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REPORTS

DATE:

1998

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
HOBBS DISTRICT OFFICE

POST OFFICE BOX 1980
HOBBS, NEW MEXICO 88241-1980
(505) 393-6161

June 9, 1998

Mr. Ron Lechwar
Titan Resources, Inc (TRI)
500 W Texas
Suite 5 0
Midland, Tx 79701

Re: Preliminary Investigation Work Plan for Open Pits Designated as ATB 1-1 in Lovington Paddock/Lovington San Andres Unit and ATB 33-1 in West Lovington Unit, Operated by Titan Resources, L.P., Lea County, New Mexico.

Dear Mr. Lechwar:

New Mexico Oil Conservation Division (NMOCD) is in receipt of the above referenced document dated April 1998 submitted by Highlander Environmental Corp. **NMOCD hereby approves of the Preliminary Investigation Work Plan** with the following additional conditions:

1. TPH analysis shall be either EPA 418.1 or EPA 8015-M to include GRO & DRO range organics.

2. Due to the possibility of hazardous constituents and/or regulated "NORMS" there will be a site safety & health plan before work starts.

Please be advised that NMOCD approval of this plan does not relieve TRI of liability should their operations fail to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD District I approval does not relieve TRI of responsibility for compliance with any other federal, state, or local laws and/or regulations.

If you require any further information or assistance please do not hesitate to call (505-393-6161) or write this office.

Sincerely Yours,

Wayne Price-Environmental Engineer

file: wp98/tripits

cc: Chris Williams-NMOCD District I Supervisor
Bill Olson-Environmental Bureau, Santa Fe, NM
Mr. Timothy M. Reed- Highlander Environmental Corp.
1910 N. Big Spring
Midland, Texas 79705

attachments- 1 cc to Bill Olson

SUBSURFACE INVESTIGATION REPORT
TITAN EXPLORATION, INC.
LOVINGTON PADDOCK/LOVINGTON SAN ANDRES UNIT
ABANDONED PIT, ATB 1-1
LEA COUNTY, NEW MEXICO

1R-272

Prepared for:

Titan Exploration, Inc.
500 W. Texas
Suite 500
Midland, Texas

Prepared by:

Highlander Environmental Corp.
1910 North Big Spring Street
Midland, Texas

May 1999

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SUBSURFACE INVESTIGATION REPORT
TITAN EXPLORATION, INC.
LOVINGTON PADDOCK/LOVINGTON SAN ANDRES UNIT
ABANDONED PIT, ATB 1-1
LEA COUNTY, NEW MEXICO

1.0 INTRODUCTION

Titan Exploration, Inc. (Titan) has retained Highlander Environmental Corp. (Highlander) to conduct a Subsurface Environmental Assessment (Assessment) at an abandoned pit designated ATB 1-1, Titan Lovington Paddock/Lovington San Andres Unit (Site), located in the SE/4, Section 1, Township 17 South, Range 36 East, Lea County, New Mexico. Figure 1 presents a Site location and topographic map. Figure 2 presents a Site drawing.

1.1 Purpose and Scope

The purpose of the Assessment was to evaluate and determine the extent of subsurface impacts, which may have occurred from releases of petroleum hydrocarbons from the abandoned pit. Prior to the assessment of the pit, the sludge material in the pit was characterized and disposed of at an approved disposal facility. The Assessment consisted of the installation of machine air rotary drilled soil borings, collection of soil samples for field and laboratory testing and the placement of permanent monitor wells at the Site to evaluate groundwater quality.

1.2 Regulatory Authority and Action Levels

The New Mexico Oil Conservation Division (NMOCD) has regulatory authority for oil and gas operations in the State of New Mexico. Locally, the NMOCD's Hobbs, New Mexico office regulates oil and gas activity in Lea County, New Mexico. The NMOCD 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

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(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 NMOCD 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 Site area is located on a moderately flat terrain. The altitude of the ground surface at the site is approximately 3816 feet above mean sea level (MSL). The natural ground surface slopes to the southeast. There are no active or dry creeks or surface impoundments in the vicinity of the the Site.

2.2 Hydrogeology

The Ogallala aquifer underlies the northern part of Lea County, New Mexico. The Tertiary Ogallala Formation is composed of terrigenous deposits such as sands, gravels, and finer sediments. Quaternary deposits cover the aquifer, and it unconformably overlies Cretaceous, Triassic, and Permian rocks. The upper part of the formation consists of several hard, caliche-cemented, erosionally resistant beds called the "Caprock". A windblown cover of fine silt, sand, and soil overlies the Caprock.

Groundwater in the Ogallala Formation generally is unconfined. The groundwater elevation in the vicinity of Lovington Paddock/Lovington San Andres Unit is approximately 3750 feet above MSL. The saturated thickness of the Ogallala in the area is between 100 and 200 feet. Thickness is highly

controlled by the configuration of the sub-Ogallala surface.

Water from the Ogallala Formation in northern Lea County has been used for municipal, irrigation, and industrial purposes for many years. Characteristically, it is hard, high in silica content, and contains sulfate slightly in excess of chloride. The dissolved solids content is generally less than 600 ppm.

Most of the information in this section was derived from "Hydrogeology and Hydrochemistry of the Ogallala Aquifer, Southern High Plains, Texas Panhandle and Eastern New Mexico" by Ronit Nativ, Bureau of Economic Geology Report No. 177, 1988.

Based on depth-to-groundwater measurements from monitor wells installed at the Site from March 29, 1999, groundwater occurs at depths of approximately 61 to 63 feet below ground surface (BGS). The Site water levels from the monitor wells are shown in Table 6. The regional groundwater flow is generally from the northwest to the southeast, however, the Site groundwater flow shows a southwest to northeast hydraulic gradient (0.003 feet per foot). Figure 3 presents a groundwater potentiometric surface map for March 29, 1999.

3.0 ENVIRONMENTAL INVESTIGATION ACTIVITIES

3.1 Waste Characterization and Disposal

The pit area measured approximately 50' x 50' and contained approximately 2' of oily sludge/soil material. On June 18, 1998, Highlander personnel collected a composite sample of the sludge material in the pit for waste characterization. From July 30, 1998 to August 3, 1998, the material was excavated and placed into lined transport trucks. The material was excavated to a depth of 1.5'-2.0' below the original sludge surface where a dense caliche rock was encountered. Currently, the bottom of the pit measures approximately 4-5' below surface. A total of 90 cubic yards of oil sludge/soil material was removed and transported to Control Recovery, Inc. located in Hobbs, New Mexico for disposal. The sludge/soil material is considered exempt oil field waste. The manifests are found in Appendix A.

3.2 Aerial Photograph Review

Aerial photographs were obtained from National Aerial Resources, Inc., Troy, New York, and included photographs for February 2, 1949, October 18, 1954, July 18, 1978 and June 10, 1986. Appendix B presents copies of the aerial photographs.

The February 2, 1949 photograph shows the location of the pit ATB 1-1 and a former tank battery consisting of two (2) tank pads containing aboveground tanks or vessels. Figure 2 shows the approximate location of the former tank battery. The tank battery was located approximately 165 feet south of the pit. No spills are visible around the pit and tanks. The October 18, 1954 photograph shows the pit and only one tank pad. No spills are visible. The July 18, 1978 photograph and June 10, 1986 show only the pit with some overflow spills evident around the pit.

3.3 Water Well Survey

Highlander conducted a review of the New Mexico State Engineer's files to locate water wells within a 1-mile radius of the Site. Sixteen (16 water wells) were found inside the 1-mile radius. The majority of the wells are located northwest and southeast (cross gradient) of the Site. Table 3 presents a summary of the water well drilling and completion details. Figure 4 presents water well inventory map. The water well records are presented in Appendix C.

Referring to Table 3, two (2) City of Lovington water wells, identified as 6 and 9, are located northwest approximately 4,000 feet and 4,800 feet from the Site. The wells identified as 1, 2, 4, 7, 8, 11, 14, and 17 were drilled in about 1952 to 1968. These wells were likely drilled during early development of the oil field and used as a source of water for drilling rigs. The remaining wells appear to be domestic water wells and are unlikely that impacts detected in groundwater at the Site will affect these wells. There were no down gradient receptors identified from the water well search.

4.0 SUBSURFACE ASSESSMENT ACTIVITIES

4.1 Rotary Drilled Soil Borings

Highlander supervised drilling of five air rotary boreholes at the Site. On June 29, 1998 and June 30, 1998, boreholes (BH-1 thru BH-5) were drilled at the pit area to assess the subsurface soil. Boreholes (BH-1 thru BH-4) were installed as close to the pit as possible to a depth of 31 feet BGS. On August 17, 1998, borehole, BH-5 was installed in the center of the pit to a depth of 71 feet BGS. The bottom of the pit is currently 4-5' below surface. The locations of the boreholes are shown in Figure 2. Scarborough Drilling, Inc. of Lamesa, Texas drilled the boreholes using a truck mounted rotary drilling rig. The soil samples were collected with a splitspoon sampler. Soil samples were collected at various depths from each soil boring for potential laboratory testing and headspace gas screening. All samples collected for laboratory analysis were collected and preserved according to EPA protocols, and analyzed within appropriate holding times. A portion of each sample was collected for headspace gas screening using a Thermal 580-B Organic Vapor Meter (OVM) to provide supporting data and determine which samples would be selected for laboratory analysis. Table 4 presents a summary of the soil headspace gas reading. Lithological sample logs were prepared from each borehole are presented in Appendix E.

The splitspoon sampler was washed between boreholes and sampling events using potable water and laboratory grade detergent. The drilling rig and all downhole equipment were washed between borings using a high-pressure hot water washer. Following the completion of the drilling activities, all boreholes were grouted to surface.

4.2 Monitor well Installation

On October 1, 1998, Highlander supervised the installation of four (4) monitor wells (MW-1, MW-2, MW-3 and MW-4 at the Site. After evaluation of groundwater analysis, additional wells (MW-5, MW-6) were installed in January 27, 1999. On March 24, 1999, monitor wells (MW-7, MW-8, and MW-9) were installed to complete the groundwater delineation. A total of nine (9) monitor wells have been installed at the Site. The wells were surveyed for elevation by Piper Surveying, Inc., Gardendale, Texas, a New Mexico licensed professional land surveyor.

The locations of each monitor well are shown in Figure 2. The well construction logs are presented in Appendix D. The monitor well completion details are shown in Table 6.

The monitor wells were constructed with 2-inch diameter schedule 40 PVC threaded casing and screen. The well screen, 20 feet long, was placed in the borehole with 5 feet above and 15 feet below the groundwater surface observed during the drilling. The exterior of screen was packed with 10-20 graded Brady silica sand, which was placed from the bottom of the borehole to about two feet above the screen. A layer of bentonite pellets was placed over the filter sand pack and hydrated with water. The remaining borehole annulus in the monitor wells was filled with cement and bentonite grout to a depth approximately one to two feet below ground. The top of the well was covered with a watertight steel sleeve cover and locking cap.

5.0 ENVIRONMENTAL INVESTGATION RESULTS

5.1 Soil Sampling and Analysis

One soil sample from the pit was collected for analysis to characterize the sludge material in the pit. The analysis included volatile organic compounds (EPA SW 846-8240), semi-volatile organic compounds (EPA SW 846-8270), and total metals (EPA SW 846-3051,6010,7471). Table 1 and 2 summarizes the results of the sludge/soil material in the pit.

Soil samples from the boreholes (BH-1 through BH-5) and monitor wells (MW-2, MW-3 and MW-4) with elevated OVM readings were selected and analyzed for Total Petroleum Hydrocarbon (TPH) by method modified 8015, Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) by method SW 846-8020 and chloride by method EPA 300.0. The analytical laboratory reports, chain of custody forms, and Quality Assurance/Quality Control samples are shown in Appendix E. Table 4 presents the organic vapor readings. Table 5 summaries the analytical results of the boreholes and monitor wells.

Referring to Tables 4 and 5, the boreholes (BH-1, BH-2, BH-3, and BH-4) drilled outside the pit showed traces of organic vapor ranging from 0 ppm to 17 ppm in the subsurface soil. The soil

samples in BH-2, BH-3 and BH-4 at 15-16' and 30-31' showed TPH and BTEX below the method detection limits. Borehole (BH-1) had traces of TPH at 12.1 mg/kg at 20-21' and 12 mg/kg at 30-31' BGS. A trace of toluene was also detected at 0.57 mg/kg at 20-21' below surface.

Borehole (BH-5) was drilled in center of the pit to a depth of 71'. During the drilling of the borehole, groundwater was encountered at 58'. The organic vapor readings ranged from 240 ppm to 560 ppm above the groundwater and decreased at 60-61' and 70-71' to 115 ppm and 1 ppm, respectively. The soil samples showed TPH (DRO) of 3,940 mg/kg at 10-11' which decreased to 1,709 mg/kg at 50-51' BGS. The TPH (GRO) ranged from 10.1 mg/kg to 397 mg/kg. The total BTEX detected in the impacted soil had decreasing concentrations of 63.55 mg/kg at 10-11', 56.11 mg/kg at 25-26', 27.19 mg/kg at 40-42' and <0.001 mg/kg at 50-51'BGS. The highest benzene level of 0.163 mg/kg was detected at a depth of 25-26'.

Soil samples were collected during the installation of monitor wells (MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8 and MW-9) at 60-61' BGS, immediately above the groundwater. The OVM readings ranged from 0 ppm to 5 ppm, except for MW-4 (60-61') which had an elevated OVM level of 671 ppm. Soil samples from monitor wells (MW-2, MW-3 and MW-4) were selected for analysis of TPH and BTEX. MW-2 and MW-3 showed levels below the method detection limits. A TPH (DRO) at 1,180 mg/kg and a total BTEX of 31.82 mg/kg with no benzene detected in MW-4 at 60-61' BGS. The impacted soil encountered in MW-4, immediately above the groundwater, appears to be from a secondary source in the area.

With the exception of area around MW-4, the impacted soil appears to be confined to the pit. Soil samples from boreholes BH-1, BH-2, BH-3, and BH-4, installed outside the pit, did not exceed the RRAL for TPH and BTEX. Total BTEX levels, which exceeded the RRAL of 50 ppm, were detected in BH-5 with a level of 63.55 mg/kg at 10-11' and 56.11 mg/kg at 25-26'. The benzene concentrations were below the method detection limit, except for one sample in BH-5 at 25-26'BGS of 0.163 mg/kg, This level is below the RRAL of 10 ppm. The proposed

RRAL for TPH (1000 ppm) was only exceeded in samples from borehole (BH-5). The highest TPH concentration reported in soil samples from BH-5 was 3,940 mg/kg (10-11'). The TPH level decreases to 1,709 mg/kg at 50-51' BGS.

The chloride analysis in boreholes (BH-1, BH-2, BH-3, and BH-4) showed levels ranging from 8.9 mg/kg to 210 mg/kg. The soil samples from BH-5, installed in the center of the pit, had a chloride level ranging from 13 mg/kg to 24 mg/kg. The chloride levels showed no impact to the subsurface soil.

5.2 Groundwater Sampling and Analysis

On November 5, 1998, monitor wells (MW-1, MW-2, MW-3 and MW-4) were sampled to evaluate groundwater qualities. On January 28, 1999, two additional monitor wells (MW-5 and MW-6) were sampled as well as monitor wells (MW-1, MW-2, MW-3 and MW-4). On March 25, 1999, three additional monitor wells (MW-7, MW-8 and MW-9) were sampled at the Site. The monitor wells were developed and purged by Scarborough Drilling, Inc. using a 10-foot long rig bailer. Prior to sampling, the wells were purged to remove a minimum of three casing volumes of groundwater. The purge water from the monitor wells were contained and disposed of in the Titan Central Tank Battery sump.

Groundwater samples from the monitor wells were collected using clean disposable bailers. The samples were transferred into labeled and preserved containers provided by the laboratory. The groundwater samples were analyzed for Polynuclear Aromatics Hydrocarbons (PAH) by method EPA SW 846-8270, 3510, Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) by method EPA SW 846 8020, Total Metals by method EPA SW 846-3015, 6010B, and 7470 and Major anions and cations by method EPA 150.1, 300.0, 353.3, 310.1, 160.1. The samples for total metals were field filtered to 0.45 micron using a dedicated disposable filter prior to preservation and shipment to the laboratory. The samples were shipped to Trace Analysis Inc. in Lubbock, Texas. Table 7 presents a summary of the TPH, BTEX and PAH analysis. Table 8 presents a summary of the dissolved metals analysis. Table 9 presents a summary of the anions and cations analysis. Appendix E

presents the laboratory reports. Figure 5 shows the contaminant distribution map. Figure 6 presents the isopleth map of benzene. Figure 7 presents the isopleth map of naphthalene.

Referring to Table 5, detectable benzene concentrations were found in MW-3 (0.102 mg/l), MW-4 (1.85 mg/l), MW-5 (2.73 mg/l) and MW-6 (2.58 mg/l), which are above the WQCC human health standard for benzene of 0.01 mg/l. Monitor well (MW-4) had toluene of 1.89 mg/l and xylene of 0.682 mg/l, above the WQCC human health standard of 0.62 mg/l. The March 25, 1999, sample analyses for MW-7, MW-8 and MW-9 did not show detectable levels of BTEX in MW-7 and MW-8, however, benzene of 0.104 mg/l and toluene of 0.002 mg/l were detected in MW-9. On April 14, 1999, monitor well (MW-9) was resampled and the BTEX levels were below the method detection limit. The first analysis for MW-9 appears to have been the result of induced laboratory error.

Naphthalene was detected in MW-2 (0.001 mg/l), MW-4 (0.002 mg/l), MW-5 (0.034 mg/l) and MW-6 (0.038 mg/l). MW-5 and MW-6 exceeded the WQCC standard for naphthalene of 0.03 mg/l. Figure 8 presents an isopleth map of naphthalene concentrations.

Referring to Table 6, barium was reported at 0.11 mg/L, 0.12 mg/l and 0.11 mg/l, in samples from wells MW-1, MW-4 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, the ions and cations parameter reported in the samples did not exceeded WQCC domestic water quality standards. Chloride was below the WQCC standard (250 mg/l) in groundwater from all wells.

Referring to Figures 5 and 6, it appears that two distinct groundwater contaminant plumes were observed at the Site. One plume is due to the impact from the pit and extends northeast from the pit. The groundwater impact from the pit has been defined and appears to be confined to the

immediate area downgradient of the pit.

The second plume is located in the area of MW-4 and MW-6, upgradient from the pit. Referring to aerial photographs and Figure 5, a former tank battery location was present at this location and may be the source of this plume. Based on the field observations during the installation of BH-4 and BH-6, the drill cuttings did not appear to reveal any impact in the subsurface soil. However, MW-4 did show detectable levels of BTEX and TPH (60-61') BGS immediately above the groundwater. Another suspected source for the groundwater plume may be the underground pipeline, operated by Texas New Mexico Pipeline Company, located south of MW-4 and MW-6.

