	silty clay to clay	UNDFND	UNDFD	12	.61
5.50	18.04	19.66	0.76	3.87	0.83	silty clay to clay	UNDFND	UNDFD	13	.[illegible]
5.75	18.86	16.38	0.66	4.00	0.85	silty clay to clay	UNDFND	UNDFD	10	.[illegible]
6.00	19.69	14.60	0.73	5.01	0.87	clay	UNDFND	UNDFD	14	.48
6.25	20.51	17.34	0.90	5.19	0.89	clay	UNDFND	UNDFD	17	.57
6.50	21.33	15.58	0.78	5.03	0.91	clay	UNDFND	UNDFD	15	.[illegible]
6.75	22.15	15.20	0.79	5.22	0.93	clay	UNDFND	UNDFD	15	.[illegible]
7.00	22.97	16.18	0.92	5.69	0.95	clay	UNDFND	UNDFD	15	.53
7.25	23.79	16.56	0.92	5.58	0.97	clay	UNDFND	UNDFD	16	.[illegible]
7.50	24.61	93.50	2.62	2.80	0.98	sandy silt to clayey silt	UNDFND	UNDFD	36	3.[illegible]
7.75	25.43	46.74	1.89	4.04	1.00	clayey silt to silty clay	UNDFND	UNDFD	22	1.62
8.00	26.25	32.34	1.53	4.74	1.02	silty clay to clay	UNDFND	UNDFD	21	1.[illegible]
8.25	27.07	28.26	1.27	4.51	1.04	silty clay to clay	UNDFND	UNDFD	18	.[illegible]
8.50	27.89	19.30	1.07	5.52	1.06	clay	UNDFND	UNDFD	18	.[illegible]
8.75	28.71	19.28	0.85	4.41	1.08	clay	UNDFND	UNDFD	18	.63
9.00	29.53	14.60	0.82	5.60	1.10	clay	UNDFND	UNDFD	14	.[illegible]
9.25	30.35	17.52	0.96	5.49	1.12	clay	UNDFND	UNDFD	17	.[illegible]
9.50	31.17	17.36	0.96	5.55	1.14	clay	UNDFND	UNDFD	17	.55

