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SUBSURFACE INVESTIGATION REPORT
NEW MEXICO "F" STATE TANK BATTERY
LEA COUNTY, NEW MEXICO

Prepared for:

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Subsurface Investigation Report

New Mexico "F" State Tank Battery

Lea County, New Mexico

1.0 INTRODUCTION

Highlander Environmental Corp. (Highlander) has been retained by Texaco Exploration and Production, Inc. (Texaco) to conduct a subsurface investigation of its former New Mexico "F" State Tank Battery (Site). The Site is located approximately 2.6 miles northwest of Monument, New Mexico, and is situated in the northeast quarter (NE/4) of the southeast quarter (SE/4), Section 24, Township 19 South, Range 36 East, Lea County, New Mexico. Figure 1 presents a Site location and topographic map.

1.1 Background

Previously, Texaco operated the Site as an oil-field tank battery. The tank battery included an earthen emergency overflow pit. Discharge to the pit was discontinued years ago. Equipment has been removed from the Site and the pit has been closed. Recently, Amerada-Hess Corp. (Hess) constructed a satellite battery near the Site and unearthed the former pit. The pit is located approximately forty (40) feet north of the satellite battery. Figure 2 presents a Site drawing.

Texaco contracted Allstate Services (Allstate), Midland, Texas to excavate the pit and hydrocarbon affected soil. Approximately 7,400 cubic yards of soil was removed from the pit and stockpiled north of the Site. The soil piles include a main pile, measuring approximately 60 x 180 x 12 feet, and sixteen (16) piles that were processed through a shredder to segregate caliche stone. These piles measure approximately 20 x 20 x 8 feet. Due to sloping topography, the excavation ranged in depth from about 35 feet on the south, to about 20 feet on the north. Figure 2 presents the locations of the soil piles. A pile of caliche rock segregated by the soil shredder was placed west of the sixteen 16 piles. The pile of caliche rock measures approximately 15 x 100 x 10 feet.

The New Mexico Oil Conservation Division (OCD) conducted an inspection of the Site, and requested that Texaco submit a work plan to investigate the extent of hydrocarbons in subsurface

soil, and determine if groundwater has been impacted.

1.2 Regulatory Authority and Remediation Action Levels

The OCD has regulatory authority for oil and gas operations in the State of New Mexico. Locally, the OCD's Hobbs, New Mexico office regulates oil and gas activity in Lea County, New Mexico. The OCD has developed guidelines for closure of unlined surface impoundments (Unlined Surface Impoundment Closure Guidelines, February 1993). The guidelines require a risk-based evaluation of the site to determine recommended remediation action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. A risk-based evaluation was performed for the Site in accordance with the OCD guidelines, and the proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/Kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene and xylene). An RRAL of 1,000 ppm for TPH is proposed for the Site.

The New Mexico Water Quality Control Commission (WQCC) has developed action levels for organic and inorganic contaminants in groundwater and have been published in the document titled, " State of New Mexico Ground and Surface Water Quality Protection Regulation (20 NMAC 6.2) and Utility Operator Certification (20 NMAC 7.4), December 1, 1995".

2.0 SITE SETTING

2.1 Topography

The elevation of the Site is approximately 3690 feet above mean sea level (AMSL). Regionally, the topography slopes to the southeast toward Monument Draw, located approximately six (6) miles southeast of the Site. Locally, the topography slopes from south to north.

2.2 Soils

The Site is represented by the Kimbrough gravelly loam soil, 0 to 3 percent slopes (KO). This soil is present on low ridges in the northern portion of Lea County, New Mexico, and is a source of caliche, which is crushed and used for construction purposes. The beneficial uses of Kimbrough

gravelly loam soil includes range and wildlife habitat.

2.3 Geology

The Site is underlain by the Tertiary-age Ogallala Formation. The Ogallala Formation consists of interbedded, poorly to well cemented sand, clay, silt and gravel. Regionally, the Ogallala Formation is nearly 300 feet thick. Red and green claystone, siltstone and fine grained sandstone of the Triassic-age Chinle Formation underlie the Ogallala Formation.

2.4 Groundwater

Groundwater occurs under unconfined conditions in the Ogallala Formation, commonly referred to as the Ogallala aquifer. Based on depth-to-groundwater measurements from monitor wells installed at the Site between July 7 - 28, 1998, groundwater occurs at depths from about 52.02 feet below ground surface (BGS) at well MW-2 to 68.20 feet BGS at water well WW-1. On July 28, 1998, the elevation of the groundwater surface ranged from 3638.77 feet above mean sea level (AMSL) at well MW-8 to 3634.97 feet AMSL at water well WW-1. Groundwater flow was generally from northwest to southeast at a gradient of approximately 0.003 feet per foot, however, pumping from a water well located approximately 350 feet southwest (cross gradient) from the Site has produced a cone of depression. Based on the groundwater flow measurements, it does not appear that the cone of depression has reached the Site. The water well is owned by Mr. Jimmie Cooper, and is used for oilfield purposes. Figure 3 presents a depth-to-groundwater map for July 28, 1998. Figure 4 presents a groundwater potentiometric surface map for July 28, 1998.

3.0 SUBSURFACE ASSESSMENT ACTIVITIES

3.1 Aerial Photograph Review

Aerial photographs were obtained from National Aerial Resources, Inc., Troy, New York, and included photographs for February 8, 1949, July 23, 1983 and June 10, 1986. Appendix A presents copies of the aerial photographs.

The February 8, 1949 photograph shows the location of the "F" State tank battery. A pit is

visible in the photograph and is located approximately 175 feet north of the tank battery. No spills are visible around the pit, however, some spills are visible around the tanks. The photograph also shows an area of apparent oil spills south of the tanks. The July 23, 1983 photograph shows the tank battery and pit, however, oil spills noted south of the Site on the February 8, 1949 photograph were not visible. The June 10, 1986 photograph is similar to the July 23, 1983 photograph.

3.2 Soil Borings and Monitoring Well Installations

From July 7-22, 1998, Highlander personnel supervised installation of eight (8) rotary drilled borings at the Site. Boring BH-1 (MW-1) was drilled by Scarborough Drilling, Inc., Lamesa, Texas, on July 7, 1998. On July 21 and 22, 1998, Harrison & Cooper, Inc., Lubbock, Texas drilled borings MW-2 through MW-8. The borings were drilled from 65 to 76 feet BGS, using air rotary drilling techniques. Figure 2 presents locations of the rotary drilled borings.

Soil samples were collected during drilling using a core sampler. The soil samples were examined for lithologic properties, and a portion of each sample was retrained for soil headspace gas analysis. A qualified geologist described the lithology of the samples and prepared a sample log for each boring. Appendix B presents sample logs for the borings. All down-hole equipment (i.e., drilling rods and bits, etc.) was thoroughly decontaminated between locations using a high pressure hot water washer. The core sampler was also thoroughly washed between sampling events using potable water and laboratory grade detergent, followed by rinsing with distilled water.

All borings were completed as groundwater monitoring wells. The wells were constructed with two (2) inch diameter schedule 40 PVC threaded casing and factory slotted screen. The well screen, approximately twenty (20) feet in length, was installed with approximately five (5) feet of screen above groundwater and fifteen (15) feet into groundwater. A graded silica sand was placed around the well screen to a depth approximately 2 feet above the screen. A layer of bentonite pellets, approximately 2 feet thick, was placed in the borehole above the sand and hydrated with potable water. The annulus above the bentonite seal was filled with cement and bentonite grout to a depth about 1-foot BGL. The wells were secured with locking caps. All wells, except MW-1, MW-3 and MW-6, were secured with locking above-grade well protectors. Wells MW-1, MW-3 and MW-6

were finished with water-tight at-grade protectors. The well protectors are anchored into concrete pads measuring approximately 3 feet by 3 feet. Table 1 presents a summary of monitoring well drilling and completion details. Appendix C presents monitoring well construction records. The wells were developed by hand bailing with dedicated disposable PVC bailers. Water removed from the wells was placed on the main soil pile. The wells were surveyed for elevation by Piper Surveying, Inc., Gardendale, Texas., a New Mexico licensed professional land surveyor.

3.3 Soil Headspace Gas Survey

Soil samples were collected from the borings, soil piles and pit excavation for headspace gas analysis. The soil samples were analyzed using the Ambient Temperature Headspace (ATH) method. The soil samples were placed in clean plastic sample bags and sealed. After a short period of time at ambient temperature storage, the concentration of organic vapors in the headspace of the sample bag was measured with a Thermo Environmental Instruments, Model 580B, Organic Vapor Meter (OVM). The OVM is a photoionization detection instrument that measures the total ionizable hydrocarbon content of the soil headspace gas. The OVM was calibrated to a 75 parts per million (ppm) isobutylene standard and has a detection limit of 0 .1 ppm. According to OCD guidelines (Guidelines for Unlined Surface Impoundment Closure, February 1993), a soil headspace gas measurement of 100 ppm may be substituted for laboratory analysis of benzene and total BTEX (sum of benzene, toluene, ethylbenzene and xylene). However, a headspace gas analysis cannot be substituted for total petroleum hydrocarbon (TPH) analysis.

Generally, the soil sample from each boring exhibiting the highest headspace gas reading was selected for benzene, total BTEX and TPH analysis. Soil samples exhibiting soil headspace gas readings below 100 ppm were analyzed for TPH. Section 3.3 presents a summary of the soil sampling and laboratory analysis. Table 2 presents a summary of the soil headspace gas readings from soil boring, soil pile and pit excavation samples. The headspace gas readings of soil samples from the borings are presented on the sample logs presented in Appendix B.

Referring to Table 2, the highest soil headspace gas readings of soil samples from borings were observed in boring BH-1. The headspace gas readings of samples from boring BH-1 ranged

from 16 ppm (0 - 1 feet) to 860 ppm (50 to 51 feet). The highest soil headspace gas reading observed in soil samples from the remaining borings was 38 ppm from boring MW-4 (30 to 31 feet). Soil samples from the piles and pit excavation recorded headspace gas readings from 28 ppm (Pile # 12) to 421 ppm (main pile, middle section).

3.4 Soil Samples and Laboratory Analysis

3.4.1 Boring Samples and Laboratory Analysis

Soil samples were collected from each boring and field screened using the ATH method (Section 3.3). Generally, the soil sample from each boring exhibiting the highest headspace gas reading was submitted to the laboratory for testing. Additionally, the soil sample collected immediately above groundwater from each boring was submitted for testing. Soil samples were collected from boring BH-1 every ten feet (i.e., 0 to 0.7 feet, 10 to 10.7 feet, 20 to 20.7 feet, etc.), until groundwater was encountered. Soil samples collected to a depth of approximately 50 feet BGS from boring BH-1 were submitted to the laboratory for testing. Soil samples were collected from borings MW-2 through MW-5 for laboratory analysis. However, no soil samples were submitted for laboratory tests from borings MW-6, MW-7 and MW-8, since these locations were outside of the area of soil impact, and were installed to evaluate groundwater quality. The soil samples were submitted to Trace Analysis, Inc., Lubbock, Texas, under chain-of-custody control and analyzed for BTEX and TPH. Table 3 presents a summary of the laboratory analysis. Appendix D presents the laboratory reports.

Referring to Table 3, the benzene and total BTEX levels reported in the soil samples were below the RRAL of 10 ppm and 50 ppm, respectively. Benzene was below the test method detection limit of 0.05 milligrams per kilogram (mg/Kg) in all soil samples. The maximum total BTEX level reported in the soil samples was 11.40 mg/Kg from boring BH-1 (30.0 to 30.7 feet). The proposed RRAL for TPH (1000 ppm) was only exceeded in samples from one boring (BH-1). The highest TPH concentration reported in soil samples from boring BH-1 was 3,002 mg/Kg (30.0 to 30.7 feet). The TPH level decreases to 65.2 mg/Kg at approximately 50 feet BGS. Soil samples from boring MW-2 (50 to 51 feet BGS) and MW-3 (60 to 61 feet BGS) reported elevated TPH levels. However,

the TPH level reported in the soil sample from boring MW-2 (50 to 51 feet) was collected at the groundwater interface and may have been affected by phase-separated hydrocarbons (PSH). The sample from boring MW-3 (60 to 61 feet BGS) was collected below the groundwater surface and likely reflects impact in groundwater. Groundwater at this location was recorded at 59.37 feet BGS. No other soil samples reported TPH concentrations above the proposed RRAL.

3.4.2 Soil Pile and Excavation Samples and Analysis

Composite soil samples were collected from the main soil pile, sixteen soil piles and pit excavation. The main pile was divided into three sections (north, middle and south). Six (6) soil samples were collected from each section and composited into a single sample for each section. Four (4) samples were collected from each of the sixteen piles and composited into single samples. Six (6) to eight (8) samples were also collected from the sides, bottom (Area # 1) and shelf (Area # 2) of the pit excavation and composited into single samples for each area. The soil samples were field screened using the ATH method presented in Section 3.3.

Twenty-five (25) soil samples were submitted to the laboratory (Trace Analysis, Inc., Lubbock, Texas), and analyzed for TPH. Based on the headspace gas analysis, soil samples with headspace readings above 100 ppm were also analyzed for BTEX. Table 4 presents a summary of the laboratory analysis. Appendix D presents the laboratory reports.

Referring to Table 4, benzene and total BTEX measurements were below the proposed RRAL of 10 ppm and 50 ppm, respectively. The highest benzene level was reported in Pile # 14 (0.107 mg/Kg), and the highest total BTEX level was reported in Pile # 3 (0.240 mg/Kg). The TPH values ranged from 21.1 mg/Kg (main pile, north section) to 5,682.6 mg/Kg (Pile # 6).

Benzene was not reported above the test method detection limits in soil samples from the pit excavation. Total BTEX was below the proposed RRAL of 50 ppm in all samples. The highest total BTEX level reported was in the sample from the west wall (0.207 mg/Kg). The TPH concentrations of excavation soil samples ranged from 604.5 mg/Kg (Area #2) to 5986.8 mg/Kg (north wall). Texaco has removed approximately 7,400 cubic yards of soil from the excavation. Visual observations and laboratory analysis of soil samples indicate that the pit and highly

contaminated soils have been removed. Soil samples from the south and north edges of the excavation indicate that some residual contamination is present, however, these samples contained no BTEX compounds above the OCD's recommended remediation action levels. The excavation was extended southward to the Amerada Hess satellite tank battery. Visual observations did not indicate that the pit extended beneath the satellite battery.

3.5 Groundwater Samples and Analysis

On July 28, 1998, Highlander personnel collected groundwater samples from six (6) monitoring wells (MW-3 through MW-8) and water well WW-1. No access was available to water well WW-2 for sample collection, therefore, no samples were collected from this well. No groundwater samples were collected from monitoring wells MW-1 and MW-2, due to PSH observed in these wells. Prior to sample collection, the wells were purged of a minimum of three (3) casing volumes of groundwater or until the well was purged dry. The purged water was placed on the main soil pile. The groundwater samples were collected using dedicated disposable PVC bailers. The groundwater samples were submitted under chain-of-custody control to Trace Analysis, Inc., and analyzed for BTEX, polynuclear aromatic hydrocarbons (PAH), dissolved (filtered) metals, anions, cations and total dissolved solids (TDS). Table 5 presents a summary of the BTEX analysis. Table 6 presents a summary of the dissolved metals analysis. Table 7 presents a summary of the anions and cations analysis. Appendix D presents the laboratory report.

No PAH compounds were reported in the groundwater samples above test method detection limits. Referring to Table 5, the only detectable benzene concentration was in groundwater from well MW-3, which reported 0.003 milligrams per liter (mg/L). The WQCC human health standard for benzene is 0.01 mg/L. Toluene and ethylbenzene were not observed in the groundwater samples above the detection limit of 0.001 mg/L. Xylene (0.002 mg/L) was reported in the sample from well MW-3, and was below the WQCC human health standard of 0.62 mg/L.

Referring to Table 6, barium was reported at 0.18 mg/L and 0.12 mg/L, in samples from wells MW-5 and MW-7, respectively. The WQCC human health standard for barium is 1.0 mg/L. No other metal parameters were reported in the groundwater samples above the test method detection

limits.

Referring to Table 7, chloride was the only parameter reported in the samples that exceeded WQCC domestic water quality standards. Chloride was below the WQCC standard (250 mg/L) in groundwater from all wells, except well MW-5 (360 mg/L). The impact from well MW-5 appears to be isolated and may not be associated with the Site, since the groundwater sample from well MW-5 also showed elevated levels of magnesium and calcium, compared to samples from the remaining wells. Well MW-5 is also located adjacent to an underground pipeline. Groundwater from well MW-7, located hydraulically down gradient of well MW-5, reported chloride at 82 mg/L.

3.6 Phase-Separated Hydrocarbons

Phase-separated hydrocarbons were observed in two (2) monitoring wells (MW-1 and MW-2). Wells MW-1 and MW-2, installed in the vicinity of the pit, reported an apparent PSH thickness of 4.96 and 1.71 feet, respectively on July 28, 1998. Figure 5 presents a drawing showing the apparent thickness of PSH. The actual formation thickness of the PSH is probably much less, and is likely 0.5 to 1.0 feet. The PSH appears to be restricted to the area in the immediate vicinity of the former tank battery and pit.

On July 28, 1998, Highlander personnel collected samples of PSH from wells MW-1 and MW-2 for GC fingerprint analysis. The analysis was performed by Trace Analysis, Inc., and reported the PSH from wells MW-1 and MW-2 consistent with an aged diesel fuel standard. Appendix D presents the laboratory reports.

3.7 Water Well Survey

Highlander personnel contacted the New Mexico State Engineer's office, located in Roswell, New Mexico, to obtain records of water wells within 1-mile of the Site. The records provided included thirteen (13) wells. Figure 6 presents a location map for the water wells. Table 8 presents a summary of drilling and completion details. Appendix E presents water well drilling and completion records.

Referring to Figure 6, the nearest water well to the Site is approximately 350 feet southwest

(cross gradient). Groundwater flow measurements and laboratory analysis of groundwater samples suggest that the cone of depression from pumping the well does not extend to the Site. The well is used mainly for oilfield purposes. The nearest down gradient well is approximately 1-mile southeast. The State Engineer's records indicate that this well was drilled for Gulf Oil Corporation on October 8, 1936. The well was drilled to a depth of approximately 62 feet BGS, however, no well screen or perforation or well status information was available from the State Engineer. This well likely supplied water for drilling oil and gas well during early development of the field. It is not known if this well still exists, however, it is unlikely that impacts from the Site will affect this well.

4.0 CONCLUSIONS

1. On July 28, 1998, groundwater occurred at depths ranging from 52.02 to 68.20 feet BGS and the elevation of the groundwater surface ranged from 3638.77 to 3634.97 feet AMSL. Groundwater flow was generally from northwest to southeast at a gradient of approximately 0.003 feet per foot. However, two (2) water wells located approximately 350 feet southwest of the Site, when pumping, may influence local groundwater flow to the southwest.
2. Benzene and total BTEX were below the proposed RRAL of 10 ppm and 50 ppm, respectively, in soil samples from all borings. Benzene was not reported above the test method detection limit of 0.05 milligrams per kilogram (mg/Kg), and the maximum total BTEX level was reported at 11.40 mg/Kg from boring BH-1, 30.0 to 30.7 feet BGS.
3. The highest TPH concentration reported in soil samples from borings was BH-1 at 3,002 mg/Kg (30.0 to 30.7 feet) and may exceed the RRAL. The TPH level decreased to 65.2 mg/Kg at a depth of 50 feet BGS. Soil samples from borings MW-2 (50 to 51 feet BGS) and MW-3 (60 to 61 feet BGS) may also exceed the RRAL for TPH. However, the soil sample collected from boring MW-2 was collected at the groundwater interface and may be affected by phase-separated hydrocarbons (PSH). The sample from boring MW-3 (60 to 61 feet BGS) was collected below the groundwater surface and likely reflects hydrocarbons in groundwater. No other soil samples from borings reported TPH concentrations above the proposed RRAL.

4. The highest benzene and total BTEX levels reported in soil samples from piles was 0.107 mg/Kg (Pile # 14) and 0.240 mg/Kg (Pile # 3), respectively. These concentrations are below the proposed RRAL of 10 ppm and 50 ppm, respectively.

5. The TPH content in samples collected from the piles, except the sample from the north section of the main pile (21.1 mg/Kg), may exceed the RRAL. Pit excavation soil samples reported no benzene levels above the test method detection limits, and total BTEX were below the proposed RRAL of 50 ppm in all samples.

6. The TPH content of soil samples collected from the excavation ranged from 604.5 mg/Kg (Area #2) to 5986.8 mg/Kg (north wall), and may exceed the RRAL. Texaco has removed approximately 7,400 cubic yards of soil from the excavation. Visual observations and laboratory analysis of soil samples indicate that the pit and highly contaminated soils have been removed. Soil samples from the south and north edges of the excavation indicate that some residual contamination is present, however, these samples contained no BTEX compounds above the OCD's recommended remediation action levels. The excavation was extended southward to the Amerada Hess satellite tank battery. Visual observations did not indicate that the pit extended beneath the satellite battery.

7. No PAH compounds were reported in the groundwater samples above test method detection limits.

8. Benzene was only detected in the groundwater from well MW-3 (0.003 mg/L), and was below the WQCC human health standard of 0.01 mg/L. Toluene and ethylbenzene were not reported above the test method detection limit of 0.001 mg/L. Xylene was reported at 0.002 mg/L (MW-3), and was below the WQCC standard of 0.62 mg/L.

9. Barium, the only metal parameter detected in the groundwater samples, was reported at 0.18 mg/L (MW-5) and 0.12 mg/L (MW-7), and was below the WQCC human health standard of 1.0 mg/L.

10. Chloride, reported at 360 mg/L (MW-5), was the only domestic water quality parameter to exceed the WQCC domestic water quality standards (250 mg/L). The chloride level reported in groundwater from well MW-5 appears to be isolated and may not be associated with

operations at the Site. Groundwater from well MW-5 also showed elevated levels of magnesium and calcium compared to samples from the remaining wells. Well MW-5 is also located adjacent to an underground pipeline that could be a possible source of any impact. Groundwater from well MW-7, located hydraulically down gradient of well MW-5, reported chloride at 82 mg/L.

11. On July 28, 1998, monitoring wells MW-1 and MW-2, installed in the vicinity of the former pit, recorded an apparent PSH thickness of 4.96 and 1.71 feet, respectively. The actual formation thickness is estimated to be from 0.5 to 1.0 feet. The PSH appears to be restricted to the area in the immediate vicinity of the former tank battery and pit.

12. The closest water well is approximately 350 feet southwest (cross gradient). Groundwater measurements suggest that the cone of depression from pumping this well does not extend to the Site. The primary use of this well is for oilfield purposes. Groundwater sample results show that this well has not been affect from impacts at the Site. The nearest down gradient well to the Site is approximately 1-mile southeast. It is unlikely that impacts from the Site will affect this well.

5.0 REMEDIATION PLAN

Based on the investigation findings, concentrations of WQCC parameters in groundwater are below regulatory standards, except chloride, which was detected in one monitoring well, MW-5, at 360 mg/L. Two wells, MW-1 and MW-2, reported apparent PSH thickness of 4.96 and 1.71 feet, respectively. Benzene and total BTEX levels in soil from all borings, soil piles and the pit excavation are well below the RRAL for unlined surface impoundment closure. The investigation results do conclude that TPH in soils from boring BH-1, pit excavation and soil piles may exceed the RRAL for unlined surface impoundment closure.

Texaco proposes to conduct groundwater remediation activities at the Site to remove PSH observed on the groundwater at well MW-1 and MW-2. Texaco proposes to remove PSH from the groundwater utilizing wells MW-1 and MW-2 as extraction wells. The wells will be bailed or

pumped to facilitate movement of PSH to the wellbores for removal and prevent further migration of the contaminant plume. If pumped, the groundwater and PSH will be conveyed to a central collection tank (i.e., gun barrel), where PSH may be removed through separation. The PSH will be transferred to a recycling or disposal facility and water will be transported to a OCD approved Class II well for disposal.

Since no levels of volatile organic constituents (benzene and total BTEX) were detected above the RRAL in samples from the soil piles or excavation, Texaco proposes to place the soil in the excavation. Prior to placement, a compacted liner consisting of approximately 2 feet of clay (shale) will be placed in the bottom of the pit. Soil from the various piles will be blended and placed on top of the clay and compacted.

Texaco will implement a semi-annual groundwater monitoring program to evaluate the effectiveness of its remediation efforts. Depth-to-groundwater and PSH thickness measurements will collected from monitoring wells MW-1 through MW-8, and water well WW-1 or WW-2. The groundwater samples will be analyzed for BTEX and chloride. Prior to sampling, the monitoring wells will be purged of approximately 3 casing volumes of groundwater . The purged groundwater will be containerized and removed from the Site for proper disposal. Groundwater monitoring will be discontinued following removal of the PSH. The wells will be plugged and abandoned in accordance with the State of New Mexico guidelines following monitoring.

References

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Table 1: Summary of Monitor Well Drilling and Completion Details
Texaco Exploration and Production, Inc.,
New Mexico "F" State Tank Battery
Lea County, New Mexico

Monitor Well	Installation Date	Drilled Depth, feet BGS	Ground Elevation, feet AMSL	Top of Casing Elevation, feet AMSL	Screen Interval, feet BGS	Depth-to-Groundwater, feet TOC
MW-1	7/7/98	73.0	3796.63	3696.65	51.87 - 72.27	*60.09 (4.96')
MW-2	7/21/98	65.0	3689.73	3692.48	45.0 - 65.0	*54.77 (1.71)
MW-3	7/21/98	75.0	3696.95	3696.85	55.0 - 75.0	59.53
MW-4	7/21/98	75.0	3696.15	3699.5	55.0 - 75.0	62.72
MW-5	7/22/98	68.0	3691.13	3693.52	48.0 - 68.0	56.53
MW-6	7/22/98	76.0	3704.51	3704.81	56.0 - 76.0	67.86
MW-7	7/22/98	69.0	3691.63	3694.58	49.0 - 69.0	58.08
MW-8	7/22/98	66.0	3692.63	3695.61	46.0 - 66.0	56.84

Notes:

1. BGS: Denotes depth in feet below ground surface
2. AMSL: Denotes elevation in feet above mean sea level
3. TOC: Denotes depth in feet below top of well casing
4. *: Depth-to-groundwater corrected for PSH Thickness - PSH thinkness shown in parenthesis

TABLES

Table 2: Summary of Soil Headspace Gas Readings from Soil Samples
Texaco Exploration and Production, Inc.,
New Mexico "F" State Tank Battery
Lea County, New Mexico

Sample Location	Sample Date	Sample Depth, feet BGS	Headspace Reading, PPM	Comments
MW-1	7/7/98	0-1	16	Background:
(BH-1)		10-11	279	Air: 0.0 ppm
		20-21	269	Soil: 0.0 ppm
		30-31	587	
		40-41	638	
		50-51	860	
		60-61	-	
		65-73	-	
MW-2	7/21/98	0-10	-	
		10-11	16	
		20-21	25	
		30-31	22	
		40-41	10	
		50-51	-	
		60-65	-	
MW-3	7/21/98	0-10	-	
		10-11	3	
		20-21	16	
		30-31	28	
		40-41	6	
		50-51	19	
		60-61	-	
		65-75	-	
MW-4	7/21/98	0-10	-	
		12-20	-	
		20-21	12	
		30-31	38	
		40-41	19	
		50-51	22	
		60-61	16	
		65-75	-	
MW-5	7/22/98	0-10	-	
		10-11	0	
		20-21	19	
		30-31	6	
		40-41	9	
		50-51	6	
		60-61	3	
		61-68	-	
MW-6	7/22/98	0-10	-	
		10-20	-	
		20-30	-	
		30-40	-	
		40-50	-	
		50-60	-	
		60-70		
		70-76	-	

Notes: All soil samples analyzed using a Thermal Environmental Instrument, Model 580B organic vapor meter, calibrated to 75 ppm isobutylene standard.

1. BGS: Denotes depth in feet below ground surface.
2. PPM: Denotes concentration in parts per million total ionizable hydrocarbons.
3. --: No data available.
4: N/A: Not applicable.

Table 2: Summary of Soil Headspace Gas Readings from Soil Samples
Texaco Exploration and Production, Inc.,
New Mexico "F" State Tank Battery
Lea County, New Mexico

Sample Location	Sample Date	Sample Depth, feet BGS	Headspace Reading, PPM	Comments
MW-7	7/22/98	0-10	-	
		10-20	-	
		20-30	-	
		30-40	-	
		40-50	-	
		50-60	-	
		60-69	-	
MW-8	7/22/98	0-10	-	
		10-20	-	
		20-30	-	
		30-40	-	
		40-50	-	
		50-60	-	
		60-66		
SOIL PILES				
Pile #1	7/17/98	N/A	67	
Pile #2	7/17/98	N/A	51	
Pile #3	7/17/98	N/A	112	
Pile #4	7/17/98	N/A	41	
Pile #5	7/17/98	N/A	41	
Pile #6	7/17/98	N/A	61	
Pile #7	7/17/98	N/A	48	
Pile #8	7/17/98	N/A	67	
Pile #9	7/17/98	N/A	64	
Pile #10	7/17/98	N/A	241	
Pile #11	7/17/98	N/A	57	
Pile #12	7/17/98	N/A	28	
Pile #13	7/17/98	N/A	131	
Pile #14	7/17/98	N/A	109	
Pile #15	7/17/98	N/A	86	
Pile #16	7/17/98	N/A	45	
MAIN PILE				
Comp. #1 (North)	7/17/98	N/A	119	
Comp. #2 (Middle)	7/17/98	N/A	421	
Comp. #3 (South)	7/17/98	N/A	176	
EXCAVATION				
North Wall	7/17/98	0-0.5	115	
South Wall	7/17/98	0-0.5	131	
East Wall	7/17/98	0-0.5	70	
West Wall	7/17/98	0-0.5	196	
Area #1 (Pit Bottom)	7/17/98	0-0.5	86	
Area #2 (Shelf)	7/7/98	0-0.5	77	

Notes: All soil samples analyzed using a Thermal Envirnonmental Instrument, Model 580B organic vapor meter, calibrated to 75 ppm isobutylene standard.