6.0 CONCLUSIONS

1. The Ogallala aquifer underlies the northern part of Lea County, New Mexico. Groundwater in the Ogallala Formation generally is unconfined. The groundwater elevation in the vicinity of Lovington Paddock Unit is approximately 3750 feet above MSL. The saturated thickness of the Ogallala in the area is between 60 and 100 feet. Thickness is highly controlled by the configuration of the sub-Ogallala surface. A total of nine (9) monitor wells MW-1 through MW-9, were installed to a depth of approximately 77 feet. The regional groundwater flow is generally from the northwest to the southeast, however, the Site groundwater flow shows a southwest to northeast hydraulic gradient. (0.003 feet per foot).

2. A total of 90 cubic yards of oil sludge/soil material was removed from the abandoned pit and transported to Control Recovery, Inc. located in Hobbs, New Mexico for disposal. The sludge material is considered exempt oil field waste.

3. The February 2, 1949 aerial photograph shows the location of the pit and a tank battery south of the pit. The tank battery consists of two (2) tank pads with aboveground tanks or vessels.

4. Highlander conducted a review of the New Mexico State Engineer's files to locate water wells within a 1-mile radius of the Site. Sixteen (16) wells were found inside the 1-mile radius. The majority of the wells are located northwest and southeast (cross gradient) of the Site. Two (2) City of Lovington water wells are located northwest approximately 4,000 feet and 4,800 feet from the Site. Some of the wells were likely drilled during early development of the oil field and used as a source of water for the drilling rigs. The remaining wells appear to be domestic water wells and it is unlikely that impacts detected in groundwater at the Site will affect these wells. There were no downgradient receptors identified from the water well search.

5. Impacted soil, with the exception of the area around MW-4, appears to be confined to the pit. The boreholes (BH-1, BH-2, BH-3, and BH-4), installed outside the pit, did not exceed the RRAL for TPH and BTEX.

6. Soil samples from BH-5 had a total BTEX level, exceeding the RRAL of 50 ppm, of 63.55 mg/kg at 10-11' and 56.11 mg/kg at 25-26'. The benzene concentrations were below the method detection limit, except for one sample at 25-26' BGS of 0.163 mg/kg. This level is below the RRAL of 10 ppm. The highest TPH concentration was reported in BH-5 at 3,940 mg/kg (10-11') and decreased to 1,709 mg/kg at 50-51' BGS. These levels are above the proposed RRAL for TPH (1,000 ppm).

7. Soil samples taken during the drilling of MW-4 (60-61') showed an elevated OVM reading of 671 ppm. The sample (60-61') from MW-4 had a TPH (DRO) at 1,180 mg/kg and a total BTEX of 31.82 mg/kg, with no benzene detected in the soil. The impacted soil encountered in MW-4, situated immediately above the groundwater, appears to be from a secondary source in the area. This secondary source appears to be a former tank battery.

8. The soil chloride analyses of boreholes (BH-1, BH-2, BH-3, BH-4, and BH-5) showed levels ranging from 8.9 mg/kg to 210 mg/kg. The chloride levels showed little or no

impact to the subsurface soil.

9. Benzene was detected in the groundwater samples in MW-3 (0.102 mg/l), MW-4 (1.85 mg/l), MW-5 (2.73 mg/l) and MW-6 (2.58 mg/l), which are above the WQCC human health standard for benzene of 0.01 mg/l. Monitor well (MW-4) showed toluene of 1.89 mg/l and xylene of 0.682 mg/l, above the WQCC human health standard of 0.62 mg/l.

10. Naphthalene was detected in the groundwater samples in MW-2 (0.001 mg/l), MW-4 (0.002 mg/l), MW-5 (0.034 mg/l) and MW-6 (0.038 mg/l). MW-5 and MW-6 exceeded the WQCC standard for naphthalene of 0.03 mg/l.

11. Barium was reported at 0.11 mg/l, 0.12 mg/l and 0.11 mg/l, in samples from wells MW-1, MW-4 and MW-7, respectively. The samples were below the WQCC human health standard for barium of 1.0 mg/l. No other dissolved metal parameters were reported in the groundwater samples above the test method detection limits. The ions and cations reported in the samples did not exceeded WQCC domestic water quality standards. Chloride levels in the groundwater were below the WQCC standard (250 mg/l) in all the wells.

12. Two groundwater hydrocarbon plumes were observed at the Site. One plume is due to the impact from the pit and extends northeast from the pit. The groundwater impact from the pit has been defined and appears to be confined to the immediate area downgradient of the pit.

    The second plume is located in the area of MW-4 and MW-6, upgradient from the pit. Referring to aerial photographs and Figure 5, a former tank battery location was present at this location and may be the source of this plume. Based on field observations during the installation of BH-4 and BH-6, the drill cuttings did not reveal any apparent impact in the subsurface soil. However, MW-4 had detectable levels of BTEX and TPH at (60-61') BGS, immediately above the groundwater. Another suspected source for the groundwater

impact may be from an underground pipeline, operated by Texas New Mexico Pipeline Company, located south of MW-4 and MW-6. The pipeline company will be contacted to determine the product carried in this pipeline.

7.0 RECOMMENDATIONS AND REMEDIATION

1. The impacted soil encountered in the vicinity of BH-5 in the pit showed total BTEX and TPH levels above the guidelines for closure of unlined surface impoundments. These levels were found from the bottom of the pit to approximately 30' BGS. Titan proposes to cap the pit with a relative impermeable compacted liner consisting of approximately 2 feet of clay. The clay cap will be placed from the bottom of the pit up in six-inch lifts and compacted to 95 % proctor. A surface cover of topsoil will be placed over the cap and seeded with a range grass mixture.

2. Groundwater contaminant plume appears to be confined to the immediate area of the pit. Based on a review of records from the New Mexico State Engineer's office, there are no close identifiable groundwater receptors downgradient of the Site. Titan proposes to implement a groundwater recovery program to remediate the levels in the groundwater.

   The groundwater recovery system will consist of installing several recovery wells. However, the final determination regarding the number of recovery wells will be based on a pumping test, which will be performed following installation of the initial well. The initial well will be installed in the area of greatest concentration, near the pit. The well will be screened from the bottom of the borehole to approximately five (5) feet above groundwater. The well will be constructed with PVC casing and screen of sufficient diameter for installation of an electric submersible pump. The recovery well will be constructed in accordance with State of New Mexico construction standards. After the evaluation of the pump test data, a workplan will be submitted for the remediation of the groundwater.

TABLES

Table 1
Titan Exploration, Inc.
Lovington Paddock Unit -Pit
Waste Characterazation

TPH, Volatile Organic and Semi-Volatile Organics

Date Sampled: 6/18/98

Sample ID	TPH mg/kg Modified 8015	Volatile Organics mg/kg		Semi-Volatiles mg/kg
		Methylene chloride -	110	Not Detected
Lovington Paddock Unit Pit	7,390	Benzene -	56	
		Toluene -	130	
		Ethylbenzene -	160	
		m&p-Xylene -	100	
		o-Xylene -	42	
		Isopropylbenzene -	26	
		n-Propylbenzene -	43	
		1,3,5-Trimethylbenzene -	15	
		1,2,4-Trimethylbenzene -	55	
		sec-Butylbenzene -	12	
		n-Butylbenzene -	22	
		Naphthalene -	22	

Titan Exploration, Inc.
Lovington Paddock Unit

Table 2

Waste Characterization
Total Metals

Date Sampled: 6/18/98

Sample ID	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Silver (mg/kg)	Selenium (mg/kg)
Lovington Paddock Pit	<10	240	<2.0	<5.0	14	<0.25	<2.0	<10

Table 3: Summary of Drilling and Completion Details for Water Wells within 1-Mile
Titan Exploration Inc.,
Lovington PaddockUnit - Pit
Lea County, New Mexico

Highlander Well Number	Date Drilled	Owner	Legal Description	Drilled Depth, feet BGS 100	Screen Interval feet BGS
1	1968	McVay Drilling Co.	SE/4, NW/4, Sec. 12, T-175, R-36-E	110	68-110
2	1953	Not Given	SE/4NW/4, NE/4, NE/4 Sec 12, T-17-S, R-36-E	110	-
3	1985	Read and Stevens Inc.	NE/4, SW/4 Sec. 13, T-17-S, R-36-E	150	90-150
4	1953	Haynes and V.T. Drilling Co.	SE/4, SE/4, Sec. 2, T-17-S, R-36-E	90	-
5	1957	Jack Clayton	SE/4, NE/4, Sec. 2, T-17-S, R-36-E	75	-
6	1992	City of Lovington	NE/4, NW/4,NW/4, Sec. 1, T-17-S, R-36-E	232	82-232
7	1952	Lee Drilling Co.	NE/4, NW/4, Sec. 1, T-17-S, R-36-E	110	87-109
8	1963	Skelly Oil Co.	NE/4, NW/4, Sec. 1, T-17-S, R-36-E	182	55-178
9	1973	City of Lovington	NE/4, SW/4, NW/4, Sec. 1, T-17-S, R-36-E	225	170-220
10	1956	Jack Clayton	NW/4, NW/4, SW/4, Sec. 1, T-17-S, R-36-E	150	46-150
11	1963	Skelly Oil Co.	SW/4, NE/4, Sec. 1, T-17-S, R-36-E	192	55-190
12	1954	Oth H. Grimes	NE/4, NE/4, NE/4, Sec. 1, T-17-S, R-36-E	120	60-120
13	1955	Mrs. Chloe Stiles	SW/4, SW/4, SW/4, Sec. 1, T-17-S, R-36-E	72	-
14	1954	Lee Drilling Co.	Not Given	100	-
15	1972	Mattie Price	NW/4, NW/4, SE/4, Sec. 6, T-17-S, R-37-E	130	-
16	1966	J. Lynn Walker	40 acre center, SE/4, Sec. 6, T-17-S, R-37-E	120	60-120
17	1952	Simmons Drilling Co.	NW/4, NW/4, Sec. 7, T-17-S, R-37-E	120	60-112
18	1964	E.D. Shipp	N/2, NW/4, Sec. 7, T-17-S, R-37-E	110	-
19	1965	E.D. Shipp	NE/4, NW/4, Sec. 7, T-17-S, R-37-E	111	50-111
20	1961	E.D. Shipp	NE/4, NW/4, NE/4, Sec. 7, T-17-S, R-37-E	95	-
21	1960	Dan Shipp	NW/4, NW/4, NW/4, Sec. 7, T-17-S, R-37-E	150	-
22	1979	Bill Shipp	NW/4, NE/4, Sec. 7, T-17-S, R-37-E	128	70-128
23	1954	Otha H. Grimes	SW/4, SW/4, SW/4, Sec. 31, T-16-S, R-37-E	137	50-137
24	1997	BOC Gas	S/2, SE/4, SW/4, Sec. 31, T-16-S, R-37-E	248	50-248

Notes:

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

Table 4: Summary of Headspace Gas Analysis from Soil Samples, Lovington Paddock Unit - Pit, Titan Exploration, Inc., Eunice, New Mexico

Sample ID	Date Collected	Depth Interval, Feet BGL	OVM Reading, PPM	Comments
BH-1	6-29-98	5.0 – 6.0	4	Background - Soil: 0.0 ppm Air: 0.0 ppm
		10.0 - 11.0	4	
		15.0 - 16.0	4	
		20.0 – 21.0	4	
		25.0 - 26.0	3	
		30.0 – 31.0	1	
TD: 31'				
BH-2	6-30-98	5.0 – 6.0	2	Background - Soil: 0.0 ppm Air: 0.0 ppm
		10.0 – 11.0	2	
		15.0 – 16.0	17	
		20.0 – 21.0	6	
		25.0 - 26.0	7	
TD: 31'		30.0 – 31.0	3	
BH-3	7-1-98	5.0 – 6.0	0	Background - Soil: 0.0 ppm Air: 0.0 ppm
		10.0 – 11.0	0	
		15.0 – 16.0	3	
		20.0 – 21.0	2	
		25.0 - 26.0	1	
		30.0 – 31.0	2	
TD: 31'				

Notes:

1. BGL: Denotes sample depth in feet below ground level.
2. PPM: Denotes concentration of total ionizable hydrocarbons in parts per million

Table 4 (cont) : Summary of Headspace Gas Analysis from Soil Samples, Lovington Paddock Unit Pit, Titan Exploration, Inc., Eunice, New Mexico

Sample ID	Date Collected	Depth Interval, Feet BGL	OVM Reading, PPM	Comments
BH-4	7-1-98	5.0 – 6.0	1	Background - Soil: 0.0 ppm Air: 0.0 ppm
		10.0 - 11.0	0	
		15.0 - 16.0	1	
		20.0 – 21.0	1	
		25.0 - 26.0	0	
		30.0 – 31.0	0	
TD: 31'				
BH-5	6-30-98	5.0 – 6.0	520	Background - Soil: 0.0 ppm Air: 0.0 ppm
		10.0 – 11.0	550	
		15.0 – 16.0	388	
		20.0 – 21.0	500	
		25.0 – 26.0	550	
		30.0 – 31.0	240	
		35.0 – 36.0	350	
		40.0 – 41.0	350	
		45.0 – 46.0	490	
		50.0 – 51.0	560	
		60.0 – 61.0	115	
		70.0 – 71.0	1	
TD: 71'				

Notes:

1. BGL: Denotes sample depth in feet below ground level.
2. PPM: Denotes concentration of total ionizable hydrocarbons in parts per million

Table 4 (cont) : Summary of Headspace Gas Analysis from Soil Samples, Lovington Paddock Unit Pit, Titan Exploration, Inc., Eunice, New Mexico

Sample ID	Date Collected	Depth Interval, Feet BGL	OVM Reading, PPM	Comments
MW-2	10-1-98	60-61	0	Background - Soil: 0.0 ppm Air: 0.0 ppm
MW-3	10-1-98	60-61	3	
MW-4	10-2-98	60-61	671	
MW-5	1-27-98	60-61	5	
MW-6	1-27-99	60-61	4	
MW-7	3-24-99	60-61	3	
MW-8	3-24-99	60-61	0	
MW-9	3-24-99	60-61	5	

Titan Exploration, Inc.
Lovington Paddock Unit

TABLE 5

Soil Samples
TPH, BTEX and Chloride

Sample ID	Date Sampled	Depth	TPH GRO (mg/kg)	TPH DRO (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
BH-1	6/29/98	10-11'	-	-	-	-	-	-		190
BH-1	6/29/98	20-21'	12.1	<50	<0.050	0.057	<0.050	<0.050	0.057	140
BH-1	6/29/98	30-31'	12	<50	<0.050	<0.050	<0.050	<0.050	<0.050	210
BH-2	6/29/98	10-11'	-	-	-	-	-	-		16
BH-2	6/29/98	15-16'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	<0.050	14
BH-2	6/29/98	30-31'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	<0.050	17
BH-3	6/30/98	10-11'	-	-	-	-	-	-		8.9
BH-3	6/30/98	15-16'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	<0.050	14
BH-3	6/30/98	30-31'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	<0.050	12
BH-4	6/30/98	10-11'	-	-	-	-	-	-		13
BH-4	6/30/98	15-16'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	<0.050	10
BH-4	6/30/98	30-31'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	<0.050	13
BH-5	8/17/98	10-11'	397	3,940	<0.050	3.57	0.189	59.8	63.56	13
BH-5	8/17/98	25-26'	182	1,840	0.167	6.24	21.3	28.4	56.1	24
BH-5	8/17/98	40-41'	274	2,080	<0.100	1.63	7.76	17.8	27.19	12
BH-5	8/17/98	50-51'	10.1	1,709	<0.100	<0.100	<0.100	<0.100	<0.100	13
MW-2	10/1/98	60-61'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	<0.050	-
MW-3	10/1/98	60-61'	<5.00	<50	<0.050	<0.050	<0.050	<0.050	<0.050	-
MW-4	10/1/98	60-61'	20.5	1,180	<0.050	1.52	4.70	25.6	31.82	-

Table 6: Summary of Monitor Well Drilling and Completion Details
Titan Exploration, Inc.,
Lovington Paddock/San Andres Unit, ATB 1-1, Pit
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	10/1/98	75.0	3814.96	3817.26	55-75	65.86
MW-2	10/1/98	76.0	3813.91	3816.07	56-76	64.75
MW-3	10/1/98	75.0	3815.32	3817.41	55-75	65.83
MW-4	10/2/98	75.0	3814.64	3816.84	55-75	64.91
MW-5	1/27/99	77	3814.67	3816.23	57-77	65.24
MW-6	1/27/99	77	3814.25	3817.51	57-77	65.36
MW-7	3/24/99	77	3813.94	3816.25	57-77	63.28
MW-8	3/24/99	77	3814.12	3816.38	57-77	66.09
MW-9	3/24/99	77	3813.32	3815.69	57-77	65.55

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 collected on 3/29/99

TABLE 7
Titan Exploration & Production Inc.
Lovington Paddock Unit
Lea County, New Mexico

Groundwater Sample Results
TPH, BTEX and PAH

Sample ID	Date Sample	TPH (mg/l)		B	T	E	X	PAH
		DRO	GRO	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
MW-1	11/5/98	-	-	<0.001	<0.001	<0.001	<0.001	Not Detected
MW-2	11/5/98	-	-	<0.001	<0.001	<0.001	<0.001	Naphthalene - 0.001
MW-3	11/5/98	-	-	0.147	<0.001	<0.001	<0.001	Not Detected
MW-4	11/5/98	-	-	0.882	0.808	0.085	0.214	Naphthalene - 0.002
MW-1	1/28/99	<5	<0.100	<0.001	<0.001	<0.001	0.001	-
MW-2	1/28/99	<5	<0.100	<0.001	<0.001	<0.001	<0.001	-
MW-3	1/28/99	<5	<0.100	0.102	<0.001	<0.001	<0.001	-
MW-4	1/28/99	<5	8.07	1.85	1.89	0.123	0.682	-
MW-5	1/28/99	<5	5.18	2.73	0.001	0.002	0.12	Naphthalene - 0.034
MW-6	1/28/99	<5	5.38	2.58	0.003	0.39	0.108	Naphthalene - 0.038
MW-7	3/25/99	<5	<0.100	<0.001	<0.001	<0.001	<0.001	Not Detected
MW-8	3/25/99	<5	<0.100	<0.001	<0.001	<0.001	<0.01	Not Detected
MW-9	3/25/99	<5	0.155	0.104	<0.001	<0.001	0.002	Not Detected
MW-9	4/14/99	<5	<0.100	<0.001	<0.001	<0.001	<0.001	-