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 28

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) *

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

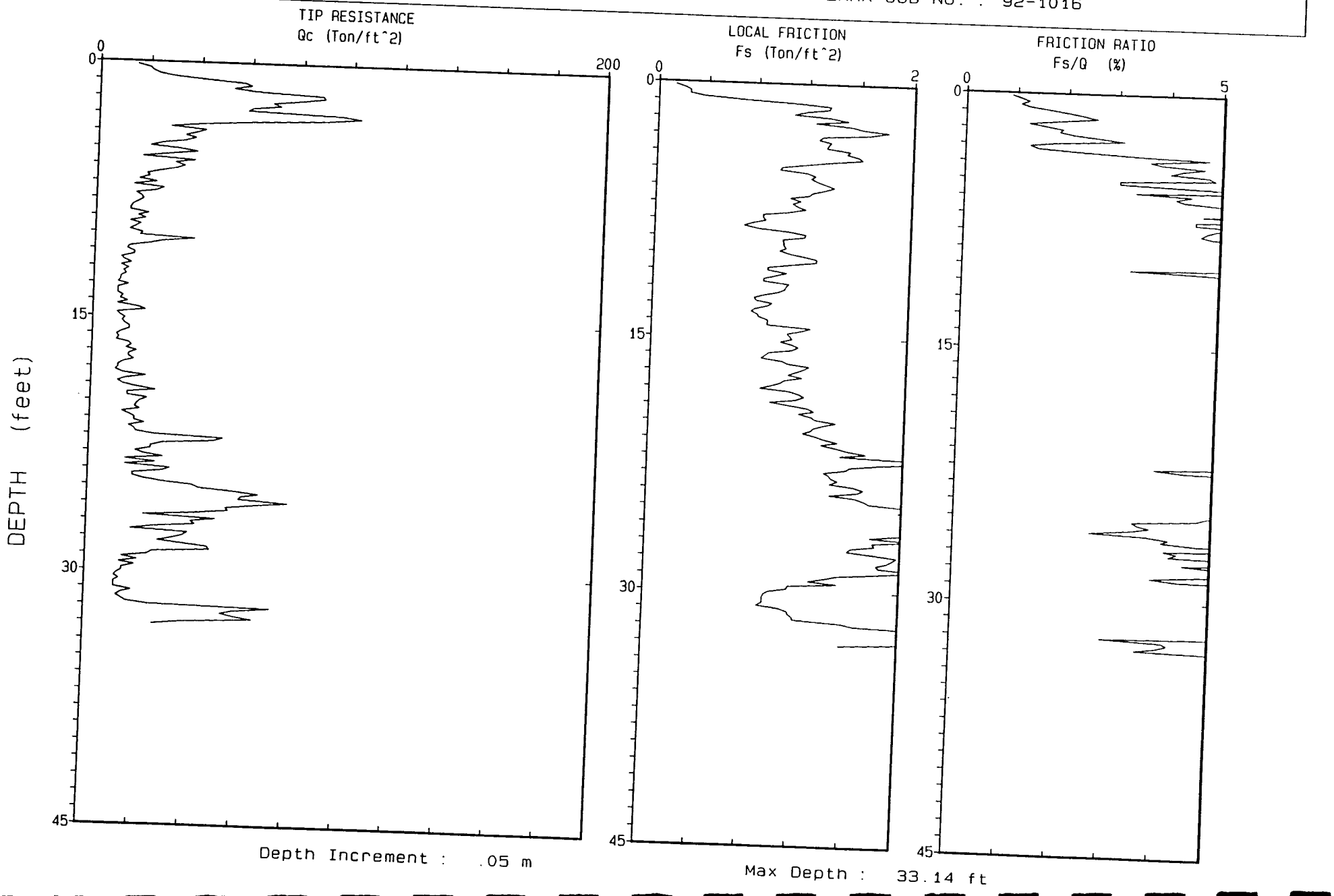
DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	12.48	0.71	5.71	1.16	clay	UNDFND	UNDFD	12	.38
10.00	32.81	13.24	0.76	5.74	1.18	clay	UNDFND	UNDFD	13	.40
10.25	33.63	15.58	0.87	5.60	1.20	clay	UNDFND	UNDFD	15	.49
10.50	34.45	12.68	0.78	6.14	1.22	clay	UNDFND	UNDFD	12	.38
10.75	35.27	11.88	0.69	5.77	1.24	clay	UNDFND	UNDFD	11	.35
11.00	36.09	13.82	0.82	5.92	1.26	clay	UNDFND	UNDFD	13	.42
11.25	36.91	12.28	0.67	5.47	1.28	clay	UNDFND	UNDFD	12	.36
11.50	37.73	14.62	0.80	5.46	1.30	clay	UNDFND	UNDFD	14	.44
11.75	38.55	14.02	0.78	5.53	1.32	clay	UNDFND	UNDFD	13	.42
12.00	39.37	30.00	1.38	4.61	1.34	silty clay to clay	UNDFND	UNDFD	19	.99
12.25	40.19	14.60	0.74	5.04	1.36	clay	UNDFND	UNDFD	14	.44
12.50	41.01	26.28	1.15	4.37	1.37	silty clay to clay	UNDFND	UNDFD	17	.85

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 28

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) **

HILL AIR FORCE BASE

CONTRACTOR : TERRA TECH SW
LOCATION : BLDG. 870
DATE : 08-15-92
DEPTH TO WATER : 24.60 FT BLS
SOUNDING NO. : CPT-39 Pg 1 / 1
TERRA JOB NO. : 92-1016