1. BGS: Denotes depth in feet below ground surface.
2. PPM: Denotes concentration in parts per million total ionizable hydrocarbons.
3. --: No data available.
4: N/A: Not applicable.

Table3: Summary of Laboratory Analysis of Soil Samples from Borings
Texaco Exploration and Production, Inc.,
New Mexico "F" State Tank Battery
Lea County, New Mexico

Borehole	Sample Depth, feet BGS	Sample Date	Benzene mg/Kg	Toluene mg/Kg	Ethylbenzene mg/Kg	Xylene mg/Kg	Total BTEX mg/Kg	GRO (C6-C10) mg/Kg	DRO (C10-C28) mg/Kg	TPH (C6-C-28) mg/Kg
BH-1	0-0.7	7/7/98	<0.050	<0.050	<0.050	<0.050	<0.050	<5.00	<50	<55
(MW-1)	10.0-10.7	7/7/98	<0.050	<0.050	<0.050	<0.050	<0.050	<5.00	112	112
	20.0-20.7	7/7/98	<0.050	<0.050	<0.050	0.280	0.280	12.2	149	161.2
	30.0-30.7	7/7/98	<0.050	1.83	0.707	8.90	11.4	342	2,660	3,002
	40.0-40.7	7/7/98	<0.050	0.881	0.371	3.43	4.68	185	1,000	1,185
	50.0-50.7	7/7/98	<0.050	<0.050	0.168	1.87	2.04	65.2	<250	65.2
MW-2	20-21	7/21/98	<0.050	<0.050	<0.050	<0.050	<0.050	<5.00	<50	<55
	50-51	7/21/98	<0.100	<0.100	0.672	7.76	8.43	273	3,270	3,543
MW-3	30-31	7/21/98	<0.050	<0.050	<0.050	0.056	0.056	5.77	<50	5.77
	60-61	7/21/98	<0.050	<0.050	0.261	4.04	4.30	141	1,160	1,301
MW-4	30-31	7/21/98	<0.050	<0.050	<0.050	0.054	0.054	<5.00	<50	<55
	60-61	7/21/98	<0.050	<0.050	<0.050	<0.050	<0.050	<5.00	<50	<55
MW-5	20-21	7/21/98	<0.050	<0.050	<0.050	<0.050	<0.050	<5.00	<50	<55
	50-51	7/21/98	<0.050	<0.050	<0.050	<0.050	<0.050	<5.00	<50	<55

Notes: All analysis performed by Trace Analysis, Inc., Lubbock, Texas

1. mg/Kg: Denotes concentration in milligrams per kilogram
2. GRO: Denotes Gasoline Range Hydrocarbons
3. DRO: Denotes Diesel Ramge Hydrocarbons

Table 4: Summary of Laboratory Analysis of Soil Samples from Soil Piles and Excavation
Texaco Exploration and Production, Inc.,
New Mexico "F" State Tank Battery
Lea County, New Mexico

Soil Sample	Date Collected	Benzene mg/Kg	Toluene mg/Kg	Ethylbenzene mg/Kg	Xylene mg/Kg	Total BTEX mg/Kg	GRO (C6-C10) mg/Kg	DRO (C10-C28) mg/Kg	TPH (C6-C-28) mg/Kg
Pile #1	7/17/98	-	-	-	-	-	61.3	2,480	2,541.3
Pile #2	7/17/98	-	-	-	-	-	53.5	3,250	3,303.5
Pile #3	7/17/98	0.085	0.073	<0.050	0.082	0.240	47.7	1,930	1,977.7
Pile #4	7/17/98	-	-	-	-	-	28.9	1,480	1,508.9
Pile #5	7/17/98	-	-	-	-	-	23.1	731	754.1
Pile #6	7/17/98	-	-	-	-	-	62.6	5,620	5,682.6
Pile #7	7/17/98	-	-	-	-	-	46.7	2,370	2,416.7
Pile #8	7/17/98	-	-	-	-	-	53.1	1,580	1,633.1
Pile #9	7/17/98	-	-	-	-	-	54.1	4,040	4,094.1
Pile #10	7/17/98	<0.050	0.080	<0.050	0.080	0.160	48.8	3,850	3,898.8
Pile #11	7/17/98	-	-	-	-	-	42.7	3,880	3,922.7
Pile #12	7/17/98	-	-	-	-	-	43.1	3,230	3,273.1
Pile #13	7/17/98	<0.050	<0.050	<0.050	0.088	0.088	51.8	4,140	4,191.8
Pile #14	7/17/98	0.107	<0.050	<0.050	<0.050	0.107	48.3	2,260	2,308.3
Pile #15	7/17/98	-	-	-	-	-	28.7	2,900	2,928.7
Pile #16	7/17/98	-	-	-	-	-	38.9	3,570	3608.9
Comp #1 North	7/17/98	<0.050	<0.050	<0.050	<0.050	<0.050	21.1	<500	21.1
Comp #2 Middle	7/17/98	<0.050	<0.050	<0.050	0.105	0.105	53.7	627	680.7
Comp #3 South	7/17/98	<0.050	<0.050	<0.050	0.070	0.070	54.8	2,570	2,624.8
North Wall	7/17/98	<0.050	<0.050	<0.050	0.091	0.091	46.8	5,940	5,986.8
South Wall	7/17/98	<0.050	<0.050	<0.050	0.059	0.059	32.3	4,790	4,822.3
East Wall	7/17/98	-	-	-	-	-	12.2	722	734.2
West Wall	7/17/98	<0.050	<0.050	0.082	0.125	0.207	59.4	2,200	2,259.4
Area #1 (Pit Bottom)	7/17/98	-	-	-	-	-	27.9	1,680	1,707.9
Area #2 (Shelf)	7/17/98	<0.100	<0.100	<0.100	0.176	0.176	12.5	592	604.5

Notes: All analysis performed by Trace Analysis, Inc., Lubbock, Texas

1. mg/Kg: Denotes concentration in milligrams per kilogram
2. GRO: Denotes Gasoline Range Hydrocarbons
3. DRO: Denotes Diesel Ramge Hydrocarbons
4. -: OVM reading below 100 parts per million, therefore no BTEX data available.

Table 5: **Summary of Volatile Organic Analysis of Groundwater Samples from Monitor Wells and Water Wells**
Texaco Exploration and Production, Inc.,
New Mexico "F" State Tank Battery
Lea County, New Mexico

Well Number	Sample Date	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylene mg/L	Total BTEX mg/L
MW-1	7/28/98	N/S	N/S	N/S	N/S	N/S
MW-2	7/28/98	N/S	N/S	N/S	N/S	N/S
MW-3	7/28/98	0.003	<0.001	<0.001	0.002	0.005
MW-3 Duplicate	7/28/98	0.003	<0.001	<0.001	0.002	0.005
MW-4	7/28/98	<0.001	<0.001	<0.001	<0.001	<0.001
MW-5	7/28/98	<0.001	<0.001	<0.001	<0.001	<0.001
MW-6	7/28/98	<0.001	<0.001	<0.001	<0.001	<0.001
MW-7	7/28/98	<0.001	<0.001	<0.001	<0.001	<0.001
MW-8	7/28/98	<0.001	<0.001	<0.001	<0.001	<0.001
WW-1	7/28/98	<0.001	<0.001	<0.001	<0.001	<0.001

Notes: All analysis performed by Trace Analysis, Inc., Lubbock, Texas

1. mg/L: Denotes concentration in milligrams per liter
2. N/S: No sample collected
3. MW: Monitor Well
4. WW: Water Well
5. <: Denotes analyte concentration below test method detection limit

Table 6: Summary of Dissolved Metals Analysis of Groundwater Samples from Monitor Wells and Water Wells
Texaco Exploration and Production, Inc.,
New Mexico "F" State Tank Battery
Lea County, New Mexico

Well Number	Sample Date	Arsenic mg/L	Barium mg/L	Cadmium mg/L	Chromium mg/L	Lead mg/L	Mercury mg/L	Selenium mg/L	Silver mg/L
MW-1	7/28/98	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
MW-2	7/28/98	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
MW-3	7/28/98	<0.10	<0.10	<0.02	<0.05	<0.10	<0.001	<0.10	<0.05
MW-3 Duplicate	7/28/98	<0.10	<0.10	<0.02	<0.05	<0.10	<0.001	<0.10	<0.05
MW-4	7/28/98	<0.10	<0.10	<0.02	<0.05	<0.10	<0.001	<0.10	<0.05
MW-5	7/28/98	<0.10	0.18	<0.02	<0.05	<0.10	<0.001	<0.10	<0.05
MW-6	7/28/98	<0.10	<0.10	<0.02	<0.05	<0.10	<0.001	<0.10	<0.05
MW-7	7/28/98	<0.10	0.12	<0.02	<0.05	<0.10	<0.001	<0.10	<0.05
MW-8	7/28/98	<0.10	<0.10	<0.02	<0.05	<0.10	<0.001	<0.10	<0.05
WW-1	7/28/98	<0.10	<0.10	<0.02	<0.05	<0.10	<0.001	<0.10	<0.05

Notes: All analysis performed by Trace Analysis, Inc., Lubbock, Texas

1. mg/L: Denotes concentration in milligrams per liter
2. N/S: No sample collected
3. MW: Monitor Well
4. WW: Water Well
5. <: Denotes analyte concentration below test method detection limit

Table 7: **Summary of Cation, Anion and General Chemistry Analysis of Groundwater Samples from Monitor Wells and Water Wells Texaco Exploration and Production, Inc., New Mexico "F" State Tank Battery Lea County, New Mexico**

Well Number	Sample Date	Potassium mg/L	Magnesium mg/L	Calcium mg/L	Sodium mg/L	Hardness mg/L	Chloride mg/L	Sulfate mg/L	Alkalinity (mg/L $CaCo_3$)		TDS mg/L	pH S.U.
MW-1	7/28/98	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
MW-2	7/28/98	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
MW-3	7/28/98	3.8	6.5	76	27		36	58	160	<1.0	330	7.6
MW-3 (Duplicate)	7/28/98	3.7	6.5	75	26		35	57	160	<1.0	310	8
MW-4	7/28/98	3.9	5.9	69	63		94	42	170	<1.0	410	7.6
MW-5	7/28/98	5.6	20	240	46		360	93	150	<1.0	1,000	7.6
MW-6	728/98	3.5	7.9	86	28		43	90	140	<1.0	360	7.2
MW-7	7/28/98	3.9	10	117	36		82	93	160	<1.0	510	7.6
MW-8	7/28/98	3.6	8.3	96	27		29	100	170	<1.0	390	7.5
WW-1	7/28/98	3.2	14	102	33	313	100	71	180	<1.0	480	7.4

Notes: All analysis performed by Trace Analysis, Inc., Lubock, Texas

1. mg/L: Denotes concentration in milligrams per liter
2. S.U. Denotes standard units
3. N/S: No sample collected.

Table 8: Summary of Drilling and Completion Details for Water Wells within 1-Mile
Texaco Exploration and Production, Inc.,
New Mexico "F" State Tank Battery
Lea County, New Mexico

Highlander Well Number	Date Drilled	Owner	Legal Description	Drilled Depth, feet BGS 100	Screen Interval feet BGS
1	3/6/36	Gulf Oil Corp.	SE/4, NW/4, NE/4 Sec. 24, T-19-S R-36-E	100	-
2	06/41	Warren Petroleum	NE/4, NE/4, SW/4 Sec. 24 T-19-S R-36-E	111	81 - 111
3	02/35	Warren Petroleum	NE/4, NE/4, SW/4 Sec. 24 T-19-S R-36-E	110	80 - 110
4	06/41	Warren Petroleum	SE/4, NE/4, SW/4 Sec. 24 T-19-S R-36-E	108	78 - 108
5	12/26/35	Gulf Oil Corp.	SE/4, NE/4, SW/4 Sec. 24 T-19-S R-36-E	104	-
6	06/13/92	Jimmie T. Cooper	SE/4, SE/4, Sec. 24 T-19-S R-36-E	101	61 - 101
7	05/03/96	Jimmie T. Cooper	SE/4, SE/4, Sec. 24 T-19-S R-36-E	102	62 - 102
8	07/10/36	Gulf Oil Corp.	NE/4, NW/4, SW/4 Sec. 25 T-19-S R-36-E	100	-
9	07/01/36	Gulf Oil Corp.	NE/4, NW/4, NE/4 Sec. 25 T-19-S R-36-E	100	-
10	12/29/36	Gulf Oil Corp.	NE/4, NW/4, NE/4 Sec. 25 T-19-S R-36-E	50	-
11	10/23/59	McVey and Stafford Drilling Co.	NW/4, NW/4, Sec. 25 T-19-S R-36-E	116	-
12	08/09/36	Gulf Oil Corp.	NW/4, NE/4, NW/4 Sec. 25 T-19-S R-36-E	85	-
13	10/08/36	Gulf Oil Corp.	SW/4, SE/4, SW/4 Sec. 25 T-19-S R-36-E	62	-

Notes:

1. BGS: Denotes depth in feet below ground surface
2. -: No data available
3. N/S: No sample collected.

FIGURES

FIGURE NO. 1

LEA COUNTY, NEW MEXICO

TEXACO EXPORATION & PRODUCTION, INC.

TOPOGRAPHIC MAP

HIGHLANDER ENVIRONMENTAL
MIDLAND, TEXAS

TAKEN FROM U.S.G.S.
MONUMENT NORTH,
NEW MEXICO
7.5' QUADRANGLES

LEGEND

☐ SITE LOCATION

SCALE: 1"=2,000'

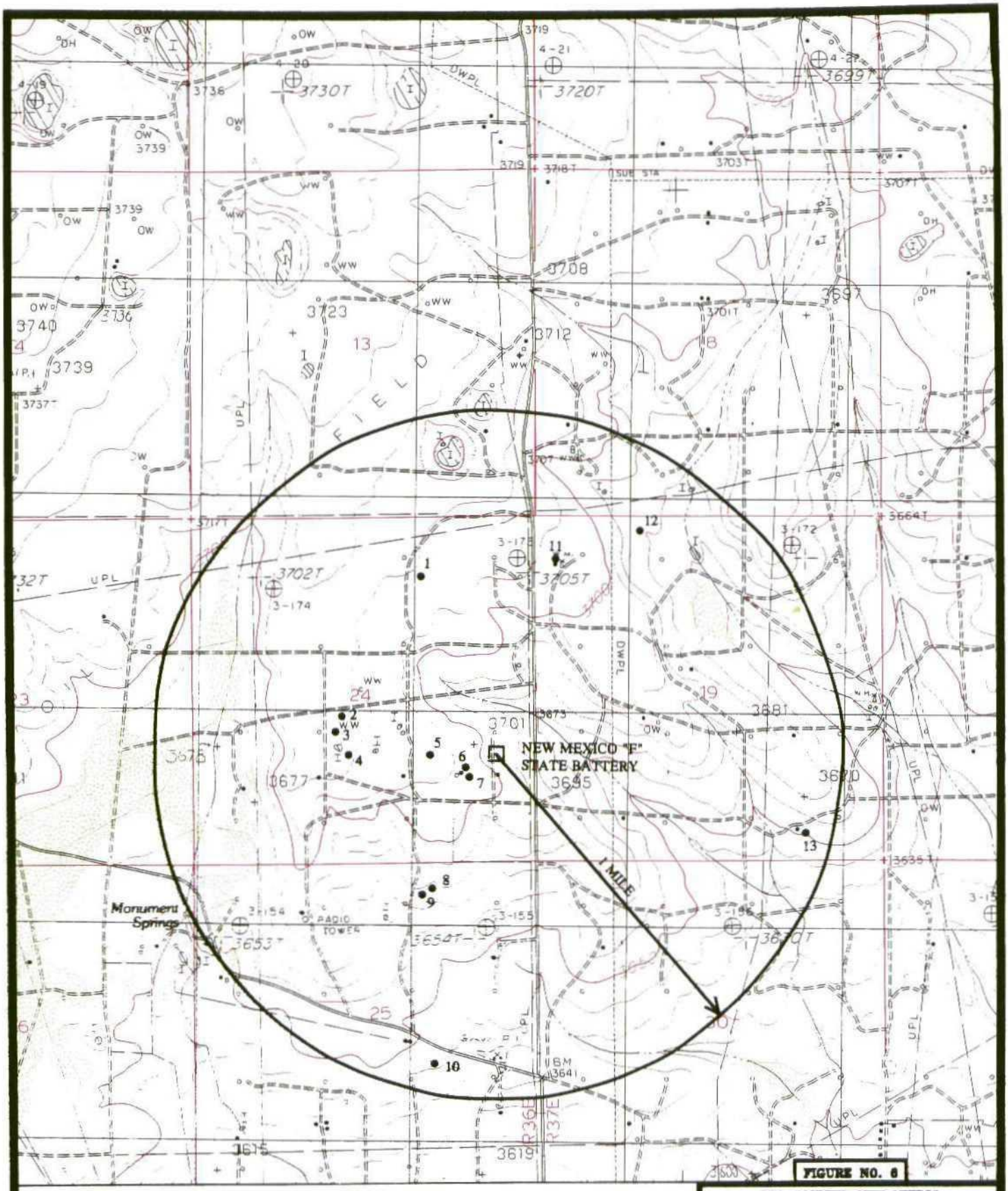


FIGURE NO. 6

LEA COUNTY, NEW MEXICO

TEXACO EXPLORATION & PRODUCTION, INC.

WATER WELLS WITHIN 1 MILE

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

TAKEN FROM U.S.G.S.
MONUMENT NORTH,
NEW MEXICO
7.5' QUADRANGLES

LEGEND

1. WATER WELL LOCATION AND INDEX NUMBER
□ SITE LOCATION

SCALE: 1"=2,000'

MONITOR WELL DATA

Monitor Well	Ground Elevation Feet AMSL	Top-of-Casing Elevation
1	3796.63	3696.65
2	3689.73	3692.48
3	3696.95	3696.85
4	3696.15	3699.50
5	3691.13	3693.52
6	3704.51	3704.81
7	3691.63	3694.58
8	3692.63	3695.61

WATER WELL DATA

WATER WELL	GROUND ELEVATION FEET AMSL	TOP-OF-CASING ELEVATION, FEET AMSL
WATER WELL 1	3703.17	3704.17
WATER WELL 2	3703.34	3703.84

SCALE IN FEET

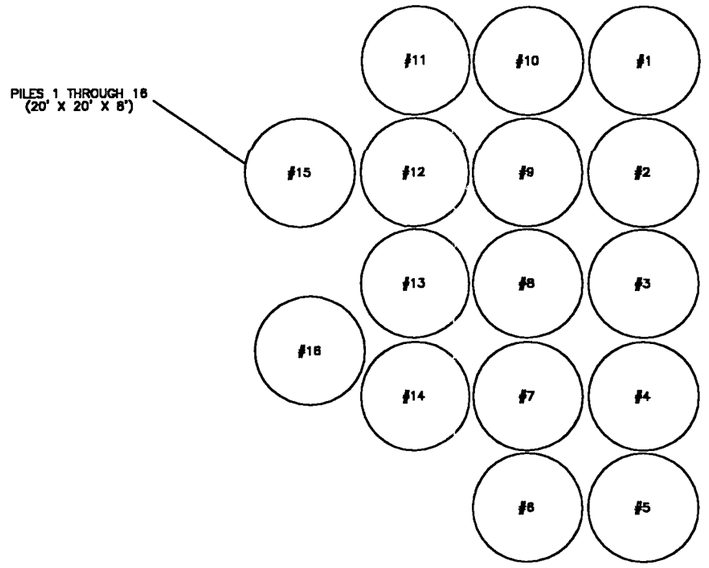
0 25 50 100

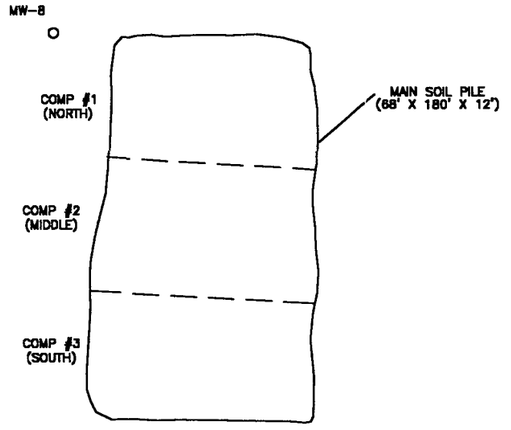
EXPLANATION

MW-1 ○ MONITOR WELL LOCATION

WW-1 ◇ WATER WELL LOCATION

N





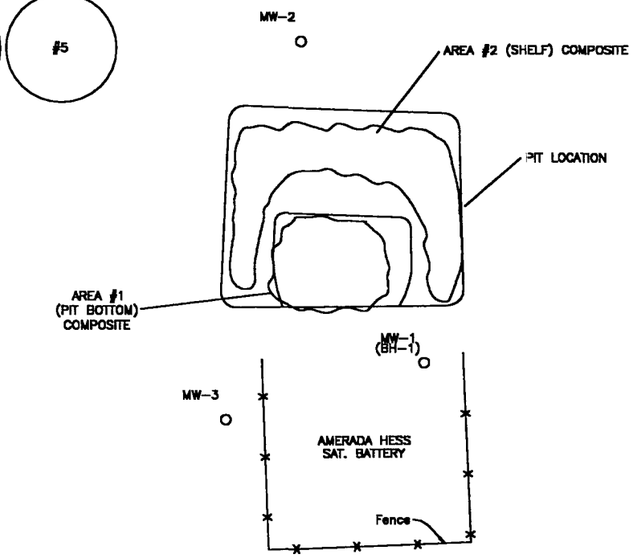


FIGURE NO. 2

TEXACO EXPLORATION AND PRODUCTION, INC.

NEW MEXICO "F" STATE BATTERY
SITE DRAWING

DATE: 8/18/98

DWN. BY: JDA

FILE: 1135\BASE

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

MONITOR WELL DATA

Monitor Well	Ground Elevation Feet AMSL	Top-of-Casing Elevation
1	3796.63	3696.65
2	3689.73	3692.48
3	3696.95	3696.85
4	3696.15	3699.50
5	3691.13	3693.52
6	3704.51	3704.81
7	3691.63	3694.58
8	3692.63	3695.61

WATER WELL DATA

WATER WELL	GROUND ELEVATION FEET AMSL	TOP-OF-CASING ELEVATION, FEET AMSL
WATER WELL 1	3703.17	3704.17
WATER WELL 2	3703.34	3703.84

SCALE IN FEET

0 25 50 100

*60.11 MW-1 EXPLANATION

- MONITOR WELL LOCATION AND DEPTH-TO-GROUNDWATER, FEET BGS, 7/28/98
- 68.20 WW-1 ◇ WATER WELL LOCATION AND DEPTH-TO-GROUNDWATER, FEET BGS, 7/28/98
- 65 CONTOUR OF DEPTH-TO-GROUNDWATER, FEET BGS, 7/28/98
- * CORRECTED FOR PSH

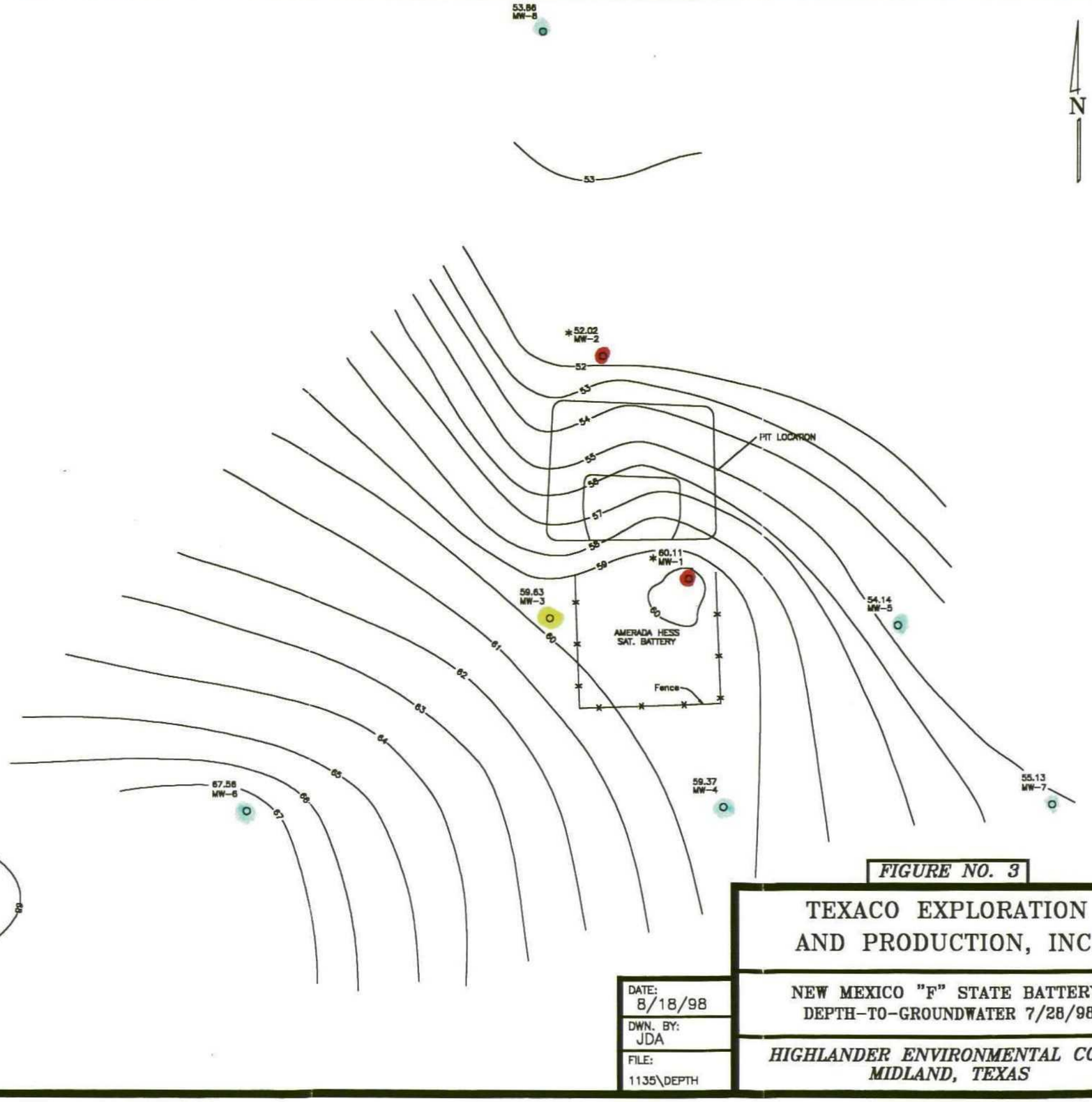


FIGURE NO. 3

TEXACO EXPLORATION AND PRODUCTION, INC.

NEW MEXICO "F" STATE BATTERY
DEPTH-TO-GROUNDWATER 7/28/98

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

DATE: 8/18/98
DWN. BY: JDA
FILE: 1135\DEPTH

MONITOR WELL DATA

Monitor Well	Ground Elevation Feet AMSL	Top-of-Casing Elevation
1	3796.63	3696.65
2	3689.73	3692.48
3	3696.95	3696.85
4	3696.15	3699.50
5	3691.13	3693.52
6	3704.51	3704.81
7	3691.63	3694.58
8	3692.63	3695.61

WATER WELL DATA

WATER WELL	GROUND ELEVATION FEET AMSL	TOP-OF-CASING ELEVATION, FEET AMSL
WATER WELL 1	3703.17	3704.17
WATER WELL 2	3703.34	3703.84

SCALE IN FEET

0 25 50 100

EXPLANATION

- * 3636.56 MW-1 — MONITOR WELL LOCATION AND GROUNDWATER POTENTIOMETRIC SURFACE ELEVATION, FEET AMSL, 7/28/98
- WW-1 — WATER WELL LOCATION AND GROUNDWATER POTENTIOMETRIC SURFACE ELEVATION, FEET AMSL, 7/28/98
- 3637.0 — CONTOUR OF GROUNDWATER POTENTIOMETRIC SURFACE ELEVATION FEET AMSL, 7/28/98
- GROUNDWATER FLOW
- * CORRECTED FOR PSH

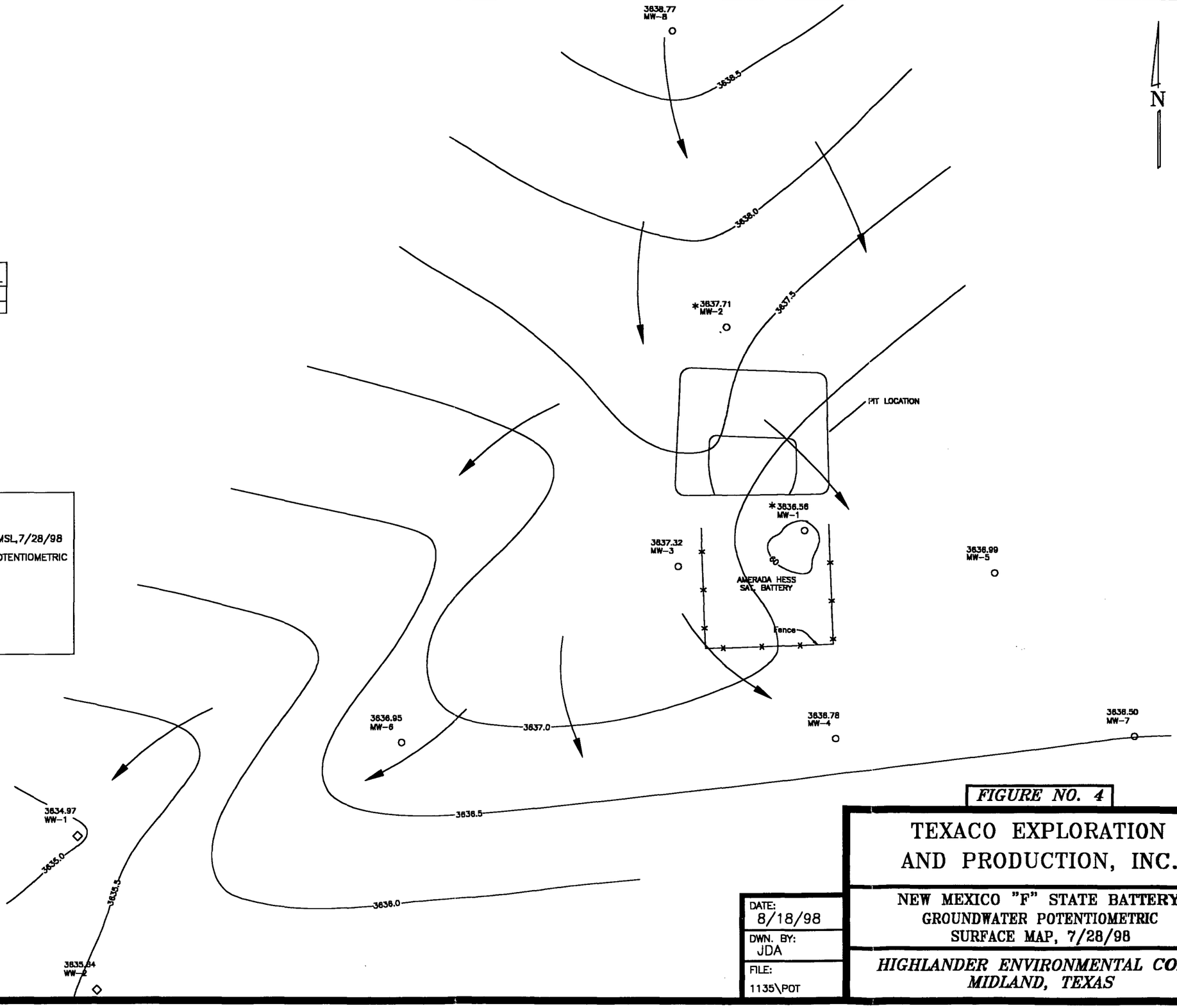


FIGURE NO. 4

TEXACO EXPLORATION AND PRODUCTION, INC.