TABLE 8
Titan Exploration Inc.
Lovington Paddock Unit
Lea County, New Mexico

Total Metals

Sample ID	Date Sampled	Arsenic (mg/L)	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Lead (mg/L)	Mercury (mg/L)	Silver (mg/L)	Selenium (mg/L)
MW-1	11/5/98	<0.10	0.11	<0.02	<0.05	<0.10	<0.0010	<0.05	<0.10
MW-2	11/5/98	<0.10	<0.10	<0.02	<0.05	<0.10	<0.0010	<0.05	<0.10
MW-3	11/5/98	<0.10	<0.10	<0.02	<0.05	<0.10	<0.0010	<0.05	<0.10
MW-4	11/5/98	<0.10	0.12	<0.02	<0.05	<0.10	<0.0010	<0.05	<0.10
MW-5	1/28/99	<0.10	<1.0	<0.01	<0.05	<0.05	<0.0010	<0.05	<0.05
MW-6	1/28/99	<0.10	<1.0	<0.01	<0.05	<0.05	<0.0010	<0.05	<0.05
MW-7	3/25/99	<0.10	0.11	<0.02	<0.05	<0.10	<0.0002	<0.05	<0.10
MW-8	3/25/99	<0.10	<0.10	<0.02	<0.05	<0.10	<0.0002	<0.05	<0.10
MW-9	3/25/99	<0.10	<0.10	<0.02	<0.05	<0.10	<0.0002	<0.05	<0.10

Table 9
Titan Exploration, Inc
Lovington Paddock Unit
Lea County, New Mexico

Major Ions

Sample ID	Date Sampled	Potassium (mg/l)	Magnesium (mg/l)	Calcium mg/l)	Sodium (mg/l)	Chloride (mg/l)	Hardness (mg/l)	Sulfate (mg/l)	Alkalinity (mg/l)	Nitrate (mg/l)	TDS (mg/l)	pH (mg/l)
MW-1	11/5/98	2.6	10	93	39	77	273	59	<1.00/180	1.1	450	7.3
MW-2	11/5/98	2.1	6.1	57	48	22	167	45	<1.00/210	0.99	360	7.2
MW-3	11/5/98	2.0	9.2	78	30	33	233	38	<1.00/210	0.53	380	7.3
MW-4	11/5/98	2.0	14	108	15	71	327	25	<1.00/220	1.2	490	7.3
MW-5	1/28/99	4.9	13	98	269	150	300	78	<1.00/600	3.4	950	7.6
MW-6	1/28/99	3.0	24	166	24	42	510	30	<1.00/500	3.2	590	7.4
MW-7	3/25/99	4.9	10	76	23	28	272	35	0/174	2.7	340	7.8
MW-8	3/25/99	2.3	10	74	43	23	226	80	0/170	3.3	390	7.7
MW-9	3/25/99	2.8	15	109	46	95	334	70	0/188	4.8	540	7.8

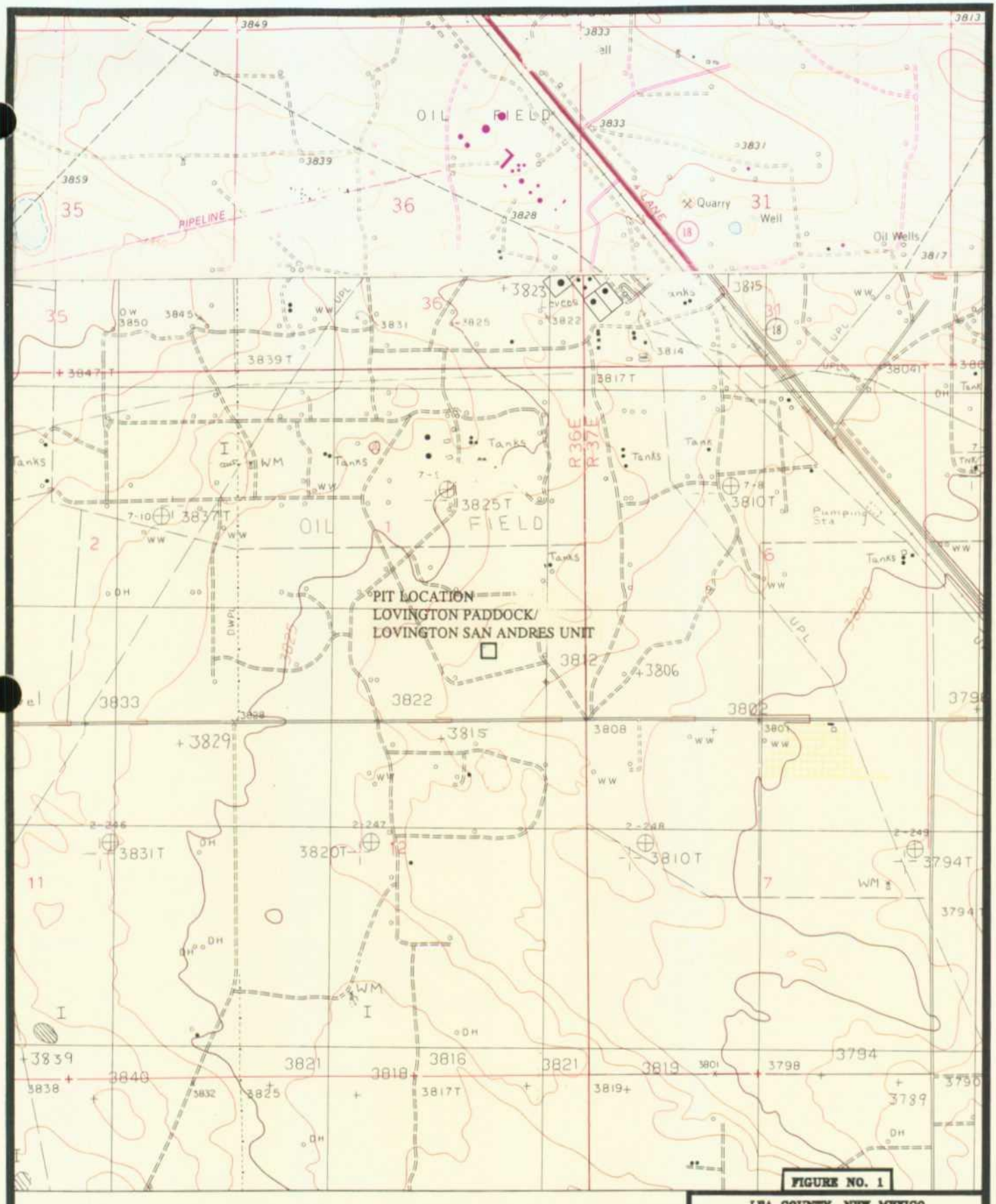


FIGURE NO. 1

LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

TOPOGRAPHIC MAP

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

TAKEN FROM U.S.G.S.
LOVINGTON, LOVINGTON SE
NEW MEXICO
7.5' QUADRANGLE

N

LEGEND

☐ TANK BATTERY

SCALE: 1"=2000'

MW-8

MW-9

MW-1

MW-5

BH-3

BH-4

BH-2

Pit
BH-5

BH-1

Fence

MW-2

MW-3

N

MW-6

FORMER
TANK PAD

FORMER
TANK PAD

MW-4

TEXAS-NEW MEXICO PIPELINE

MW-7

GRAPHIC SCALE IN FEET

0 50 100 150

LEGEND

BH-1 — BOREHOLE LOCATION

MW-2 — MONITOR WELL LOCATION

APPROXIMATE LOCATION OF FORMER TANK BATTERY (TANK PADS)

FIGURE NO. 2

LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

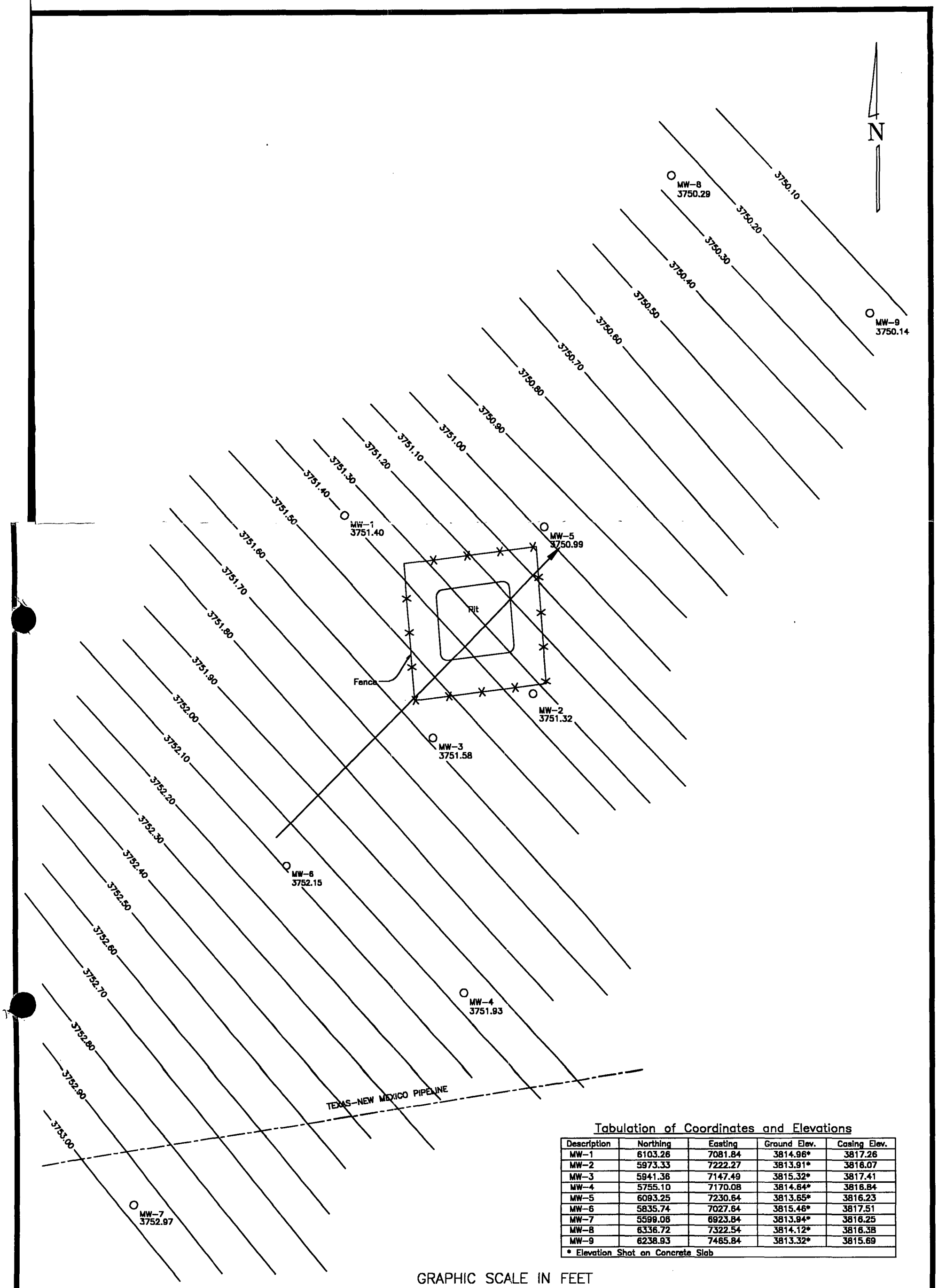
LOVINGTON PADDOCK
SITE PLAN

DATE: 4/19/99

NAME: JDA

FILE: C:\TITAN\1065\SITE-PLAN-2

HIGHLANDER ENVIRONMENTAL CORP.



Tabulation of Coordinates and Elevations

Description	Northing	Easting	Ground Elev.	Casing Elev.
MW-1	6103.26	7081.84	3814.96*	3817.26
MW-2	5973.33	7222.27	3813.91*	3816.07
MW-3	5941.36	7147.49	3815.32*	3817.41
MW-4	5755.10	7170.08	3814.64*	3816.84
MW-5	6093.25	7230.64	3813.65*	3816.23
MW-6	5835.74	7027.64	3815.46*	3817.51
MW-7	5599.06	6923.84	3813.94*	3816.25
MW-8	6336.72	7322.54	3814.12*	3816.38
MW-9	6238.93	7465.84	3813.32*	3815.69

* Elevation Shot on Concrete Slab

GRAPHIC SCALE IN FEET

0 50 100 150

LEGEND

MW-1 / 3751.40 — MONITOR WELL LOCATION

3753.00 — CONTOUR OF GROUNDWATER 1-26-99/4-14-99

DIRECTION OF FLOW

FIGURE NO. 3

LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

LOVINGTON PADDOCK
GROUNDWATER TABLE MAP

HIGHLANDER ENVIRONMENTAL CORP.

DATE: 4/23/99
NAME: JDA
FILE: C:\TITAN\1085 GROUND

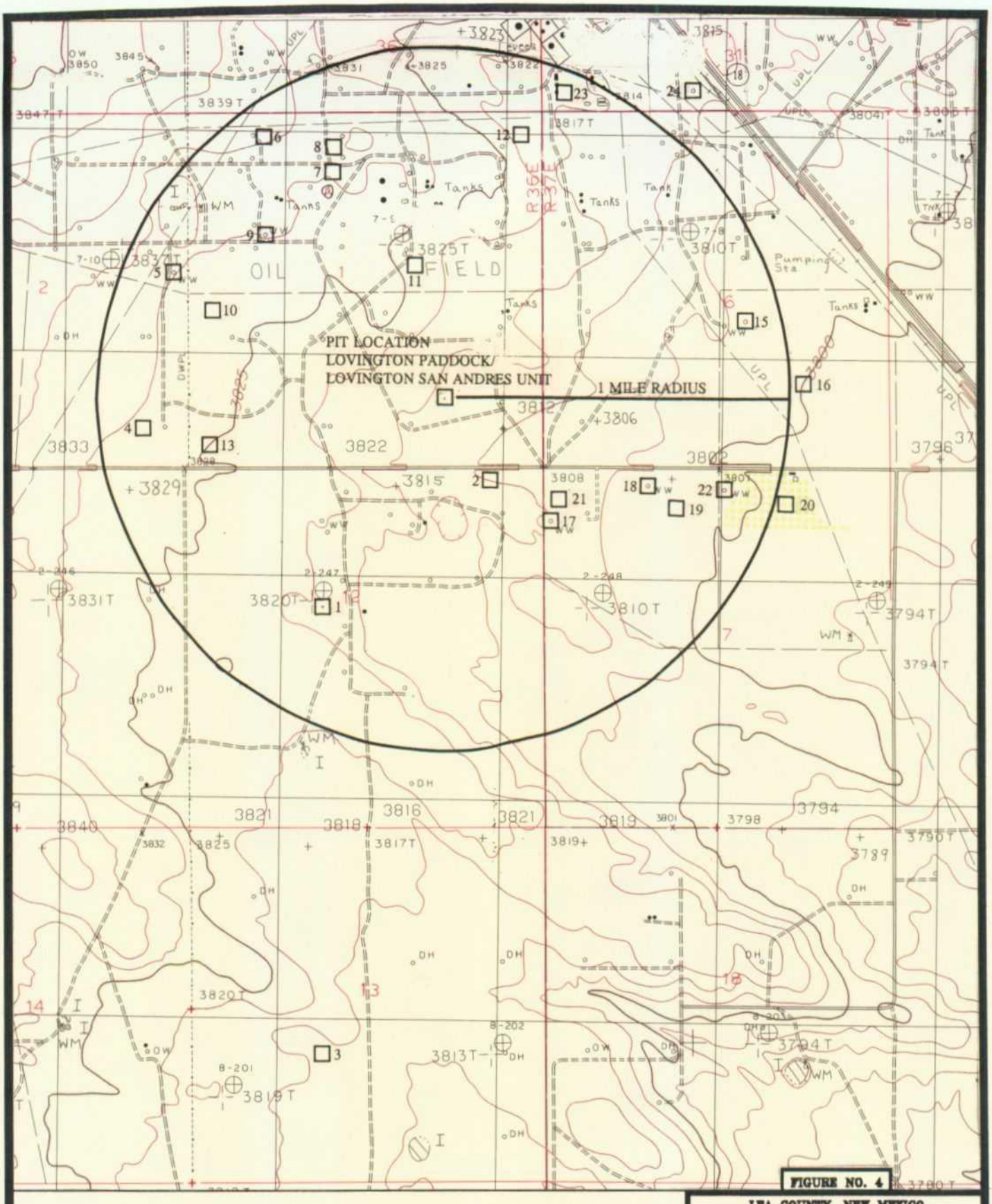


FIGURE NO. 4

LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

WATER WELL INVENTORY MAP

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

TAKEN FROM U.S.G.S.
LOVINGTON SE, NM
7.5' QUADRANGLE

LEGEND

☐ WELL LOCATION

SCALE: 1"=2000'

B–<0.001
T–<0.001
E–<0.001
X–<0.001
NAPHTHALENE–ND
MW–8

B–<0.001
T–<0.001
E–<0.001
X–<0.001
NAPHTHALENE–ND
MW–9

B–<0.001
T–<0.001
E–<0.001
X–<0.001
NAPHTHALENE–ND
MW–1

B–2.73
T–0.001
E–0.002
X–0.12
NAPHTHALENE–0.034
MW–5

N

Pit

Fence

B–<0.001
T–<0.001
E–<0.001
X–<0.001
NAPHTHALENE–0.001
MW–2

B–0.102
T–<0.01
E–<0.01
X–<0.01
NAPHTHALENE–ND
MW–3

B–2.58
T–0.003
E–0.39
X–0.108
NAPHTHALENE–0.038
MW–6

B–1.85
T–1.89
E–0.123
X–0.682
NAPHTHALENE–0.002
MW–4

TEXAS–NEW MEXICO PIPELINE

B–<0.001
T–<0.001
E–<0.001
X–<0.001
NAPHTHALENE–ND
MW–7

GRAPHIC SCALE IN FEET

0 50 100 150

LEGEND

MW–1 MONITOR WELL LOCATION

CONCENTRATIONS (mg/L)

B = BENZENE
T = TOLUENE
E = ETHYL BENZENE
X = TOTAL XYLENE

NAPHTHALENE–ND = NOT DETECTED

FIGURE NO. 5

LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

LOVINGTON PADDOCK
CONTAMINANT CONCENTRATION
DISTRIBUTION MAP

HIGHLANDER ENVIRONMENTAL CORP.