1 HILL AIRFORCE BASE - BUILDING 870

0

Contractor : TERRA TECH SW
Location : CPT-39
Job No. : 92-1016
Tot. Unit Wt. (avg) : 110 pcf

Test Date : 08-15-92
Elevation : UNKNOWN
Water table (meters) : 7.5

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
0.25	0.82	21.44	0.24	1.12	0.02	sandy silt to clayey silt	UNDFND	UNDFD	8	1.02
0.50	1.64	54.56	1.14	2.10	0.07	sandy silt to clayey silt	UNDFND	UNDFD	21	2.59
0.75	2.46	78.90	1.34	1.70	0.11	silty sand to sandy silt	>90	>48	25	UNDEFINED
1.00	3.28	81.42	1.54	1.89	0.16	silty sand to sandy silt	80-90	46-48	26	UNDEFINED
1.25	4.10	42.08	1.42	3.37	0.20	clayey silt to silty clay	UNDFND	UNDFD	20	1.99
1.50	4.92	30.40	1.36	4.46	0.25	silty clay to clay	UNDFND	UNDFD	19	1.43
1.75	5.74	30.78	1.19	3.86	0.29	clayey silt to silty clay	UNDFND	UNDFD	15	1.45
2.00	6.56	27.88	1.31	4.70	0.34	clay	UNDFND	UNDFD	27	1.31
2.25	7.38	20.28	1.13	5.55	0.38	clay	UNDFND	UNDFD	19	.94
2.50	8.20	18.32	0.89	4.84	0.43	clay	UNDFND	UNDFD	18	.85
2.75	9.02	15.78	1.00	6.32	0.47	clay	UNDFND	UNDFD	15	.72
3.00	9.84	15.96	1.03	6.43	0.52	clay	UNDFND	UNDFD	15	.73
3.25	10.66	24.54	1.19	4.86	0.56	clay	UNDFND	UNDFD	24	1.14
3.50	11.48	13.64	0.95	6.95	0.61	clay	UNDFND	UNDFD	13	.62
3.75	12.30	12.46	1.01	8.14	0.65	undefined	UNDFND	UNDFD	UDF	UNDEFINED
4.00	13.12	11.48	0.88	7.65	0.70	clay	UNDFND	UNDFD	11	.51
4.25	13.94	10.30	0.84	8.19	0.74	undefined	UNDFND	UNDFD	UDF	UNDEFINED
4.50	14.76	14.20	1.08	7.58	0.79	clay	UNDFND	UNDFD	14	.63
4.75	15.58	12.48	1.11	8.88	0.83	undefined	UNDFND	UNDFD	UDF	UNDEFINED
5.00	16.40	11.28	0.98	8.69	0.88	undefined	UNDFND	UNDFD	UDF	UNDEFINED
5.25	17.22	15.18	1.17	7.68	0.92	clay	UNDFND	UNDFD	15	.67
5.50	18.04	13.06	1.03	7.90	0.97	clay	UNDFND	UNDFD	13	.57
5.75	18.86	13.62	1.13	8.30	1.01	undefined	UNDFND	UNDFD	UDF	UNDEFINED
6.00	19.69	16.94	1.23	7.28	1.06	clay	UNDFND	UNDFD	16	.75
6.25	20.51	19.48	1.36	6.97	1.11	clay	UNDFND	UNDFD	19	.87
6.50	21.33	16.94	1.36	8.05	1.15	undefined	UNDFND	UNDFD	UDF	UNDEFINED
6.75	22.15	25.90	1.67	6.45	1.20	clay	UNDFND	UNDFD	25	1.17
7.00	22.97	29.04	1.72	5.91	1.24	clay	UNDFND	UNDFD	28	1.32
7.25	23.79	21.22	1.50	7.06	1.29	clay	UNDFND	UNDFD	20	.94
7.50	24.61	23.54	1.64	6.96	1.33	clay	UNDFND	UNDFD	23	1.05
7.75	25.43	47.52	2.05	4.31	1.36	clayey silt to silty clay	UNDFND	UNDFD	23	2.19
8.00	26.25	63.88	2.26	3.54	1.38	clayey silt to silty clay	UNDFND	UNDFD	31	2.97
8.25	27.07	42.26	1.98	4.69	1.40	silty clay to clay	UNDFND	UNDFD	27	1.94
8.50	27.89	33.12	1.76	5.32	1.42	clay	UNDFND	UNDFD	32	1.50
8.75	28.71	39.34	1.94	4.93	1.44	silty clay to clay	UNDFND	UNDFD	25	1.79
9.00	29.53	19.88	1.54	7.74	1.46	clay	UNDFND	UNDFD	19	.87
9.25	30.35	14.62	1.04	7.11	1.48	clay	UNDFND	UNDFD	14	.61
9.50	31.17	13.44	1.01	7.50	1.50	clay	UNDFND	UNDFD	13	.55