NEW MEXICO "F" STATE BATTERY
GROUNDWATER POTENTIOMETRIC SURFACE MAP, 7/28/98

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

DATE: 8/18/98
DWN. BY: JDA
FILE: 1135\POT

MONITOR WELL DATA

Monitor Well	Ground Elevation Feet AMSL	Top-of-Casing Elevation
1	3796.63	3696.65
2	3689.73	3692.48
3	3696.95	3696.85
4	3696.15	3699.50
5	3691.13	3693.52
6	3704.51	3704.81
7	3691.63	3694.58
8	3692.63	3695.61

WATER WELL DATA

WATER WELL	GROUND ELEVATION FEET AMSL	TOP-OF-CASING ELEVATION, FEET AMSL
WATER WELL 1	3703.17	3704.17
WATER WELL 2	3703.34	3703.84

SCALE IN FEET

0 25 50 100

EXPLANATION

4.96 MW-1 ○ MONITOR WELL LOCATION AND APPARENT PSH THICKNESS, FEET, 7/28/98

WW-1 ◇ WATER WELL LOCATION

2.0 CONTOUR OF APPARENT PSH THICKNESS, FEET 7/28/98

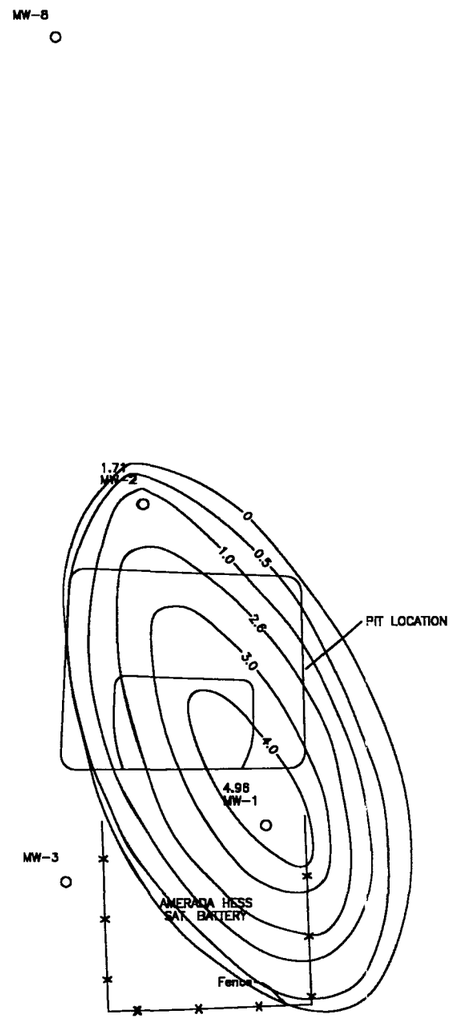


FIGURE NO. 5

TEXACO EXPLORATION AND PRODUCTION, INC.

NEW MEXICO "F" STATE BATTERY
APPARENT PSH THICKNESS MAP
7/28/98

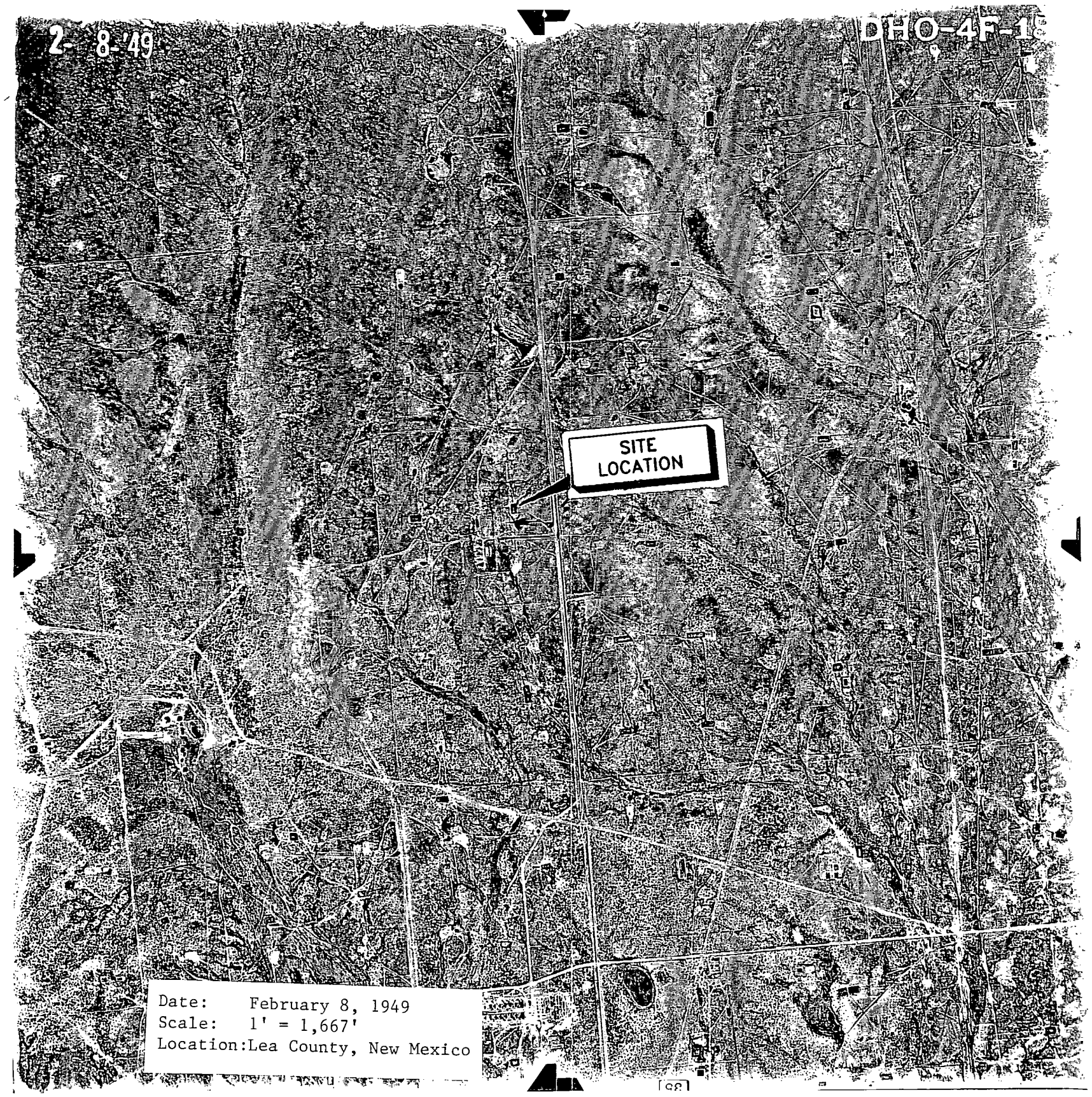
HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

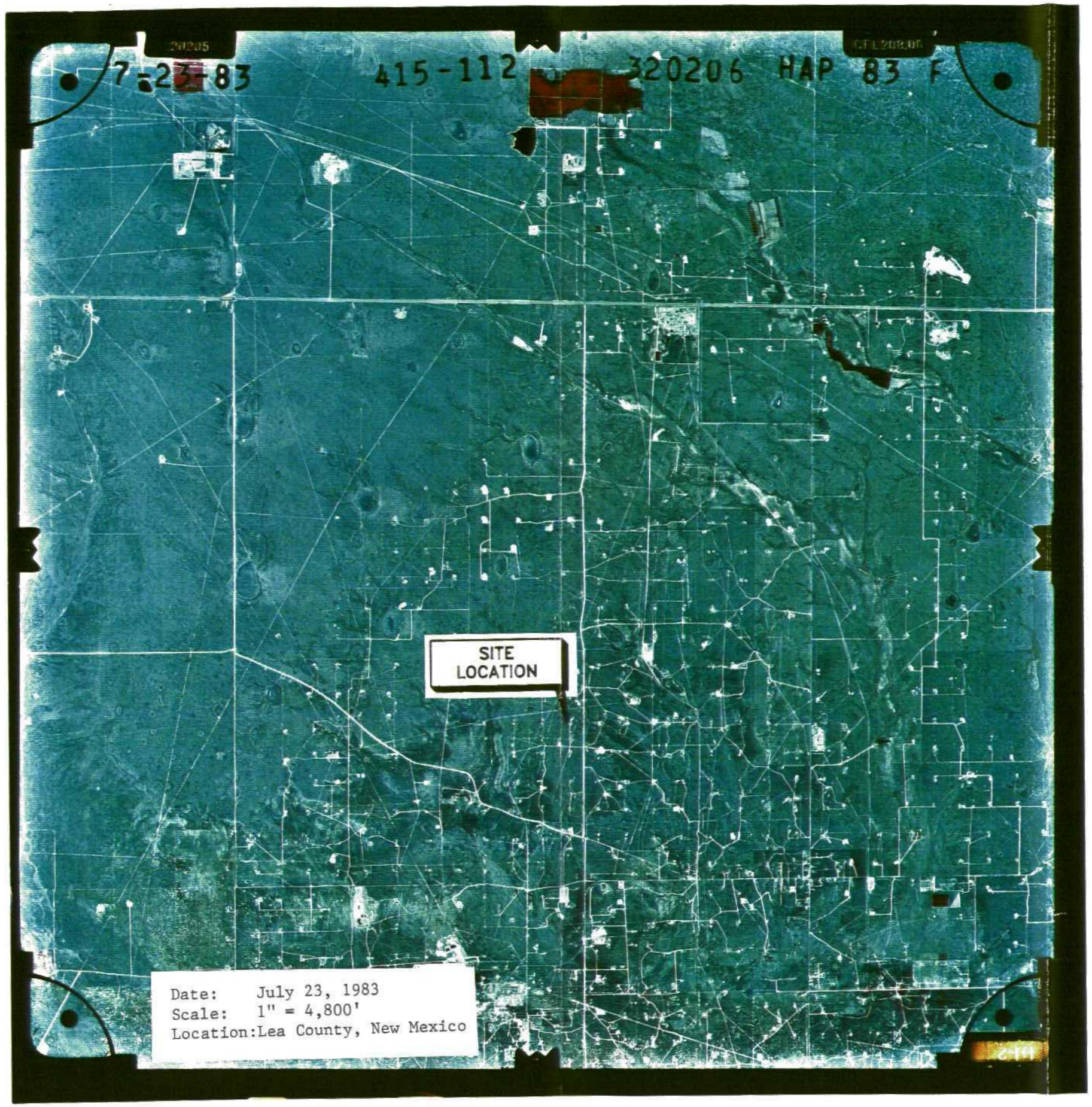
DATE: 8/26/98
DWN. BY: JDA
FILE: 1135\THICK

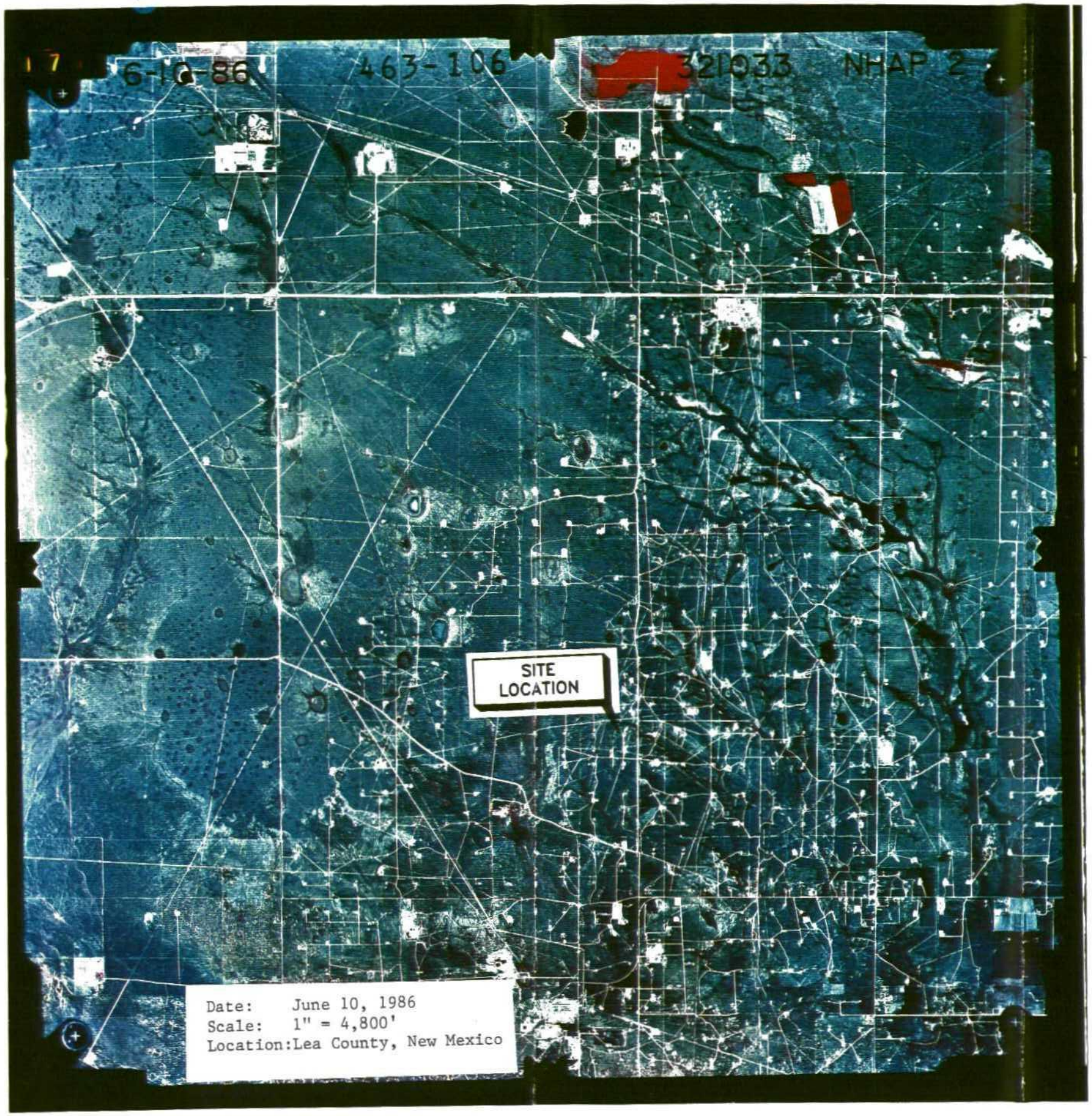
APPENDICES

APPENDIX A

Aerial Photographs


2-8-49
DHO-4F-1
SITE
LOCATION
Date: February 8, 1949
Scale: 1' = 1,667'
Location: Lea County, New Mexico


7-23-83
415-112
320206 HAP 83 F
SITE
LOCATION
Date: July 23, 1983
Scale: 1" = 4,800'
Location:Lea County, New Mexico


6-10-86
463-106
321033
NHAP 2
SITE
LOCATION
Date: June 10, 1986
Scale: 1" = 4,800'
Location:Lea County, New Mexico

APPENDIX B

Boring Sample Logs

SAMPLE LOG

Boring/Well: MW-1
Project Number: 1135
Client: Texaco Exploration & Production, Inc
Site Location: State F Tank Battery
Location: Lea County, New Mexico
Total Depth: 73 feet
Date Installed: 7/7/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-1	16	White and pink, caliche, crush and dry, mod. compacted fill material
10-11	279	White, caliche, dense and friable layer, sandstone layers with traces of fine grain sand
20-21	269	White, caliche and limestone, dense layer, trace of sandstone
30-31	587	Tan, fine grain sand and trace of dense layers of caliche
40-41	638	Tan, fine grain sand, loose, layers of dense caliche and cemented sandstone
50-51	860	Tan, fine grain sand, loose, layers of dense caliche and cemented sandstone
60-61	-	Tan, fine grain sand, loose, damp, traces of cemented sandstone
65-73	-	Tan, fine grain sand, loose, damp, traces gravel and layers of cemented sandstone
		TD -73'

SAMPLE LOG

Boring/Well: MW-2
Project Number: 1135
Client: Texaco Exploration & Production, Inc
Site Location: State F Tank Battery
Location: Lea County, New Mexico
Total Depth: 65 feet
Date Installed: 7/21/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-10	-	White, caliche, dense layer, some consolidated limestone
10-11	16	White, caliche, dense layer, some consolidated limestone, tan, fine grain sand encountered at 15' with layers of caliche
20-21	25	White, caliche, dense at 25'
30-31	22	Tan, fine grain sand and cemented sandstone, dese layer encountered at 35'
40-41	10	Tan, fine grain sand, loose, layers of dense caliche
50-51	-	Tan, fine grain sand, loose, damp
60-65	-	Tan, fine grain sand, loose, damp, traces of gravel and cemented sandstone
		TD -65'

SAMPLE LOG

Boring/Well: MW-3
Project Number: 1135
Client: Texaco Exploration & Production, Inc
Site Location: State F Tank Battery
Location: Lea County, New Mexico
Total Depth: 75 feet
Date Installed: 7/21/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-10	-	White, caliche, dense layer, traces of consolidated limestone
10-11	3	White, caliche, dense and friable layer, some consolidated limestone at 15'
20-21	16	White, caliche and limestone, dense layer
30-31	28	Tan, fine grain sand and trace of dense layers of caliche
40-41	6	Tan, fine grain sand, loose, layers of dense caliche and cemented sandstone
50-51	19	Tan, fine grain sand, loose, layers of dense caliche and cemented sandstone
60-61	-	Tan, fine grain sand, loose, damp, traces of cemented sandstone
65-75	-	Tan, fine grain sand, loose, damp, traces gravel and layers of cemented sandstone
		TD -75'

SAMPLE LOG

Boring/Well: MW-4
Project Number: 1135
Client: Texaco Exploration & Production, Inc
Site Location: State F Tank Battery
Location: Lea County, New Mexico
Total Depth: 75 feet
Date Installed: 7/21/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-10	-	Unconsolidated caliche and fine grain sand, appears to be fill material from 0-12'
12-20	-	White, caliche, dense and friable layer, some consolidated limestone
20-21	12	White, caliche and limestone, dense and friable layer, fine grain sand layer encounter from 25' to 27'
30-31	38	White, dense, caliche and trace of cemented sandstone, tan fine grain sand encountered at 33' to 34'
40-41	19	Tan, fine grain sand, loose, layers of dense caliche and cemented sandstone
50-51	22	Tan, fine grain sand, loose, layers of dense caliche and cemented sandstone
60-61	16	Tan, fine grain sand, loose, damp, trace of brown and red clay
65-75	-	Tan, fine grain sand, loose, damp, traces gravel and layers of dense cemented sandstone
		TD -75'

SAMPLE LOG

Boring/Well: MW-5
Project Number: 1135
Client: Texaco Exploration & Production, Inc
Site Location: State F Tank Battery
Location: Lea County, New Mexico
Total Depth: 68 feet
Date Installed: 7/22/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-10	-	White, caliche, dense and fraible layer
10-11	0	White, caliche, dense and friable layer, some consolidated limestone
20-21	19	White, caliche and limestone, dense and friable layer, trace of fine grain sand layer
30-31	6	Tan, fine grain sand, white caliche, dense
40-41	9	Tan, fine grain sand, loose, layers of dense caliche and cemented sandstone
50-51	6	Tan, fine grain sand, loose, damp, layers of dense caliche and cemented sandstone
60-61	3	Tan, fine grain sand, loose, damp, trace of caliche
61-68	-	Tan, fine grain sand, loose, damp, trace of brown and red clay and gravel
		TD - 68'

Boring/Well: MW-6
Project Number: 1135
Client: Texaco Exploration & Production, Inc
Site Location: State F Tank Battery
Location: Lea County, New Mexico
Total Depth: 76 feet
Date Installed: 7/22/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-10	-	White, caliche, dense and fraible layer, trace of fine grain sand
10-20	-	White, caliche, dense and friable layer, some consolidated limestone
20-30	-	White, caliche and limestone, dense and friable layer at 23'
30-40	-	White, dense, caliche, some layers of tan fine grain sand
40-50	-	Tan, fine grain sand, loose, layers of dense caliche and cemented sandstone, dense at 45'-48'
50-60	-	Tan, fine grain sand, loose, trace of layers of dense caliche and cemented sandstone
60-70	-	Tan, fine grain sand, loose, damp at 62', trace of brown clay
70-76	-	Tan, fine grain sand, loose, damp, traces gravel and layers of dense cemented sandstone
		TD -76'

Boring/Well: MW-7
Project Number: 1135
Client: Texaco Exploration & Production, Inc
Site Location: State F Tank Battery
Location: Lea County, New Mexico
Total Depth: 69 feet
Date Installed: 7/22/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-10	-	White, caliche, dense and fraible layer
10-20	-	White, caliche, dense and friable layer, some consolidated limestone
20-30	-	White, caliche and limestone, dense and friable layer
30-40	-	White, dense, caliche, layers of tan fine grain sand
40-50	-	White, dense caliche at 40-'42', tan, fine grain sand, loose and cemented sandstone
50-60	-	Tan, fine grain sand, loose, damp, trace of dense caliche and cemented sandstone
60-69	-	Tan, fine grain sand, loose, damp, dense caliche encountered at 69'
		TD - 69'

SAMPLE LOG

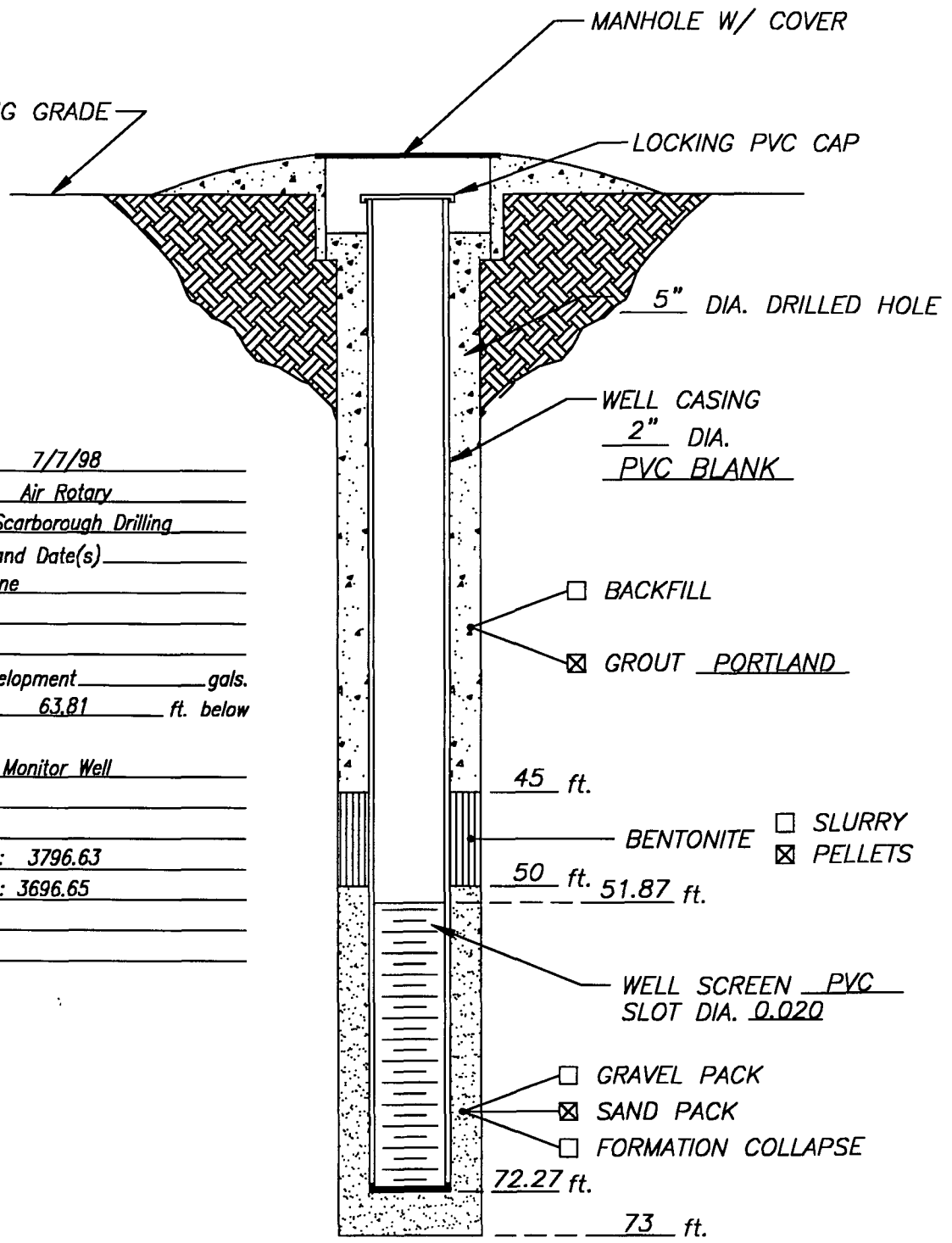
Boring/Well: MW-8
Project Number: 1135
Client: Texaco Exploration & Production, Inc
Site Location: State F Tank Battery
Location: Lea County, New Mexico
Total Depth: 65 feet
Date Installed: 7/22/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-10	-	White, caliche, dense layer, some consolidated limestone
10-20	-	White, caliche, dense layer, some consolidated limestone, tan, fine grain sand encountered at 20' with layers of caliche
20-30	-	White, caliche, dense
30-40	-	Tan, fine grain sand and cemented sandstone
40-50	-	Tan, fine grain sand, loose, layers of dense caliche and cemented sandstone
50-60	-	Tan, fine grain sand, loose, damp, trace of red and brown clay
60-66	-	Tan, fine grain sand, loose, damp, traces of gravel and cemented sandstone
		TD -66'

APPENDIX C

Monitor Well Completion Records

WELL CONSTRUCTION LOG



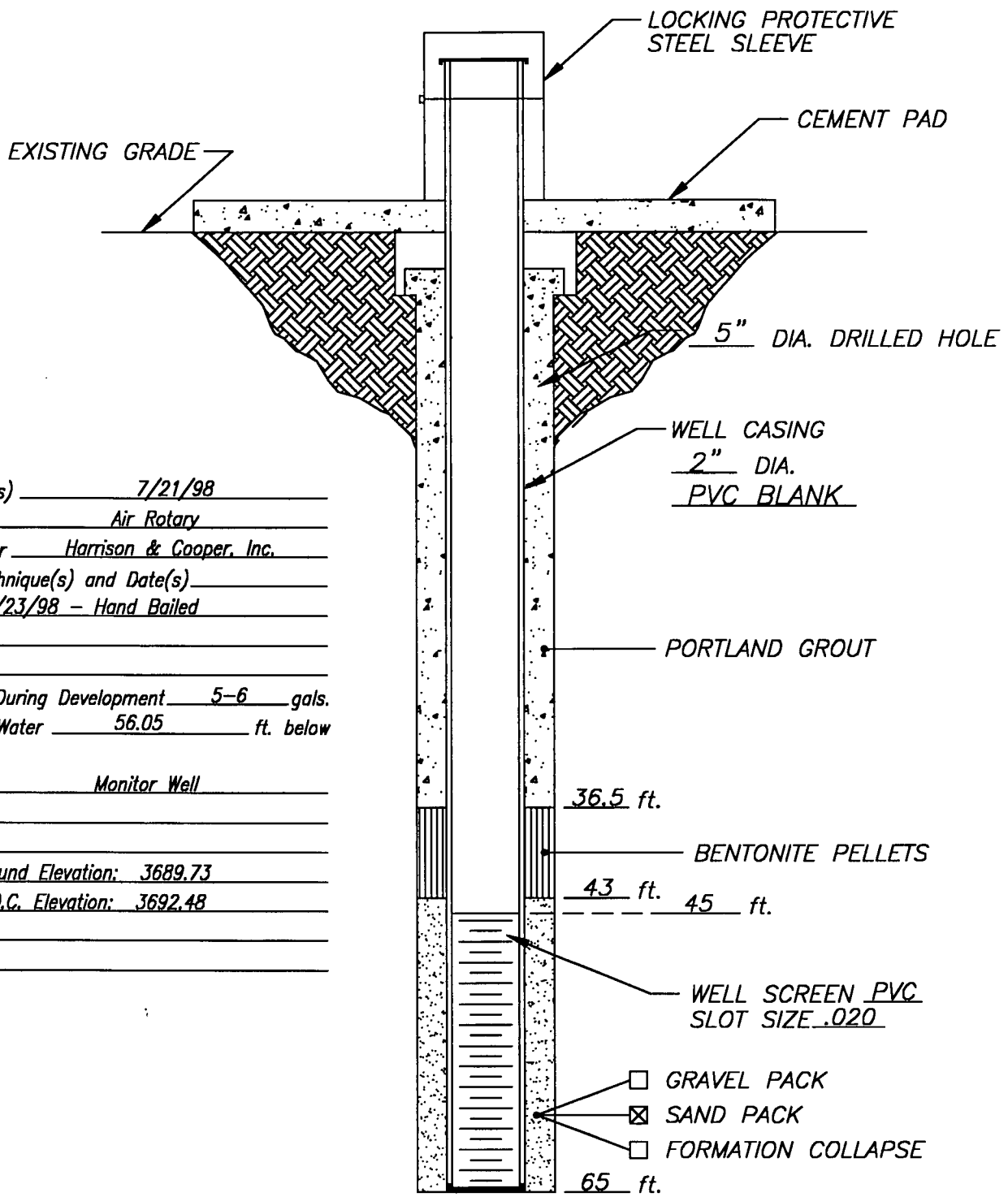
Installation Date(s) 7/7/98
Drilling Method Air Rotary
Drilling Contractor Scarborough Drilling
Development Technique(s) and Date(s)
None