DATE: 4/23/99
NAME: JDA
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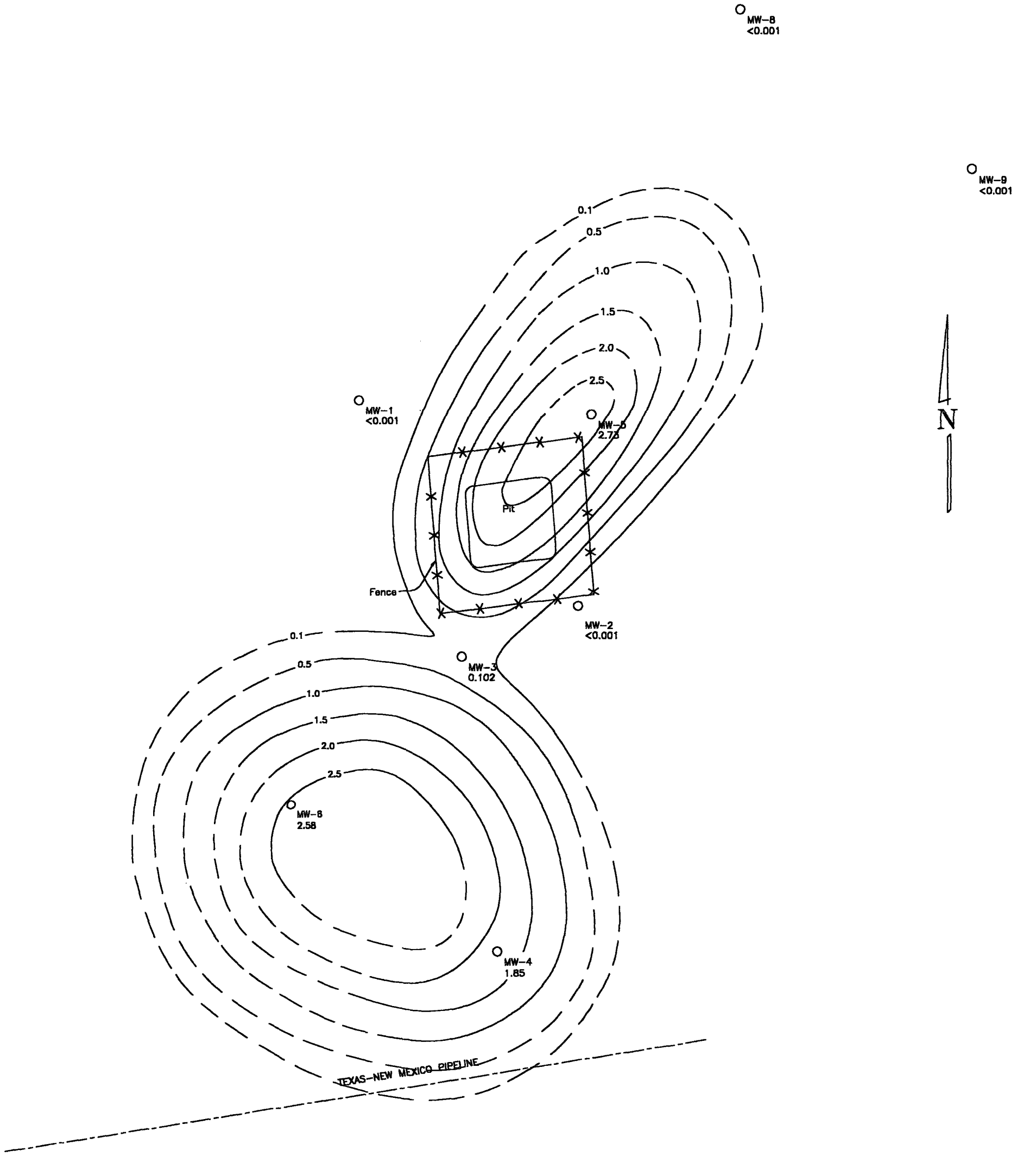


LEGEND

MW-1 ○ 2.73 — MONITOR WELL LOCATION AND BENZENE CONCENTRATION IN GROUNDWATER, 1-28-99/4-14-99

—2.0— CONTOUR OF BENZENE IN GROUNDWATER (mg/L) 1-28-99/4-14-99

FIGURE NO. 6

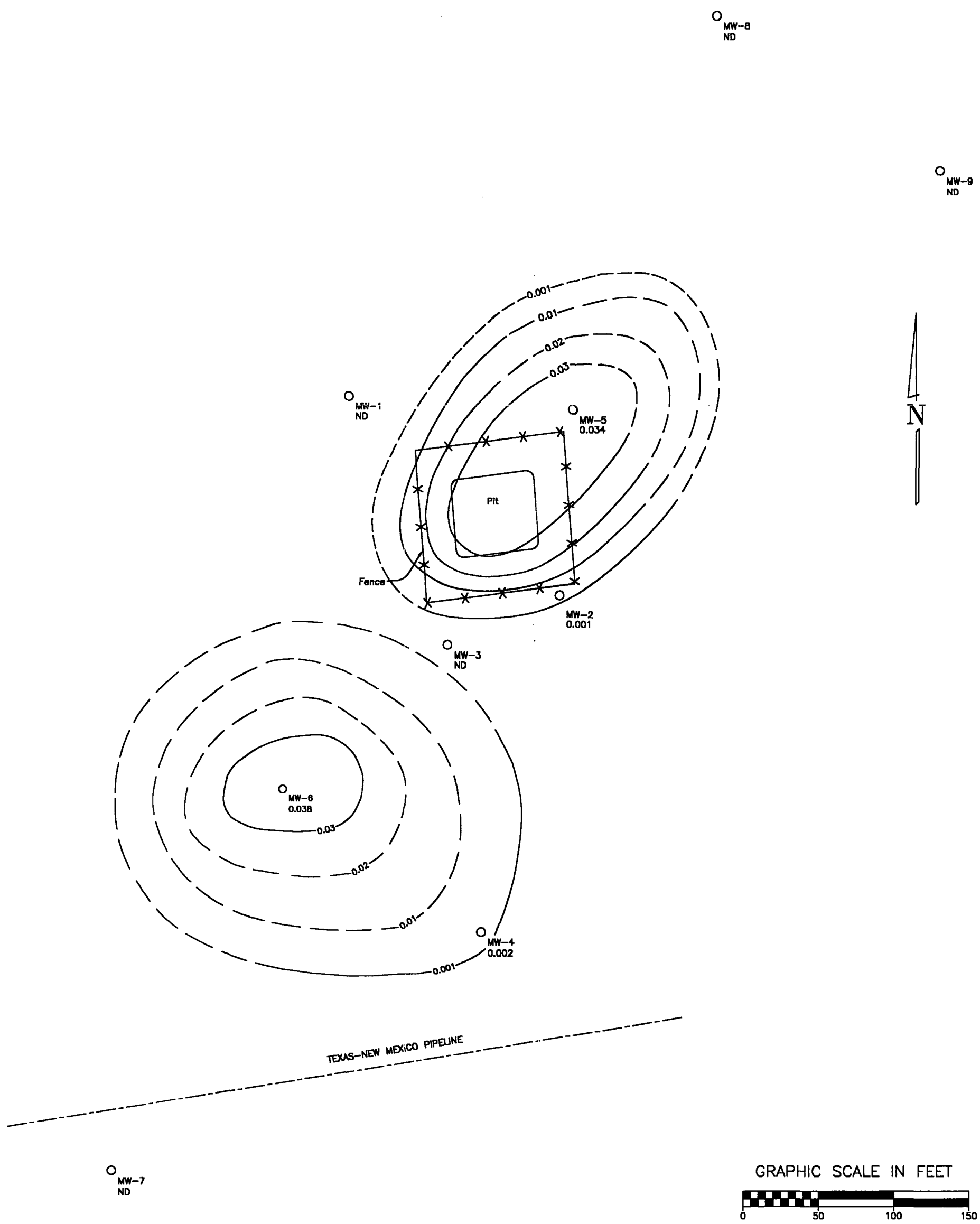
LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

LOVINGTON PADDOCK
ISOPLETH MAP OF BENZENE
(CONCENTRATION IN GROUNDWATER)

DATE: 4/23/99
NAME: JDA
FILE: C:\TITAN\1085\BENZENE

HIGHLANDER ENVIRONMENTAL CORP.



LEGEND

MW-1 ○ 0.038	MONITOR WELL LOCATION AND NAPHTHENE CONCENTRATION IN GROUNDWATER, 1-28-99/4-14-99
—2.0—	CONTOUR OF NAPHTHALENE IN GROUNDWATER, (mg/L) 1-28-99/4-14-99
ND	NOT DETECTED

FIGURE NO. 7

LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

LOVINGTON PADDOCK
ISOPLETH MAP OF NAPHTHALENE
(CONCENTRATION IN GROUNDWATER)

HIGHLANDER ENVIRONMENTAL CORP.

DATE: 4/19/99
NAME: JDA
FILE: C:\TITAN\1085\NAPHTHALENE

APPENDIX A

Manifest

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: ______

Address: ______

COMPANY/GENERATOR:: Titan Exploration

LEASE NAME: Lovington Paddock San Andres Unit R-1478(-)

TRUCKING COMPANY: Texas Lease Works | TIME: 10:35 (AM) - PM

DATE: 7-30-98 | VEHICLE No.: | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS [ ] TANK BOTTOMS [ ] EXEMPT FLUIDS
[ ] COMPLETION FLUIDS [ ] GAS PLANT WASTE [ ] C-117 No.:
[X] CONTAMINATED SOIL [ ] OTHER MATERIAL [ ] Pit No.: OCD

DESCRIPTION

Mon Pot #2

#1

VOLUME OF MATERIAL [ ] BBLS. ______ [X] YARD 12 : [ ] GALLONS ______

[ ] WASH OUT [ ] CALL OUT [ ] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: [signature]
(SIGNATURE)

CRI REPRESENTATIVE: [signature]
(SIGNATURE)

TANK NO.

OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.
1ST GAUGE			
2ND GAUGE			
MEASURE RECEIVED			
BS& W	%		
FREE WATER		BBLS.	

DEDUCTIONS	
NET BBLS.	

05-98-500-4pt.-#27501

№ 27S18

White - CRI Canary - CRI Accounting Pink - CRI Plant Gold - Transporter

NON-HAZARDOUS WASTE MANIFEST

#1

PART I: Generator Titan Exploration Inc.
Address 500 W. Texas, Suite 500 (915) 682-6612
City/State Midland, Texas 79701 Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico Permit No. _____

Property Name (1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
(2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES
RCRA Exempt - Soil/Sludge 12 yds

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

Tom Ward agent for Titan Explorati — 7-30-98
Signature of Generator's Authorized Agent — Date and time of Shipment

PART II: TRANSPORTER: (To be completed in full by Transporter)

Name Texas Lease Works (915)580-0508
Address I-20 West Co Rd. Telephone No.
City/State Odessa TX. 526
Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

J.B. Rosario Reyes — 7-30-98
Signature of Transporter's Agent — Date and time of Received

PART III: DISPOSAL OR RECLAMATION SITE:

Name Controlled Recovery, Inc. (505)393-1079
Address P.O. Box 388 Telephone No.
City/State Hobbs, NM 88241

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

_____ 7-30-98 10:35 am
Signature of Facility Agent — Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: ______________________

Address: ______________________

COMPANY/GENERATOR:: Titan Resources

LEASE NAME: Livingston Paddock San Andres Unit Pit ATD-1

TRUCKING COMPANY: Texas Cross Works | TIME: 10:35 (AM) PM

DATE: 7-30-98 | VEHICLE No.: | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS [ ] TANK BOTTOMS [ ] EXEMPT FLUIDS
[ ] COMPLETION FLUIDS [ ] GAS PLANT WASTE [ ] C-117 No.: ________
[X] CONTAMINATED SOIL [ ] OTHER MATERIAL [ ] Pit No.: ________

DESCRIPTION

Manifest # 2

VOLUME OF MATERIAL [ ] BBLS. ________ : [X] YARD 12 : [ ] GALLONS ________

[ ] WASH OUT [ ] CALL OUT [ ] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: Manuel M. Ortega
(SIGNATURE)

CRI REPRESENTATIVE: [signature]
(SIGNATURE)

TANK NO. OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.	DEDUCTIONS	
1ST GAUGE				NET BBLS.	
2ND GAUGE					
MEASURE RECEIVED					
BS& W	%				
FREE WATER		BBLS.			

05-98-500-4pt.-#27501

№ 027617

White - CRI Canary - CRI Accounting Pink - CRI Plant Gold - Transporter

#2

NON-HAZARDOUS WASTE MANIFEST

PART I: Generator Titan Exploration Inc.
Address 500 W. Texas, Suite 500
City/State Midland, Texas 79701
(915) 682-6612
Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico
Permit No. ____

Property Name ✓ (1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
___ (2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)

Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES

RCRA Exempt - Soil/Sludge 12 yds

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

[signature] agent for Titan Exploration — 7-30-98
Signature of Generator's Authorized Agent — Date and time of Shipment

PART II: TRANSPORTER: (To be completed in full by Transporter)

Name Texas lease works
Address I 20 west Co. Rd
City/State Odessa TX
915-580-0508
Telephone No.
520
Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

J.B. [signature] — 7-30-98
Signature of Transporter's Agent — Date and time of Received

PART III: DISPOSAL OR RECLAMATION SITE:

Name Controlled Recovery, Inc.
Address P.O. Box 388
City/State Hobbs, NM 88241
(505)393-1079
Telephone No.

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

[signature] — 7-30-98 10:35 a.m.
Signature of Facility Agent — Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: _____

Address: _____

COMPANY/GENERATOR:: Titan Resources

LEASE NAME: Lovington Paddock San Andres Unit #T-ATD-1

TRUCKING COMPANY: Texas Legas Works | TIME: 1:15 AM (PM)

DATE: 7-30-78 | VEHICLE No.: 520 | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS	[ ] TANK BOTTOMS	[ ] EXEMPT FLUIDS
[ ] COMPLETION FLUIDS	[ ] GAS PLANT WASTE	[ ] C-117 No.: _____
[X] CONTAMINATED SOIL	[ ] OTHER MATERIAL	[X] Pit No.: OCD

DESCRIPTION

Manifest #3

VOLUME OF MATERIAL [ ] BBLS. _____ : [X] YARD 12 : [ ] GALLONS _____

[ ] WASH OUT [ ] CALL OUT [ ] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: _____
(SIGNATURE)

CRI REPRESENTATIVE: _____
(SIGNATURE)

TANK NO. OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.	DEDUCTIONS	
1ST GAUGE				NET BBLS.	
ND GAUGE					
MEASURE RECEIVED					
BS& W	%				
FREE WATER		BBLS.			

05-98-500-4pt.-#27501

Nº 027619

White - CRI Canary - CRI Accounting Pink - CRI Plant Gold - Transporter

NON-HAZARDOUS WASTE MANIFEST

#3

PART I: Generator: Titan Exploration Inc.
Address: 500 W. Texas, Suite 500
City/State: Midland, Texas 79701

(915) 682-6612
Telephone No.

ORGINATION OF WASTE:

Operations Center: Titan Exploration/Lovington Unit, Lea County, New Mexico

Permit No. ____________

Property Name ✓ (1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
___(2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES

RCRA Exempt - Soil/Sludge 12 yds

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

[signature] agent for Titan Exploration — 7-30-98
Signature of Generator's Authorized Agent — Date and time of Shipment

PART II: TRANSPORTER: (To be completed in full by Transporter)

Name: Texas lease works
Address: I 20 west Co. Rd.
City/State: Odessa Tx.

Telephone No.: ____________
Truck No.: 520

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

J.B. [signature] — 7-30-98
Signature of Transporter's Agent — Date and time of Received

PART III: DISPOSAL OR RECLAMATION SITE:
Name: Controlled Recovery, Inc.
Address: P.O. Box 388
City/State: Hobbs, NM 88241

(505)393-1079
Telephone No.

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

[signature] — 7-30-98 1:15 PM
Signature of Facility Agent — Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: _____

Address: _____

COMPANY/GENERATOR:: Titan Resources

LEASE NAME: Covington Paddock Sand Dunes Unit Lit-d TR-1-1

TRUCKING COMPANY: Titus Lease work. | TIME: 1:20 AM (PM)

DATE: 1-30-98 | VEHICLE No.: 526 | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS	[ ] TANK BOTTOMS	[ ] EXEMPT FLUIDS
[ ] COMPLETION FLUIDS	[ ] GAS PLANT WASTE	[ ] C-117 No.: _____
[X] CONTAMINATED SOIL	[ ] OTHER MATERIAL	[X] Pit No.: OCD

DESCRIPTION

Manifest #4

VOLUME OF MATERIAL [ ] BBLS. _____ : [X] YARD 12 : [ ] GALLONS _____

[ ] WASH OUT [ ] CALL OUT [ ] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: _____
(SIGNATURE)

CRI REPRESENTATIVE: _____
(SIGNATURE)

TANK NO. OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.	DEDUCTIONS	
1ST GAUGE				NET BBLS.	
2ND GAUGE					
MEASURE RECEIVED					
BS& W	%				
FREE WATER		BBLS.			

05-98-500-4pt.-#27501

Nº 027620

White - CRI Canary - CRI Accounting Pink - CRI Plant Gold - Transporter

#4

NON-HAZARDOUS WASTE MANIFEST

PART I: Generator Titan Exploration Inc.
Address 500 W. Texas, Suite 500
City/State Midland, Texas 79701

(915) 682-6612
Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico

Permit No. ________

Property Name ✓(1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
___(2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES
RCRA Exempt - Soil/Sludge 12 yd3

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

[signature] Titan Exploration — 7-30-98
Signature of Generator's Authorized Agent — Date and time of Shipment

PART II: TRANSPORTER: (To be completed in full by Transporter)

Name Texas Lease Works
Address I 20 West Co Rd.
City/State Odessa TX

Telephone No.
326
Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

JIB- Rosario [signature] — 7-30-98
Signature of Transporter's Agent — Date and time of Received

PART III: DISPOSAL OR RECLAMATION SITE:
Name Controlled Recovery, Inc.
Address P.O. Box 388
City/State Hobbs, NM 88241

(505)393-1079
Telephone No.

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

[signature] — 7-30-98 1:20 PM
Signature of Facility Agent — Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: _____

Address: _____

COMPANY/GENERATOR:: Titan Exploration Inc

LEASE NAME: Lovington Paddock / San Andres Unit Pit ATB 1-1

TRUCKING COMPANY: Texas Lease Works | TIME: 400 AM (PM)

DATE: 7 30 98 | VEHICLE No.: 520 | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS	[ ] TANK BOTTOMS	[ ] EXEMPT FLUIDS
[ ] COMPLETION FLUIDS	[ ] GAS PLANT WASTE	[ ] C-117 No.: _____
[X] CONTAMINATED SOIL	[ ] OTHER MATERIAL	[X] Pit No.: OCD

DESCRIPTION

#5

VOLUME OF MATERIAL [ ] BBLS. _____ : [X] YARD 12 : [ ] GALLONS _____

[ ] WASH OUT [ ] CALL OUT [ ] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: _____
(SIGNATURE)

CRI REPRESENTATIVE: _____
(SIGNATURE)

TANK NO. OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.	DEDUCTIONS	
1ST GAUGE				NET BBLS.	
2ND GAUGE					
MEASURE RECEIVED					
BS& W	%				
FREE WATER		BBLS.			