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 21

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

1 HILL AIRFORCE BASE - BUILDING 870
0
Contractor : TERRA TECH SW Location : BLDG. 870 Page No. 2

DEPTH (meters)	DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
9.75	31.99	16.76	1.36	8.10	1.52	undefined	UNDFND	UNDFD	UDF	UNDEFIN
10.00	32.81	62.14	2.33	3.74	1.54	clayey silt to silty clay	UNDFND	UNDFD	30	2.

Dr - All sands (Jamiolkowski et al. 1985) PHI - Robertson and Campanella 1983 Su: Nk= 21

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02)

APPENDIX B

CPT SUMMARY REPORT

GROUND-WATER ANALYTICAL DATA

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 57
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-01
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/05/92
SUBMITTAL DATE: 08/07/92
ANALYSIS DATE : 08/07/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	0.741	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-01

PROJECT NO. : 92-1016
SAMPLE NO. : 57
REPORT DATE : 10/09/92
REVIEWED BY : RAK

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	0.425	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	2.273	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	0.540	mg/L	0.005
o-Xylene	0.487	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 39
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-02
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/05/92
SUBMITTAL DATE: 08/05/92
ANALYSIS DATE : 08/06/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	5.203	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho)	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB)	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-02

PROJECT NO. : 92-1016
SAMPLE NO. : 39
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	0.740	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	3.809	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	7.578	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	1.903	mg/L	0.005
o-Xylene	2.274	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 90
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-03
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/10/92
SUBMITTAL DATE: 08/10/92
ANALYSIS DATE : 08/10/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	2.701	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-03

PROJECT NO. : 92-1016
SAMPLE NO. : 90
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	0.322	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	2.447	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	3.112	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	0.801	mg/L	0.005
o-Xylene	0.854	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 15
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-04
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/05/92
SUBMITTAL DATE: 08/05/92
ANALYSIS DATE : 08/05/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-04

PROJECT NO. : 92-1016
SAMPLE NO. : 15
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 14
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-05
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/05/92
SUBMITTAL DATE: 08/05/92
ANALYSIS DATE : 08/05/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-05

PROJECT NO. : 92-1016
SAMPLE NO. : 14
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT:	James M. Montgomery	PROJECT NO. :	92-1016
	4525 S. Wasatch Blvd.	SAMPLE NO. :	42
	SLC, Utah 84124	REPORT DATE :	10/09/92
		REVIEWED BY :	RAK
	Attn: David A. Fulton	PAGE :	1 OF 2

CLIENT ID NO. :	None	AUTHORIZED BY :	DAF
SAMPLE MATRIX :	Ground Water	CLIENT P.O. :	None
SAMPLED BY :	NKT/RAK	SAMPLE DATE :	08/05/92
SAMPLE SOURCE :	TP-06	SUBMITTAL DATE:	08/05/92
ANALYST :	NKT	ANALYSIS DATE :	08/07/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-06