Water Removed During Development ____ gals.
Static Depth to Water 63.81 ft. below M.P.
Well Purpose Monitor Well

Remarks
Ground Elevation: 3796.63
T.O.C. Elevation: 3696.65

DATE: 7/7/98	CLIENT: Texaco Exploration & Production, Inc.	WELL NO.
Highlander Environmental	PROJECT: State "F" Tank Battery	MW-1
	LOCATION: Lea County, New Mexico	

WELL CONSTRUCTION LOG



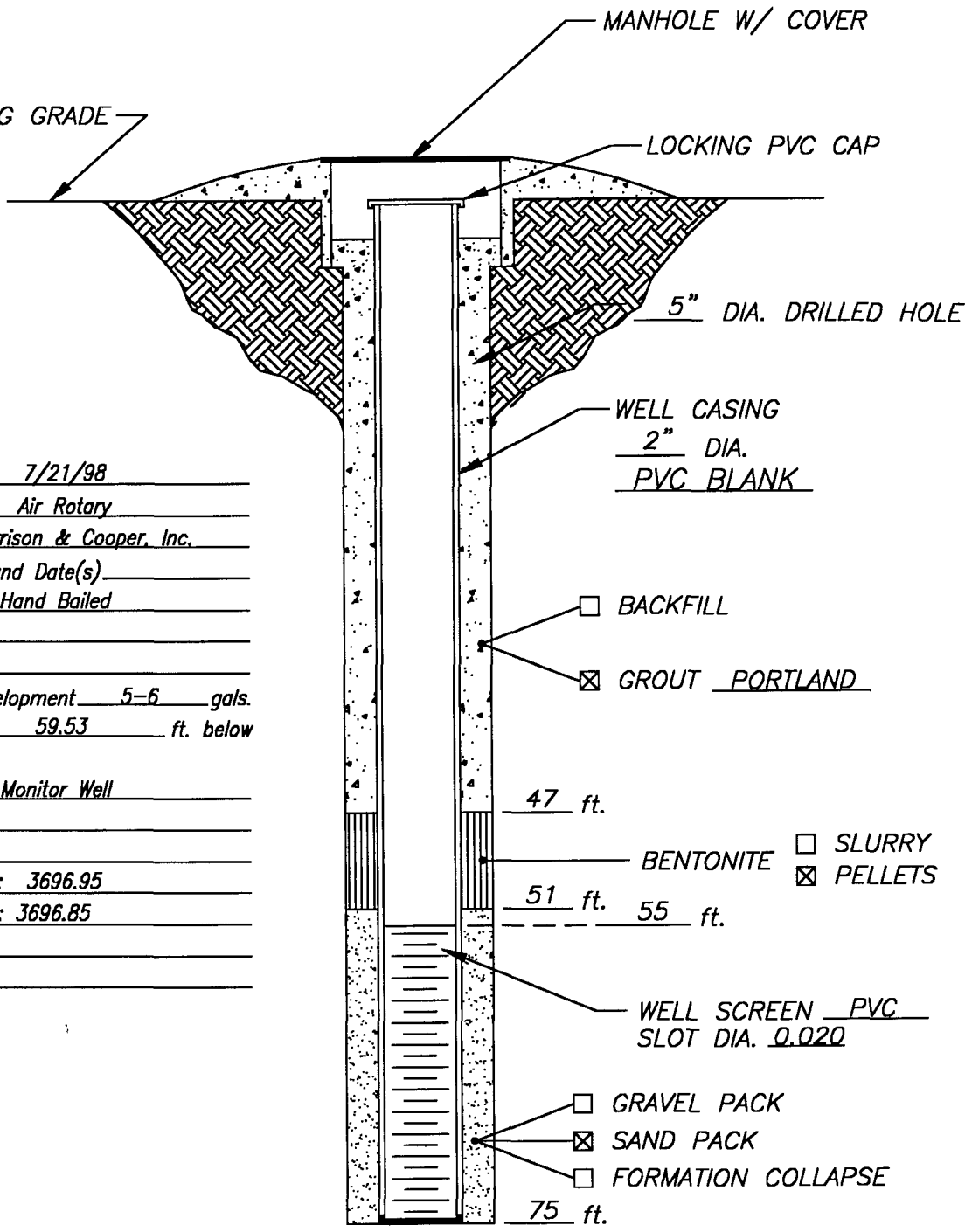
Installation Date(s) 7/21/98
Drilling Method Air Rotary
Drilling Contractor Harrison & Cooper, Inc.
Development Technique(s) and Date(s)
7/23/98 – Hand Bailed

Water Removed During Development 5–6 gals.
Static Depth to Water 56.05 ft. below Ground Level
Well Purpose Monitor Well

Remarks
Ground Elevation: 3689.73
T.O.C. Elevation: 3692.48

DATE: 7/21/98	CLIENT: Texaco Exploration & Production, Inc.	WELL NO.
Highlander Environmental	PROJECT: State "F" Tank Battery	MW–2
	LOCATION: Lea County, New Mexico	

WELL CONSTRUCTION LOG



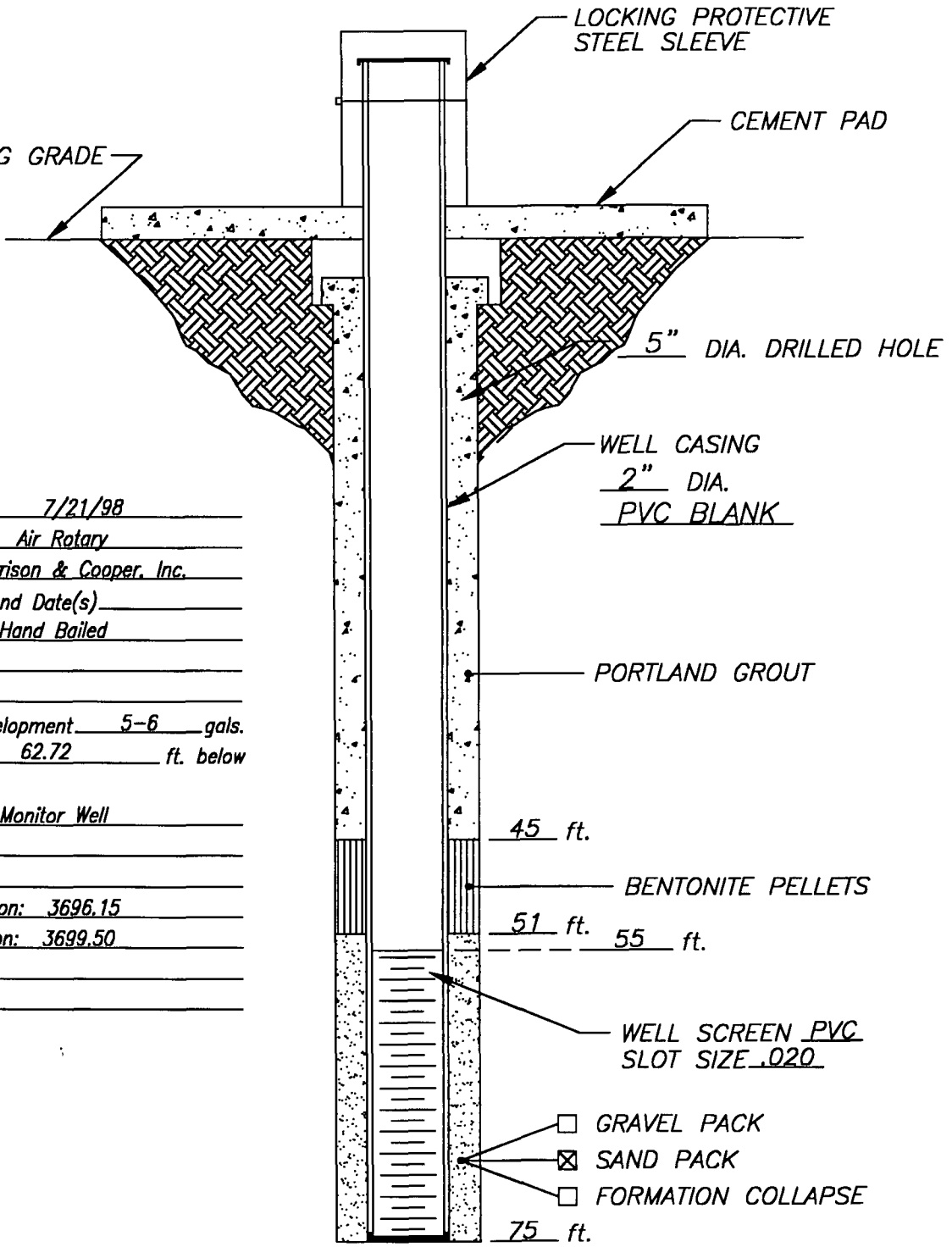
Installation Date(s) 7/21/98
Drilling Method Air Rotary
Drilling Contractor Harrison & Cooper, Inc.
Development Technique(s) and Date(s)
7/23/98 - Hand Bailed

Water Removed During Development 5-6 gals.
Static Depth to Water 59.53 ft. below M.P.
Well Purpose Monitor Well

Remarks
Ground Elevation: 3696.95
T.O.C. Elevation: 3696.85

DATE: 7/21/98	CLIENT: Texaco Exploration & Production, Inc.	WELL NO.
Highlander Environmental	PROJECT: State "F" Tank Battery	MW-3
	LOCATION: Lea County, New Mexico	

WELL CONSTRUCTION LOG



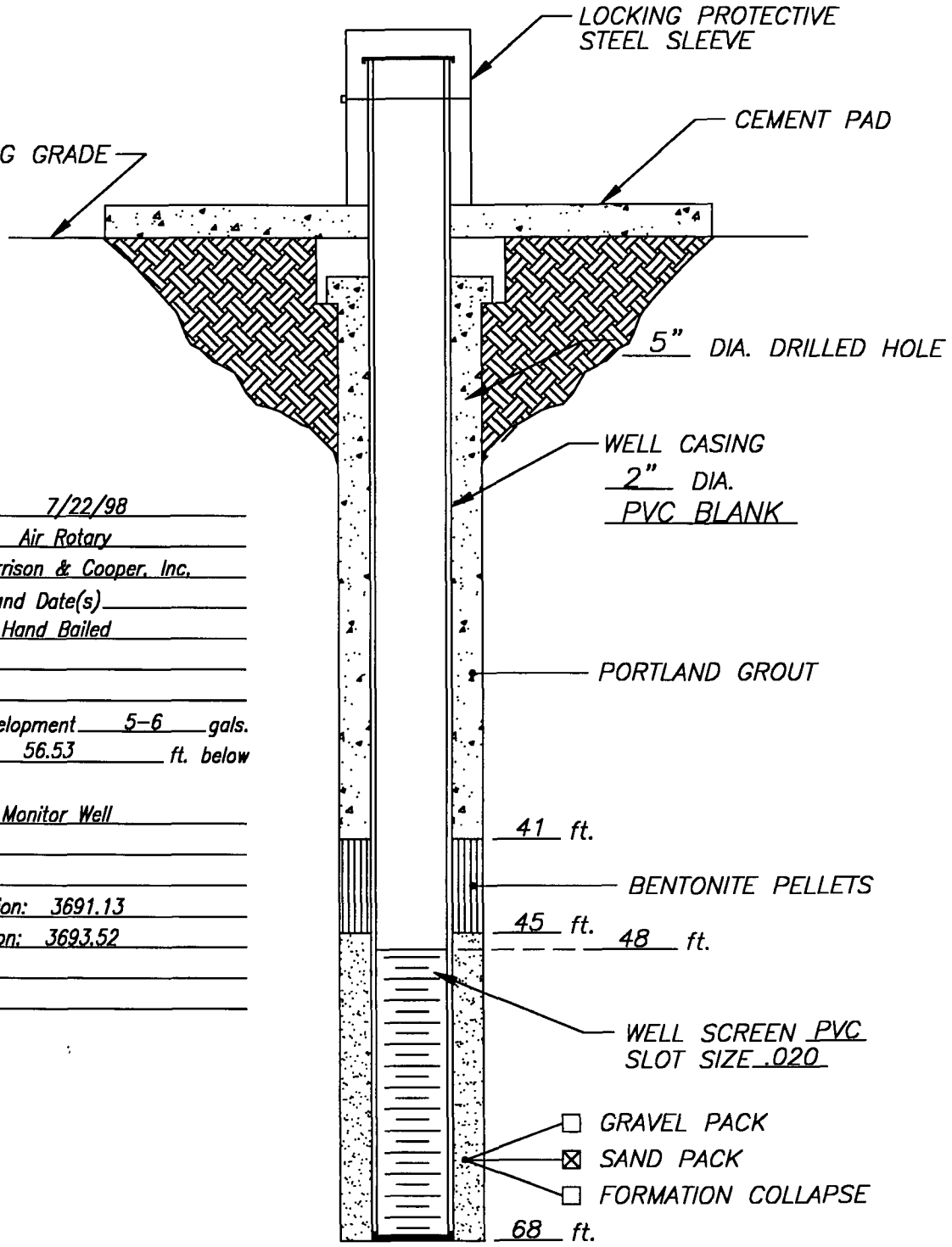
Installation Date(s) 7/21/98
Drilling Method Air Rotary
Drilling Contractor Harrison & Cooper, Inc.
Development Technique(s) and Date(s)
7/23/98 - Hand Bailed

Water Removed During Development 5-6 gals.
Static Depth to Water 62.72 ft. below Ground Level
Well Purpose Monitor Well

Remarks
Ground Elevation: 3696.15
T.O.C. Elevation: 3699.50

DATE: 7/22/98	CLIENT: Texaco Exploration & Production, Inc.	WELL NO.
Highlander Environmental	PROJECT: State "F" Tank Battery	MW-4
	LOCATION: Lea County, New Mexico	

WELL CONSTRUCTION LOG



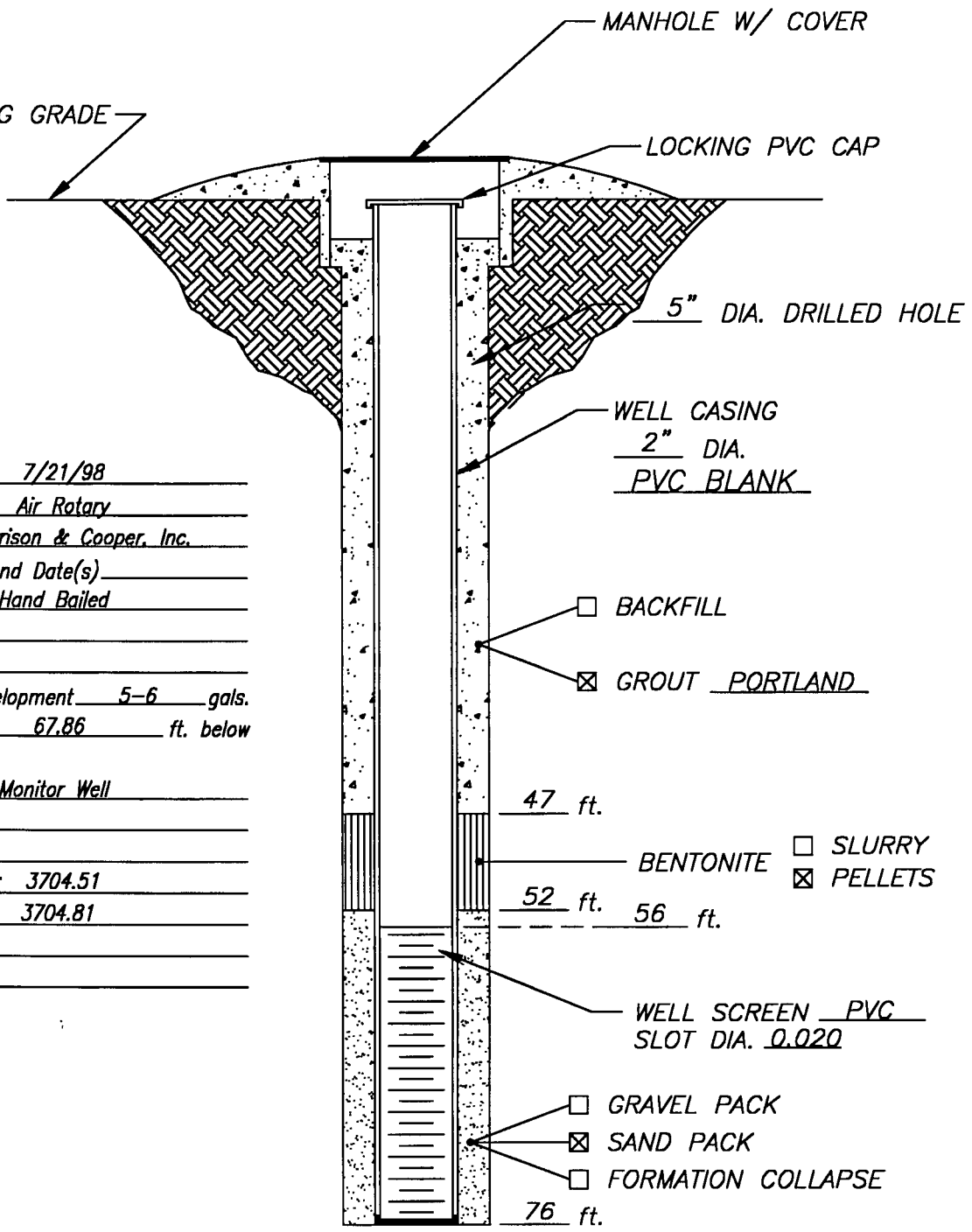
Installation Date(s) 7/22/98
Drilling Method Air Rotary
Drilling Contractor Harrison & Cooper, Inc.
Development Technique(s) and Date(s)
7/23/98 - Hand Bailed

Water Removed During Development 5-6 gals.
Static Depth to Water 56.53 ft. below Ground Level
Well Purpose Monitor Well

Remarks
Ground Elevation: 3691.13
T.O.C. Elevation: 3693.52

DATE: 7/22/98	CLIENT: Texaco Exploration & Production, Inc.	WELL NO.
Highlander Environmental	PROJECT: State "F" Tank Battery	MW-5
	LOCATION: Lea County, New Mexico	

WELL CONSTRUCTION LOG



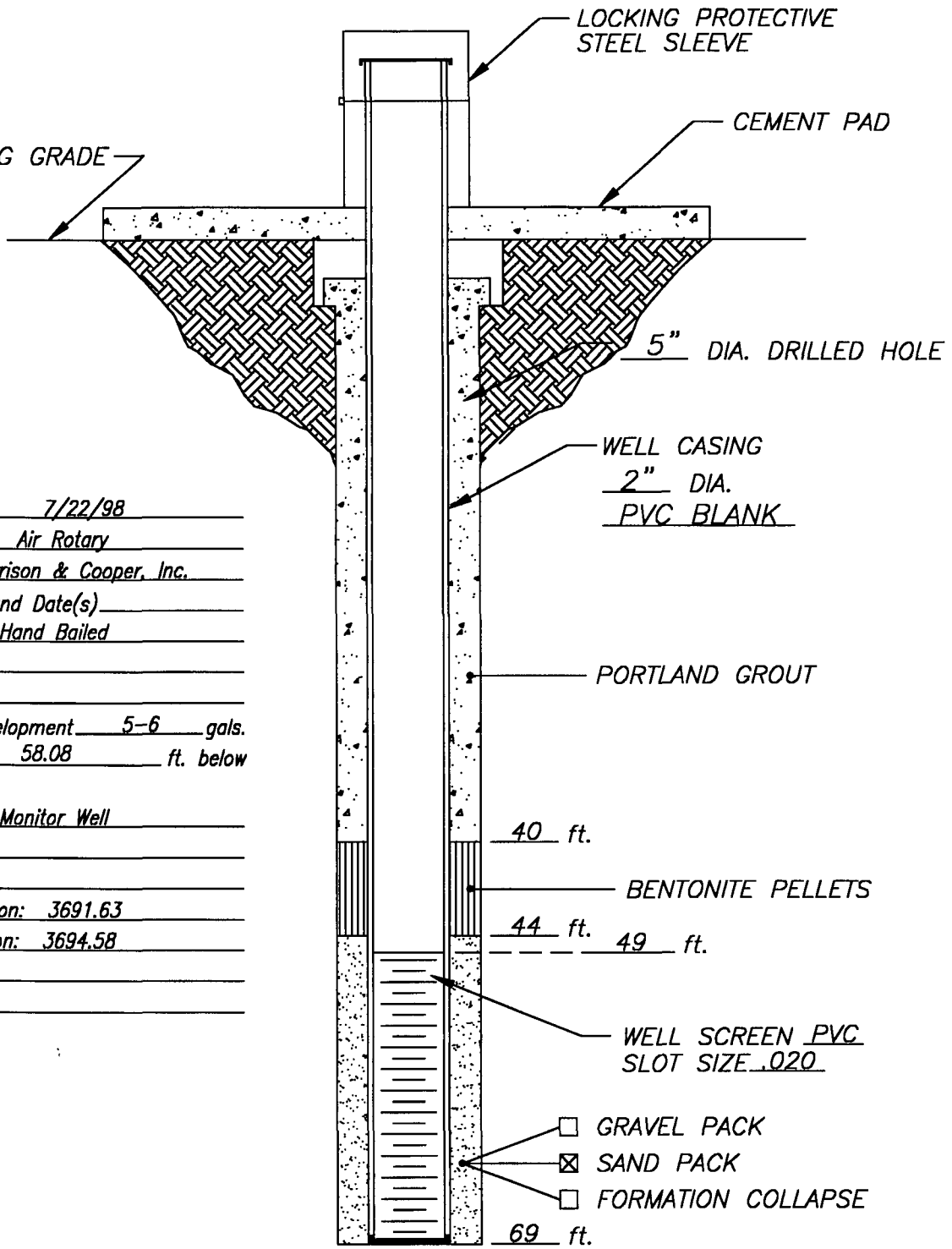
Installation Date(s) 7/21/98
Drilling Method Air Rotary
Drilling Contractor Harrison & Cooper, Inc.
Development Technique(s) and Date(s)
7/23/98 – Hand Bailed

Water Removed During Development 5–6 gals.
Static Depth to Water 67.86 ft. below M.P.
Well Purpose Monitor Well

Remarks
Ground Elevation: 3704.51
T.O.C. Elevation: 3704.81

DATE: 7/22/98		WELL NO.
Highlander Environmental	CLIENT: Texaco Exploration & Production, Inc. PROJECT: State "F" Tank Battery LOCATION: Lea County, New Mexico	MW–6

WELL CONSTRUCTION LOG



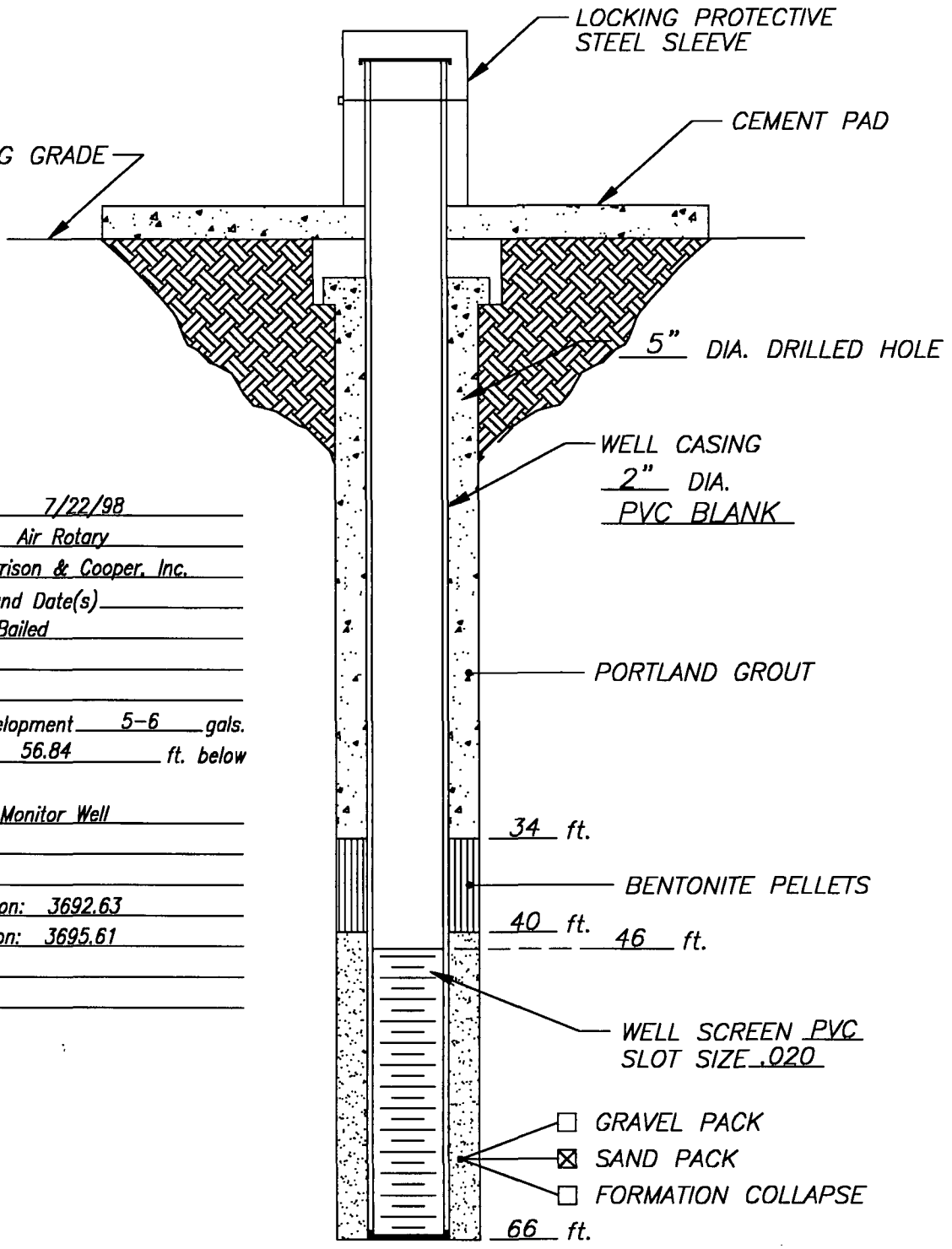
Installation Date(s) 7/22/98
Drilling Method Air Rotary
Drilling Contractor Harrison & Cooper, Inc.
Development Technique(s) and Date(s)
7/23/98 – Hand Bailed

Water Removed During Development 5-6 gals.
Static Depth to Water 58.08 ft. below Ground Level
Well Purpose Monitor Well

Remarks
Ground Elevation: 3691.63
T.O.C. Elevation: 3694.58

DATE: 7/22/98 **Highlander Environmental**	CLIENT: Texaco Exploration & Production, Inc. PROJECT: State "F" Tank Battery LOCATION: Lea County, New Mexico	WELL NO. MW-7

WELL CONSTRUCTION LOG



Installation Date(s) 7/22/98
Drilling Method Air Rotary
Drilling Contractor Harrison & Cooper, Inc.
Development Technique(s) and Date(s)
Hand Bailed

Water Removed During Development 5-6 gals.
Static Depth to Water 56.84 ft. below Ground Level
Well Purpose Monitor Well

Remarks
Ground Elevation: 3692.63
T.O.C. Elevation: 3695.61

DATE: 7/22/98	CLIENT: Texaco Exploration & Production, Inc.	WELL NO.
Highlander Environmental	PROJECT: State "F" Tank Battery	MW-8
	LOCATION: Lea County, New Mexico	

APPENDIX D

Trace Analysis, Inc. Report

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Mark Larson
1910 N. Big Spirng St.
Midland TX 79705

Date: Jul 23, 1998
Date Rec: 7/21/98
Project: 1135
Proj Name: New Mexico "F" State
Proj Loc: N/A

Lab Receiving # : 9807000345
Sampling Date: 7/17/98
Sample Condition: Intact and Cool
Sample Received By: MLS