05-98-500-4pt.-#27501

Nº 027622

White - CRI Canary - CRI Accounting Pink - CRI Plant Gold - Transporter

#5

NON-HAZARDOUS WASTE MANIFEST

PART I: Generator Titan Exploration Inc.
Address 500 W. Texas, Suite 500 (915) 682-6612
City/State Midland, Texas 79701 Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico Permit No. _____

Property Name ✓ (1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
(2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES
RCRA Exempt - Soil/Sludge 12 yds

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

Lynn C Ward agent for Titan Exploration 7-30-'98
Signature of Generator's Authorized Agent Date and time of Shipment

PART II: TRANSPORTER: (To be completed in full by Transporter)

Name Texas Lease Works 915-580-0508
Address I 20 West Co. Rd. Telephone No.
City/State Odessa TX 520
Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

J.B. Maxwell Rose 7-30-98
Signature of Transporter's Agent Date and time of Received

PART III: DISPOSAL OR RECLAMATION SITE:

Name Controlled Recovery, Inc. (505)393-1079
Address P.O. Box 388 Telephone No.
City/State Hobbs, NM 88241

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

Signature of Facility Agent 7-30-98 4:00 P
Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: _____

Address: _____

COMPANY/GENERATOR:: Titan Exploration Inc

LEASE NAME: Lovington Paddock / San Andres Unit Pit ATB 1-1

TRUCKING COMPANY: Texas Lease Works | TIME: 400 AM - PM

DATE: 7 30 98 | VEHICLE No.: 526 | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS	[ ] TANK BOTTOMS	[ ] EXEMPT FLUIDS
[ ] COMPLETION FLUIDS	[ ] GAS PLANT WASTE	[ ] C-117 No.: _____
[X] CONTAMINATED SOIL	[ ] OTHER MATERIAL	[X] Pit No.: 20

DESCRIPTION

#6

VOLUME OF MATERIAL [ ] BBLS. _____ : [X] YARD 12 : [ ] GALLONS _____

[ ] WASH OUT [ ] CALL OUT [X] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: Rosario F Rojas
(SIGNATURE)

CRI REPRESENTATIVE: _____
(SIGNATURE)

TANK NO. OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.	DEDUCTIONS	
1ST GAUGE				NET BBLS.	
2ND GAUGE					
MEASURE RECEIVED					
BS& W	%				
FREE WATER		BBLS.			

05-98-500-4pt.-#27501

Nº 027623

White - CRI Canary - CRI Accounting Pink - CRI Plant Gold - Transporter

#6

NON-HAZARDOUS WASTE MANIFEST

PART I: Generator Titan Exploration Inc.
Address 500 W. Texas, Suite 500
City/State Midland, Texas 79701

(915) 682-6612
Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico

Permit No. ______

Property Name (1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
(2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)

Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	x	Other Material		Pit No.	

DESCRIPTION / NOTES

RCRA Exempt - Soil/Sludge 12 yds

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

[signature] for Titan Exploration — 7-30-98
Signature of Generator's Authorized Agent — Date and time of Shipment

PART II: TRANSPORTER: (To be completed in full by Transporter)

Name Texas [illegible] works
Address [illegible] West Co
City/State Odessa TX

915-580-0505
Telephone No.

526
Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

J.B. [signature] — 7-30-98
Signature of Transporter's Agent — Date and time of Received

PART III: DISPOSAL OR RECLAMATION SITE:

Name Controlled Recovery, Inc.
Address P.O. Box 388
City/State Hobbs, NM 88241

(505)393-1079
Telephone No.

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

[signature] — 73098 400P
Signature of Facility Agent — Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: _____

Address: _____

COMPANY/GENERATOR:: Titan Exploration Inc

LEASE NAME: Lovington Paddock/San Andres Unit Pit ATB 1-1

TRUCKING COMPANY: Texas Lease Works | TIME: 835 (AM) - PM

DATE: 7 31 98 | VEHICLE No.: 520 | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS	[ ] TANK BOTTOMS	[ ] EXEMPT FLUIDS
[ ] COMPLETION FLUIDS	[ ] GAS PLANT WASTE	[ ] C-117 No.: _____
[X] CONTAMINATED SOIL	[ ] OTHER MATERIAL	[X] Pit No.: OCD

DESCRIPTION

#7

VOLUME OF MATERIAL [ ] BBLS. _____ : [X] YARD 12 : [ ] GALLONS _____

[ ] WASH OUT [ ] CALL OUT [ ] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: Jamie Garcia
(SIGNATURE)

CRI REPRESENTATIVE: _____
(SIGNATURE)

TANK NO. OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.	DEDUCTIONS	
1ST GAUGE				NET BBLS.	
2ND GAUGE					
MEASURE RECEIVED					
BS& W	%				
FREE WATER		BBLS.			

05-98-500-4pt.-#27501

Nº 027624

White - CRI Canary - CRI Accounting Pink - CRI Plant Gold - Transporter

#7

NON-HAZARDOUS WASTE MANIFEST

PART I: **Generator** Titan Exploration Inc.
Address 500 W. Texas, Suite 500 (915) 682-6612
City/State Midland, Texas 79701 Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico **Permit No.** _____

Property Name √ (1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
___ (2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES	
RCRA Exempt - Soil/Sludge	12yd3

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

Tom C Ward agent for Titan Exploration — 7-31-98
Signature of Generator's Authorized Agent — Date and time of Shipment

PART II: **TRANSPORTER: (To be completed in full by Transporter)**

Name Texas Lease Works
Address I 20 West Co Rt.
City/State Odessa TX

915-580-0508 Telephone No.

Truck No. 520

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

JJB Emanuel M Garcia — 7-31-98
Signature of Transporter's Agent — Date and time of Received

PART III: **DISPOSAL OR RECLAMATION SITE:**

Name Controlled Recovery, Inc. (505)393-1079
Address P.O. Box 388 Telephone No.
City/State Hobbs, NM 88241

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

Signature of Facility Agent — 7/31/98 8351
Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: _____

Address: _____

COMPANY/GENERATOR:: Titan Exploration Inc

LEASE NAME: Lovington Paddock / Synthetics Unit Pit ATB 1-1

TRUCKING COMPANY: Texas Lease Works | TIME: 840 (AM) PM

DATE: 7 31 98 | VEHICLE No.: 526 | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS	[ ] TANK BOTTOMS	[ ] EXEMPT FLUIDS
[ ] COMPLETION FLUIDS	[ ] GAS PLANT WASTE	[ ] C-117 No.: _____
[X] CONTAMINATED SOIL	[ ] OTHER MATERIAL	[X] Pit No.: OCD

DESCRIPTION

8

VOLUME OF MATERIAL [ ] BBLS. _____ : [X] YARD 12 : [ ] GALLONS _____

[ ] WASH OUT [ ] CALL OUT [X] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: Rosario Fabiga
(SIGNATURE)

CRI REPRESENTATIVE: _____
(SIGNATURE)

TANK NO. OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.	DEDUCTIONS	
1ST GAUGE				NET BBLS.	
2ND GAUGE					
MEASURE RECEIVED					
BS& W	%				
FREE WATER		BBLS.			

05-98-500-4pt.-#27501

Nº 027625

White - CRI Canary - CRI Accounting Pink - CRI Plant Gold - Transporter

#8

NON-HAZARDOUS WASTE MANIFEST

PART I: **Generator** Titan Exploration Inc.
Address 500 W. Texas, Suite 500 (915) 682-6612
City/State Midland, Texas 79701 Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico **Permit No.** _____

Property Name ✓(1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
___(2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES
RCRA Exempt - Soil/Sludge 12 y d 3

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

Lynn C Ward agent for Titan Exploration — 7-31-98
Signature of Generator's Authorized Agent — Date and time of Shipment

PART II: **TRANSPORTER: (To be completed in full by Transporter)**

Name Texas Lease Works 915-580-0508
Address I 20 West Co Rd. Telephone No.
City/State Odessa TX. 526
Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

J103 Rosario F. Lujan — 7-31-98
Signature of Transporter's Agent — Date and time of Received

PART III: **DISPOSAL OR RECLAMATION SITE:**

Name Controlled Recovery, Inc. (505)393-1079
Address P.O. Box 388 Telephone No.
City/State Hobbs, NM 88241

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

Signature of Facility Agent — 7 31 98 840 A
Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: _____

Address: _____

COMPANY/GENERATOR:: TITAN EXPLORATION

LEASE NAME: LOVINGTON PADDOCK / SAN ANDRES pit - ATB 1-1

TRUCKING COMPANY: TEXAS LEASE WORKS | TIME: 11:15 (AM) PM

DATE: 7-31-99 | VEHICLE No.: 520 | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS	[ ] TANK BOTTOMS	[ ] EXEMPT FLUIDS
[ ] COMPLETION FLUIDS	[ ] GAS PLANT WASTE	[ ] C-117 No.: _____
[X] CONTAMINATED SOIL	[ ] OTHER MATERIAL	[X] Pit No.: OCD

DESCRIPTION

#9

VOLUME OF MATERIAL [ ] BBLS. _____ : [X] YARD 12 : [ ] GALLONS _____

[ ] WASH OUT [ ] CALL OUT [ ] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: _____
(SIGNATURE)

CRI REPRESENTATIVE: _____
(SIGNATURE)

TANK NO. OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.	DEDUCTIONS	
1ST GAUGE				NET BBLS.	
2ND GAUGE					
MEASURE RECEIVED					
BS& W	%				
FREE WATER		BBLS.			

05-98-500-4pt.-#27501

Nº 027631

White - CRI Canary - CRI Accounting Pink - CRI Plant Gold - Transporter

NON-HAZARDOUS WASTE MANIFEST

#9

PART I: Generator Titan Exploration Inc.
Address 500 W. Texas, Suite 500 (915) 682-6612
City/State Midland, Texas 79701 Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico Permit No. _____

Property Name (1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
(2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES
RCRA Exempt - Soil/Sludge 12 yds

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

Tom C Ward agent for Titan Exploration — 7-31-98
Signature of Generator's Authorized Agent — Date and time of Shipment

PART II: TRANSPORTER: (To be completed in full by Transporter)

Name Texas Lease Works
Address I 20 West Co Rd.
City/State Odessa Tx.
Telephone No. _____
Truck No. 520

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

J.B. Manuel Perez — 7-31-98
Signature of Transporter's Agent — Date and time of Received

PART III: DISPOSAL OR RECLAMATION SITE:

Name Controlled Recovery, Inc. (505)393-1079
Address P.O. Box 388 Telephone No.
City/State Hobbs, NM 88241

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

_____ — 7-31-98 10:55
Signature of Facility Agent — Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: _____

Address: _____

COMPANY/GENERATOR:: TITAN EXPLORATION

LEASE NAME: LOVINGTON PADDOCK / SAN ANDRES UNIT Pit-A+B 1-1

TRUCKING COMPANY: TEXAS LEASE WORKS | TIME: 11:15 (AM) PM

DATE: 7-31-98 | VEHICLE No.: 526 | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS	[ ] TANK BOTTOMS	[ ] EXEMPT FLUIDS
[ ] COMPLETION FLUIDS	[ ] GAS PLANT WASTE	[ ] C-117 No.: _____
[X] CONTAMINATED SOIL	[ ] OTHER MATERIAL	[X] Pit No.: ~~OCD~~

DESCRIPTION

#10

VOLUME OF MATERIAL [ ] BBLS. _____ : [X] YARD 12 : [ ] GALLONS _____

[ ] WASH OUT [ ] CALL OUT [ ] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: Rosario Fabian
(SIGNATURE)

CRI REPRESENTATIVE: _____
(SIGNATURE)

TANK NO. OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.	DEDUCTIONS	
1ST GAUGE				NET BBLS.	
2ND GAUGE					
MEASURE RECEIVED					
BS& W	%				
FREE WATER		BBLS.			

05-98-500-4pt.-#27501

Nº 027632

White - CRI Canary - CRI Accounting Pink - CRI Plant Gold - Transporter

NON-HAZARDOUS WASTE MANIFEST

#10

PART I: Generator Titan Exploration Inc.
Address 500 W. Texas, Suite 500 (915) 682-6612
City/State Midland, Texas 79701 Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico Permit No. _____

Property Name ✓(1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
(2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES

RCRA Exempt - Soil/Sludge 12 yds

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

Lynn C Ward agent for Titan Exploration 7-31-98
Signature of Generator's Authorized Agent Date and time of Shipment

PART II: TRANSPORTER: (To be completed in full by Transporter)

Name Texas Lease Works 915-580-0508
Address I 20 West CO. Rd Telephone No.
City/State Odessa TX. 526
Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

J.B. Rosario F Lujan 7-31-98
Signature of Transporter's Agent Date and time of Received

PART III: DISPOSAL OR RECLAMATION SITE:

Name Controlled Recovery, Inc. (505)393-1079
Address P.O. Box 388 Telephone No.
City/State Hobbs, NM 88241

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

Signature of Facility Agent 7-31-98 11:00 a.
Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: _____

Address: _____

COMPANY/GENERATOR:: Titan Exploration

LEASE NAME: Lovington Paddock/San Andres Unit Area 1-1

TRUCKING COMPANY: Texas Lease Works | TIME: 1:05 AM / PM

DATE: 7-31 | VEHICLE No.: | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS	[ ] TANK BOTTOMS	[ ] EXEMPT FLUIDS
[ ] COMPLETION FLUIDS	[ ] GAS PLANT WASTE	[ ] C-117 No.: _____
[X] CONTAMINATED SOIL	[ ] OTHER MATERIAL	[ ] Pit No.: _____

DESCRIPTION

Manifest 11

VOLUME OF MATERIAL [ ] BBLS. _____ : [X] YARD 12 : [ ] GALLONS _____

[ ] WASH OUT [ ] CALL OUT [ ] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: Manuel Lopez
(SIGNATURE)

CRI REPRESENTATIVE: _____
(SIGNATURE)

TANK NO. OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.	DEDUCTIONS	
1ST GAUGE				NET BBLS.	
2ND GAUGE					
MEASURE RECEIVED					
BS& W	%				
FREE WATER		BBLS.			

05-98-500-4pt.-#27501

Nº 027634

White - CRI Canary - CRI Accounting Pink - CRI Plant Gold - Transporter

NON-HAZARDOUS WASTE MANIFEST

#11

PART I: Generator Titan Exploration Inc.
Address 500 W. Texas, Suite 500 (915) 682-6612
City/State Midland, Texas 79701 Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico Permit No. _____

Property Name ✓ (1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
___(2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES
RCRA Exempt - Soil/Sludge 12 yds.

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

Lynn C. Ward agent for Titan Exploration — 7-31-98
Signature of Generator's Authorized Agent — Date and time of Shipment

PART II: TRANSPORTER: (To be completed in full by Transporter)

Name Texas Lease Works 915-586-0508
Address I 20 West Co Rd. Telephone No.
City/State Odessa TX. 520
Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

J.B. Manuel A. Barrio — 7-31-98
Signature of Transporter's Agent — Date and time of Received

PART III: DISPOSAL OR RECLAMATION SITE:

Name Controlled Recovery, Inc. (505)393-1079
Address P.O. Box 388 Telephone No.
City/State Hobbs, NM 88241

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

_____ 8-3-98 1:05 PM
Signature of Facility Agent — Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: _____

Address: _____

COMPANY/GENERATOR:: TITAN EXPLORATION

LEASE NAME: LOVINGTON PADDOCK / SAN ANDRES A+B-1-1

TRUCKING COMPANY: TEXAS LEASE WORKS | TIME: 1:15 AM (PM)

DATE: 7-31-98 | VEHICLE No.: 526 | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS [ ] TANK BOTTOMS [ ] EXEMPT FLUIDS

[ ] COMPLETION FLUIDS [ ] GAS PLANT WASTE [ ] C-117 No.: _____

[X] CONTAMINATED SOIL [ ] OTHER MATERIAL [X] Pit No.: OCD

DESCRIPTION

#12

VOLUME OF MATERIAL [ ] BBLS. _____ : [X] YARD 12 : [ ] GALLONS _____

[ ] WASH OUT [ ] CALL OUT [ ] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: Rosario Fabian
(SIGNATURE)

CRI REPRESENTATIVE: _____
(SIGNATURE)

TANK NO. OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.	DEDUCTIONS	
1ST GAUGE				NET BBLS.	
2ND GAUGE					
MEASURE RECEIVED					
BS& W	%				
FREE WATER		BBLS.			

05-98-500-4pt.-#27501

Nº 027633

White - CRI Canary - CRI Accounting Pink - CRI Plant Gold - Transporter

NON-HAZARDOUS WASTE MANIFEST

#12

PART I: **Generator** Titan Exploration Inc.
Address 500 W. Texas, Suite 500 (915) 682-6612
City/State Midland, Texas 79701 Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico **Permit No.** _____

Property Name ✓(1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
___(2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES

RCRA Exempt - Soil/Sludge 12 yds

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

Lynn C Ward agent for Titan Exploration — 7-31-98
Signature of Generator's Authorized Agent — Date and time of Shipment

PART II: **TRANSPORTER: (To be completed in full by Transporter)**

Name Texas Lease Works 915-580-0508
Address I 20 West Co Rd. Telephone No.
City/State Odessa Tx. 526
Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

J.B. Rosario Fdujan — 7-31-98
Signature of Transporter's Agent — Date and time of Received

PART III: **DISPOSAL OR RECLAMATION SITE:**

Name Controlled Recovery, Inc. (505)393-1079
Address P.O. Box 388 Telephone No.
City/State Hobbs, NM 88241

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

_____ — 7-31-98 1:15 PM
Signature of Facility Agent — Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: ______

Address: ______

COMPANY/GENERATOR:: Titan Resources

LEASE NAME: Lovington Paddock / San Andres Unit Pit/Tel

TRUCKING COMPANY: Texas Lease Works

TIME: 2:30 AM / PM (PM circled)

DATE: 7-31-98 VEHICLE No.: DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS [ ] TANK BOTTOMS [ ] EXEMPT FLUIDS

[ ] COMPLETION FLUIDS [ ] GAS PLANT WASTE [ ] C-117 No.: ______

[X] CONTAMINATED SOIL [ ] OTHER MATERIAL [ ] Pit No.: ______

DESCRIPTION

Manifest #13

VOLUME OF MATERIAL [ ] BBLS. ______ : [X] YARD 12 : [ ] GALLONS ______

[ ] WASH OUT [ ] CALL OUT [ ] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: Manuel R. Garcia
(SIGNATURE)

CRI REPRESENTATIVE: D. Lavers
(SIGNATURE)

TANK NO. OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.
1ST GAUGE			
2ND GAUGE			
MEASURE RECEIVED			
BS& W	%		
FREE WATER		BBLS.	

DEDUCTIONS	
NET BBLS.	

05-98-500-4pt.-#27501

№ 027636

White - CRI Canary - CRI Accounting Pink - CRI Plant Gold - Transporter

NON-HAZARDOUS WASTE MANIFEST

#13

PART I: **Generator** Titan Exploration Inc.
Address 500 W. Texas, Suite 500 (915) 682-6612
City/State Midland, Texas 79701 Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico **Permit No.** _____

Property Name ✓(1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
___(2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES
RCRA Exempt - Soil/Sludge 12 yds

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

Lynn Ward agent for Titan Exploration — 7-31-98
Signature of Generator's Authorized Agent — Date and time of Shipment

PART II: **TRANSPORTER: (To be completed in full by Transporter)**

Name Texas Lease Workers
Address I 20 west Co Rd.
City/State Odessa Tx. Telephone No.
520 Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

J.B. [illegible] GARCIA — 7-31-98
Signature of Transporter's Agent — Date and time of Received

PART III: **DISPOSAL OR RECLAMATION SITE:**

Name Controlled Recovery, Inc. (505)393-1079
Address P.O. Box 388
City/State Hobbs, NM 88241 Telephone No.