PROJECT NO. : 92-1016
SAMPLE NO. : 42
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 26
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-07
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/05/92
SUBMITTAL DATE: 08/05/92
ANALYSIS DATE : 08/06/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	26.092	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-07

PROJECT NO. : 92-1016
SAMPLE NO. : 26
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	0.753	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	2.204	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	21.919	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	1.459	mg/L	0.005
o-Xylene	2.447	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 31
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-08
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/06/92
SUBMITTAL DATE: 08/06/92
ANALYSIS DATE : 08/06/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho)	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB)	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-08

PROJECT NO. : 92-1016
SAMPLE NO. : 31
REPORT DATE : 10/09/92
REVIEWED BY : RAK

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 37
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-09
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/06/92
SUBMITTAL DATE: 08/06/92
ANALYSIS DATE : 08/06/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	0.992	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho)	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB)	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-09

PROJECT NO. : 92-1016
SAMPLE NO. : 37
REPORT DATE : 10/09/92
REVIEWED BY : RAK

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	0.173	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	1.269	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	2.128	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	0.211	mg/L	0.005
o-Xylene	0.090	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 38
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-10
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/06/92
SUBMITTAL DATE: 08/06/92
ANALYSIS DATE : 08/06/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	1.928	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-10

PROJECT NO. : 92-1016
SAMPLE NO. : 38
REPORT DATE : 10/09/92
REVIEWED BY : RAK

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	3.618	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	3.214	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	1.854	mg/L	0.005
o-Xylene	1.976	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 70
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-11
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/07/92
SUBMITTAL DATE: 08/08/92
ANALYSIS DATE : 08/08/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho)	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB)	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-11

PROJECT NO. : 92-1016
SAMPLE NO. : 70
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 55
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-12
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/07/92
SUBMITTAL DATE: 08/07/92
ANALYSIS DATE : 08/07/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	1.163	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-12

PROJECT NO. : 92-1016
SAMPLE NO. : 55
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	0.062	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	0.636	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	0.565	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	0.215	mg/L	0.005
o-Xylene	0.050	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 58
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-13
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/07/92
SUBMITTAL DATE: 08/07/92
ANALYSIS DATE : 08/07/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho)	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB)	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-13

PROJECT NO. : 92-1016
SAMPLE NO. : 58
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	0.069	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	0.062	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 59
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-14
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/07/92
SUBMITTAL DATE: 08/07/92
ANALYSIS DATE : 08/07/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	1.440	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-14

PROJECT NO. : 92-1016
SAMPLE NO. : 59
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	0.338	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	0.392	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	0.930	mg/L	0.005
o-Xylene	0.448	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 60
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-15
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/07/92
SUBMITTAL DATE: 08/07/92
ANALYSIS DATE : 08/07/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho)	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB)	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-15

PROJECT NO. : 92-1016
SAMPLE NO. : 60
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 71
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-16
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/07/92
SUBMITTAL DATE: 08/08/92
ANALYSIS DATE : 08/08/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-16

PROJECT NO. : 92-1016
SAMPLE NO. : 71
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	0.057	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 68
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-17
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/08/92
SUBMITTAL DATE: 08/08/92
ANALYSIS DATE : 08/08/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho)	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB)	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-17

PROJECT NO. : 92-1016
SAMPLE NO. : 68
REPORT DATE : 10/09/92
REVIEWED BY : RAK

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	0.014	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	0.057	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 69
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-18
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/08/92
SUBMITTAL DATE: 08/08/92
ANALYSIS DATE : 08/08/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-18

PROJECT NO. : 92-1016
SAMPLE NO. : 69
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 72
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-19
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/08/92
SUBMITTAL DATE: 08/08/92
ANALYSIS DATE : 08/08/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	0.646	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-19

PROJECT NO. : 92-1016
SAMPLE NO. : 72
REPORT DATE : 10/09/92
REVIEWED BY : RAK

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	0.036	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	0.125	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	0.149	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 73
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-20
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/08/92
SUBMITTAL DATE: 08/08/92
ANALYSIS DATE : 08/08/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	0.124	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho)	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB)	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-20