TA#	Field Code	MATRIX	GRO (mg/Kg)
103017	Pile #1	Soil	61.3
103018	Pile #2	Soil	53.5
103019	Pile #3	Soil	47.7
103020	Pile #4	Soil	28.9
103021	Pile #5	Soil	23.1
103022	Pile #6	Soil	62.6
103023	Pile #7	Soil	46.7
103024	Pile #8	Soil	53.1
103025	Pile #9	Soil	54.1
103026	Pile #10	Soil	48.8
103027	Pile #11	Soil	42.7
103028	Pile #12	Soil	43.1
103029	Pile #13	Soil	51.8
103030	Pile #14	Soil	48.3
Method Blank			<5.00
Reporting Limit			5
QC			1.13
RPD			5
% Extraction Accuracy			110
% Instrument Accuracy			113

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
GRO	EPA 5030	7/22/98	EPA 8015B	7/22/98	JG	1	50

BB

Director, Dr. Blair Leftwich

7-23-98

Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Mark Larson
1910 N. Big Spirng St.
Midland TX 79705

Date: Jul 23, 1998
Date Rec: 7/21/98
Project: 1135
Proj Name: New Mexico "F" State
Proj Loc: N/A

Lab Receiving # : 9807000345
Sampling Date: 7/17/98
Sample Condition: Intact and Cool
Sample Received By: MLS

TA#	Field Code	MATRIX	GRO (mg/Kg)
103031	Pile #15	Soil	28.7
103032	Pile #16	Soil	38.9
103033	Comp #1 North	Soil	21.1
103034	Comp #1 Middle	Soil	53.7
103035	Comp #1 South	Soil	54.8
103036	N Wall	Soil	46.8
103037	S Wall	Soil	32.3
Method Blank			<5.00
Reporting Limit			5
QC			1.13
RPD			5
% Extraction Accuracy			110
% Instrument Accuracy			113

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
GRO	EPA 5030	7/22/98	EPA 8015B	7/22/98	JG	1	50

Director, Dr. Blair Leftwich

7-23-98
Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Mark Larson
1910 N. Big Spirng St.
Midland TX 79705

Date: Jul 24, 1998
Date Rec: 7/21/98
Project: 1135
Proj Name: New Mexico "F" State
Proj Loc: N/A

Lab Receiving # : 9807000345
Sampling Date: 7/17/98
Sample Condition: Intact and Cool
Sample Received By: MLS

TA#	Field Code	MATRIX	GRO (mg/Kg)
103038	E Wall	Soil	12.2
103039	W Wall	Soil	59.4
103040	Pit Bottom	Soil	27.9
Method Blank			<5.00
Reporting Limit			5
QC			1.1
RPD			4
% Extraction Accuracy			110
% Instrument Accuracy			110

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
GRO	EPA 5030	7/23/98	EPA 8015B	7/23/98	JG	100	100

Director, Dr. Blair Leftwich

7-24-98
Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Mark Larson
1910 N. Big Spirng St.
Midland TX 79705

Date: Jul 23, 1998
Date Rec: 7/21/98
Project: 1135
Proj Name: New Mexico "F" State
Proj Loc: N/A

Lab Receiving # : 9807000345
Sampling Date: 7/17/98
Sample Condition: Intact and Cool
Sample Received By: MLS

TA#	Field Code	MATRIX	DRO (mg/Kg)
103017	Pile #1	Soil	2,480
103018	Pile #2	Soil	3,250
103019	Pile #3	Soil	1,930
103020	Pile #4	Soil	1,480
103021	Pile #5	Soil	731
103022	Pile #6	Soil	5,620
103023	Pile #7	Soil	2,370
103024	Pile #8	Soil	1,580
103025	Pile #9	Soil	4,040
103026	Pile #10	Soil	3,850
103027	Pile #11	Soil	3,880
103028	Pile #12	Soil	3,230
103029	Pile #13	Soil	4,140
103030	Pile #14	Soil	2,260
103031	Pile #15	Soil	2,900
103032	Pile #16	Soil	3,570
Method Blank			<50
Reporting Limit			50
QC			233
RPD			20
% Extraction Accuracy			91
% Instrument Accuracy			93

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
DRO	EPA 8011	7/21/98	EPA 8015B	7/21/98	MS	250	250

BL 7-23-98

Director, Dr. Blair Leftwich Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Mark Larson
1910 N. Big Spirng St.
Midland TX 79705

Date: Jul 24, 1998
Date Rec: 7/21/98
Project: 1135
Proj Name: New Mexico "F" State
Proj Loc: N/A

Lab Receiving # : 9807000345
Sampling Date: 7/17/98
Sample Condition: Intact and Cool
Sample Received By: MLS

TA#	Field Code	MATRIX	DRO (mg/Kg)
103033	Comp #1 North	Soil	<500
103034	Comp #2 Middle	Soil	627
103035	Comp #3 South	Soil	2,570
103036	N Wall	Soil	5,940
103037	S Wall	Soil	4,790
103038	E Wall	Soil	722
103039	W Wall	Soil	2,200
103040	Pit Bottom	Soil	1,680
Method Blank			<50
Reporting Limit			50
QC			283

RPD	5
% Extraction Accuracy	89
% Instrument Accuracy	113

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
DRO	EPA 8011	7/21/98	EPA 8015B	7/21/98	MS	250	250

Director, Dr. Blair Leftwich

7-24-98
Date

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Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

PAGE: 1 OF: 3

CLIENT NAME: Texaco | SITE MANAGER: M. Larson

PROJECT NO.: 1135 | PROJECT NAME: New Mexico "F" State

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH (8015 M) Grg/Dro	PAH 8270
103017	7/17/98	10:35	S	✓		Pit #1	1				✓				✓	
18		10:40	S	✓		" 2	1				✓				✓	
19		11:00	S	✓		" 3	1				✓		✓		✓	
20		11:05	S	✓		" 4	1				✓				✓	
21		11:12	S	✓		" 5	1				✓				✓	
22		11:19	S	✓		" 6	1				✓				✓	
23		11:25	S	✓		" 7	1				✓				✓	
24		11:31	S	✓		" 8	1				✓				✓	
25		11:38	S	✓		" 9	1				✓				✓	
26	↓	11:43	S	✓		" 10	1				✓		✓		✓	

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 8020/602	MTBE 8020/602	TPH (8015 M) Grg/Dro	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/825	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
✓	✓	✓														

RELINQUISHED BY: (Signature) — Date: 7/20/98 Time: 6:50
RECEIVED BY: (Signature) Allen Shelton — Date: 7/20/98 Time: 4:55 PM

RELINQUISHED BY: (Signature) Allen Shelton — Date: 7/20/98 Time: 6:30 PM
RECEIVED BY: (Signature) — Date: Time:

RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:

RECEIVING LABORATORY: Trace
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: 7-21-98 TIME: 9:30

SAMPLED BY: (Print & Sign) M. Larson — Date: 7/17/98 Time: 14:35

SAMPLE SHIPPED BY: (Circle) FEDEX HAND DELIVERED BUS UPS Greyhound AIRBILL #: OTHER:

HIGHLANDER CONTACT PERSON: M. Larson

Results by: Fri 7/24/98

RUSH Charges Authorized: Yes (No)

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid (S)-Soil SL-Sludge O-Other

REMARKS: 7/23/98

Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

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Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705
(915) 682-4559 Fax (915) 682-3946

PAGE: 2 OF: 3

CLIENT NAME: Texaco | SITE MANAGER: M. Larom

PROJECT NO.: 1135 | PROJECT NAME: New Mexico "F" State

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	ANALYSIS REQUEST (Circle or Specify Method No.): BTEX 8020/602	MTBE 8020/602	TPH (8015M) Pro/Gro	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
103027	7/17/98	11:50	S	✓		Pit # 11	1				✓				1.														
28		11:56	S	✓		" 12	1				✓				1.														
29		12:03	S	✓		" 13	1				✓				1.														
30		12:10	S	✓		" 14	1				✓				1.														
31		12:17	S	✓		" 15	1				✓				1.														
32		12:24	S	✓		" 16	1				✓				1.														
33		12:50	S	✓		Comp. #1 North	1				✓				1.														
34		13:25	S	✓		Comp. #2 Middle	1				✓				1.														
35		13:49	S	✓		Comp. #3 South	1				✓				1.														
36	↓	14:00	S	✓		N. Wall	1				✓				1.														

RELINQUISHED BY: (Signature) Date: 7/20/98 Time: 12:50
RECEIVED BY: (Signature) Helen Shelton Date: 7/20/98 Time: 4:55 PM

RELINQUISHED BY: (Signature) Helen Shelton Date: 7/20/98 Time: 6:30 PM
RECEIVED BY: (Signature) Date: Time:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: Trace
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: 7-21-98 TIME: 9:50 5°

SAMPLED BY: (Print & Sign) M. Larom Date: 7/17/98 Time: 14:35
SAMPLE SHIPPED BY: (Circle) FEDEX BUS UPS Greyhound HAND DELIVERED AIRBILL #: OTHER:
HIGHLANDER CONTACT PERSON: M. Larom
Results by NO LATER THAN FRI - 7/24/98
RUSH Charges Authorized: Yes (No)

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid (S)-Soil SL-Sludge O-Other

REMARKS: ONG

Please Fill out all required information. Laboratory retains yellow copy. Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

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Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

PAGE: 3 OF: 3

CLIENT NAME: Texaco | SITE MANAGER: M. Larson

PROJECT NO.: 1135 | PROJECT NAME: New Mexico "F" State

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH (8015 M) Dro/Gro	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
103037	7/17/98	14:10	S	✓		S. Wall	1				✓		✓		✓														
38	↓	14:20	S	✓		E. Wall	1				✓				✓														
39		14:25	S	✓		W. Wall	1				✓		✓		✓														
40	↓	14:35	S	✓		Pit Bottom	1				✓				✓														

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature) — Date: 7/20/98 Time: 16:30
RECEIVED BY: (Signature) Helen Shelton — Date: 7/20/98 Time: 4:55 PM

RELINQUISHED BY: (Signature) Helen Shelton — Date: 7/20/98 Time: 6:30 PM
RECEIVED BY: (Signature) — Date: Time:

RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:

RECEIVING LABORATORY: Trace
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: 7-21-98 TIME: 9:30

SAMPLED BY: (Print & Sign) M. Larson — Date: 7/17/98 Time: 14:35
SAMPLE SHIPPED BY: (Circle) FEDEX BUS UPS HAND DELIVERED — AIRBILL #: Greyhound — OTHER:

HIGHLANDER CONTACT PERSON: M. Larson ★
Results by: FRI - 7/24/98 ★
RUSH Charges Authorized: Yes (No)

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water (S)Soil A-Air SL-Sludge SD-Solid O-Other

REMARKS: NM

Please Fill out billing info — Laboratory retains yellow copy — Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

CLIENT NAME: Texaco | SITE MANAGER: M. Larson

PROJECT NO.: 1135 | PROJECT NAME: New Mexico "F" State

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
	7/17/98	10:35	S	✓		Pile #1	1				✓	
		10:40	S	✓		" 2	1				✓	
		11:00	S	✓		" 3	1				✓	
		11:05	S	✓		" 4	1				✓	
		11:12	S	✓		" 5	1				✓	
		11:19	S	✓		" 6	1				✓	
		11:25	S	✓		" 7	1				✓	
		11:31	S	✓		" 8	1				✓	
		11:38	S	✓		" 9	1				✓	
		11:43	S	✓		" 10	1				✓	

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 8020/602	MTBE 8020/602	TPH (8015 M) Gro/Dro	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
✓	✓	✓														

RELINQUISHED BY: (Signature) — Date: 7/20/98 Time: 16:50
RECEIVED BY: (Signature) Allen Shelton — Date: 7/20/98 Time: 4:50 PM

RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:

RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:

RECEIVING LABORATORY: Trace
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:

SAMPLED BY: (Print & Sign) M. Larson — Date: 7/17/98 Time: 14:35

SAMPLE SHIPPED BY: (Circle)
FEDEX BUS UPS AIRBILL #
HAND DELIVERED OTHER:

HIGHLANDER CONTACT PERSON: M. Larson

Results by:

RUSH Charges Authorized: Yes (No)

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid (S)-Soil SL-Sludge O-Other

REMARKS:

Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705
(915) 682-4559 Fax (915) 682-3946

ANALYSIS REQUEST (Circle or Specify Method No.)

CLIENT NAME: Texaco SITE MANAGER: M. Larson

PROJECT NO.: 1135 PROJECT NAME: New Mexico "F" State

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH (8015m) Pro/Gro	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
	7/17/98	11:50	S	✓		Pile # 11	1				✓				✓														
	↓	11:56	S	✓		" 12	1				✓				✓														
		12:05	S	✓		" 13	1				✓		✓		✓														
		12:10	S	✓		" 14	1				✓		✓		✓														
		12:17	S	✓		" 15	1				✓				✓														
		12:24	S	✓		" 16	1				✓				✓														
		12:50	S	✓		Comp. #1 North	1				✓		✓		✓														
		13:25	S	✓		Comp. #2 Middle	1				✓		✓		✓														
		13:49	S	✓		Comp. #3 South	1				✓		✓		✓														
	↓	14:00	S	✓		N. Wall	1				✓		✓		✓														

RELINQUISHED BY: (Signature) [signature] Date: 7/20/98 Time: 16:50 RECEIVED BY: (Signature) Helen Skotter Date: 7/20/98 Time: 4:55pm

RELINQUISHED BY: (Signature) Date: Time: RECEIVED BY: (Signature) Date: Time:

RELINQUISHED BY: (Signature) Date: Time: RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: Trace RECEIVED BY: (Signature)
ADDRESS:
CITY: STATE: ZIP: DATE: TIME:
CONTACT: PHONE:

SAMPLED BY: (Print & Sign) M. Larson [signature] Date: 7/17/98 Time: 14:35

SAMPLE SHIPPED BY: (Circle) FEDEX (BUS) UPS HAND DELIVERED AIRBILL #: OTHER:

HIGHLANDER CONTACT PERSON: M. Larson

Results by:

RUSH Charges Authorized: Yes (No)

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water (S)-Soil A-Air SL-Sludge SD-Solid O-Other

REMARKS:

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

CLIENT NAME: Texaco | SITE MANAGER: M. Lavan

PROJECT NO.: 1135 | PROJECT NAME: New Mexico "F" State

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH (8015 M) Dro/Gro	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/824	GC.MS Semi. Vol. 8270/825	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
	7/17/98	14:10	S	✓		S. Wall	—				✓		✓		✓														
		14:20	S	✓		E. Wall	—				✓				✓														
		14:25	S	✓		W. Wall	—				✓		✓		✓														
	↓	14:35	S	✓		Pit Bottom	—				✓				✓														

RELINQUISHED BY: (Signature) Date: 7/20/98 Time: 16:50 | RECEIVED BY: (Signature) Date: 7/20/98 Time: 4:52 PM

RELINQUISHED BY: (Signature) Date: Time: | RECEIVED BY: (Signature) Date: Time:

RELINQUISHED BY: (Signature) Date: Time: | RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: Trace | RECEIVED BY: (Signature)

ADDRESS: | CITY: STATE: ZIP: | CONTACT: PHONE: | DATE: TIME:

SAMPLED BY: (Print & Sign) M. Lavan Date: 7/17/98 Time: 14:35

SAMPLE SHIPPED BY: (Circle) FEDEX HAND DELIVERED BUS UPS AIRBILL #: OTHER:

HIGHLANDER CONTACT PERSON: M. Lavan

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid (S)-Soil SL-Sludge O-Other

REMARKS:

Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Mark Larson
1910 N. Big Spirng St.
Midland TX 79705

Lab Receiving # : 9807000148
Sampling Date: 7/7/98
Sample Condition: Intact and Cool
Sample Received By: VW

Date: Jul 14, 1998
Date Rec: 7/9/98
Project: 1135
Proj Name: New Mexico "F" State
Proj Loc: N/A

TA#	Field Code	MATRIX	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL-BENZENE (mg/Kg)	M,P,O XYLENE (mg/Kg)	TOTAL BTEX mg/Kg)
102262	BH-1, 0-0.7'	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
102263	BH-1, 10.0-10.7'	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
102264	BH-1, 20.0-20.7'	Soil	<0.050	<0.050	<0.050	0.280	0.280
102265	BH-1, 30-30.7'	Soil	<0.050	1.83	0.707	8.90	11.4
102266	BH-1, 40-40.7'	Soil	<0.050	0.881	0.371	3.43	4.68
102267	BH-1, 50-50.7'	Soil	<0.050	<0.050	0.168	1.87	2.04
102268	Area #2 Composite Sample	Soil	<0.100	<0.100	<0.100	0.176	0.176
Method Blank			<0.050	<0.050	<0.050	<0.050	
Reporting Limit			0.05	0.05	0.05	0.05	
QC			0.096	0.096	0.095	0.304	

RPD	1	2	1	1
% Extraction Accuracy	93	92	91	97
% Instrument Accuracy	96	96	95	101

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: mg/Kg)
BTEX	EPA 5030	7/13/98	EPA 8021B	7/13/98	JG	0.100 ea	5 ea

Director, Dr. Blair Leftwich

7-14-98
Date

TRACE ANALYSIS, INC.

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4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Mark Larson
1910 N. Big Spirng St.
Midland TX 79705

Date: Jul 14, 1998
Date Rec: 7/9/98
Project: 1135
Proj Name: New Mexico "F" State
Proj Loc: N/A

Lab Receiving # : 9807000148
Sampling Date: 7/7/98
Sample Condition: Intact and Cool
Sample Received By: VW

TA#	Field Code	MATRIX	GRO (mg/Kg)
102262	BH-1, 0-0.7'	Soil	<5.00
102263	BH-1, 10.0-10.7'	Soil	<5.00
102264	BH-1, 20.0-20.7'	Soil	12.2
102265	BH-1, 30-30.7'	Soil	342
102266	BH-1, 40-40.7'	Soil	185
102267	BH-1, 50-50.7'	Soil	65.2
102268	Area #2 Composite Sample	Soil	12.5
Method Blank			<5.00
Reporting Limit			5
QC			1.03

RPD	0
% Extraction Accuracy	89
% Instrument Accuracy	103

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
GRO	EPA 5030	7/13/98	EPA 8015B	7/13/98	JG	1	50

Director, Dr. Blair Leftwich

7-14-98
Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Mark Larson
1910 N. Big Spirng St.
Midland TX 79705

Date: Jul 23, 1998
Date Rec: 7/9/98
Project: 1135
Proj Name: New Mexico "F" State
Proj Loc: N/A

Lab Receiving # : 9807000148
Sampling Date: 7/7/98
Sample Condition: Intact and Cool
Sample Received By: VW

TA#	Field Code	MATRIX	DRO (mg/Kg)
102262	BH-1, 0-0.7'	Soil	<50
102263	BH-1, 10.0-10.7'	Soil	112
Method Blank			<50
Reporting Limit			50
QC			252
RPD			12
% Extraction Accuracy			102
% Instrument Accuracy			101

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
DRO	EPA 8011	7/14/98	EPA 8015B	7/14/98	HC	250	250

Director, Dr. Blair Leftwich

7-23-98
Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Mark Larson
1910 N. Big Spirng St.
Midland TX 79705

Date: Jul 23, 1998
Date Rec: 7/9/98
Project: 1135
Proj Name: New Mexico "F" State
Proj Loc: N/A

Lab Receiving # : 9807000148
Sampling Date: 7/7/98
Sample Condition: Intact and Cool
Sample Received By: VW

TA#	Field Code	MATRIX	DRO (mg/Kg)
102264	BH-1, 20.0-20.7'	Soil	149
102265	BH-1, 30-30.7'	Soil	2,660
Method Blank			<50
Reporting Limit			50
QC			286

RPD	10
% Extraction Accuracy	120
% Instrument Accuracy	114

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
DRO	EPA 8011	7/18/98	EPA 8015B	7/18/98	MS	250	250

Director, Dr. Blair Leftwich

7-23-98
Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Mark Larson
1910 N. Big Spirng St.
Midland TX 79705

Date: Jul 23, 1998
Date Rec: 7/9/98
Project: 1135
Proj Name: New Mexico "F" State
Proj Loc: N/A

Lab Receiving # : 9807000148
Sampling Date: 7/7/98
Sample Condition: Intact and Cool
Sample Received By: VW

TA#	Field Code	MATRIX	DRO (mg/Kg)
102266	BH-1, 40-40.7'	Soil	1,000
102267	BH-1, 50-50.7'	Soil	<250
102268	Area #2 Composite Sample	Soil	592
Method Blank			<50
Reporting Limit			50
QC			263

RPD	10
% Extraction Accuracy	120
% Instrument Accuracy	105

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
DRO	EPA 8011	7/18/98	EPA 8015B	7/18/98	MS	250	250

Director, Dr. Blair Leftwich

7-23-98
Date

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Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

PAGE: 1 OF: 1

CLIENT NAME: Texaco | SITE MANAGER: M. Larson

PROJECT NO.: 1135 | PROJECT NAME: New Mexico "F" State

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH (8015M GRO + DRO)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
102262	7/7/98	10:17	S	✓		BH-1, 0-0.7'	1				✓		✓		✓														
63	7/7/98	10:25	S	✓		BH-1, 10.0-10.7'	1				✓		✓		✓														
64	7/7/98	10:44	S	✓		BH-1, 20.0-20.7'	1				✓		✓		✓														
65	7/7/98	11:05	S	✓		BH-1, 30-30.7'	1				✓		✓		✓														
66	7/7/98	11:15	S	✓		BH-1, 40-40.7'	1				✓		✓		✓														
67	7/7/98	11:40	S	✓		BH-1, 50-50.7'	1				✓		✓		✓														
68	7/7/98	12:35	S	✓		Area #2 Composite Sample	1				✓		✓		✓														

RELINQUISHED BY: (Signature) Mark Larson — Date: 7/8/98 Time: 06:30

RECEIVED BY: (Signature) Helen Shelton — Date: 7/8/98 Time: 6:15 AM

RELINQUISHED BY: (Signature) Helen Shelton — Date: 7/8/98 Time: 6:30PM

RECEIVED BY: (Signature) — Date: — Time:

RELINQUISHED BY: (Signature) — Date: — Time:

RECEIVED BY: (Signature) — Date: — Time:

RECEIVING LABORATORY: Trace Analysis
ADDRESS: 6701 Aberdeen
CITY: Lubbock STATE: Tx ZIP: 79424
CONTACT: Nell PHONE: (806) 378-1296

RECEIVED BY: (Signature) [signature] DATE: 7-9-98 TIME: 10:10 AM

SAMPLED BY: (Print & Sign) M. Larson — Date: 7/7/98 Time: 12:35

SAMPLE SHIPPED BY: (Circle) FEDEX (BUS) UPS HAND DELIVERED — AIRBILL # 155 7589 6495 OTHER:

HIGHLANDER CONTACT PERSON: Mark Larson

Results by:

RUSH Charges Authorized: Yes (No)

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid (S)-Soil SL-Sludge O-Other

REMARKS:

7/23/98

Please Fill out all copies. Laboratory retains yellow copy - Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

PAGE: 1 OF: 1

CLIENT NAME: Texaco | SITE MANAGER: M. Lawen

PROJECT NO.: 1135 | PROJECT NAME: New Mexico "F" Stak

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH (8015 GRO + DRO)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest.-808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
	11/7/98	10:17	S	✓		BH-1, 0-0.7'	1				✓		✓		✓														
	11/7/98	10:25	S	✓		BH-1, 10.0-10.7'	1				✓		✓		✓														
	11/7/98	10:44	S	✓		BH-1, 20.0-20.7'	1				✓		✓		✓														
	11/7/98	11:05	S	✓		BH-1, 30-30.7'	1				✓		✓		✓														
	11/7/98	11:15	S	✓		BH-1, 40-40.7'	1				✓		✓		✓														
	11/7/98	11:40	S	✓		BH-1, 50-50.7'	1				✓		✓		✓														
	11/7/98	12:35	S	✓		Area #2 Composite Sample	1				✓		✓		✓														

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature) Mark Lawen — Date: 11/8/98 Time: 06:30
RECEIVED BY: (Signature) Nelda Shelton — Date: 11/9/98 Time: 4:15 PM
SAMPLED BY: (Print & Sign) M. Lawen — Date: 11/7/98 Time: 12:35

RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX (BUS) UPS HAND DELIVERED — AIRBILL #: OTHER:

RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:
HIGHLANDER CONTACT PERSON: Mark Lawen — Results by:

RECEIVING LABORATORY: Trace Analysis
ADDRESS: 6701 Aberdeen
CITY: Lubbock STATE: Tx ZIP: 79424
CONTACT: Neil PHONE: (806) 378-1296
RECEIVED BY: (Signature) — DATE: TIME:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid (S)Soil SL-Sludge O-Other

REMARKS:

Please Fill out all required information. Laboratory retains yellow copy. Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Ike Tavarez
1910 N. Big Spirng St.
Midland TX 79705

Lab Receiving # : 9807000447
Sampling Date: 7/21/98
Sample Condition: Intact and Cool
Sample Received By: MB

Date: Jul 31, 1998
Date Rec: 7/25/98
Project: 1135
Proj Name: Texaco/State "F"/TB
Proj Loc: Lea Co., NM

TA#	Field Code	MATRIX	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL-BENZENE (mg/Kg)	M,P,O XYLENE (mg/Kg)	TOTAL BTEX mg/Kg)
103381	MW-2 (20-21')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
Method Blank			<0.050	<0.050	<0.050	<0.050	
Reporting Limit			0.05	0.05	0.05	0.05	
QC			0.103	0.104	0.104	0.293	
RPD			2	1	1	3	
% Extraction Accuracy			105	104	103	97	
% Instrument Accuracy			103	104	104	98	

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: mg/Kg)
BTEX	EPA 5030	7/28/98	EPA 8021B	7/28/98	mls	0.100 ea	5 ea

BZ
Director, Dr. Blair Leftwich

7-31-98
Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Highlander Environmental Services
Attention Ike Tavarez
1910 N. Big Spirng St.
Midland TX 79705

Lab Receiving # : 9807000447
Sampling Date: 7/21/98
Sample Condition: Intact and Cool
Sample Received By: MB

Date: Jul 31, 1998
Date Rec: 7/25/98
Project: 1135
Proj Name: Texaco/State "F"/TB
Proj Loc: Lea Co., NM

TA#	Field Code	MATRIX	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL-BENZENE (mg/Kg)	M,P,O XYLENE (mg/Kg)	TOTAL BTEX mg/Kg)
103383	MW-2 (50-51')	Soil	<0.100	<0.100	0.672	7.76	8.43
103384	MW-3 (30-31')	Soil	<0.050	<0.050	<0.050	0.056	0.056
103387	MW-3 (60-61')	Soil	<0.050	<0.050	0.261	4.04	4.30
103389	MW-4 (30-31')	Soil	<0.050	<0.050	<0.050	0.054	0.054
103392	MW-4 (60-61')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
103393	MW-5 (20-21')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
103395	MW-5 (50-51')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
Method Blank			<0.050	<0.050	<0.050	<0.050	
Reporting Limit			0.05	0.05	0.05	0.05	
QC			0.101	0.101	0.100	0.304	
RPD			3	3	3	3	
% Extraction Accuracy			101	100	99	100	
% Instrument Accuracy			101	101	100	101	

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: mg/Kg)
BTEX	EPA 5030	7/29/98	EPA 8021B	7/29/98	JG	0.100 ea	5 ea

Director, Dr. Blair Leftwich

7-31-98
Date

TRACE ANALYSIS, INC.

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4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Ike Tavarez
1910 N. Big Spirng St.
Midland TX 79705

Date: Jul 31, 1998
Date Rec: 7/25/98
Project: 1135
Proj Name: Texaco/State "F"/TB
Proj Loc: Lea Co., NM

Lab Receiving # : 9807000447
Sampling Date: 7/21/98
Sample Condition: Intact and Cool
Sample Received By: MB

TA#	Field Code	MATRIX	GRO (mg/Kg)
103381	MW-2 (20-21')	Soil	<5.00
	Method Blank		<5.00
	Reporting Limit		5
	QC		0.9
	RPD		5
	% Extraction Accuracy		84
	% Instrument Accuracy		90

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
GRO	EPA 5030	7/28/98	EPA 8015B	7/28/98	JG	1	50

Director, Dr. Blair Leftwich

7-31-98
Date

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Ike Tavarez
1910 N. Big Spirng St.
Midland TX 79705

Date: Jul 31, 1998
Date Rec: 7/25/98
Project: 1135
Proj Name: Texaco/State "F"/TB
Proj Loc: Lea Co., NM

Lab Receiving # : 9807000447
Sampling Date: 7/21/98
Sample Condition: Intact and Cool
Sample Received By: MB

TA#	Field Code	MATRIX	GRO (mg/Kg)
103383	MW-2 (50-51')	Soil	273
103384	MW-3 (30-31')	Soil	5.77
103387	MW-3 (60-61')	Soil	141
103389	MW-4 (30-31')	Soil	<5.00
103392	MW-4 (60-61')	Soil	<5.00
103393	MW-5 (20-21')	Soil	<5.00
103395	MW-5 (50-51')	Soil	<5.00
Method Blank			<5.00
Reporting Limit			5
QC			0.95

RPD	1
% Extraction Accuracy	92
% Instrument Accuracy	95

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
GRO	EPA 5030	7/29/98	EPA 8015B	7/29/98	JG	1	50

Director, Dr. Blair Leftwich

7-31-98
Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Ike Tavarez
1910 N. Big Spirng St.
Midland TX 79705

Date: Jul 30, 1998
Date Rec: 7/25/98
Project: 1135
Proj Name: Texaco/State "F"/TB
Proj Loc: Lea Co., NM

Lab Receiving # : 9807000447
Sampling Date: 7/21/98
Sample Condition: Intact and Cool
Sample Received By: MB

TA#	Field Code	MATRIX	DRO (mg/Kg)
103381	MW-2 (20-21')	Soil	<50
103383	MW-2 (50-51')	Soil	3,270
103384	MW-3 (30-31')	Soil	<50
103387	MW-3 (60-61')	Soil	1,160
103392	MW-4 (60-61')	Soil	<50
103395	MW-5 (50-51')	Soil	<50
Method Blank			<50
Reporting Limit			50
QC			297
RPD			3
% Extraction Accuracy			107
% Instrument Accuracy			119

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
DRO	EPA 8011	7/28/98	EPA 8015B	7/28/98	MS	250	250

Director, Dr. Blair Leftwich

7-30-98
Date

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Ike Tavarez
1910 N. Big Spirng St.
Midland TX 79705

Date: Aug 04, 1998
Date Rec: 7/25/98
Project: 1135
Proj Name: Texaco/State "F"/TB
Proj Loc: Lea Co., NM

Lab Receiving # : 9807000447
Sampling Date: 7/21/98
Sample Condition: Intact and Cool
Sample Received By: MB

TA#	Field Code	MATRIX	DRO (mg/Kg)
103389	MW-4 (30-31')	Soil	<50
103393	MW-5 (20-21')	Soil	<50
	Method Blank		<50
	Reporting Limit		50
	QC		299
	RPD		6
	% Extraction Accuracy		111
	% Instrument Accuracy		120

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
DRO	EPA 8011	7/29/98	EPA 8015B	7/29/98	MS	250	250

BR

Director, Dr. Blair Leftwich

8-4-98

Date

447

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

PAGE: 1 OF: 2

CLIENT NAME: TEXACO E&P Inc. SITE MANAGER: IKE Tavarez

PROJECT NO.: 1135 PROJECT NAME: TEXACO / STATE "F" TB Lea County. NM.