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

[signature] — 2-31-98 3:25 P.M
Signature of Facility Agent — Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: ______

Address: ______

COMPANY/GENERATOR:: Titan Resources

LEASE NAME: Lovington Paddock San Andres unit Pit A13-1-1

TRUCKING COMPANY: Texac Lease works | TIME: 11:00 AM (PM)

DATE: 7-31-98 | VEHICLE No.: | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS [ ] TANK BOTTOMS [ ] EXEMPT FLUIDS
[ ] COMPLETION FLUIDS [ ] GAS PLANT WASTE [ ] C-117 No.: ______
[X] CONTAMINATED SOIL [ ] OTHER MATERIAL [ ] Pit No.: ______

DESCRIPTION

maniFest #14

VOLUME OF MATERIAL [ ] BBLS. ______ [X] YARD 12 : [ ] GALLONS ______

[ ] WASH OUT [ ] CALL OUT [ ] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: Rosario Falujan
(SIGNATURE)

CRI REPRESENTATIVE: E Thomas
(SIGNATURE)

TANK NO. OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.
1ST GAUGE			
2ND GAUGE			
MEASURE RECEIVED			
BS& W	%		
FREE WATER		BBLS.	

DEDUCTIONS	
NET BBLS.	

05-98-500-4pt.-#27501

№ 027637

White - CRI Canary - CRI Accounting Pink - CRI Plant Gold - Transporter

NON-HAZARDOUS WASTE MANIFEST

#14

PART I: Generator Titan Exploration Inc.
Address 500 W. Texas, Suite 500 (915) 682-6612
City/State Midland, Texas 79701 Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico Permit No. _____

Property Name 1 (1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
(2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES
RCRA Exempt - Soil/Sludge 12 yds

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

Lynn Cuhel agent for Titan Exploration — 7-31-98
Signature of Generator's Authorized Agent — Date and time of Shipment

PART II: TRANSPORTER: (To be completed in full by Transporter)

Name TEXAS LEASE WORKS (915) 580-0508
Address I-20 C.R. West Telephone No.
City/State ODESSA, TX 79765 526
Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

Rosario Trujan — 7-31-98
Signature of Transporter's Agent — Date and time of Received

PART III: DISPOSAL OR RECLAMATION SITE:

Name Controlled Recovery, Inc. (505)393-1079
Address P.O. Box 388 Telephone No.
City/State Hobbs, NM 88241

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

[signature] — 7-31-98 4:00P
Signature of Facility Agent — Date and time of Received

CONTROLLED RECOVERY INC.

P. O. BOX 388 • HOBBS, NEW MEXICO 88241-0388
(505) 393-1079

Bill To: _____

Address: _____

COMPANY/GENERATOR:: Titan Exploration Inc

LEASE NAME: Lovington Paddock / San Andres Unit Pit ATB 1-1

TRUCKING COMPANY: Texas Lease Work | TIME: 910 (AM) PM

DATE: 8 3 98 | VEHICLE No.: 520 | DRIVER No.:

TYPE OF MATERIAL

[ ] DRILLING FLUIDS [ ] TANK BOTTOMS [ ] EXEMPT FLUIDS
[ ] COMPLETION FLUIDS [ ] GAS PLANT WASTE [ ] C-117 No.: _____
[X] CONTAMINATED SOIL [ ] OTHER MATERIAL [ ] PI No.: OCD

DESCRIPTION

#15

VOLUME OF MATERIAL [ ] BBLS. _____ : [X] YARD 12 : [ ] GALLONS _____

[ ] WASH OUT [ ] CALL OUT [ ] AFTER HOURS [ ] DEBRIS CHARGE

I, represent and warrant that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recover Act (RCRA) Subtitle C Regulations; and not mixed with non-exempt wastes.

AGENT: Manuel H Barrios
(SIGNATURE)

CRI REPRESENTATIVE: _____
(SIGNATURE)

TANK NO. OFFICE USE:

OIL LEVELS	FEET	INCHES	GROSS BBLS.	DEDUCTIONS	
1ST GAUGE				NET BBLS.	
2ND GAUGE					
MEASURE RECEIVED					
BS& W	%				
FREE WATER		BBLS.			

05-98-500-4pt.-#27501

Nº 027640

White - CRI Canary - CRI Accounting Pink - CRI Plant Gold - Transporter

#15

NON-HAZARDOUS WASTE MANIFEST

PART I: **Generator** Titan Exploration Inc.
Address 500 W. Texas, Suite 500 (915) 682-6612
City/State Midland, Texas 79701 Telephone No.

ORGINATION OF WASTE:

Operations Center Titan Exploration/Lovington Unit, Lea County, New Mexico **Permit No.** _____

Property Name ✓(1) Lovington Paddock/San Andres Unit (Pit-ATB 1-1)
(Well,Tank Battery,Plant,Facility)
___(2) West Lovington Unit (Pit-ATB 33-1)

WASTE IDENTIFICATION AND AMOUNT (BARRELS, YARDS, TONS, CU.FT.,LBS., UNITS, ETC.)					
Drilling Fluids		Tank Bottoms		Exempt Fluids	
Completion Fluids		Gas Plant Waste		C117 No.	
Contaminated Soil	X	Other Material		Pit No.	

DESCRIPTION / NOTES
RCRA Exempt - Soil/Sludge 12 yds

CERTIFICATION: The waste described above is not hazardous pursuant to 40 CFR Part 261 and was consigned to the transporter named below. I certify the the foregoing is true and correct to the best of my knowledge.

Lynn C Ward agent for Titan Exploration 8-3-98
Signature of Generator's Authorized Agent Date and time of Shipment

PART II: **TRANSPORTER: (To be completed in full by Transporter)**

Name Texas Lease Work 915-580-0508
Address 720 West County Rd. Telephone No.
City/State Odessa TX 520
Truck No.

CERTIFICATION: I certify that the waste in quantity above was received by me for shipment to the destination below.

Jim Manuel Lozano 8-3-98
Signature of Transporter's Agent Date and time of Received

PART III: **DISPOSAL OR RECLAMATION SITE:**

Name Controlled Recovery, Inc. (505)393-1079
Address P.O. Box 388 Telephone No.
City/State Hobbs, NM 88241

CERTIFICATION: I certify that the waste described in Part I was received by me via the transporter described in Part II.

Signature of Facility Agent 8 398 910 AM
Date and time of Received

APPENDIX B

Aerial Photographs

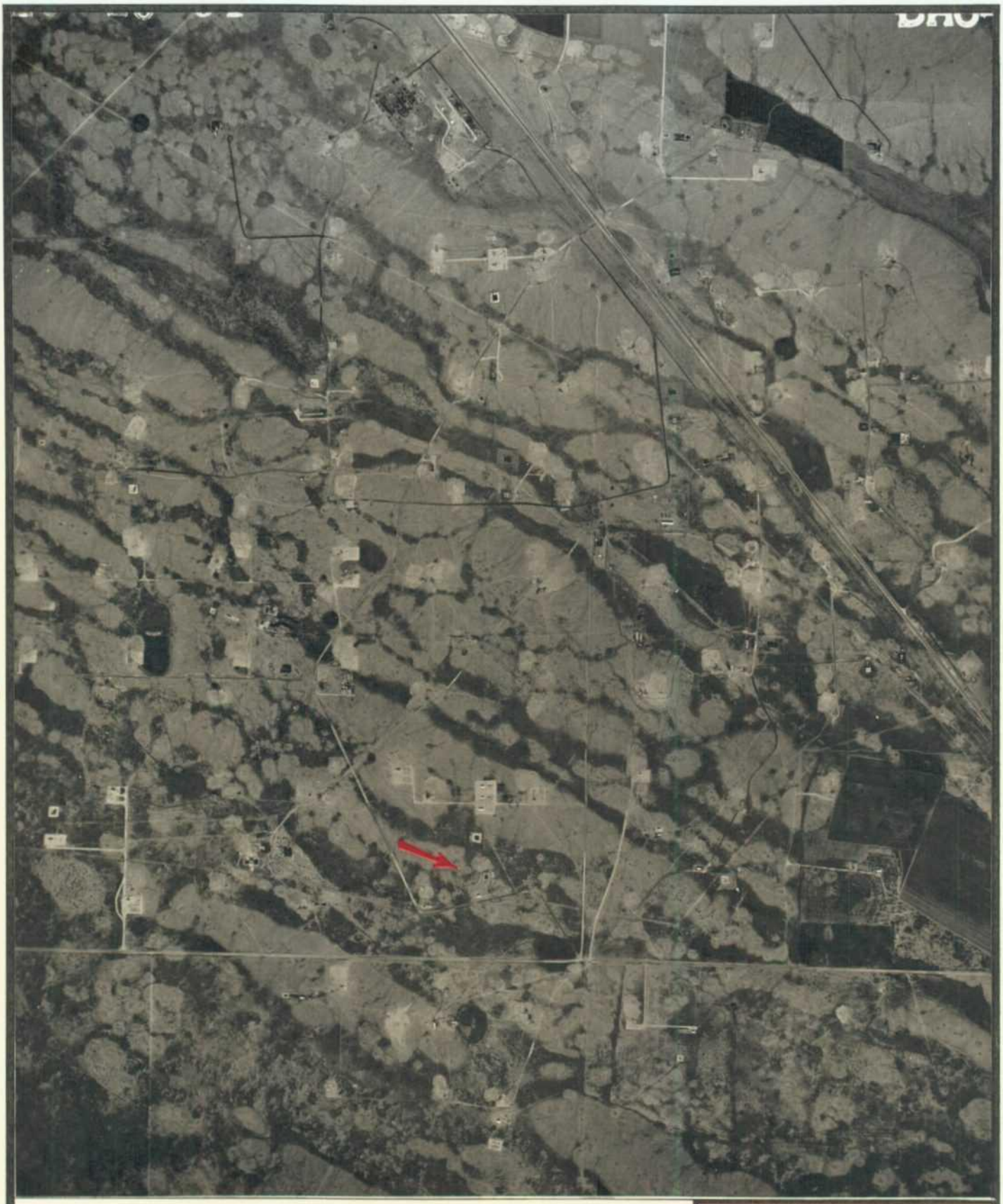
LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

1949 AERIAL PHOTOGRAPH

SCALE: 1"=1667'

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS



SCALE: 1"=1667'

LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

1954 AERIAL PHOTOGRAPH

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

SCALE: 1"=1050'

LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

1978 AERIAL PHOTOGRAPH

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

SCALE: 1"=1676'

LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

1986 AERIAL PHOTOGRAPH

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

APPENDIX C

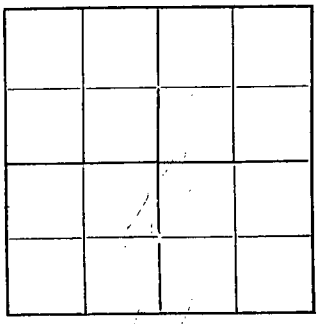
Water Well Records

Form WR-23 STATE ENGINEER OFFICE FIELD ENGR. LOG

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 McVay Drilling Co.

Street and Number P.O. Box 9240

City Hobbs 88240 State New Mexico

Well was drilled under Permit No. L-6395(E) and is located in the ¼ SE ¼ NW ¼ of Section 12 Twp. 17S Rge. 36E

(B) Drilling Contractor Abbott Brothers License No. WD-46

Street and Number P.O. Box 637

City Hobbs 88240 State New Mexico

Drilling was commenced October 19 19

Drilling was completed October 19 19 68

Elevation at top of casing in feet above sea level Total depth of well 112

State whether well is shallow or artesian Shallow Depth to water upon completion 47

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1	47	85	38	Water Sand
2	85	112	27	loose Sand
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
7	21	10	0	110	110	Open	68	110

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 1968 NOV 22 AM 10:37

File No. L-6395(E) Use OWD Location No. 17.36-12-143

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ 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 _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in.

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

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

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

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

Section 4. RECORD OF MUDDING AND CEMENTING

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

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

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

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 2/2/78

Quad _____ FWL _____ FSL _____

File No. _____ Use 011 Location No. 17.36.12.211433

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ 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 _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in.

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

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

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

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

Section 4. RECORD OF MUDDING AND CEMENTING

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

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

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

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 2/2/78

Quad _____ FWL _____ FSL _____

File No. _____ Use Oil Location No. 17.36.12.21200

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ 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 _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in.

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

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

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

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

Section 4. RECORD OF MUDDING AND CEMENTING

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

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

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

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 2/2/78

Quad _____ FWL _____ FSL _____

File No. _____ Use 011 Location No. 17.36.12.22000

Form WR-23 STATE ENGINEER OFFICE

WELL RECORD

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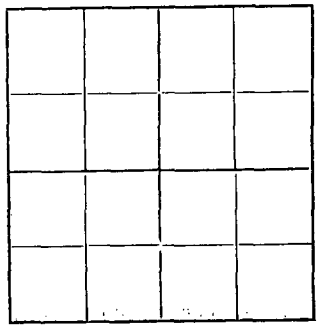
Section 1



(Plat of 640 acres)

(A) Owner of well

Street and Number

City State

Well was drilled under Permit No. and is located in the SE¼NW ¼ NE ¼ NE ¼ of Section 12 Twp. 17S Rge. 36E

(B) Drilling Contractor Abbott Bros. License No.

Street and Number

City State

Drilling was commenced 19

Drilling was completed May 19 53

Elevation at top of casing in feet above sea level Total depth of well 110'

State whether well is shallow or artesian Depth to water upon completion 45' (Rept.

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1				
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

File No. L-2205 Use Location No. 17.36.12.2214.

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ 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 _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in.

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

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

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

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

Section 4. RECORD OF MUDDING AND CEMENTING

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

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

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

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 2/2/78

Quad _____ FWL _____ FSL _____

File No. _____ Use 011 Location No. 17.36.12.23200

Revised June

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Read and Stevens, Inc. Owner's Well No. _____
Street or Post Office Address c/o Glenn's Water Well Service
City and State Box 692 Tatum, New Mexico 88267

Well was drilled under Permit No. L-9666 and is located in the:

a. ___ ¼ ___ ¼ NE ¼ SW ¼ of Section 13 Township 17-S Range 36-East 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
the _____ Grid

(B) Drilling Contractor Glenn's Water Well Service License No. WD 421

Address Box 692 Tatum, New Mexico 88267

Drilling Began 4/23/85 Completed 4/23/85 Type tools Rotary Size of hole 9 7/

Elevation of land surface or _____ at well is 3815 ft. Total depth of well 150

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

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)
76'	128'	52'	sand and gravel	120

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 5/8			0	151	151		90	15

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 April 26, 1985

Quad _____ FWL _____ FSL _____

File No. L-9666 Use OWD Location No. 17.36.13.32231

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ 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 _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in.

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

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

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

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

Section 4. RECORD OF MUDDING AND CEMENTING

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

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

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

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 2/2/78

Quad _____ FWL _____ FSL _____

File No. _____ Use 011 _____ Location No. 17.36.13.42200

FIELD ENGR. LOG

(This form to be executed in triplicate)

WELL RECORD

(4)

Date of Receipt Nov. 22, 1953 Permit No. L-2413

Name of permittee, HAYNES & V. T. DRILLING CO.

Street or P. O., LOVINGTON, City and State NEW MEXICO

1. Well location and description: The SHALLOW (shallow or artesian) well is located in SE ¼, SE ¼, ¼ of Section 2, Township 17 SOUTH Range 36 EAST Elevation of top of casing above sea level, ... feet; diameter of hole, 8 " inches; total depth, 90 feet; depth to water upon completion, 90 feet; drilling was commenced Nov. 19, 1953, and completed Nov. 20, 1953; name of drilling contractor C. O. ALDREDGE Box 379; Address, LOVINGTON, N. M.; Driller's License No. 79

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	45	60	15	FAIR WATER SAND
No. 2	60	90	30	GOOD WATER 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	Depth of Casing or Liner Bottom	Feet of Casing	Type of Shoe	Perforation From	Perforation To

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 3 1953
OFFICE
STATE ENGINEER

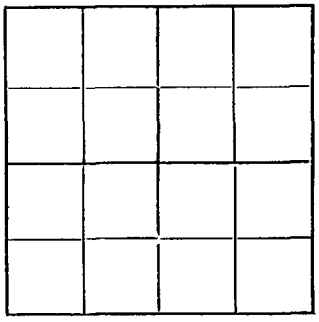
Form WR-23 Oil in O.S. STATE ENGINEER OFFICE

WELL RECORD

5

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 Jack Cayton

Street and Number Box 1252

City Lovington State New Mexico

Well was drilled under Permit No. L-3676 and is located in the

¼ S E ¼ N E ¼ of Section 2 Twp. 17 S Rge. 36 E

(B) Drilling Contractor Cayton Drilling Co. License No. WD-183

Street and Number Box 1021

City Lovington State New Mexico

Drilling was commenced September 16 19 57

Drilling was completed September 17 19 57

Elevation at top of casing in feet above sea level ____ Total depth of well 75 ft.

State whether well is shallow or artesian Shallow Depth to water upon completion 68 ft.

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1	38	55	17	Water Sand
2	68	75	7	Good Water Sand
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
NONE								

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
20	75	7	100 lbs.		Dry Mix

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

RECEIVED
OCT 2 1957
OFFICE
GROUND WATER SUPERVISOR
ROSWELL, NEW MEXICO

File No. L-3676 Use Dom Location No. 17.36.2.240

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ 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 _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in.

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

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

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

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

Section 4. RECORD OF MUDDING AND CEMENTING

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

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

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

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 1/27/78

Quad _____ FWL _____ FSL _____

File No. _____ Use 011 Location No. 17.36.1.11000

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

(6)

Section 1. GENERAL INFORMATION

(A) Owner of well City of Lovington Owner's Well No. _____

Street or Post Office Address P.O. Box 1268

City and State Lovington, New Mexico 88260

Well was drilled under Permit No. L-5486-S and is located in the:

a. _____ ¼ NE ¼ NW ¼ NW ¼ of Section 1 Township 17S 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 Lea County.

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

(B) Drilling Contractor Abbott Bros. Drilling License No. WD-46

Address P.O. Box 637, Hobbs, New Mexico 88240

Drilling Began 4/20/92 Completed 5/1/92 Type tools Cable Size of hole 15½ in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 232 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 83 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)
83	227	144	Sand	

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
12 3/4	50	Welded	0	235	235		82	232

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 May 6, 1992

Quad _____ FWL _____ FSL _____

File No. L-5486-S Use MUN Location No. 17.36.1.1120

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ 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 _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in.

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

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

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

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

Section 4. RECORD OF MUDDING AND CEMENTING

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

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

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

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 1/27/78

Quad _____ FWL _____ FSL _____

File No. _____ Use 011 Location No. 17.36.1.112344

(This form to be executed in triplicate)

(7)

WELL RECORD

Date of Receipt..... Permit No. L-1584

Name of permittee, Lee Drilling Co.

Street or P.O. Box 338, City and State Lovington, New Mexico

1. Well location and description: The shallow well is located in ¼, NE ¼
(shallow or artesian)

NW ¼ of Section 1, Township 17 South, Range 36 East; Elevation of top of casing above sea level, x feet; diameter of hole, 7 inches; total depth, 110 feet depth to water upon completion, 48 feet; drilling was commenced Sept. 29, 1952 and completed Sept. 29, 1952; name of drilling contractor Edward Burke Box 306; Address, Hobbs, New Mexico; Driller's License No. WD-111

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	53	110	57	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
7	24	10	0	109	109	none	87	109

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
OCT 7 1952
OFFICE
ARTESIAN WELL SUPERVISOR
ROSWELL, NEW MEXICO

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ 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 _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in.