PROJECT NO. : 92-1016
SAMPLE NO. : 73
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	0.303	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	2.699	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	0.504	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 74
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-21
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/08/92
SUBMITTAL DATE: 08/08/92
ANALYSIS DATE : 08/08/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-21

PROJECT NO. : 92-1016
SAMPLE NO. : 74
REPORT DATE : 10/09/92
REVIEWED BY : RAK

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	0.057	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 83
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-22
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/09/92
SUBMITTAL DATE: 08/10/92
ANALYSIS DATE : 08/10/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	0.056	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-22

PROJECT NO. : 92-1016
SAMPLE NO. : 83
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	0.022	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	0.090	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	0.068	mg/L	0.005
o-Xylene	0.036	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 87
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Soil Gas
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-23
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/10/92
SUBMITTAL DATE: 08/10/92
ANALYSIS DATE : 08/10/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho)	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB)	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-23

PROJECT NO. : 92-1016
SAMPLE NO. : 87
REPORT DATE : 10/09/92
REVIEWED BY : RAK

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 86
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-24
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/10/92
SUBMITTAL DATE: 08/10/92
ANALYSIS DATE : 08/10/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho)	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB)	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-24

PROJECT NO. : 92-1016
SAMPLE NO. : 86
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 88
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-25
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/10/92
SUBMITTAL DATE: 08/10/92
ANALYSIS DATE : 08/10/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-25

PROJECT NO. : 92-1016
SAMPLE NO. : 88
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 101
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-26
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/11/92
SUBMITTAL DATE: 08/11/92
ANALYSIS DATE : 08/11/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-26

PROJECT NO. : 92-1016
SAMPLE NO. : 101
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 102
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-27
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/11/92
SUBMITTAL DATE: 08/11/92
ANALYSIS DATE : 08/11/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-27

PROJECT NO. : 92-1016
SAMPLE NO. : 102
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 108
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-29
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/11/92
SUBMITTAL DATE: 08/11/92
ANALYSIS DATE : 08/12/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-29

PROJECT NO. : 92-1016
SAMPLE NO. : 108
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 109
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-30
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/11/92
SUBMITTAL DATE: 08/11/92
ANALYSIS DATE : 08/12/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-30

PROJECT NO. : 92-1016
SAMPLE NO. : 109
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 110
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-31
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/11/92
SUBMITTAL DATE: 08/11/92
ANALYSIS DATE : 08/12/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-31

PROJECT NO. : 92-1016
SAMPLE NO. : 110
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 111
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-32
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/12/92
SUBMITTAL DATE: 08/12/92
ANALYSIS DATE : 08/12/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-32

PROJECT NO. : 92-1016
SAMPLE NO. : 111
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 112
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-33
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/12/92
SUBMITTAL DATE: 08/12/92
ANALYSIS DATE : 08/12/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-33

PROJECT NO. : 92-1016
SAMPLE NO. : 112
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 120
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-34
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/12/92
SUBMITTAL DATE: 08/12/92
ANALYSIS DATE : 08/12/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-34

PROJECT NO. : 92-1016
SAMPLE NO. : 120
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 131
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-36
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/13/92
SUBMITTAL DATE: 08/13/92
ANALYSIS DATE : 08/13/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-36

PROJECT NO. : 92-1016
SAMPLE NO. : 131
REPORT DATE : 10/09/92
REVIEWED BY : RAK

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	0.052	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 130
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-37
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/13/92
SUBMITTAL DATE: 08/13/92
ANALYSIS DATE : 08/13/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	0.789	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-37