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH 8015 (DRO / GRO)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
10 33817	7/21/98		S		X	MW-2 (20-21')	1				✓		X		X														
82			S		X	MW-2 (40-41')	1				✓				Hold.														
83			S		X	MW-2 (50-51')	1				✓		X		X														
84			S		X	MW-3 (30-31')	1				✓		X		X														
85			S		X	MW-3 (40-41')	1				✓				Hold.														
86			S		X	MW-3 (50-51')	1				✓				Hold.														
87			S		X	MW-3 (60-61')	1				✓		X		X														
88			S		X	MW-4 (20-21')	1				✓				Hold														
89			S		X	MW-4 (30-31')	1				✓		X		X														
90			S		X	MW-4 (40-41')	1				✓				Hold.														

7/23

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature) Date: 7-24-98 Time:
RECEIVED BY: (Signature) Date: 7/23 Time: 5:00

RELINQUISHED BY: (Signature) Date: 7/24 Time: 5:15
RECEIVED BY: (Signature) Date: Time:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: 7/25/98 Time: 10:15

RECEIVING LABORATORY: Trace
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:

SAMPLED BY: (Print & Sign) IKE Tavarez Date: 7-24-98 Time: 5:00 pm

SAMPLE SHIPPED BY: (Circle)
FEDEX BUS AIRBILL #
HAND DELIVERED UPS OTHER:

HIGHLANDER CONTACT PERSON: IKE Tavarez

Results by:

RUSH Charges Authorized: Yes (No)

SAMPLE CONDITION WHEN RECEIVED: 2°C

MATRIX: W-Water A-Air SD-Solid S-Soil SL-Sludge O-Other

REMARKS: Ground 155 758 9605

7/31/98

Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

CLIENT NAME: TEXACO E & P. Inc. SITE MANAGER: IKE Tavarez

PROJECT NO.: 1135 PROJECT NAME: TEXACO / STATE "F" TB. Lea County, NM.

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	ANALYSIS REQUEST (Circle or Specify Method No.): BTEX 8020/602	MTBE 8020/602	TPH 8015 (GRO/DRO)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
103397	7-21-98		S		✓	MW-4 (50-51')	1				✓		Hold.																
92	7-21-98		S		✓	MW-4 (60-61')	1				✓		X		X														
93	7-22-98		S		✓	MW-5 (20-21')	1				✓		X		X														
94	↓		S		✓	MW-5 (30-31')	1				✓		Hold.																
95			S		✓	MW-5 (50-51')	1				✓		X		X														
96			S		✓	MW-5 (60-61')	1				✓		Hold.																

RELINQUISHED BY: (Signature) Date: 7-24-98 Time:
RECEIVED BY: (Signature) Date: 7/24 Time: 5:00

RELINQUISHED BY: (Signature) Date: 7/24 Time: 5:05
RECEIVED BY: (Signature) Date: Time:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: 7/25/98 Time: 10:00

RECEIVING LABORATORY: Trace
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:

SAMPLED BY: (Print & Sign) IKE Tavarez Date: 7-24-98 Time: 5:00pm

SAMPLE SHIPPED BY: (Circle)
FEDEX BUS AIRBILL #
HAND DELIVERED UPS OTHER:

HIGHLANDER CONTACT PERSON: IKE Tavarez

Results by:

RUSH Charges Authorized: Yes (No)

SAMPLE CONDITION WHEN RECEIVED: 2°C

MATRIX: W-Water A-Air SD-Solid (S-Soil) SL-Sludge O-Other

REMARKS: Greyhound 155 758 9605

Please Fill out all copies. Laboratory retains yellow copy. Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

Analysis Request and Chain of Custody Record

PAGE: 1 OF: 2

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705
(915) 682-4559 Fax (915) 682-3946

CLIENT NAME: Texaco E&P Inc.
SITE MANAGER: Ike Tavarez
PROJECT NO.: 1125
PROJECT NAME: Texaco / "TATE" TB
Lea County, NM.

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH 8015 (GRO/DRO)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
	7/21/98		S		✓	MW-2 (0-2')	1				✓		X		X														
	↓		S		✓	MW-2 (40-41')	1				✓		Hold																
			S		✓	MW-2 (50-51')	1				✓		X		X														
			S		✓	MW-3 (30-31')	1				✓		X		X														
			S		✓	MW-3 (40-41')	1				✓		Hold																
			S		✓	MW-3 (50-51')	1				✓		Hold																
			S		✓	MW-3 (60-61')	1				✓		X		X														
			S		✓	MW-4 (0-2')	1				✓		Hold																
			S		✓	MW-4 (30-31')	1				✓		X		X														
	↓		S		✓	MW-4 (40-41')	1				✓		Hold																

RELINQUISHED BY: (Signature) [signature] Date: 7-24-98 Time:
RECEIVED BY: (Signature) [signature] Date: 7/23 Time: 5:00
SAMPLED BY: (Print & Sign) Ike Tavarez Date: 7-... Time: ...

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS AIRBILL #
HAND DELIVERED UPS OTHER:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:
HIGHLANDER CONTACT PERSON: Ike Tavarez
Results by:

RECEIVING LABORATORY: Trace.
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:
RUSH Charges Authorized: Yes No (circled)

SAMPLE CONDITION WHEN RECEIVED:
MATRIX: W-Water A-Air SD-Solid S-Soil (circled) SL-Sludge O-Other
REMARKS:

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(915) 682-4559 Fax (915) 682-3946

PAGE: 2 OF: 2

CLIENT NAME: Texaco E & P. Inc. SITE MANAGER: Ike Tavarez

PROJECT NO.: 1135 PROJECT NAME: Texaco / State F TB. Lea County, NM.

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH 8015 (GRO / DRO)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
	7-21-98		S		✓	MW-4 (50-51')	1				✓		Hold.																
	7-21-98		S		✓	MW-4 (60-61')	1				✓		X		X														
	7-22-98		S		✓	MW-5 (20-21')	1				✓		X		X														
	↓		S		✓	MW-5 (30-31')	1				✓		Hold.																
			S		✓	MW-5 (50-51')	1				✓		X		X														
			S		✓	MW-5 (60-61')	1				✓		Hold.																

RELINQUISHED BY: (Signature) Date: 7-24-98 Time: — RECEIVED BY: (Signature) Date: 7/24 Time: 5:00p

SAMPLED BY: (Print & Sign) Ike Tavarez Date: 7-21-98 Time: 5:00p

RELINQUISHED BY: (Signature) Date: — Time: — RECEIVED BY: (Signature) Date: — Time: —

SAMPLE SHIPPED BY: (Circle) FEDEX BUS AIRBILL # — HAND DELIVERED UPS OTHER: —

RELINQUISHED BY: (Signature) Date: — Time: — RECEIVED BY: (Signature) Date: — Time: —

RECEIVING LABORATORY: Trace Analysis RECEIVED BY: (Signature)

ADDRESS: — CITY: — STATE: — ZIP: — CONTACT: — PHONE: — DATE: — TIME: —

HIGHLANDER CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes (No)

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid (S-Soil) SL-Sludge O-Other

REMARKS:

Please Fill out all copies. Laboratory retains yellow copy. Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR

Highlander Environmental Services
Attention Ike Tavarez
1910 N. Big Spirng St.
Midland TX 79705

Lab Receiving # : 9807000523
Sampling Date: 7/28/98
Sample Condition: Intact and Cool
Sample Received By: VW

Date: Aug 03, 1998
Date Rec: 7/30/98
Project: 1135
Proj Name: Texaco/State "F"/TB
Proj Loc: Lea Co., NM

TA#	Field Code	MATRIX	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL-BENZENE (mg/L)	M,P,O XYLENE (mg/L)	TOTAL BTEX (mg/L)
103654	MW-3	Water	0.003	<0.001	<0.001	0.002	0.005
103655	MW-3 Dup.	Water	0.003	<0.001	<0.001	0.002	0.005
103656	MW-4	Water	<0.001	<0.001	<0.001	<0.001	<0.001
103657	MW-5	Water	<0.001	<0.001	<0.001	<0.001	<0.001
103658	MW-6	Water	<0.001	<0.001	<0.001	<0.001	<0.001
103659	MW-7	Water	<0.001	<0.001	<0.001	<0.001	<0.001
103660	MW-8	Water	<0.001	<0.001	<0.001	<0.001	<0.001
103661	WW-1	Water	<0.001	<0.001	<0.001	<0.001	<0.001
Method Blank			<0.001	<0.001	<0.001	<0.001	
Reporting Limit			0.001	0.001	0.001	0.001	
QC			0.107	0.103	0.105	0.325	
RPD			4	3	3	3	
% Extraction Accuracy			114	110	111	118	
% Instrument Accuracy			107	103	105	108	

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	EPA 5030	7/31/98	EPA 8021B	7/31/98	JG	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

8-3-98
Date

TRACE ANALYSIS, INC.

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4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Mark Larson
1910 N. Big Spirng St.
Midland TX 79705

Lab Receiving # : 9807000345
Sampling Date: 7/17/98
Sample Condition: Intact and Cool
Sample Received By: MLS

Date: Jul 23, 1998
Date Rec: 7/21/98
Project: 1135
Proj Name: New Mexico "F" State
Proj Loc: N/A

TA#	Field Code	MATRIX	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL-BENZENE (mg/Kg)	M,P,O XYLENE (mg/Kg)	TOTAL BTEX (mg/Kg)
103019	Pile #3	Soil	0.085	0.073	<0.050	0.082	0.240
103026	Pile #10	Soil	<0.050	0.080	<0.050	0.080	0.160
103029	Pile #13	Soil	<0.050	<0.050	<0.050	0.088	0.088
103030	Pile #14	Soil	0.107	<0.050	<0.050	<0.050	0.107
103033	Comp #1 North	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
103034	Comp #2 Middle	Soil	<0.050	<0.050	<0.050	0.105	0.105
103035	Comp #3 South	Soil	<0.050	<0.050	<0.050	0.070	0.070
103036	N Wall	Soil	<0.050	<0.050	<0.050	0.091	0.091
103037	S Wall	Soil	<0.050	<0.050	<0.050	0.059	0.059
Method Blank			<0.050	<0.050	<0.050	<0.050	
Reporting Limit			0.05	0.05	0.05	0.05	
QC			0.093	0.090	0.093	0.291	
RPD			1	1	0	0	
% Extraction Accuracy			96	93	95	100	
% Instrument Accuracy			93	90	93	97	

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
BTEX	EPA 5030	7/22/98	EPA 8021B	7/22/98	JG	0.100 ea	5 ea

Director, Dr. Blair Leftwich

7-23-98
Date

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Mark Larson
1910 N. Big Spirng St.
Midland TX 79705

Lab Receiving # : 9807000345
Sampling Date: 7/17/98
Sample Condition: Intact and Cool
Sample Received By: MLS

Date: Aug 18, 1998
Date Rec: 7/21/98
Project: 1135
Proj Name: Texaco/State "F"/TB
Proj Loc: Lea Co., NM

TA#	Field Code	MATRIX	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL-BENZENE (mg/Kg)	M,P,O XYLENE (mg/Kg)	TOTAL BTEX (mg/Kg)
103038	E Wall	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
Method Blank			<0.050	<0.050	<0.050	<0.050	
Reporting Limit			0.05	0.05	0.05	0.05	
QC			0.093	0.091	0.093	0.293	
RPD			0	1	0	0	
% Extraction Accuracy			91	88	91	93	
% Instrument Accuracy			93	91	93	98	

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
BTEX	EPA 5030	7/23/98	EPA 8021B	7/23/98	JG	0.100 ea	5 ea

Director, Dr. Blair Leftwich

8-18-98
Date

TRACE ANALYSIS, INC.

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4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
Highlander Environmental Services
Attention Mark Larson
1910 N. Big Spirng St.
Midland TX 79705

Lab Receiving # : 9807000345
Sampling Date: 7/17/98
Sample Condition: Intact and Cool
Sample Received By: MLS

Date: Jul 27, 1998
Date Rec: 7/21/98
Project: 1135
Proj Name: New Mexico "F" State
Proj Loc: N/A

TA#	Field Code	MATRIX	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL-BENZENE (mg/Kg)	M,P,O XYLENE (mg/Kg)	TOTAL BTEX (mg/Kg)
103039	W Wall	Soil	<0.050	<0.050	0.082	0.125	0.207
Method Blank			<0.050	<0.050	<0.050	<0.050	
Reporting Limit			0.05	0.05	0.05	0.05	
QC			0.093	0.091	0.093	0.293	
RPD			0	1	0	0	
% Extraction Accuracy			91	88	91	93	
% Instrument Accuracy			93	91	93	98	

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
BTEX	EPA 5030	7/23/98	EPA 602	7/23/98	JG	0.100 ea	5 ea

Director, Dr. Blair Leftwich

7-27-98
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

August 12, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1135
Project Location: NA

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL SERVICES
Attention: Ike Tavarez
1910 N. Big Spring St.
Midland, TX 79705

Sampling Date: 07/28/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Texaco E & P, Inc.
Project Name: Texaco/State "F" TB
Lea County, NM

TOTAL METALS (mg/L)

TA#	Field Code	As	Se	Cd	Cr	Pb	Ag	Ba	Hg
T103654	MW-3	<0.10	<0.10	<0.02	<0.05	<0.10	<0.05	<0.10	<0.0010
T103655	MW-3 (Duplicate)	<0.10	<0.10	<0.02	<0.05	<0.10	<0.05	<0.10	<0.0010
T103656	MW-4	<0.10	<0.10	<0.02	<0.05	<0.10	<0.05	<0.10	<0.0010
T103657	MW-5	<0.10	<0.10	<0.02	<0.05	<0.10	<0.05	0.18	<0.0010
T103658	MW-6	<0.10	<0.10	<0.02	<0.05	<0.10	<0.05	<0.10	<0.0010
T103659	MW-7	<0.10	<0.10	<0.02	<0.05	<0.10	<0.05	0.12	<0.0010
ICV		1.0	0.90	1.0	1.0	1.0	0.22	1.0	0.0052
CCV		1.0	1.0	1.0	1.0	1.0	0.20	1.0	0.0050
Reporting Limit		0.10	0.10	0.02	0.05	0.10	0.05	0.10	0.0010
RPD		10	20	5	0	0	6	0	0
% Extraction Accuracy		90	110	95	95	95	106	95	105
% Instrument Accuracy		100	95	100	100	100	105	100	102
PREP DATE		07/31/98	07/31/98	07/31/98	07/31/98	07/31/98	07/31/98	07/31/98	07/31/98
ANALYSIS DATE		08/10/98	08/10/98	08/10/98	08/10/98	08/10/98	08/10/98	08/10/98	08/03/98

CHEMIST: As, Se, Cd, Cr, Pb, Ag, Ba: RR Hg: HC
METHODS: EPA SW 846-3015, 6010B, 7470.
TOTAL METALS SPIKE: 2.0 mg/L As, Se, Cd, Cr, Pb, Ba; 0.50 mg/L Ag; 0.0050 mg/L Hg.
TOTAL METALS CV: 1.0 mg/L As, Se, Cd, Cr, Pb, Ba; 0.20 mg/L Ag; 0.0050 mg/L Hg.

Director, Dr. Blair Leftwich

12 Aug 98
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

August 12, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1135
Project Location: NA

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL SERVICES
Attention: Ike Tavarez
1910 N. Big Spring St.
Midland, TX 79705

Sampling Date: 07/28/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Texaco E & P, Inc.
Project Name: Texaco/State "F" TB
Lea County, NM

TOTAL METALS (mg/L)

TA#	Field Code	As	Se	Cd	Cr	Pb	Ag	Ba	Hg
T103660	MW-8	<0.10	<0.10	<0.02	<0.05	<0.10	<0.05	<0.10	<0.0010
ICV		1.0	1.0	1.0	1.0	1.0	0.20	1.0	0.0052
CCV		1.0	1.0	1.0	0.99	1.0	0.20	1.0	0.0050
Reporting Limit		0.10	0.10	0.02	0.05	0.10	0.05	0.10	0.0010
RPD		5	5	5	5	5	12	0	0
% Extraction Accuracy		100	95	100	100	100	88	100	105
% Instrument Accuracy		100	100	100	99	100	100	100	102
PREP DATE		07/31/98	07/31/98	07/31/98	07/31/98	07/31/98	07/31/98	07/31/98	07/31/98
ANALYSIS DATE		08/10/98	08/10/98	08/10/98	08/10/98	08/10/98	08/10/98	08/10/98	08/03/98

CHEMIST: As, Se, Cd, Cr, Pb, Ag, Ba: RR Hg: HC
METHODS: EPA SW 846-3015, 6010B, 7470.
TOTAL METALS SPIKE: 2.0 mg/L As, Se, Cd, Cr, Pb, Ba; 0.40 mg/L Ag; 0.0050 mg/L Hg.
TOTAL METALS CV: 1.0 mg/L As, Se, Cd, Cr, Pb, Ba; 0.20 mg/L Ag; 0.0050 mg/L Hg.

Director, Dr. Blair Leftwich

12-16-98
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

August 12, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1135
Project Location: NA

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL SERVICES
Attention: Ike Tavarez
1910 N. Big Spring St.
Midland, TX 79705

Sampling Date: 07/28/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Texaco E & P, Inc.
Project Name: Texaco/State "F" TB
Lea County, NM

TOTAL METALS (mg/L)

TA#	Field Code	As	Se	Cd	Cr	Pb	Ag	Ba	Hg
T103661	WW-1	<0.10	<0.10	<0.02	<0.05	<0.10	<0.05	<0.10	<0.0010
ICV		1.0	1.0	1.0	1.0	1.0	0.20	1.0	0.0052
CCV		1.0	1.0	1.0	0.99	1.0	0.20	1.0	0.0045
Reporting Limit		0.10	0.10	0.02	0.05	0.10	0.05	0.10	0.0010
RPD		5	5	5	5	5	12	0	2*
% Extraction Accuracy		100	95	100	100	100	88	100	105*
% Instrument Accuracy		100	100	100	99	100	100	100	95
PREP DATE		07/31/98	07/31/98	07/31/98	07/31/98	07/31/98	07/31/98	07/31/98	07/31/98
ANALYSIS DATE		08/10/98	08/10/98	08/10/98	08/10/98	08/10/98	08/10/98	08/10/98	08/03/98

***NOTE: LCS used for Extraction Accuracy and RPD due to MSD not being spiked.**

CHEMIST: As, Se, Cd, Cr, Pb, Ag, Ba: RR Hg: HC
METHODS: EPA SW 846-3015, 6010B, 7470.
TOTAL METALS SPIKE: 2.0 mg/L As, Se, Cd, Cr, Pb, Ba; 0.40 mg/L Ag; 0.0050 mg/L Hg.
TOTAL METALS CV: 1.0 mg/L As, Se, Cd, Cr, Pb, Ba; 0.20 mg/L Ag; 0.0050 mg/L Hg.

Director, Dr. Blair Leftwich

12/16/98
Date

TRACEANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
HIGHLANDER SERVICES CORP.
Attention: Ike Tavarez
1910 N. Big Spring Street
Midland, Texas 79705

August 14, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1132
Project Loc.: N/A
Project Name: Texaco/State "F" TB Lea County, NM
Sampling Date: 07/28/98
Sample Condition: I & C
Sample Received by: VW
Extraction Date: 08/03/98
Analysis Date: 08/05/98

PAH Reporting T103654

8270 Compounds (mg/L)	Limit	MW-3	CV	RPD	%EA	%IA
Naphthalene	0.002	ND	81	5	105	101
Acenaphthylene	0.002	ND	78	8	128	98
Acenaphthene	0.002	ND	79	9	119	99
Fluorene	0.002	ND	79	4	121	99
Phenanthrene	0.002	ND	79	4	127*	99
Anthracene	0.002	ND	80	3	122	100
Fluoranthene	0.002	ND	80	0	123	100
Pyrene	0.002	ND	79	1	120*	99
Benzo[a]anthracene	0.002	ND	80	6	108	100
Chrysene	0.002	ND	80	5	111	100
Benzo[b]fluoranthene	0.002	ND	87	11	84	109
Benzo[k]fluoranthene	0.002	ND	73	1	109	91
Benzo[a]pyrene	0.002	ND	80	7	103	100
Indeno[1,2,3-cd]pyrene	0.002	ND	79	8	119	99
Dibenz[a,h]anthracene	0.002	ND	80	12	121	100
Benzo[g,h,i]perylene	0.002	ND	88	11	126	110

ND = Not Detected

*%EA out of limits

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	63
2-Fluorobiphenyl SURR	65
Terphenyl-d14 SURR	81

METHODS: EPA SW 846-8270, 3510.

CHEMIST: DG

Director, Dr. Blair Leftwich

8/14/98
DATE

TRACEANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
HIGHLANDER SERVICES CORP.
Attention: Ike Tavarez
1910 N. Big Spring Street
Midland, Texas 79705

August 14, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1132
Project Loc.: N/A
Project Name: Texaco/State "F" TB Lea County, NM
Sampling Date: 07/28/98
Sample Condition: I & C
Sample Received by: VW
Extraction Date: 08/03/98
Analysis Date: 08/05/98

PAH Reporting T103655

8270 Compounds (mg/L)	Limit	MW-3 (Duplicate)	CV	RPD	%EA	%IA
Naphthalene	0.002	ND	81	5	105	101
Acenaphthylene	0.002	ND	78	8	128	98
Acenaphthene	0.002	ND	79	9	119	99
Fluorene	0.002	ND	79	4	121	99
Phenanthrene	0.002	ND	79	4	127*	99
Anthracene	0.002	ND	80	3	122	100
Fluoranthene	0.002	ND	80	0	123	100
Pyrene	0.002	ND	79	1	120*	99
Benzo[a]anthracene	0.002	ND	80	6	108	100
Chrysene	0.002	ND	80	5	111	100
Benzo[b]fluoranthene	0.002	ND	87	11	84	109
Benzo[k]fluoranthene	0.002	ND	73	1	109	91
Benzo[a]pyrene	0.002	ND	80	7	103	100
Indeno[1,2,3-cd]pyrene	0.002	ND	79	8	119	99
Dibenz[a,h]anthracene	0.002	ND	80	12	121	100
Benzo[g,h,i]perylene	0.002	ND	88	11	126	110

ND = Not Detected

*%EA out of limits

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	75
2-Fluorobiphenyl SURR	79
Terphenyl-d14 SURR	94

METHODS: EPA SW 846-8270, 3510.

CHEMIST: DG

Director, Dr. Blair Leftwich

8-14-98
DATE

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
HIGHLANDER SERVICES CORP.
Attention: Ike Tavarez
1910 N. Big Spring Street
Midland, Texas 79705

August 14, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1132
Project Loc.: N/A
Project Name: Texaco/State "F" TB Lea County, NM
Sampling Date: 07/28/98
Sample Condition: I & C
Sample Received by: VW
Extraction Date: 08/03/98
Analysis Date: 08/05/98

PAH Reporting T103656

8270 Compounds (mg/L)	Limit	MW-4	CV	RPD	%EA	%IA
Naphthalene	0.002	ND	81	5	105	101
Acenaphthylene	0.002	ND	78	8	128	98
Acenaphthene	0.002	ND	79	9	119	99
Fluorene	0.002	ND	79	4	121	99
Phenanthrene	0.002	ND	79	4	127*	99
Anthracene	0.002	ND	80	3	122	100
Fluoranthene	0.002	ND	80	0	123	100
Pyrene	0.002	ND	79	1	120*	99
Benzo[a]anthracene	0.002	ND	80	6	108	100
Chrysene	0.002	ND	80	5	111	100
Benzo[b]fluoranthene	0.002	ND	87	11	84	109
Benzo[k]fluoranthene	0.002	ND	73	1	109	91
Benzo[a]pyrene	0.002	ND	80	7	103	100
Indeno[1,2,3-cd]pyrene	0.002	ND	79	8	119	99
Dibenz[a,h]anthracene	0.002	ND	80	12	121	100
Benzo[g,h,i]perylene	0.002	ND	88	11	126	110

ND = Not Detected

*%EA out of limits

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	80
2-Fluorobiphenyl SURR	81
Terphenyl-d14 SURR	80

METHODS: EPA SW 846-8270, 3510.

CHEMIST: DG

Director, Dr. Blair Leftwich

8/14/98
DATE

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ANALYTICAL RESULTS FOR
HIGHLANDER SERVICES CORP.
Attention: Ike Tavarez
1910 N. Big Spring Street
Midland, Texas 79705

August 14, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1132
Project Loc.: N/A
Project Name: Texaco/State "F" TB Lea County, NM
Sampling Date: 07/28/98
Sample Condition: I & C
Sample Received by: VW
Extraction Date: 08/03/98
Analysis Date: 08/05/98

PAH Reporting T103657

8270 Compounds (mg/L)	Limit	MW-5	CV	RPD	%EA	%IA
Naphthalene	0.002	ND	81	5	105	101
Acenaphthylene	0.002	ND	78	8	128	98
Acenaphthene	0.002	ND	79	9	119	99
Fluorene	0.002	ND	79	4	121	99
Phenanthrene	0.002	ND	79	4	127*	99
Anthracene	0.002	ND	80	3	122	100
Fluoranthene	0.002	ND	80	0	123	100
Pyrene	0.002	ND	79	1	120*	99
Benzo[a]anthracene	0.002	ND	80	6	108	100
Chrysene	0.002	ND	80	5	111	100
Benzo[b]fluoranthene	0.002	ND	87	11	84	109
Benzo[k]fluoranthene	0.002	ND	73	1	109	91
Benzo[a]pyrene	0.002	ND	80	7	103	100
Indeno[1,2,3-cd]pyrene	0.002	ND	79	8	119	99
Dibenz[a,h]anthracene	0.002	ND	80	12	121	100
Benzo[g,h,i]perylene	0.002	ND	88	11	126	110

ND = Not Detected

*%EA out of limits

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	73
2-Fluorobiphenyl SURR	77
Terphenyl-d14 SURR	92

METHODS: EPA SW 846-8270, 3510.

CHEMIST: DG

Director, Dr. Blair Leftwich

8/4/98
DATE

TRACE ANALYSIS, INC.

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ANALYTICAL RESULTS FOR
HIGHLANDER SERVICES CORP.
Attention: Ike Tavarez
1910 N. Big Spring Street
Midland, Texas 79705

August 14, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1132
Project Loc.: N/A
Project Name: Texaco/State "F" TB Lea County, NM
Sampling Date: 07/28/98
Sample Condition: I & C
Sample Received by: VW
Extraction Date: 08/03/98
Analysis Date: 08/05/98

PAH Reporting T103658

8270 Compounds (mg/L)	Limit	MW-6	CV	RPD	%EA	%IA
Naphthalene	0.002	ND	81	5	105	101
Acenaphthylene	0.002	ND	78	8	128	98
Acenaphthene	0.002	ND	79	9	119	99
Fluorene	0.002	ND	79	4	121	99
Phenanthrene	0.002	ND	79	4	127*	99
Anthracene	0.002	ND	80	3	122	100
Fluoranthene	0.002	ND	80	0	123	100
Pyrene	0.002	ND	79	1	120*	99
Benzo[a]anthracene	0.002	ND	80	6	108	100
Chrysene	0.002	ND	80	5	111	100
Benzo[b]fluoranthene	0.002	ND	87	11	84	109
Benzo[k]fluoranthene	0.002	ND	73	1	109	91
Benzo[a]pyrene	0.002	ND	80	7	103	100
Indeno[1,2,3-cd]pyrene	0.002	ND	79	8	119	99
Dibenz[a,h]anthracene	0.002	ND	80	12	121	100
Benzo[g,h,i]perylene	0.002	ND	88	11	126	110

ND = Not Detected

*%EA out of limits

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	69
2-Fluorobiphenyl SURR	72
Terphenyl-d14 SURR	83

METHODS: EPA SW 846-8270, 3510.