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

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

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

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

Section 4. RECORD OF MUDDING AND CEMENTING

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

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

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

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 1/27/78

Quad _____ FWL _____ FSL _____

File No. _____ Use 011 Location No. 17.36.1.122344

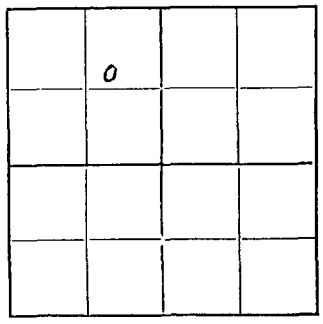
Form WR-23 STATE ENGINEER OFFICE MAIN SUPPLY WELL NO. 30
FIELD ENGR. LOG LOVINGT SAN ANDRES UNIT

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.

(8)

Section 1



(Plat of 640 acres)

(A) Owner of well SKELLY OIL COMPANY
Street and Number P.O. Box 1226
City Lovington State New Mexico
Well was drilled under Permit No. L-4988-X and is located in the ¼ NE ¼ NE ¼ of Section 1 Twp. 17 S Rge. 36 E
(B) Drilling Contractor Abbott Brothers License No. WD-26
Street and Number P.O. Box 687
City Hobbs State New Mexico
Drilling was commenced January 30 19
Drilling was completed February 2 1963

Elevation at top of casing in feet above sea level Total depth of well 182
State whether well is shallow or artesian shallow Depth to water upon completion 65

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1	65	178	123	water 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
9 5/8	32	8	0	182	182	open	65	178

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 [illegible] ✓

1963 MAR -4 AM 8:29

File No. L-4988-X Use SRO Location No. 17.36.1.1234 L

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ 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 _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in.

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

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

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	*Description of Water-Bearing Formation*	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

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

Section 4. RECORD OF MUDDING AND CEMENTING

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

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

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

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 1/27/78

Quad _____ FWL _____ FSL _____

File No. _____ Use 011 Location No. 17.36.1.132344

W 9 No. 3

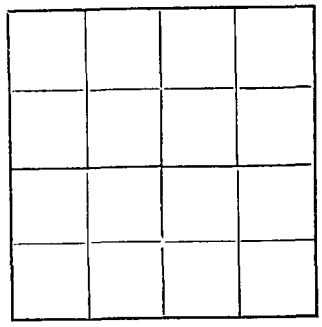
Form WR-23

STATE ENGINEER OFFICE

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 City of Lovington "City Well No. 3"

Street and Number

City Lovington State N.M.

Well was drilled under Permit No. L-5884 and is located in the NE ¼ SW ¼ NW ¼ of Section 1 Twp. 17 Rge. 36

(B) Drilling Contractor Grady Backus License No. WD-522

Street and Number Box 791

City Lovington State N.M.

Drilling was commenced 5-28 19 73

Drilling was completed 6-4 19 73

Elevation at top of casing in feet above sea level Total depth of well 225

State whether well is shallow or artesian Depth to water upon completion 62

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1	62	72	10	Water Sand
2	86	98	12	Quick Sand
3	114	128	14	Sand
4	138	158	20	Sand
5				

Section 3 RECORD OF CASING

Dia in.	Pounds ft.	Threads in	Depth Top	Depth Bottom	Feet	Type Shoe	Perforations From	Perforations To
12 3/4		0	0	225	225	0	170	220

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

File No. L-5486 Use MUN Location No. 17.36.1.13241

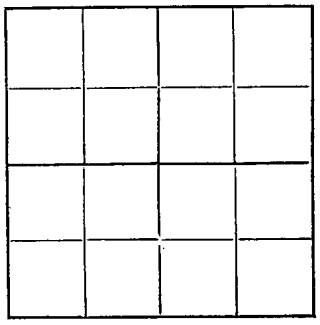
Form WR-23 STATE ENGINEER OFFICE

Orig in S.E. (10)

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 Jack Clayton

Street and Number Box 1252

City Lovington State New Mexico

Well was drilled under Permit No. L-2481 and is located in the NW ¼ NW ¼ NW ¼ of Section 1 Twp. 17 S Rge. 36 E

(B) Drilling Contractor Clayton & Porter Drlg. Co License No. WD-183

Street and Number Box 1021

City Lovington State New Mexico

Drilling was commenced March 7 19 56

Drilling was completed March 9 19 56

Elevation at top of casing in feet above sea level ..... Total depth of well 150 ft.

State whether well is shallow or artesian Shallow Depth to water upon completion 76

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1	78	92	14	Quick 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
16 OD	40	Weld	0	150	150	None	46	150

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
0	150	7/8			Mudded top to bottom

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 MAR 15 1956

OFFICE
GROUND WATER SUPERVISOR
ROSWELL, NEW MEXICO

File No. L-2481 Use Irrig Location No. 17.36.1.133

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ 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 _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in

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

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

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

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

Section 4. RECORD OF MUDDING AND CEMENTING

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

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

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

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 1/27/78

Quad _____ FWL _____ FSL _____

File No. _____ Use 011 Location No. 17.36.1.142344

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ 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 _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in.

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

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

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

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

Section 4. RECORD OF MUDDING AND CEMENTING

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

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

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

FOR USE OF STATE ENGINEER ONLY

Date Received 1/31/78 Typed

Quad _____ FWL _____ FSL _____

File No. _____ Use 011 Location No. 17.36.1.21000

Form WR-23 STATE ENGINEER OFFICE

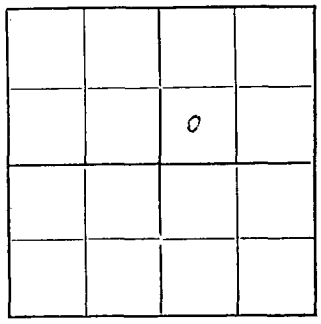
FIELD ENGR. Lea

WELL RECORD

11

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 SKELLY OIL COMPANY

Street and Number P.O. BOX 38

City HOBBS State NEW MEXICO

Well was drilled under Permit No. L-4988 and is located in the ¼ SW ¼ NE ¼ of Section 1 Twp. 17 Rge. 36 E

(B) Drilling Contractor Abbott Brothers License No. WD-18

Street and Number P.O. Box 687

City Hobbs State New Mexico

Drilling was commenced January 2 19

Drilling was completed January 3 19 63

Elevation at top of casing in feet above sea level Total depth of well 192

State whether well is shallow or artesian shallow Depth to water upon completion 55

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1	55	170	115	water 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
9 5/8	36	8	0	192	192	open	55	100
12¼" hole		6 yds. pea gravel bailed in.						
		1 yds. pea gravel stock piled for test pump						

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 1963 JAN 10 AM 8:32

File No. L-4988 Use STO Location No. 17.36.1.2143

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ 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 _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in.

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

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

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

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

Section 4. RECORD OF MUDDING AND CEMENTING

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

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

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

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 1/31/78

Quad _____ FWL _____ FSL _____

File No. _____ Use 011 Location No. 17.36.1.22000

Orig. to S.E.

(This form is to be executed in triplicate)

WELL RECORD

Date of Receipt November 26, 1954 Permit No. L-2508

Name of permitee, Otho H. Grimes

Street or P. O. Box 55, City and State Lovington, New Mexico

1. Well location and description: The shallow (shallow or artesian) well is located in NE ¼, NE ¼ of Section 1, Township 17S, Range 36E; Elevation of top casing above sea level, unknown feet; diameter of hole, 10 inches; total depth, 120 fe depth to water upon completion, 40 feet; drilling was commenced November 17, 195 and completed November 20, 1954; name of drilling contractor Claude Tatum 524 W Washington; Address, Lovington New Mexico; Driller's License No. LD33

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	40	120	80	Water sands
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 OD	23	8	0	120	120	none	60	120

4. If above construction replaces old well to be abandoned, give location: New well does not and of Section ....., Township ....., Range .....; name and address of plugging contract

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

FILED
NOV 26 1954
OFFICE
GROUND WATER SUPERVISOR
ROSWELL, NEW MEXICO

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ 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 _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in.

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

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

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

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

Section 4. RECORD OF MUDDING AND CEMENTING

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

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

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

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 1/31/78

Quad _____ FWL _____ FSL _____

File No. _____ Use Oil Location No. 17.36.1.23000

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ 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 _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in.

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

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

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

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

Section 4. RECORD OF MUDDING AND CEMENTING

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

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

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

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 1/31/78

Quad _____ FWL _____ FSL _____

File No. _____ Use 011 Location No. 17.36.1.24000

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ 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 _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in.

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

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

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

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

Section 4. RECORD OF MUDDING AND CEMENTING

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

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

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

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 2/1/78

Quad _____ FWL _____ FSL _____

File No. _____ Use 011 Location No. 17.36.1.32000

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ 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 _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in

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

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

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

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

Section 4. RECORD OF MUDDING AND CEMENTING

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

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

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

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 2/1/78

Quad _____ FWL _____ FSL _____

File No. _____ Use 011 Location No. 17.36.1.34000

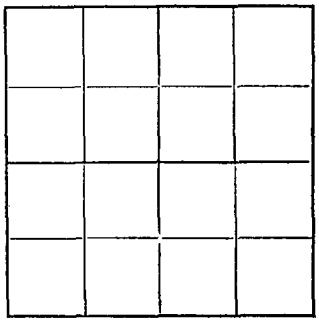
Form WR-23 STATE ENGINEER OFFICE

WELL RECORD

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

(13)

Section 1



(Plat of 640 acres)

(A) Owner of well MRS. CHLOE TILES

Street and Number

City LOVINGTON State NEW MEXICO

Well was drilled under Permit No. L-2084 DOMESTIC WELL and is located in th

SW ¼ SW ¼ SW ¼ of Section 1 Twp. 17 Rge. 36E

(B) Drilling Contractor C. O. ALDRIDGE License No. 79

Street and Number BOX 379

City LOVINGTON State N. MEX.

Drilling was commenced SEPT. 14 19 55

Drilling was completed SEPT. 15 19 55

Elevation at top of casing in feet above sea level Total depth of well 72

State whether well is shallow or artesian SHALLOW Depth to water upon completion 40

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1	72	72	0	BAILING QUICK SAND AT 72 FEET
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
6								

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
					NO MUD 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 OCT 13 1955

OFFICE GROUND WATER SUPERVISOR ROSWELL, NEW MEXICO

File No. L-2084 Use Location No. 17.36.1.333

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ 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 _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in.

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

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

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

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

Section 4. RECORD OF MUDDING AND CEMENTING

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

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

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

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 1/27/78

Quad _____ FWL _____ FSL _____

File No. _____ Use 011 Location No. 17.36.1.43000

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ 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 _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in

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

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

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

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

Section 4. RECORD OF MUDDING AND CEMENTING

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

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

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

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 1/27/78

Quad _____ FWL _____ FSL _____

File No. _____ Use 011 Location No. 17.36.1.44000

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ 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 _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in

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

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

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

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

Section 4. RECORD OF MUDDING AND CEMENTING

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

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

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

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 1/27/78

Quad _____ FWL _____ FSL _____

File No. _____ Use 011 Location No. 17.36.1.441244

(This form is to be executed in triplicate)

(14)

WELL RECORD

Date of Receipt ..... January 30 1954 ..... Permit No. L-2474

Name of permitee, ... Lee Drilling Company .....

Street or P. O. ....., City and State ..... Lovington, N. M. .....

1. Well location and description: The shallow (shallow or artesian) well is located in ....¼, ...¼,

....¼ of Section ....., Township ....., Range .....; Elevation of top of casing above sea level, unknown feet; diameter of hole, 8 inches; total depth, 100 feet; depth to water upon completion, 40 feet; drilling was commenced Jan 13, 1954, and completed Jan 14, 1954; name of drilling contractor Claude Tatum Well Drilling Address, Lovington, N.M.; Driller's License No. WD33

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	40	100	60	Water sands
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
None								

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
MAR 2 1954
OFFICE
GROUND WATER SUPERVISOR
ROSWELL, NEW MEXICO

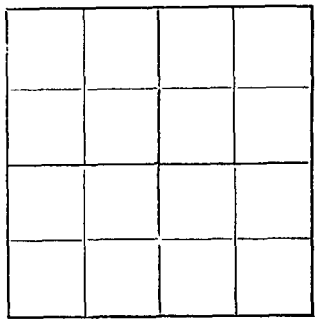
Form WR-23 STATE ENGINEER OFFICE

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.

(15)

Section 1



(Plat of 640 acres)

(A) Owner of well Mattie Price

Street and Number

City Tatum State N. M.

Well was drilled under Permit No. L-904 and is located in the NW ¼ NW ¼ SE ¼ of Section 6 Twp. 17S Rge. 37E

(B) Drilling Contractor Glenn's Water Well License No. WD-421

Street and Number Box 692

City Tatum State N.M.

Drilling was commenced June 20 19 72

Drilling was completed June 26 19 72

Elevation at top of casing in feet above sea level Total depth of well 130

State whether well is shallow or artesian shallow Depth to water upon completion 75

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1	75	130	55	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
			None					

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 July 21, 1972 8:30 AM

File No. L-904 Use Irr (repair) Location No. 17.37.6.312

Form WR-23

FIELD ENGR. Log

STATE ENGINEER OFFICE

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

(16)

(A) Owner of well T. LYNN WALKER

Street and Number STAR RT. A. BOX 123

City HOBBS State N. M.

Well was drilled under Permit No. L-5426 and is located in the Center 1/4 NW 1/4 SE 1/4 of Section 6 Twp. 17S Rge. 37E

(B) Drilling Contractor M. L. FULLINGIM License No. WD124

Street and Number 317 NORTH FULLER

City HOBBS State N. M.

Drilling was commenced 4-13 19 66

Drilling was completed 4-17 19 66

(Plat of 640 acres)

Elevation at top of casing in feet above sea level ..... Total depth of well 120 Ft.

State whether well is shallow or artesian SHALLOW Depth to water upon completion 48 Ft.

Section 2 **PRINCIPAL WATER-BEARING STRATA**

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1	48	91	43	1st water Sand
2	94	120	26	2nd water Sand
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
14 in		Welded	0	120	120	No Shoe	60	120

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:

Cement Plugs were placed as follows:

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

..... Basin Supervisor

FOR USE OF STATE ENGINEER ONLY

Date Received 1966 MAY -6 AM 8:26 ✓

STATE ENGINEER OFFICE DISTRICT

File No. L-5426 Use Irr Location No. 17.37.6.400

(This form to be executed in triplicate)

17

WELL RECORD

Date of Receipt Oct. 1952 Permit No. L-1603

Name of permittee, Simmons Drilling Co.

Street or P. O., Box 2322, City and State Tulsa, Oklahoma

1. Well location and description: The Shallow (shallow or artesian) well is located in ¼, NW ¼, NW ¼ of Section 7, Township 17, Range 37; Elevation of top of casing above sea level, 3865 feet; diameter of hole, 7 OD inches; total depth, 120 feet; depth to water upon completion, 39 feet; drilling was commenced Oct 22, 19 52 and completed Oct 25, 19 52; name of drilling contractor Aqua Drilling Co. Box 1004; Address, Lovington, N.M.; Driller's License No. Wd 35

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	50	52	2	Water Sand, & Quick Sand
No. 2	68	70	2	Water Sand
No. 3	105	111	6	Water Sand
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
6-5/8	27	8			114		60-80	94-11

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
NOV 28 1952
OFFICE
ARTESIAN WELL SUPERVISOR
ROSWELL, NEW MEXICO

Form WR-23 STATE ENGINEER OFFICE

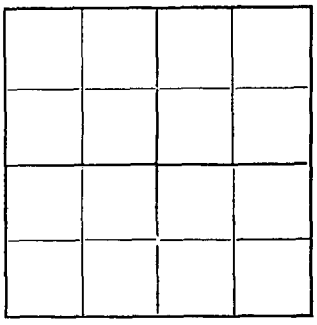
FIELD ENGR. LOG

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.

(18)

Section 1



(Plat of 640 acres)

(A) Owner of well E. D. Shipp

Street and Number Box 281

City Lovington State New Mexico

Well was drilled under Permit No. L-4360 and is located in the

¼ N½ ¼ NW ¼ of Section 7 Twp. 17 S Rge. 37 E

(B) Drilling Contractor P & P Drilling Co. License No. WD-281

Street and Number 1121 S. Love

City Lovington State New Mexico

Drilling was commenced March 24 19 64

Drilling was completed March 26 19 64

Elevation at top of casing in feet above sea level ..... Total depth of well 110

State whether well is shallow or artesian Shallow Depth to water upon completion 82

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1				
2	37 82	40 105		
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
		None						

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
		16	6 sacks		

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 ✓

1964 APR -8 AM 8:14

File No. L-4360 Use D & Sr. Location No. 17.37.7.111

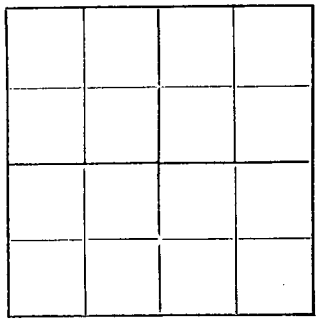
Form WR-23 STATE ENGINEER OFFICE

WELL ENGR. LOG

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)

(19)

(A) Owner of well E. D. SHIPP

Street and Number Box 281

City Lovington State New Mexico

Well was drilled under Permit No. L-4359 and is located in the

¼ NE ¼ NW ¼ of Section 7 Twp. 17 S Rge. 37 E

(B) Drilling Contractor P & P Drilling Co. License No. WD-281

Street and Number I-21 S. Love

City Lovington State New Mexico

Drilling was commenced April 8 19 65

Drilling was completed April 12 19 65

Elevation at top of casing in feet above sea level Total depth of well III

State whether well is shallow or artesian Shallow Depth to water upon completion 75

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1	47	60		
2	75	110		
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
14			0	III	III		50	III

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
			6 sacks		

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 1965 MAY 10 AM 8:23

STATE ENGINEER OFFICE

File No. L-4359 Use Irr. Location No. 17.37.7.121

Form WR-23 STATE ENGINEER OFFICE

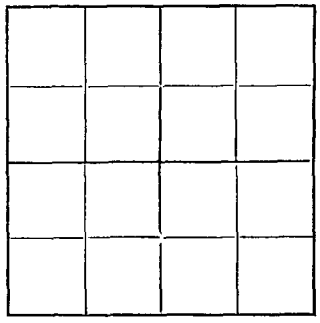
FIELD ENGR. LOG

WELL RECORD

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

20

Section 1



(Plat of 640 acres)

(A) Owner of well E. D. Shipp

Street and Number Box 281

City Lovington State New Mexico

Well was drilled under Permit No. L-4712 and is located in

No ¼ NW ¼ NE ¼ of Section 7 Twp. 17 S Rge. 37 E

(B) Drilling Contractor P & P Drilling Co. License No. WD-28

Street and Number 1121 S. Love

City Lovington State New Mexico

Drilling was commenced Sept. 10 19 6

Drilling was completed Sept. 11 19 6

Elevation at top of casing in feet above sea level Total depth of well 95

State whether well is shallow or artesian Shallow Depth to water upon completion 75

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1	40	65		
2	75	95		
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
		None						

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
		7			

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 SANTA FE, NEW MEXICO SEP 15 AM 8:16 1961 BW

File No. L-4712 Use Dom. Location No. 17.37.7.242

Form WR-23 FIELD ENGR. LOG

STATE ENGINEER OFFICE

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.