PROJECT NO. : 92-1016
SAMPLE NO. : 130
REPORT DATE : 10/09/92
REVIEWED BY : RAK

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	2.525	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	0.930	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	2.410	mg/L	0.005
o-Xylene	1.769	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 141
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-38
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/14/92
SUBMITTAL DATE: 08/14/92
ANALYSIS DATE : 08/14/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-38

PROJECT NO. : 92-1016
SAMPLE NO. : 141
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 142
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : TP-39
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/14/92
SUBMITTAL DATE: 08/14/92
ANALYSIS DATE : 08/14/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TP-39

PROJECT NO. : 92-1016
SAMPLE NO. : 142
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 122
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : JMM Personnel
SAMPLE SOURCE : TWP-01
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/12/92
SUBMITTAL DATE: 08/12/92
ANALYSIS DATE : 08/12/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	0.520	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: TWP-01

PROJECT NO. : 92-1016
SAMPLE NO. : 122
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	0.085	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	0.795	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	1.271	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	0.141	mg/L	0.005
o-Xylene	0.032	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 16
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Soil Gas
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : SGS-01
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/05/92
SUBMITTAL DATE: 08/05/92
ANALYSIS DATE : 08/05/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	0.161	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: SGS-01

PROJECT NO. : 92-1016
SAMPLE NO. : 16
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	0.046	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	12.645	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	0.295	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 143
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : GWS-01
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/14/92
SUBMITTAL DATE: 08/14/92
ANALYSIS DATE : 08/14/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	0.195	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: GWS-01

PROJECT NO. : 92-1016
SAMPLE NO. : 143
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	0.072	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	0.946	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	0.062	mg/L	0.005
o-Xylene	0.027	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 154
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : NKT/RAK
SAMPLE SOURCE : GWS-02
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/14/92
SUBMITTAL DATE: 08/14/92
ANALYSIS DATE : 08/14/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: GWS-02

PROJECT NO. : 92-1016
SAMPLE NO. : 154
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 123
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Product (JP-4)
SAMPLED BY : Unknown
SAMPLE SOURCE : Unknown
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : Unknown
SUBMITTAL DATE: 08/12/92
ANALYSIS DATE : 08/12/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	12.782	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: Unknown

PROJECT NO. : 92-1016
SAMPLE NO. : 123
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	0.475	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	1.804	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	7.434	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	2.009	mg/L	0.005
o-Xylene	1.647	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 107
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : JMM Personnel
SAMPLE SOURCE : MW-03
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/06/92
SUBMITTAL DATE: 08/12/92
ANALYSIS DATE : 08/12/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	12.179	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: MW-03

PROJECT NO. : 92-1016
SAMPLE NO. : 107
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	2.722	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	6.728	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	4.300	mg/L	0.005
o-Xylene	3.369	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 89
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ground Water
SAMPLED BY : JMM Personnel
SAMPLE SOURCE : MW-07
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/10/92
SUBMITTAL DATE: 08/10/92
ANALYSIS DATE : 08/10/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: MW-07

PROJECT NO. : 92-1016
SAMPLE NO. : 89
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

Attn: David A. Fulton

PROJECT NO. : 92-1016
SAMPLE NO. : 75
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 1 OF 2

CLIENT ID NO. : None
SAMPLE MATRIX : Ambient Air
SAMPLED BY : RAK
SAMPLE SOURCE : Basement Sample
ANALYST : NKT