CHEMIST: DG

Director, Dr. Blair Leftwich

8/14/98
DATE

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
HIGHLANDER SERVICES CORP.
Attention: Ike Tavarez
1910 N. Big Spring Street
Midland, Texas 79705

August 14, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1132
Project Loc.: N/A
Project Name: Texaco/State "F" TB Lea County, NM
Sampling Date: 07/28/98
Sample Condition: I & C
Sample Received by: VW
Extraction Date: 08/03/98
Analysis Date: 08/05/98

PAH Reporting T103659

8270 Compounds (mg/L)	Limit	MW-7	CV	RPD	%EA	%IA
Naphthalene	0.002	ND	81	5	105	101
Acenaphthylene	0.002	ND	78	8	128	98
Acenaphthene	0.002	ND	79	9	119	99
Fluorene	0.002	ND	79	4	121	99
Phenanthrene	0.002	ND	79	4	127*	99
Anthracene	0.002	ND	80	3	122	100
Fluoranthene	0.002	ND	80	0	123	100
Pyrene	0.002	ND	79	1	120*	99
Benzo[a]anthracene	0.002	ND	80	6	108	100
Chrysene	0.002	ND	80	5	111	100
Benzo[b]fluoranthene	0.002	ND	87	11	84	109
Benzo[k]fluoranthene	0.002	ND	73	1	109	91
Benzo[a]pyrene	0.002	ND	80	7	103	100
Indeno[1,2,3-cd]pyrene	0.002	ND	79	8	119	99
Dibenz[a,h]anthracene	0.002	ND	80	12	121	100
Benzo[g,h,i]perylene	0.002	ND	88	11	126	110

ND = Not Detected

*%EA out of limits

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	67
2-Fluorobiphenyl SURR	71
Terphenyl-d14 SURR	90

METHODS: EPA SW 846-8270, 3510.

CHEMIST: DG

Director, Dr. Blair Leftwich

8/14/98
DATE

TRACEANALYSIS, INC.

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ANALYTICAL RESULTS FOR
HIGHLANDER SERVICES CORP.
Attention: Ike Tavarez
1910 N. Big Spring Street
Midland, Texas 79705

August 14, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1132
Project Loc.: N/A
Project Name: Texaco/State "F" TB Lea County, NM
Sampling Date: 07/28/98
Sample Condition: I & C
Sample Received by: VW
Extraction Date: 08/03/98
Analysis Date: 08/05/98

PAH Reporting T103660

8270 Compounds (mg/L)	Limit	MW-8	CV	RPD	%EA	%IA
Naphthalene	0.002	ND	81	5	105	101
Acenaphthylene	0.002	ND	78	8	128	98
Acenaphthene	0.002	ND	79	9	119	99
Fluorene	0.002	ND	79	4	121	99
Phenanthrene	0.002	ND	79	4	127*	99
Anthracene	0.002	ND	80	3	122	100
Fluoranthene	0.002	ND	80	0	123	100
Pyrene	0.002	ND	79	1	120*	99
Benzo[a]anthracene	0.002	ND	80	6	108	100
Chrysene	0.002	ND	80	5	111	100
Benzo[b]fluoranthene	0.002	ND	87	11	84	109
Benzo[k]fluoranthene	0.002	ND	73	1	109	91
Benzo[a]pyrene	0.002	ND	80	7	103	100
Indeno[1,2,3-cd]pyrene	0.002	ND	79	8	119	99
Dibenz[a,h]anthracene	0.002	ND	80	12	121	100
Benzo[g,h,i]perylene	0.002	ND	88	11	126	110

ND = Not Detected

*%EA out of limits

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	65
2-Fluorobiphenyl SURR	71
Terphenyl-d14 SURR	87

METHODS: EPA SW 846-8270, 3510.

CHEMIST: DG

Director, Dr. Blair Leftwich

14-Aug-98
DATE

TRACE ANALYSIS, INC.

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August 18, 1998

ANALYTICAL RESULTS FOR
HIGHLANDER SERVICES
Attention: Ike Tavarez
1910 N. Big Spring St.
Midland, TX 79705

Receiving Date: 07/30/98
Sample Type: Water
Project No: 1135
Sampling Date: 07/28/98
Sample Condition: I & C
Sample Received by: VW
Client Name: Texaco E & P, Inc.
Proj. Name: Texaco/State "F" TB
Lea County, NM
Extraction Date: 08/03/98
Analysis Date: 08/05/98

PAH Reporting T103661

8270 Compounds (mg/L)	Limit**	WW-1	QC	RPD	%EA	%IA
Naphthalene	0.002	ND	81	5	105	101
Acenaphthylene	0.002	ND	78	8	128	98
Acenaphthene	0.002	ND	79	9	119	99
Fluorene	0.002	ND	79	4	121	99
Phenanthrene	0.002	ND	79	4	127*	99
Anthracene	0.002	ND	80	3	122	100
Fluoranthene	0.002	ND	80	0	123	100
Pyrene	0.002	ND	79	1	120*	99
Benzo[a]anthracene	0.002	ND	80	6	108	100
Chrysene	0.002	ND	80	5	111	100
Benzo[b]fluoranthene	0.002	ND	87	11	84	109
Benzo[k]fluoranthene	0.002	ND	73	1	109	91
Benzo[a]pyrene	0.002	ND	80	7	103	100
Indeno[1,2,3-cd]pyrene	0.002	ND	79	8	119	99
Dibenz[a,h]anthracene	0.002	ND	80	12	121	100
Benzo[g,h,i]perylene	0.002	ND	88	11	126	110

ND = Not Detected

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	74
2-Fluorobiphenyl SURR	79
Terphenyl-d14 SURR	96

*NOTE: % Extraction Accuracy out of limits.

**NOTE: Elevated reporting limits due to matrix effect.

METHODS: EPA SW 846-8270, 3510.

CHEMIST: DG

Director, Dr. Blair Leftwich

8-18-98
DATE

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL SERVICES
Attention: Ike Tavarez
1910 N. Big Spring St.
Midland, TX 79705

August 12, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1135
Project Location: NA

Prep Date: 08/04/98
Analysis Date: 08/04/98
Sampling Date: 07/28/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Texaco E & P, Inc.
Project Name: Texaco/
State "F" TB
Lea County, NM

T103652
FIELD CODE: MW-1

Sample 103652 exhibited peaks consistent with those of an aged diesel fuel standard.

CHEMIST: MS/SLR

Director, Dr. Blair Leftwich

12 AUG 98
DATE

TRACEANALYSIS, INC.

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ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL SERVICES
Attention: Ike Tavarez
1910 N. Big Spring St.
Midland, TX 79705

August 12, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1135
Project Location: NA

Prep Date: 08/04/98
Analysis Date: 08/04/98
Sampling Date: 07/28/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Texaco E & P, Inc.
Project Name: Texaco/
State "F" TB
Lea County, NM

T103653
FIELD CODE: MW-2

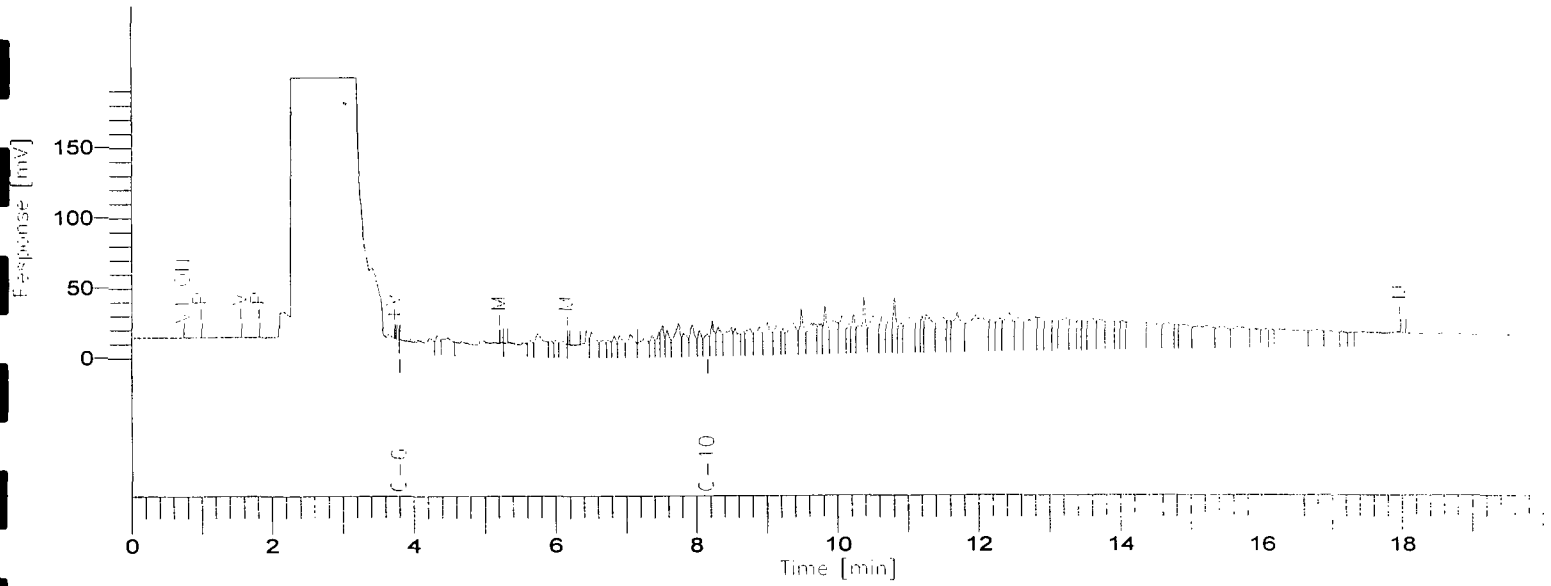
Sample 103653 exhibited peaks consistent with those of an aged diesel fuel standard.

CHEMIST: MS/SLR

Director, Dr. Blair Leftwich

8-12-98
DATE

Software Version: 4.1<0G07>
Date: 8/5/98 12:29 PM fingerprint
Sample Name : 103652*1000 mw1
Data File : C:\TC4\DATA3\3804023.RAW Date: 8/5/98 12:09 PM
Sequence File: C:\TC4\SEQUENCE\GC30804.SEQ Cycle: 23 Channel : B
Instrument : AUTOSYS - GC3 Rack/Vial: 0/23 Operator:
Sample Amount : 1.0000 Dilution Factor : 1000.00



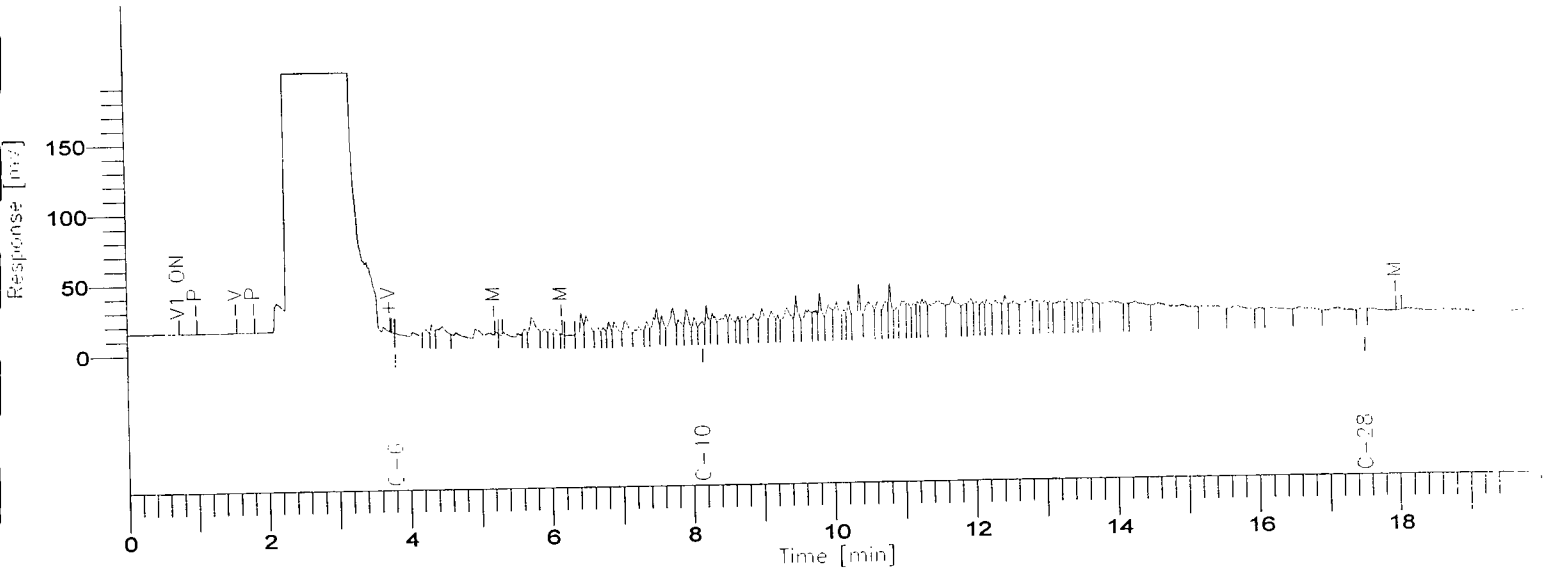
TPH REPORT

Component Name	Adjusted Amount	Raw Amount	Area [µV·s]
TPH AS GASOLINE	72861.4	72.9	546842.63
TPH	479420.2	479.4	5481667.10
TPH AS DIESEL	309981.9	310.0	4934824.48
			10963334.21

Report stored in ASCII file: C:\TC4\DATA3\3804023.TX0

Software Version: 4.1<0G07>
Date: 8/5/98 01:04 PM
Sample Name : 103653*1000
Data File : C:\TC4\DATA3\3804024.RAW Date: 8/5/98 12:44 PM
Sequence File: C:\TC4\SEQUENCE\GC30804.SEQ Cycle: 24 Channel : B
Instrument : AUTOSYS_-_GC3 Rack/Vial: 0/24 Operator:
Sample Amount : 1.0000 Dilution Factor : 1000.00

fingerprint
MW 2

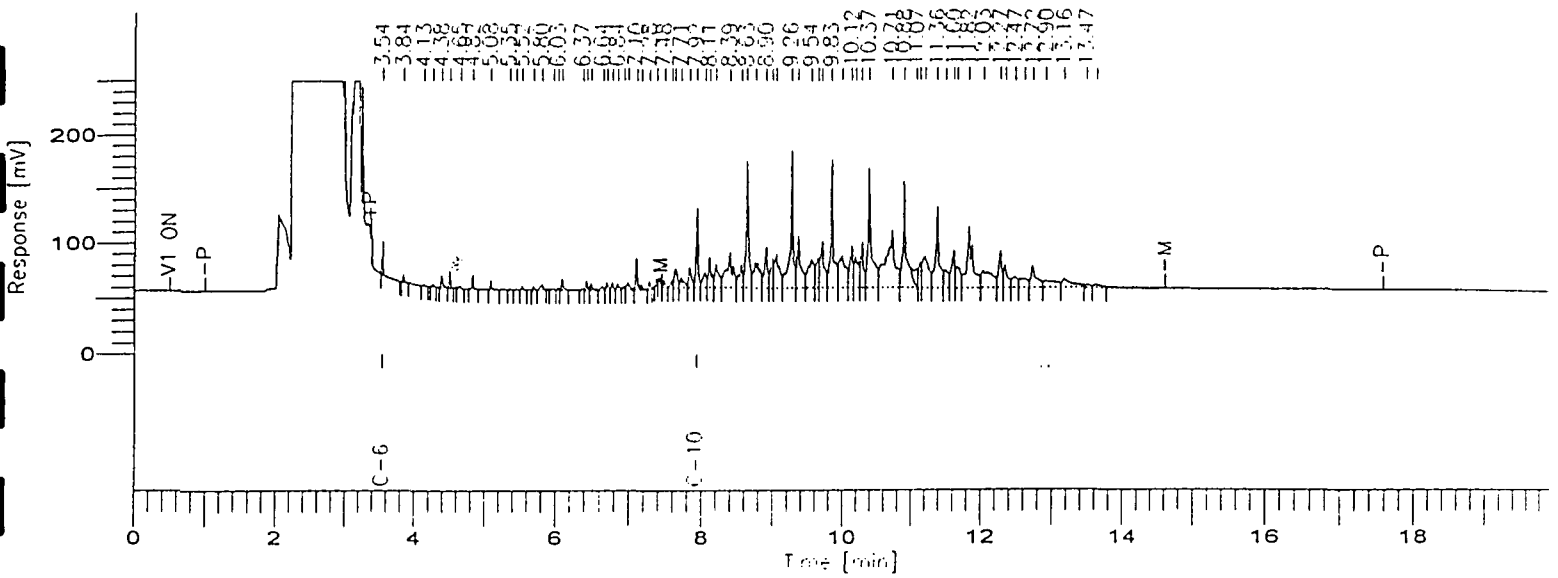


TPH REPORT

Component Name	Adjusted Amount	Raw Amount	Area [µV·s]
TPH AS GASOLINE	109815.6	109.8	804101.38
TPH	536514.8	536.5	6171937.65
TPH AS DIESEL	335087.0	335.1	5367836.27
			12343875.30

Report stored in ASCII file: C:\TC4\DATA3\3804024.TX0

Software Version: 4.1<0G07>
Date: 4/14/98 07:23 AM
Sample Name : DRO 500
Data File : C:\TC4\DATA6\6409082.RAW Date: 4/12/98 02:02 AM
Sequence File: C:\TC4\SEQUENCE\GC60409.SEQ Cycle: 82 Channel : A
Instrument : AUTOSYS_-_GC6 Rack/Vial: 0/82 Operator:
Sample Amount : 1.0000 Dilution Factor : 1.00



TPH REPORT

Component Name	Adjusted Amount	Raw Amount	Area [µV·s]
TPH AS GASOLINE	10.6	10.6	669926.67
TPH	490.3	490.3	6994952.53
TPH AS DIESEL	437.3	437.3	6325025.86
			13989905.05

Report stored in ASCII file: C:\TC4\DATA6\6409082.TX0

Cation-Anion Balance Sheet

8/17/98

Sample #	Calcium ppm	Magnesium ppm	Sodium ppm	Potassium ppm	Alkalinity ppm	Sulfate ppm	Chloride ppm	Nitrate* ppm	Fluoride* ppm	TDS ppm	EC µMHOs/cm
103654	76	6.5	27	3.8	160	36	58	0.0	0	330	
103655	75	6.5	26	3.7	160	57	35	0.0	0	310	
103656	69	5.9	63	3.9	170	94	42	0.0	0	410	
103657	240	20	46	5.6	150	93	360	0.0	0	1000	
103658	86	7.9	28	3.5	140	90	43	0.0	0	360	
103659	117	10	36	3.9	160	93	82	12.4	2.58	510	
103660	96	8.3	27	3.6	170	100	29	0.0	0	390	
103661	102	14	33	3.2	160	71	100	7.4	2.05	480	

***NOTE: Fluoride and Nitrate are estimated concentrations**

Sample #	Calcium in meq/L	Magnesium in meq/L	Sodium in meq/L	Potassium in meq/L	Alkalinity in meq/L	Sulfate in meq/L	Chloride in meq/L	Nitrate in meq/L	Fluoride in meq/L	**Total Cations in meq/L**	**Total Anions in meq/L**	**Percentage Error**
103654	3.7924	0.534885	1.1745	0.097204	3.20	0.74952	1.63618	0.000	0.000	5.60	5.59	0.23762842
103655	3.7425	0.534885	1.131	0.094646	3.20	1.18674	0.98735	0.000	0.000	5.50	5.37	2.37086633
103656	3.4431	0.485511	2.7405	0.099762	3.40	1.95708	1.18482	0.000	0.000	6.77	6.54	3.41036542
103657	11.976	1.6458	2.001	0.143248	3.00	1.93626	10.1556	0.000	0.000	15.77	15.09	4.36962869
103658	4.2914	0.650091	1.218	0.08953	2.80	1.8738	1.21303	0.000	0.000	6.25	5.89	5.96894276
103659	5.8383	0.8229	1.566	0.099762	3.20	1.93626	2.31322	0.887	0.136	8.33	8.47	1.73464406
103660	4.7904	0.683007	1.1745	0.092088	3.40	2.082	0.81809	0.000	0.000	6.74	6.30	6.74696522
103661	5.0898	1.15206	1.4355	0.081856	3.20	1.47822	2.821	0.528	0.108	7.76	8.13	4.72492749

	EC/Cation	EC/Anion				
103654	559.8989	558.57	range	0	to	0
103655	550.3031	537.409	range	0	to	0
103656	676.8873	654.19	range	0	to	0
103657	1576.6048	1509.186	range	0	to	0
103658	624.9021	588.683	range	0	to	0
103659	832.6962	847.26689	range	0	to	0
103660	673.9995	630.009	range	0	to	0
103661	775.9216	813.47041	range	0	to	0

TDS/EC	TDS/Cat	TDS/Anion	
#DIV/0!	0.58939212	0.59079435	needs to be 0.55-0.77
#DIV/0!	0.56332592	0.57684185	needs to be 0.55-0.77
#DIV/0!	0.60571383	0.62672924	needs to be 0.55-0.77
#DIV/0!	0.63427436	0.66260885	needs to be 0.55-0.77
#DIV/0!	0.57609024	0.61153456	needs to be 0.55-0.77
#DIV/0!	0.61246827	0.60193548	needs to be 0.55-0.77
#DIV/0!	0.57863544	0.61903878	needs to be 0.55-0.77
#DIV/0!	0.6186192	0.59006449	needs to be 0.55-0.77

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

August 12, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1135
Project Location: NA

ANALYTICAL RESULTS FOR
HIGHLANDER SERVICES CORP.
Attention: Ike Tavarez
1910 N. Big Spring Street
Midland, TX 79705

Prep Date: 07/31/98
Analysis Date: 08/10/98
Sampling Date: 07/28/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Texaco E & P, Inc.
Project Name: Texaco/State "F" TB
Lea County, NM

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T103654	MW-3	3.8	6.5	76	27
T103655	MW-3 (Duplicate)	3.7	6.5	75	26
T103656	MW-4	3.9	5.9	69	63
T103657	MW-5	5.6	20	240	46
T103658	MW-6	3.5	7.9	86	28
T103659	MW-7	3.9	10	117	36
T103660	MW-8	3.6	8.3	96	27
ICV		126	128	128	123
CCV		126	132	130	126
Reporting Limit		0.50	0.50	0.50	0.50
RPD		1	1	0	1
% Extraction Accuracy		111	96	97	120
% Instrument Accuracy		101	104	103	100

METHODS: EPA 200.7.
CHEMIST: RR
SPIKE: 100 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.
CV: 125 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich

12-16-98
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

August 12, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1135
Project Location: NA

ANALYTICAL RESULTS FOR
HIGHLANDER SERVICES CORP.
Attention: Ike Tavarez
1910 N. Big Spring Street
Midland, TX 79705

Prep Date: 07/31/98
Analysis Date: 08/10/98
Sampling Date: 07/28/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Texaco E & P, Inc.
Project Name: Texaco/State "F" TB
Lea County, NM

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)	HARDNESS (mg/L CaC03)
T103661	WW-1	3.2	14	102	33	313
ICV		126	130	131	129	---
CCV		126	132	131	126	---
Reporting Limit		0.50	0.50	0.50	0.50	---
RPD		2	2	1	0	---
% Extraction Accuracy		97	100	105	100	---
% Instrument Accuracy		101	105	105	102	---

METHODS: EPA 200.7.
CHEMIST: RR
SPIKE: 100 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.
CV: 125 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich

12-Aug-98
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

August 12, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1135
Project Location: NA

ANALYTICAL RESULTS FOR
HIGHLANDER SERVICES CORP.
Attention: Ike Tavarez
1910 N. Big Spring Street
Midland, TX 79705

Sampling Date: 07/28/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Texaco E & P, Inc.
Project Name: Texaco/State "F" TB
Lea County, NM

TA#	FIELD CODE	TDS (mg/L)	pH (s.u.)	CHLORIDE (mg/L)	SULFATE (mg/L)
T103654	MW-3	330	7.6	36	58
T103656	MW-4	410	7.6	94	42
ICV		---	7.0	12	12
CCV		---	7.0	11	11
REPORTING LIMIT		10	---	0.5	0.5
RPD		1	0	0	2
% Extraction Accuracy		---	---	96*	104
% Instrument Accuracy		95	100	97	97
PREP DATE		08/04/98	07/30/98	08/03/98	08/03/98
ANALYSIS DATE		08/04/98	07/30/98	08/03/98	08/03/98

***NOTE: Chloride matrix spikes % Extraction Accuracy high. LRB spikes used due to matrix difficulties. LRB spikes in range.**

METHODS: EPA 160.1, 150.1, 300.0.
CHEMIST: pH: BP TDS: RS CHLORIDE/SULFATE: JS
CHLORIDE SPIKE: 31.25 mg/L CHLORIDE. CHLORIDE CV: 12.5 mg/L CHLORIDE.
SULFATE SPIKE: 31.25 mg/L SULFATE. SULFATE CV: 12.5 mg/L SULFATE.

Director, Dr. Blair Leftwich

12 AUG 98
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

August 12, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1135
Project Location: NA

ANALYTICAL RESULTS FOR
HIGHLANDER SERVICES CORP.
Attention: Ike Tavarez
1910 N. Big Spring Street
Midland, TX 79705

Sampling Date: 07/28/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Texaco E & P, Inc.
Project Name: Texaco/State "F" TB
Lea County, NM

TA#	FIELD CODE	TDS (mg/L)	pH (s.u.)	CHLORIDE (mg/L)	SULFATE (mg/L)
T103655	MW-3 (Duplicate)	310	7.6	35	57
ICV		---	7.0	12	12
CCV		---	7.0	11	11
REPORTING LIMIT		10	---	0.5	0.5
RPD		1	0	0	2
% Extraction Accuracy		---	---	96*	104
% Instrument Accuracy		95	100	97	97
PREP DATE		08/04/98	08/09/98	08/03/98	08/03/98
ANALYSIS DATE		08/04/98	08/09/98	08/03/98	08/03/98

***NOTE: Chloride matrix spikes % Extraction Accuracy high. LRB spikes used due to matrix difficulties. LRB spikes in range.**

METHODS: EPA 160.1, 150.1, 300.0.
CHEMIST: pH: BP TDS: RS CHLORIDE/SULFATE: JS
CHLORIDE SPIKE: 31.25 mg/L CHLORIDE. CHLORIDE CV: 12.5 mg/L CHLORIDE.
SULFATE SPIKE: 31.25 mg/L SULFATE. SULFATE CV: 12.5 mg/L SULFATE.

Director, Dr. Blair Leftwich

12 AUG 98
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

August 18, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1135
Project Location: NA

ANALYTICAL RESULTS FOR
HIGHLANDER SERVICES CORP.
Attention: Ike Tavarez
1910 N. Big Spring Street
Midland, TX 79705

Sampling Date: 07/28/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Texaco E & P, Inc.
Project Name: Texaco/State "F" TB
Lea County, NM

TA#	FIELD CODE	TDS (mg/L)	pH (s.u.)	CHLORIDE (mg/L)	SULFATE (mg/L)
T103657	MW-5	1,000	7.6	360	93
T103658	MW-6	360	7.2	43	90
T103659	MW-7	510	7.6	82	93
T103660	MW-8	390	7.5	29	100
ICV		---	7.0	11	11
CCV		---	7.0	11	11
REPORTING LIMIT		10	---	0.5	0.5
RPD		1	0	0	0
% Extraction Accuracy		---	---	94	91
% Instrument Accuracy		95	100	96	96
PREP DATE		08/04/98	07/30/98	08/03/98	08/03/98
ANALYSIS DATE		08/04/98	07/30/98	08/03/98	08/03/98

METHODS: EPA 160.1, 150.1, 300.0.
CHEMIST: pH: BP TDS: RS CHLORIDE/SULFATE: JS
CHLORIDE SPIKE: 31.25 mg/L CHLORIDE. CHLORIDE CV: 12.5 mg/L CHLORIDE.
SULFATE SPIKE: 31.25 mg/L SULFATE. SULFATE CV: 12.5 mg/L SULFATE.

BL
Director, Dr. Blair Leftwich

8-18-98
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

ANALYTICAL RESULTS FOR
HIGHLANDER SERVICES CORP.

August 18, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1135
Project Location: NA

Attention: Ike Tavarez
1910 N. Big Spring Street
Midland, TX 79705

Sampling Date: 07/28/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Texaco E & P, Inc.
Project Name: Texaco/State "F" TB
Lea County, NM

TA#	FIELD CODE	TDS (mg/L)	pH (s.u.)	CHLORIDE (mg/L)	SULFATE (mg/L)
T103661	WW-1	480	7.4	100	71
ICV		---	7.0	13	13
CCV		---	7.0	13	13
REPORTING LIMIT		10	---	0.5	0.5
RPD		1	0	0	1
% Extraction Accuracy		---	---	85	100
% Instrument Accuracy		95	100	108	109
PREP DATE		08/04/98	07/30/98	08/14/98	08/14/98
ANALYSIS DATE		08/04/98	07/30/98	08/14/98	08/14/98

METHODS: EPA 160.1, 150.1, 300.0.
CHEMIST: pH: BP TDS: RS CHLORIDE/SULFATE: JS
CHLORIDE SPIKE: 6.25 mg/L CHLORIDE. CHLORIDE CV: 12.5 mg/L CHLORIDE.
SULFATE SPIKE: 6.25 mg/L SULFATE. SULFATE CV: 12.5 mg/L SULFATE.

Director, Dr. Blair Leftwich

8-18-98
Date

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL SERVICES
Attention: Ike Tavarez
1910 N. Big Spring St.
Midland, TX 79705

August 18, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1135
Project Location: NA

Sampling Date: 07/28/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Texaco E & P, Inc.
Project Name: Texaco/
State "F" TB
Lea County, NM

TA#	FIELD CODE	ALKALINITY (mg/L as CaCo3) HC03	C03
T103654	MW-3	160	<1.0
T103655	MW-3 (Duplicate)	160	<1.0
T103656	MW-4	170	<1.0
T103657	MW-5	150	<1.0
T103658	MW-6	140	<1.0
T103659	MW-7	160	<1.0
T103660	MW-8	170	<1.0
ICV		1,140	1,080
CCV		1,060	1,120
REPORTING LIMIT			
RPD		1	1
% Extraction Accuracy		---	---
% Instrument Accuracy		91	91
PREP DATE		08/11/98	
ANALYSIS DATE		08/11/98	

METHODS: EPA 310.1.
CHEMIST: RS

Director, Dr. Blair Leftwich

8-19-98
DATE

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
4725 Ripley Avenue, Suite A El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL SERVICES
Attention: Ike Tavarez
1910 N. Big Spring St.
Midland, TX 79705

August 12, 1998
Receiving Date: 07/30/98
Sample Type: Water
Project No: 1135
Project Location: NA

Sampling Date: 07/28/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Texaco E & P, Inc.
Project Name: Texaco/
State "F" TB
Lea County, NM

TA#	FIELD CODE	ALKALINITY (mg/L as CaCo3) HC03	C03
T103661	WW-1	180	<1.0
ICV		1,100	1,100
CCV		1,130	1,060
REPORTING LIMIT		1.0	1.0
RPD		1	1
% Extraction Accuracy		---	---
% Instrument Accuracy		91	91
PREP DATE		08/11/98	
ANALYSIS DATE		08/11/98	

METHODS: EPA 310.1.
CHEMIST: RS

Director, Dr. Blair Leftwich

12 Aug 98
DATE

103652-61

522/523

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705
(915) 682-4559 Fax (915) 682-3946

PAGE: 1 OF: 1

ANALYSIS REQUEST (Circle or Specify Method No.)