AUTHORIZED BY : DAF
CLIENT P.O. : None
SAMPLE DATE : 08/08/92
SUBMITTAL DATE: 08/08/92
ANALYSIS DATE : 08/08/92

Organic Monitoring-Drinking Water Volatiles
Full Suite

Sample Analysis			
Parameter	Result	Unit	Detection Level
Benzene	< 0.005	mg/L	0.005
Bromobenzene	N/A	mg/L	0.005
Bromochloromethane	N/A	mg/L	0.005
Bromodichloromethane	N/A	mg/L	0.005
Bromoform	N/A	mg/L	0.005
Bromomethane	N/A	mg/L	0.005
n-Butylbenzene	N/A	mg/L	0.005
sec-Butylbenzene	N/A	mg/L	0.005
tert-Butylbenzene	N/A	mg/L	0.005
Carbon tetrachloride	N/A	mg/L	0.005
Chlorobenzene	N/A	mg/L	0.005
Chloroethane	N/A	mg/L	0.005
Chloroform	N/A	mg/L	0.005
Chloromethane	N/A	mg/L	0.005
2-Chlorotoluene (ortho) ...	N/A	mg/L	0.005
4-Chlorotoluene (para)	N/A	mg/L	0.005
1,2-Dibromoethane (EDB) ...	N/A	mg/L	0.005
1,2-Dibromo-3-chloropropane	N/A	mg/L	0.005
Dibromochloromethane	N/A	mg/L	0.005
Dibromomethane	N/A	mg/L	0.005
1,2-Dichlorobenzene (ortho)	N/A	mg/L	0.005
1,3-Dichlorobenzene (meta)	N/A	mg/L	0.005
1,4-Dichlorobenzene (para)	N/A	mg/L	0.005
Dichlorodifluoromethane ...	N/A	mg/L	0.005
1,1-Dichloroethane	N/A	mg/L	0.005
1,2-Dichloroethane	N/A	mg/L	0.005

TERRA TECHNOLOGIES - SOUTHWEST, INC.
ANALYTICAL TESTING SERVICES

CLIENT: James M. Montgomery
4525 S. Wasatch Blvd.
SLC, Utah 84124

SAMPLE SOURCE: Basement Sample

PROJECT NO. : 92-1016
SAMPLE NO. : 75
REPORT DATE : 10/09/92
REVIEWED BY : RAK
PAGE : 2 OF 2

Sample Analysis			
Parameter	Result	Unit	Detection Level
cis 1,2-Dichloroethene	N/A	mg/L	0.005
trans 1,2-Dichloroethene ..	N/A	mg/L	0.005
1,2-Dichloropropane	N/A	mg/L	0.005
1,3-Dichloropropane	N/A	mg/L	0.005
2,2-Dichloropropane	N/A	mg/L	0.005
1,1-Dichloropropene	N/A	mg/L	0.005
1,1-Dichloroethene	N/A	mg/L	0.005
cis 1,3-Dichloropropene ...	N/A	mg/L	0.005
trans 1,3-Dichloropropene .	N/A	mg/L	0.005
Ethylbenzene	< 0.005	mg/L	0.005
Hexachlorobutadiene	N/A	mg/L	0.005
Isoproylbenzene	N/A	mg/L	0.005
4-Isopropyltoluene	N/A	mg/L	0.005
Dichloromethane	N/A	mg/L	0.005
Napthalene	N/A	mg/L	0.005
Propylbenzene	N/A	mg/L	0.005
Styrene	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethane .	N/A	mg/L	0.005
1,1,2,2-Tetrachloroethene (Tetrachloroethylene)	< 0.005	mg/L	0.005
1,1,1,2-Tetrachloroethane .	N/A	mg/L	0.005
Toluene	< 0.005	mg/L	0.005
1,2,3-Trichlorobenzene	N/A	mg/L	0.005
1,2,4-Trichlorobenzene	N/A	mg/L	0.005
1,1,1-Trichloroethane	N/A	mg/L	0.005
1,1,2-Trichloroethane	N/A	mg/L	0.005
Trichloroethene (TCE)	N/A	mg/L	0.005
Fluorotrichloromethane	N/A	mg/L	0.005
1,2,3-Trichloropropane	N/A	mg/L	0.005
1,2,4-Trimethylbenzene	N/A	mg/L	0.005
1,3,5-Trimethylbenzene	N/A	mg/L	0.005
Vinyl chloride	N/A	mg/L	0.005
p-m-Xylene	< 0.005	mg/L	0.005
o-Xylene	< 0.005	mg/L	0.005