CLIENT NAME: Texaco E & P, Inc

SITE MANAGER: Ike Tavarez

PROJECT NO.: 1135

PROJECT NAME: Texaco / State "F" TB. Lea County, NM.

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Ions	Gibson (Fingerprint)
103652	7-28-98	4:45	O		/	MW-1	1																								X
53	↓	5:10	O		/	MW-2	1																								X
54	↓	4:30	W		/	MW-3	5	/	/	/	/	/	X			X	X													X	
55	↓	4:30	W		/	MW-3 (Duplicate)	5	/	/	/	/	/	X			X	X													X	
56	↓	3:10	W		/	MW-4	5	/	/	/	/	/	X			X	X													X	
57	↓	2:45	W		/	MW-5	5	/	/	/	/	/	X			X	X													X	
58	↓	2:00	W		/	MW-6	5	/	/	/	/	/	X			X	X													X	
59	↓	2:25	W		/	MW-7	5	/	/	/	/	/	X			X	X													X	
60	↓	1:15	W		/	MW-8	5	/	/	/	/	/	X			X	X													X	
61	↓	1:00	W		/	WW-1	8	/	/	/	/	/	X			X	X													X	

RELINQUISHED BY: (Signature) [signature] Date: 7-29-98 Time: 4:10 PM
RECEIVED BY: (Signature) Helen Shelton Date: 7-29-98 Time: 4:10 PM

RELINQUISHED BY: (Signature) Helen Shelton Date: 7-29-98 Time: 6:00 PM
RECEIVED BY: (Signature) Date: Time:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: Trace.
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:

RECEIVED BY: (Signature) Vicki Wadlow
DATE: 7-30-98 TIME: 9:40 Am

SAMPLED BY: (Print & Sign) Ike Tavarez Date: 7-28-98 Time:

SAMPLE SHIPPED BY: (Circle) FEDEX BUS UPS HAND DELIVERED — BLS AIRBILL # 155-758 972 OTHER: 6

HIGHLANDER CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water S-Soil A-Air SL-Sludge SD-Solid O-Other

REMARKS: [initials]

8/18/98 2°

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

Analysis Request and Chain of Custody Record

PAGE: 1 OF: 1

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705
(915) 682-4559 Fax (915) 682-3946

CLIENT NAME: Texaco E & P, Inc.
SITE MANAGER: Ike Tavarez
PROJECT NO.: 1135
PROJECT NAME: Texaco / State "I" TB. Lea County, NM.

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Ions	GC DRO (Fingerprint)
	7-28-98	4:45	O		/	MW-1	1																								X
	↓	5:10	O		/	MW-2	1																								X
		4:30	W		/	MW-3	5	/	/	/	/	/	X			X	X													X	
		4:30	W		-	MW-3 (Duplicate)	5	/	/	/	/	/	X			X	X													X	
		3:10	W		-	MW-4	5	/	/	/	/	/	X			X	X													X	
		2:45	W		/	MW-5	5	/	/	/	/	/	X			X	X													X	
		2:00	W			MW-6	5	/	/	/	/	/	X			X	X													X	
		2:25	W		/	MW-7	5	/	/	/	/	/	X			X	X													X	
		1:15	W		/	MW-8	5	/	/	/	/	/	X			X	X													X	
	↓	1:00	W		/	WW-1	8	/	/	/	/	/	X			X	X													X	

RELINQUISHED BY: (Signature) [illegible] Date: 7-29-98 Time: 4:15 PM
RECEIVED BY: (Signature) [illegible] Date: 7-29-98 Time: 4:15 PM
SAMPLED BY: (Print & Sign) Ike Tavarez Date: 7-28-98 Time:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS (circled) AIRBILL #
HAND DELIVERED UPS OTHER:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:
HIGHLANDER CONTACT PERSON: Ike Tavarez
Results by:

RECEIVING LABORATORY: Trace.
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:
RUSH Charges Authorized: Yes No (circled)

SAMPLE CONDITION WHEN RECEIVED:
MATRIX: W-Water (circled) S-Soil A-Air SL-Sludge SD-Solid O-Other
REMARKS:

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Environmental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

APPENDIX E

Water Well Records

(1)

(This form to be executed in triplicate)

WELL RECORD

Date of Receipt ..... Permit No. L-1279

Name of permittee, Gulf Oil Corporation

Street or P. O., Box 1290, City and State Fort Worth, Texas

1. Well location and description: The shallow (shallow or artesian) well is located in SE ¼, NW ¼, NE ¼ of Section 24, Township 19-S, Range 36-E; Elevation of top of casing above sea level, Unknown feet; diameter of hole, Unknown inches; total depth, 100 feet; depth to water upon completion, 50 feet; drilling was commenced 3-6, 1936, and completed 3-6, 1936; name of drilling contractor Gene R. Burke; Address, Hobbs, N. M.; Driller's License No. Unknown

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	50	65	15	Sand
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in inches	Pounds per ft.	Threads per inch	Depth of Casing or Liner Top	Bottom	Feet of Casing	Type of Shoe	Perforation From	To
8-1/4"	Unknown		0	85	85	None	Unknown	

4. If above construction replaces old well to be abandoned, give location: ¼, ¼, ¼ of Section ....., Township ....., Range .....; name and address of plugging contractor,

.....

date of plugging ....., 19.....; describe how well was plugged:

.....

.....

.....

DEC 4 1952

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

L-1279

5. Log of Well:

Depth in feet From	Depth in feet To	Thickness in feet	Description of Formation
0	1	1	Top soil
1	50	49	Flinty lime
50	65	15	Quick sand (water)
65	90	25	Back sand
90	100	10	Coarse and fine sand
L-1274			
TRBurke	3/6/53		
			19.36.24.214

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Gene R. Burke
Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

(This form is to be executed in triplicate)

(2)

WELL RECORD

Date of Receipt January 3, 1955 Permit No. L-2614

Name of permitee, Warren Petroleum Corporation

Street or P. O. ....., City and State .....

1. Well location and description: The Shallow (shallow or artesian) well is located in NE ¼, NE ¼, SW ¼ of Section 24, Township 19 S, Range 36 E; Elevation of top of casing above sea level, ... feet; diameter of hole, 8 inches; total depth, 111 feet; depth to water upon completion, 68 feet; drilling was commenced June, 19 41, and completed June, 1941; name of drilling contractor Edward R. Burke Box 306; Address, Hobbs, N.M.; Driller's License No. W.D. 111

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	72	104	32	Water Sand
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in Inches	Pounds per ft.	Threads per Inch	Depth of Casing or Liner Top	Bottom	Feet of Casing	Type of Shoe	Perforation From	To
7	21	10			111	Collar	81	111

4. If above construction replaces old well to be abandoned, give location: ¼, ¼, ¼ of Section ....., Township ....., Range .....; name and address of plugging contractor,

.....

.....

date of plugging ....., 19....; describe how well was plugged: .....

.....

.....

.....

FILED
55
JAN 3 1955
OFFICE
GROUND WATER SUPERVISOR
ROSWELL, NEW MEXICO

5. Log of Well:

Depth in Feet From	Depth in Feet To	Thickness in feet	Description of Formation
0	2	2	Top Soil
2	14	12	Caleche
14	21	7	Hard Sand Rock
21	72	51	Pack Sand
72	104	32	Water Sand
104	111	7	Red Clay

L.S Elev 3714
Depth to K Tre
Elev of K Tre

Loc. No. 19.36.24.32211

Hydro. Survey Field Check X

SOURCE OF ALTITUDE GIVEN

Interpolated from Topo. Sheet

Determined by Inst. Leveling

Other

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Edward B Burke
Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

(This form is to be executed in triplicate)

(3)

WELL RECORD

Date of Receipt January 3, 1955 Permit No. L 2612

Name of permitee, Warren Petroleum Corporation

Street or P. O. ..... City and State .....

1. Well location and description: The Shallow (shallow or artesian) well is located in NE ¼, NE ¼, SW ¼ of Section 24, Township 19 S, Range 36 E; Elevation of top of casing above sea level, ... feet; diameter of hole, 8 inches; total depth, 110 feet; depth to water upon completion, 68 feet; drilling was commenced February, 19 35, and completed February, 19 35; name of drilling contractor Edward B. Burke Box 306; Address, Hobbs, N.M.; Driller's License No. W.D. 111

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	72	104	32	Water Sand
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in Inches	Pounds per ft.	Threads per inch	Depth of Casing or Liner Top	Depth of Casing or Liner Bottom	Feet of Casing	Type of Shoe	Perforation From	Perforation To
7	21	10			110	Collar	80	110

4. If above construction replaces old well to be abandoned, give location: ¼, ¼, ¼ of Section ....., Township ....., Range .....; name and address of plugging contractor, ...

date of plugging ....., 19.....; describe how well was plugged: .....

FILED
JAN 3 1955
OFFICE
GROUND WATER SUPERVISOR
ROSWELL, NEW MEXICO

5. Log of Well:

Depth in Feet From	Depth in Feet To	Thickness in feet	Description of Formation
0	1	1	Top Soil
1	12	11	Caliche
12	24	12	Hard Sand Rock
24	72	48	Pack Sand
72	104	32	Water Sand
104	110	6	Red Clay

L S Elev 3443'
Depth to K Tr 104'
Elev of K Tr 3607'

Loc. No. 19.36.24.322337

Hydro. Survey _____ Field Check X

Spot Elev. is wrong!!

SOURCE OF ALTITUDE GIVEN

Interpolated from Topo. Sheet X (Corr.)

Determined by Inst. Leveling

Other _____

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Edward B Burks
Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

(This form is to be executed in triplicate)

④

WELL RECORD

Date of Receipt January 3, 1955 Permit No. L 2613

Name of permitee, Warren Petroleum Corporation

Street or P. O. ..... City and State .....

1. Well location and description: The Shallow (shallow or artesian) well is located in SE ¼, NE ¼, SW ¼ of Section 24, Township 19 S, Range 36 E; Elevation of top of casing above sea level, ... feet; diameter of hole, 8 inches; total depth, 108 feet; depth to water upon completion, 67 feet; drilling was commenced June, 19 41, and completed June, 1941; name of drilling contractor Edward B. Burke Box 306; Address, Hobbs, N. M.; Driller's License No. W.D. 111

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	71	103	32	Sand
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in Inches	Pounds per ft.	Threads per Inch	Depth of Casing or Liner Top	Bottom	Feet of Casing	Type of Shoe	Perforation From	To
7	21	10			108	Collar	78	108

4. If above construction replaces old well to be abandoned, give location: ¼, ¼, ¼ of Section ....., Township ....., Range .....; name and address of plugging contractor, ...

date of plugging ....., 19.....; describe how well was plugged: .....

FILED
JAN 3 1955
OFFICE
GROUND WATER SUPERVISOR
ROSWELL, NEW MEXICO

No photo - 32343

8. Log of Well:

Depth in Feet From	Depth in Feet To	Thickness in feet	Description of Formation
0	1	1	Top Soil
1	13	12	Caleche
13	26	13	Hard Sand Rock
26	71	45	Rock Sand
71	103	32	Water Sand
103	108	5	Red Clay

L S Elev 3713
Depth to K Trc 1035
Elev of K Trc 3610

Loc. No. 19.36.24.32412

Hydro. Survey ____ Field Check X

SOURCE OF ALTITUDE GIVEN
Interpolated from Topo. Sheet X
Determined by Inst. Leveling ____
Other ____

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Edward B. Burke
Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

(5)

(This form to be executed in triplicate)

WELL RECORD

Date of Receipt _____ Permit No. L-1272

Name of permittee, Gulf Oil Corporation

Street or P.O., Box 1290, City and State Fort Worth, Texas

1. Well location and description: The Shallow (shallow or artesian) well is located in SE ¼, NW ¼, SE ¼ of Section 24, Township 19-S, Range 36-E; Elevation of top of casing above sea level, Unknown feet; diameter of hole, Unknown inches; total depth, 104 feet; depth to water upon completion, ~~Under~~ 88 feet; drilling was commenced 12-26-35, 19__, and completed 12-26-35, 19__; name of drilling contractor Vane R. Burke; Address, Hobbs, N. M.; Driller's License No. Unknown

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	88	102	14	Sand
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in Inches	Pounds per ft.	Threads per Inch	Depth of Casing or Liner Top	Bottom	Feet of Casing	Type of Shoe	Perforations From	To
8-1/4"	32	10	0	81'	81'	None	Unknown	
7"	26	8	0	5'	5'	None	None	

7" casing welded in top of 8-1/4" casing.

4. If above construction replaces old well to be abandoned, give location: ¼, ¼, ¼ of Section, Township, Range; name and address of plugging contractor,

date of plugging, 19__; describe how well was plugged:

DEC 2 1935

k-2131

5. Log of Well:

Depth in feet From	To	Thickness in feet	Description of Formation
0	60	60	Flint shells & caliche
60	68	8	Quick sand
68	88	20	Pack sand
88	102	14	Water sand
102	104	2	Red bed

L-1272

G R Burke 12/26/55 19.36.24.414 33

3707

L S Elev 102 Trc

Depth to K 3605 Trc

Elev of K

Loc. No. 19.36.24.41433

Hydro. Survey Field Check Rept.

SOURCE OF ALTITUDE GIVEN

Interpolated from Topo. Sheet X

Determined by Inst. Leveling

Other

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Gene R. Burke
Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

STATE ENGINEER OFFICE

WELL RECORD

(6)

Section 1. GENERAL INFORMATION

(A) Owner of well Mr. & Mrs. Jimmy T. Cooper Owner's Well No. _____

Street or Post Office Address Box 55

City and State Monument, N.M. 88240

Well was drilled under Permit No. L-2131-S and is located in the:

a. _____ ¼ _____ ¼ SE ¼ SE ¼ of Section 24 Township 19S Range 36E N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in _____ County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Alan Eades License No. WD-1044

Address 3521 Camino Real, Hobbs, N.M. 88240

Drilling Began 6-13-92 Completed 6-13-92 Type tools Rotary Size of hole 8 in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 101 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 65 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
65	101	36	Water Sand	35

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6 3/4	160psi				101		61	101

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor _____

Address _____

Plugging Method _____

Date Well Plugged _____

Plugging approved by: _____

State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received August 14, 1992

Quad _____ FWL _____ FSL _____

(SUPPLEMENTAL WELL)

File No. L-2131-S Use COM Location No. 19.36.24.441112

19.36.24.441112

From	To	Thickness in Feet	Color and Type of Material Encountered
0	1	1	Top Soil
1	16	15	Caliche
16	24	8	Sandstone
24	62	38	Sandy Clay with Sandstone Stringers
62	65	3	Red Clay
65	101	36	Water Sand
101			Red Bed

Section 7. REMARKS AND ADDITIONAL INFORMATION

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Alan Eades
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 7 need be completed.

Revised June 1972

STATE ENGINEER OFFICE

(7)

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Jimmie L. Cooper Owner's Well No. _____
Street or Post Office Address P.O. Box 55
City and State Monument NM 88265

Well was drilled under Permit No. L-2131-A-2 and is located in the:

a. ____ ¼ ____ ¼ SE ¼ SE ¼ of Section 24 Township 19S Range 36E N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in _____ County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Fred Root License No. WD 1332
Address 1300 E. Bender Blvd. Hobbs NM 88240
Drilling Began 5-3-96 Completed 5-3-96 Type tools Rotary Size of hole 8¼ in.
Elevation of land surface or _____ at well is _____ ft. Total depth of well 102 ft.
Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well _____ ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
65	102	37	Water Sand	40

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6	160		0	102	102		62	102

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received 07-10-96
Quad _____ FWL _____ FSL _____
File No. L-2131-S-2 Use Commercial Location No. 19.36.24.441114

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color and Type of Material Encountered
0	1	1	Top soil
1	16	15	Caliche
16	24	8	Sandstone
24	62	38	Sandy clay w/ sandstone stringers
62	65	3	Red clay
65	102	37	Water sand
102			Red clay

Section 7. REMARKS AND ADDITIONAL INFORMATION

STATE ENGINEER OFFICE
ROSWELL NEW MEXICO
'96 JUL 10 AM 10 53

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Fred D. Root by Andrea Root
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. A[illegible]ions, except Section 5, shall be answered as completely and accurate[illegible]ossible when any well is drilled, repaired or deepe[illegible]hen this form is used as a plugging record, only Section 1(a) and Section [illegible]l be completed.

(8)

(This form to be executed in triplicate)

WELL RECORD

Date of Receipt _____ Permit No. L-1262

Name of permittee, Gulf Oil Corporation

Street or P.O., Box 1290, City and State Fort Worth, Texas

1. Well location and description: The shallow (shallow or artesian) well is located in NE ¼, NW ¼, NE ¼ of Section 25, Township 19-S, Range 36-E; Elevation of top of casing above sea level, Unknown feet; diameter of hole, Unknown inches; total depth, 100 feet; depth to water upon completion, 48 feet; drilling was commenced 7-10-36, 19__, and completed 7-10-36, 19__; name of drilling contractor Gene R. Burke; Address, Hobbs, N. M.; Driller's License No. Unknown

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	48	73	25	Sand
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in inches	Pounds per ft.	Threads per inch	Depth of Casing or Liner Top	Depth of Casing or Liner Bottom	Feet of Casing	Type of Shoe	Perforations From	Perforations To
8-1/4"	Unknown		0	91	91	None	Unknown	

4. If above construction replaces old well to be abandoned, give location: ____ ¼, ____ ¼, ____ ¼ of Section ____, Township ____, Range ____; name and address of plugging contractor, _____

date of plugging _____, 19__; describe how well was plugged: _____

RECEIVED
DEC 2 1952
OFFICE
ARTESIAN WELL SUPERVISOR
ROSWELL, NEW MEXICO

1-1262.

5. Log of Well:

Depth in feet From	To	Thickness in feet	Description of Formation
0	30	30	Flinty lime
30	48	18	Caliche
48	73	25	Sand
73	100	17	Thin shells and red mud

L-1262

G.R. Burke 7/10/36 19.36.25.212

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Gene R. Burke

Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

(9)

(This form to be executed in triplicate)

WELL RECORD

Date of Receipt ..... Permit No. L-1280

Name of permittee, Gulf Oil Corporation

Street or P. O., Box 1290, City and State Fort Worth, Texas

1. Well location and description: The shallow (shallow or artesian) well is located in NE ¼, NW ¼, NE ¼ of Section 25, Township 19-S, Range 36-E; Elevation of top of casing above sea level, Unknown feet; diameter of hole, Unknown inches; total depth, 100 feet; depth to water upon completion, 70 feet; drilling was commenced 7-1, 1936, and completed 7-1, 1936; name of drilling contractor Gene R. Burke; Address, Hobbs, N. M.; Driller's License No. Unknown

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	70	85	15	Sand and pebbles
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in inches	Pounds per ft.	Threads per inch	Depth of Casing or Liner Top	Bottom	Feet of Casing	Type of Shoe	Perforation From	To
8-1/4"	Unknown		0	85'	85'	None	Unknown	
7"	26	8	0	5'	5'	None	None	

7" casing welded inside of 8-1/4" casing

4. If above construction replaces old well to be abandoned, give location: ¼, ¼, ¼ of Section ....., Township ....., Range .....; name and address of plugging contractor,

.....

.....

date of plugging ....., 19.....; describe how well was plugged:

.....

.....

.....

OIL CONSERVATION
ARTESIAN WELL SUPERVISOR
ROSWELL, NEW MEXICO
DEC 9 1952
FILED

5. Log of Well:

Depth in feet From	To	Thickness in feet	Description of Formation
0	1	1	Top soil
1	45	44	Caliche
45	70	25	Pack Sand
70	85	15	Sand & pebbles - water
85	100	15	Red mud & shells

L-1280

GR Burke 9/1/36 19.36.25.212

3680 ✓

L S Elev 83 ✓

Depth to K Trc 3595 ✓

Elev of K Trc

Loc. No. 19.36.25.2120 ✓

Hydro. Survey: Field Check Rept

SOURCE OF ALTITUDE GIVEN

Interpolated from Topo. Sheet X

Determined by Inst. Leveling

Other

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Gene R. Burke

Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

(10)

(This form to be executed in triplicate)

WELL RECORD

Date of Receipt ..... Permit No. L-1261

Name of permittee, Gulf Oil Corporation

Street or P. O., Box 1290, City and State Fort Worth, Texas

1. Well location and description: The shallow (shallow or artesian) well is located in NE ¼, NW ¼, SE ¼ of Section 25, Township 19-S, Range 36-E; Elevation of top of casing above sea level, Unknown feet; diameter of hole, Unknown inches; total depth, 50'8" feet; depth to water upon completion, 26 feet; drilling was commenced 12-29 19 36, and completed 12-29, 19 36; name of drilling contractor Gene R. Burke; Address, Hobbs, N. M.; Driller's License No. Unknown

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	26	32	6'	Sand
No. 2	32	42	10'	Sand
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in Inches	Pounds per ft.	Threads per Inch	Depth of Casing or Liner Top	Bottom	Feet of Casing	Type of Shoe	Perforation From	To
6"	Unknown		0	45'	45'3"	None	Unknown	

4. If above construction replaces old well to be abandoned, give location: ¼, ¼, ¼ of Section ....., Township ....., Range .....; name and address of plugging contractor,

date of plugging ....., 19.....; describe how well was plugged:

RECEIVED
DEC 9 1952
OIL CONSERVATION COMMISSION
ARTESIAN WELL SUPERVISOR
ROSWELL, NEW MEXICO

5. Log of Well:

Depth in feet From	Depth in feet To	Thickness in feet	Description of Formation
0	8'	8	Top Soil
8	26	18	Caliche
26	32	6	Water Sand
32	42	10	Muddy Water Sand
42	50	8	Red Beds

L-4261 19.36.25.412

G.R. Burke 12/29/36

L S Elev 3650 ✓

Depth to K 42 ✓ Trc

Elev of K 3608 ✓ Trc

Loc No. 19.36.25.412 1

Hydro. Survey _____ Field Check Sept.

SOURCE OF ALTITUDE GIVEN

Interpolated from Topo. Sheet X

~~Determined by Inst. Leveling~~

~~Other~~

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Gene R. Burke
Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

Form WR-23 FIELD ... R. LOG

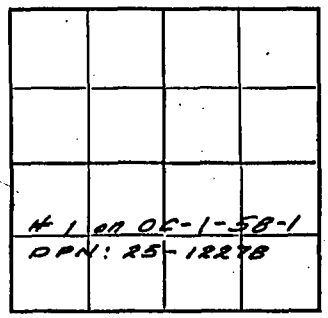
STATE ENGINEER OFFICE

(11)

WELL RECORD

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the nearest district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1A and Section 5 need be completed.

Section 1



(Plat of 640 acres)

(A) Owner of well McVey and Stafford Drilling Co.

Street and Number 513 E. Lea

City Hobbs State New Mexico

Well was drilled under Permit No. L-4313 and is located in the NW ¼ NW ¼ ¼ of Section 19 Twp. 19S Rge. 37E

(B) Drilling Contractor Ed Burke License No. 111

Street and Number Box 306

City Hobbs State New Mexico

Drilling was commenced October 23 19 59

Drilling was completed October 23 19 59

Elevation at top of casing in feet above sea level ____ Total depth of well 116'

State whether well is shallow or artesian shallow Depth to water upon completion 52'

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1	52	65	13	ater sand
2				
3				
4				
5				

Section 3 RECORD OF CASING

Dia in.	Pounds ft.	Threads in	Depth Top	Depth Bottom	Feet	Type Shoe	Perforations From	Perforations To

Section 4 RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Diameter Hole in in.	Tons Clay	No. Sacks of Cement	Methods Used

Section 5 PLUGGING RECORD

Name of Plugging Contractor ____ License No. ____

Street and Number ____ City ____ State ____

Tons of Clay used ____ Tons of Roughage used ____ Type of roughage ____

Plugging method used ____ Date Plugged ____ 19 ____

Plugging approved by:

Basin Supervisor

Cement Plugs were placed as follows:

No.	Depth of Plug From	Depth of Plug To	No. of Sacks Used

FOR USE OF STATE ENGINEER ONLY

Date Received STATE ENGINEER OFFICE DISTRICT II 1959 OCT 29 AM 8:16

File No. L-4313 Use D.D.D. Location No. 19.37.19.113211

Section 6

LOG OF WELL

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color	Type of Material Encountered
0	1	1		Surface soil
1	19	18		Caliche
19	23	4		Sand rock
23	29	6		Sand, tight
29	52	23		Sand, rock
52	65	13		Sand, water
65	67	2		Red clay
67	82	15		Sand, gravel ?
82	85	3		Red clay
85	91	6		Sand
91	94	3		Red clay
94	99	5		Sand
99	116	17		Red clay

L S Elev 3703 ±

Depth to K Trc 82 ±

Elev of K Trc 3621 ±

Loc. No. 19.37.19.113211

Hydro. Survey ____ Field Check X

SOURCE OF ALTITUDE GIVEN

Interpolated from Topo. Sheet X

Determined by Inst. Leveling ____

Other ____

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Edward B Burke

Well Driller

5. Log of Well:

Depth in feet From	To	Thickness in feet	Description of Formation
0	1	1	Top Soil
1	32	31	Caliche
32	45	13	Dry Sand
45	58	13	Water Sand
58	62	4	Red Bed

L – 1273

Unknown, 10/8/36 19.37.19.4431

3656 ✓

L S Elev ——— ——— 58 ✓

Depth to K ——— Trc ———

Elev of K ——— Trc 3598

Loc. No. 19.37.19.44310 ✓

Hydro. Survey ——— Field Check Rept.

SOURCE OF ALTITUDE GIVEN

Interpolated from Topo. Sheet X

Determined by Inst. Leveling ———

Other ———

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Unknown

Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

(This form to be executed in triplicate)

WELL RECORD

Date of Receipt _____ Permit No. I-1273

Name of permittee, Gulf Oil Corporation

Street or P.O., Box 1290, City and State Fort Worth, Texas

1. Well location and description: The shallow (shallow or artesian) well is located in SW ¼, SE ¼, SE ¼ of Section 19, Township 19S, Range 37E; Elevation of top of casing above sea level, Unknown feet; diameter of hole, Unknown inches; total depth, 62 feet; depth to water upon completion, 45 feet; drilling was commenced 10-8-36, 19__, and completed 10-8-36, 19__; name of drilling contractor Unknown; Address, Unknown; Driller's License No. Unknown

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	45	58	13	Water sand
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in Inches	Pounds per ft.	Threads per Inch	Depth of Casing or Liner Top	Depth of Casing or Liner Bottom	Feet of Casing	Type of Shoe	Perforations From	Perforations To
6"	Unknown		0	53	53	None	Unknown	

4. If above construction replaces old well to be abandoned, give location: ¼, ¼, ¼ of Section, Township, Range; name and address of plugging contractor,

date of plugging, 19__; describe how well was plugged:

I-1272

5. Log of Well:

Depth in feet From	To	Thickness in feet	Description of Formation
0	4	4	Soil
4	36	32	Caliche
36	38	2	Sand
38	44	6	Hard Sand
44	50	6	Water Sand
50	60	10	Hard Sand
60	84	24	Water Sand & Gravel
84	85	1	Red Bed

L-1259

G.R. Burke 8/9/35 19.37.19.121

L.S. Elev 3683

Depth to K Trc

Elev of K Trc 3599

Loc. No. 19. 37. 19. 1214

Hydro. Survey Field Check Repd.

SOURCE OF ALTITUDE GIVEN

Interpolated from Topo. Sheet X

Determined by Inst. Leveling

Other

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Gene R. Burke
Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

(12)

(This form to be executed in triplicate)

WELL RECORD

Date of Receipt ..... Permit No. L-1259

Name of permittee, Gulf Oil Corporation

Street or P. O., Box 1290, City and State Fort Worth, Texas

1. Well location and description: The shallow (shallow or artesian) well is located in NW ¼, NE ¼, NW ¼ of Section 19, Township 19-S, Range 37-E; Elevation of top of casing above sea level, Unknown feet; diameter of hole, 11 inches; total depth, 85 feet; depth to water upon completion, 44 feet; drilling was commenced 8-9, 1935, and completed 8-9, 1935; name of drilling contractor Gene R. Burke; Address, Hobbs, N. M.; Driller's License No. Unknown

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	44	50	6'	Sand
No. 2	60	81	21'	Sand & Gravel
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in Inches	Pounds per ft.	Threads per Inch	Depth of Casing or Liner Top	Bottom	Feet of Casing	Type of Shoe	Perforation From	To
8-1/4"	32#	10	0	81'	81'3"	None	Unknown	
7"	26#	8	0	5'	5'	None	None	

7" Liner welded in top of 8-1/4" casing

4. If above construction replaces old well to be abandoned, give location: ¼, ¼, ¼ of Section ....., Township ....., Range .....; name and address of plugging contractor.

.....

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date of plugging ....., 19....; describe how well was plugged: .....

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FILED
DEC 2 1952
OFFICE
ARTESIAN WELL SUPERVISOR
ROSWELL, NEW MEXICO

L-1259

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