(21)

Section 1

(A) Owner of well Dann Shipp

Street and Number Box 281 New Mexico

City Lovington State

Well was drilled under Permit No. L-1963 and is located in the NW ¼ NW ¼ NW ¼ of Section 7 Twp. 17S Rge. 37E

(B) Drilling Contractor Miller Drilling Co License No.

Street and Number 1121 S. Love New Mexico

City Lovington State

Drilling was commenced June 25 19 60

Drilling was completed June 30 19 60

(Plat of 640 acres)

Elevation at top of casing in feet above sea level 3750 ft. Total depth of well 150 ft.

State whether well is shallow or artesian Shallow Depth to water upon completion 132 ft.

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1	~~132~~ 46	~~150~~ 62		
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
		~~None~~						

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
		16	8 sacks		

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 ROSWELL, N. MEX. 1960 NOV -8 AM 8:27

File No. L-1963 Use Irr. Location No. 17.37.7.211

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

FIELD CHECK

(2)

Section 1. GENERAL INFORMATION

(A) Owner of well Bill Shipp Owner's Well No. _____

Street or Post Office Address _____

City and State Lovington, N.M.

Well was drilled under Permit No. L-1963-S and is located in the:

a. ____ ¼ ____ ¼ NW ¼ NE ¼ of Section 7 Township 17 S Range 37 East 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 Glenn's water Well Service License No. WD 421

Address Box 692 Tatum, N.M. 88267

Drilling Began 1-30-79 Completed 2-3-79 Type tools _____ Size of hole 10 in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 128 ft

Completed well is [X] shallow [ ] artesian. Depth to water upon completion of well 50 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)
80	128			100 GPM

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 5/8	.219						70	128

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 January 17, 1980

Quad _____ FWL _____ FSL _____

SUPP. (was old domestic well # L-4712)

L-1963-S IRR. Location No. 17.37.7.21221

(This form to be executed in triplicate)

(23)

WELL RECORD

Date of Receipt Mar. 30, 1954 Permit No. L-2561

Name of permittee, Otha H. Grimes

Street or P. O., Box 501, City and State Norman, Oklahoma

1. Well location and description: The Shallow (shallow or artesian) well is located in SW ¼, SW ¼, SW ¼ of Section 31, Township 16 S, Range 37 E; Elevation of top of casing above sea level, ... feet; diameter of hole, 8 inches; total depth, 137 feet; depth to water upon completion, 50 feet; drilling was commenced March 2, 19 54 and completed March 3, 19 54 name of drilling contractor Abbott Bros. Box 637; Address, Hobbs, N. M.; Driller's License No. WD-46

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	45	75	30	Water Sand
No. 2	95	137	42	Water 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
7" OD	32	8	0	137	137	none	50	137

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
MAR 30 1954
OFFICE
GROUND WATER SUPERVISOR
ROSWELL, NEW MEXICO

STATE ENGINEER OFFICE

WELL RECORD

Revised June 1972

(24)

Section 1. GENERAL INFORMATION

(A) Owner of well BOC Gases Owner's Well No. _____

Street or Post Office Address c/o Glenn's Water Well Service

City and State P.O. Box 692 Tatum, New Mexico 88267

Well was drilled under Permit No. L-10,652 and is located in the:

a. _____ ¼ S½ ¼ SE ¼ SW ¼ of Section 31 Township 16-S. Range 37-E. 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 Glenn's Water Well Service License No. WD-421

Address P.O. Box 692 Tatum, New Mexico 88267

Drilling Began 4-10-97 Completed 4-10-97 Type tools rotary Size of hole 12¼ in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 248 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 72 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)
72	185		sand	75
198	243		gravel	75

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 5/8	.188		1	238	248	none	58	248

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

16.37.31.344121

Date Received 04/16/97

Quad _____ FWL _____ FSL _____

File No. L-10,652 Use D&S Location No. 16.37.31.344121

APPENDIX D

Borehole Logs and Monitor Well Completion Logs

SAMPLE LOG

Boring/Well: BH-1
Project Number: 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 31 feet
Date Installed: 6/29/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated caliche
5-6	4	White, caliche, dense layer
10-11	4	White, caliche, dense and friable layer
15-16	4	White, caliche, dense and friable layer
20-21	4	White, caliche, dense, tan fine grain sand encountered at 23', loose
25-26	4	Tan, fine grain sand, loose, trace of caliche layers and cemented sandstone
30-31	3	Tan, fine grain sand, loose, cemented sandstone layers
		TD -31'

SAMPLE LOG

Boring/Well: BH-2
Project Number:` 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 31 feet
Date Installed: 6/29/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated caliche
5-6	2	White, caliche, dense layer
10-11	2	White, caliche, dense and friable layer, trace of fine grain sand
15-16	17	Tan, fine grain sand , and trace of white caliche, dense layers
20-21	6	Tan, fine grain sand, and trace of white caliche, dense layers
25-26	7	Tan, fine grain sand, loose, trace of caliche layers and cemented sandstone
30-31	3	Tan, fine grain sand, loose, traces of cemented sandstone
		TD -31'

SAMPLE LOG

Boring/Well: BH-3
Project Number: 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 31 feet
Date Installed: 6/29/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated caliche
5-6	0	White, caliche, dense, layer
10-11	0	White, caliche, dense and friable layer, unconsolidated layer, trace of fine grain sand
15-16	3	Tan, fine grain sand, and trace of white caliche, dense layers
20-21	2	Tan, fine grain sand, and trace of white caliche and cemented sandstone, dense layers
25-26	1	Tan, fine grain sand, loose, trace of caliche layers and cemented sandstone
30-31	2	Tan, fine grain sand, loose, traces of cemented sandstone
		TD -31'

SAMPLE LOG

Boring/Well: BH-4
Project Number: 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 31 feet
Date Installed: 6/29/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated caliche, broken
5-6	1	White, caliche, dense, layer, unconsolidated
10-11	0	White, caliche, dense and friable layer, unconsolidated layer
15-16	1	Tan, fine grain sand, and trace of white caliche, dense layers
20-21	1	Tan, fine grain sand, and trace of white caliche and cemented sandstone, dense layers
25-26	0	Tan, fine grain sand, loose, trace of caliche layers and cemented sandstone
30-31	0	Tan, fine grain sand, loose, traces of cemented sandstone
		TD -31'

SAMPLE LOG

Boring/Well: BH-5
Project Number:` 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 31 feet
Date Installed: 6/29/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	Grayish, caliche, dense layer, trace of black streaks in caliche
5-6	520	Grayish, caliche, dense, layer, trace of black streaks of staining
10-11	550	White, caliche, dense and friable layer, unconsolidated layer
15-16	388	Grayish, fine grain sand, loose, and trace of gray caliche, dense layers
20-21	500	Tan, fine grain sand, and trace of white caliche and cemented sandstone, dense layers traces of gray staining
25-26	550	Tan, fine grain sand, loose, trace of caliche layers and cemented sandstone, trace of gray staining
30-31	240	Tan, fine grain sand, loose, traces of cemented sandstone
35-36	350	Tan, fine grain sand, streaks of cemented sandstone
40-41	350	Tan, fine grain sand, streaks of cemented sandstone
45-46	490	Tan, fine grain sand, streaks of cemented sandstone
50-51	560	Tan, fine grain sand, streaks of cemented sandstone
60-61	115	Tan, fine grain sand, streaks of cemented sandstone, damp
70-71	1	Tan, fine grain sand, streaks of cemented sandstone, moist

SAMPLE LOG

Boring/Well: MW-1
Project Number: 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 75 feet
Date Installed: 10/1/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated caliche, broken
10-20	-	White, caliche, dense and friable layer, unconsolidated layer, becoming sandy with depth
20-30	-	Tan, fine grain sand, and trace of white caliche and cemented sandstone, dense layers
30-40	-	Tan, fine grain sand, loose, traces of caliche and cemented sandstone
40-50	-	Tan, fine grain sand, loose, traces of cemented sandstone
50-60	-	Tan, fine grain sand, loose, traces of cemented sandstone
60-75	-	Tan, fine grain sand, loose, traces of cemented sandstone, damp
		TD -75'

SAMPLE LOG

Boring/Well: MW-2
Project Number:` 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 76 feet
Date Installed: 10/1/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated caliche, broken
10-20	-	White, caliche, dense and friable layer, unconsolidated layer, becoming sandy with depth
20-30	-	Tan, fine grain sand, and white caliche and traces of cemented sandstone, dense layers, 50% sand / 50% caliche
30-40	-	Tan, fine grain sand, loose, traces of caliche and cemented sandstone
40-50	-	Tan, fine grain sand, loose, traces of cemented sandstone
50-60	-	Tan, fine grain sand, loose, traces of cemented sandstone
60-61	0	Tan, fine grain sand, loose, traces of cemented sandstone, damp
70-76	-	Tan, fine grain sand, loose, traces of cemented sandstone, damp
		TD -76'

SAMPLE LOG

Boring/Well: MW-3
Project Number:` 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 75 feet
Date Installed: 10/1/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated caliche, broken
10-20	-	White, caliche, dense and friable layer, unconsolidated layer, becoming sandy with depth
20-30	-	Tan, fine grain sand, and white caliche and traces of cemented sandstone, dense layers, 50% sand / 50% caliche
30-40	-	Tan, fine grain sand, loose, traces of caliche and cemented sandstone
40-50	-	Tan, fine grain sand, loose, traces of cemented sandstone
50-60	-	Tan, fine grain sand, loose, traces of cemented sandstone
60-61	3	Tan, fine grain sand, loose, traces of cemented sandstone, damp
70-75	-	Tan, fine grain sand, loose, traces of cemented sandstone, damp
		TD -75'

SAMPLE LOG

Boring/Well: MW-4
Project Number:` 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 75 feet
Date Installed: 10/2/98

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated caliche, broken
10-20	-	White, caliche, dense and friable layer, unconsolidated layer, becoming sandy with depth
20-30	-	Tan, fine grain sand, and white caliche and traces of cemented sandstone, dense layers, 30% sand / 70% caliche
30-40	-	Tan, fine grain sand, loose, traces of caliche and cemented sandstone
40-50	-	Tan, fine grain sand, loose, traces of cemented sandstone
50-60	-	Tan, fine grain sand, loose, traces of cemented sandstone
60-61	671	Tan, fine grain sand, loose, traces of cemented sandstone, damp
70-75	-	Tan, fine grain sand, loose, traces of cemented sandstone, damp
		TD -75'

SAMPLE LOG

Boring/Well: MW-5
Project Number:` 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 77 feet
Date Installed: 1/27/99

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated , dense
10-20	-	White, caliche, dense and friable layer, unconsolidated layer, becoming sandy with depth
20-30	-	Tan, fine grain sand, and white caliche and traces of cemented sandstone, dense layers, 50% sand / 50% caliche
30-40	-	Tan, fine grain sand, loose, traces of caliche and cemented sandstone
40-50	-	Tan, fine grain sand, loose, traces of cemented sandstone, 50% / 50%
50-60	-	Tan, fine grain sand, loose, traces of cemented sandstone, layered
60-61	4	Tan, fine grain sand, loose, traces of cemented sandstone, damp
70-77	-	Tan, fine grain sand, loose, traces of cemented sandstone, damp
		TD -77'

SAMPLE LOG

Boring/Well: MW-6
Project Number:` 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 77 feet
Date Installed: 1/27/99

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, unconsolidated , dense
10-20	-	White, caliche, dense and friable layer, unconsolidated layer, becoming sandy with depth
20-30	-	Tan, fine grain sand, and white caliche and traces of cemented sandstone, dense layers, 80% sand 20% caliche
30-40	-	Tan, fine grain sand, loose, traces of caliche and cemented sandstone
40-50	-	Tan, fine grain sand, loose, traces of cemented sandstone, 50% / 50%
50-60	-	Tan, fine grain sand, loose, traces of cemented sandstone, layered
60-61	4	Tan, fine grain sand, loose, traces of cemented sandstone, damp
70-77	-	Tan, fine grain sand, loose, traces of cemented sandstone, damp
		TD -77'

SAMPLE LOG

Boring/Well: MW-7
Project Number: 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 77 feet
Date Installed: 3/24/99

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, dense
10-20	-	White, caliche, dense and friable layer, becoming sandy with depth
20-30	-	Tan, fine grain sand, and white caliche and traces of cemented sandstone, dense layers, 80% sand 20% caliche
30-40	-	Tan, fine grain sand, loose, traces of caliche and cemented sandstone
40-50	-	Tan, fine grain sand, loose, traces of cemented sandstone, 50% / 50%
50-60	-	Tan, fine grain sand, loose, traces of cemented sandstone, layered
60-61	3	Tan, fine grain sand, loose, traces of cemented sandstone, damp
70-77	-	Tan, fine grain sand, loose, traces of cemented sandstone, damp
		TD -77'

SAMPLE LOG

Boring/Well: MW-8
Project Number:` 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 77 feet
Date Installed: 3/24/99

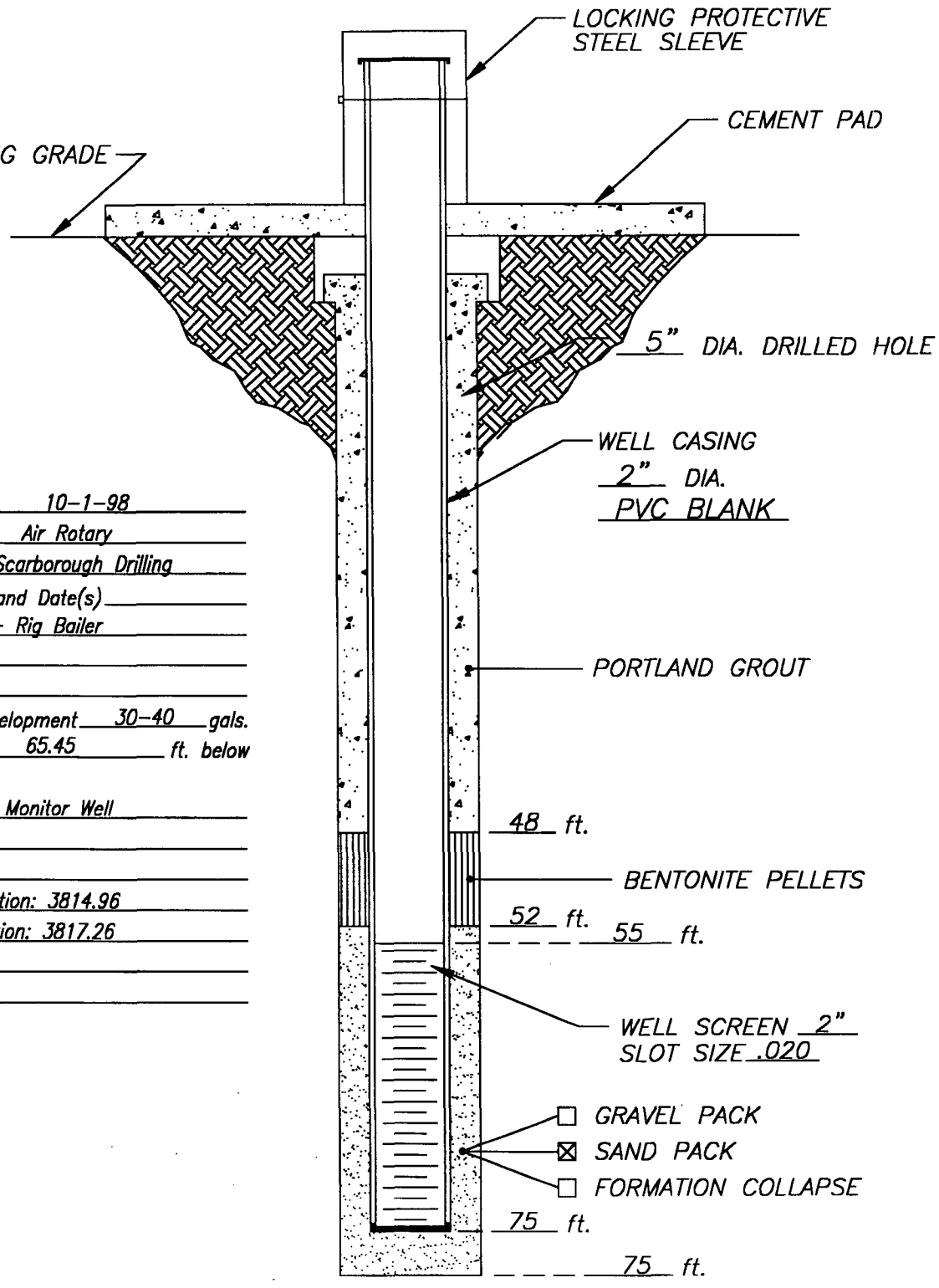
DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, dense
10-20	-	White, caliche, dense and friable layer, becoming sandy with depth
20-30	-	Tan, fine grain sand, and white caliche and traces of cemented sandstone, dense layers, 60% sand 40% caliche
30-40	-	Tan, fine grain sand, loose, traces of caliche and cemented sandstone
40-50	-	Tan, fine grain sand, loose, traces of cemented sandstone, 50% / 50%
50-60	-	Tan, fine grain sand, loose, traces of cemented sandstone, layered
60-61	0	Tan, fine grain sand, loose, traces of cemented sandstone, damp
70-77	-	Tan, fine grain sand, loose, traces of cemented sandstone, damp
		TD -77'

SAMPLE LOG

Boring/Well: MW-9
Project Number:` 1085
Client: Titan Exploration, Inc.
Site Location: ATB 1-1 Pit, Lovington Paddock/Lovington San Andres
Location: Lea County, New Mexico
Total Depth: 77 feet
Date Installed: 3/24/99

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	-	White, caliche, dense
10-20	-	White, caliche, dense and friable layer, becoming sandy with depth
20-30	-	Tan, fine grain sand, and white caliche and traces of cemented sandstone, dense layers, 70% sand 30% caliche
30-40	-	Tan, fine grain sand, loose, traces of caliche and cemented sandstone
40-50	-	Tan, fine grain sand, loose, traces of cemented sandstone, 50% / 50%
50-60	-	Tan, fine grain sand, loose, traces of cemented sandstone, layered
60-61	5	Tan, fine grain sand, loose, traces of cemented sandstone, damp
70-77	-	Tan, fine grain sand, loose, traces of cemented sandstone, damp
		TD -77'

WELL CONSTRUCTION LOG



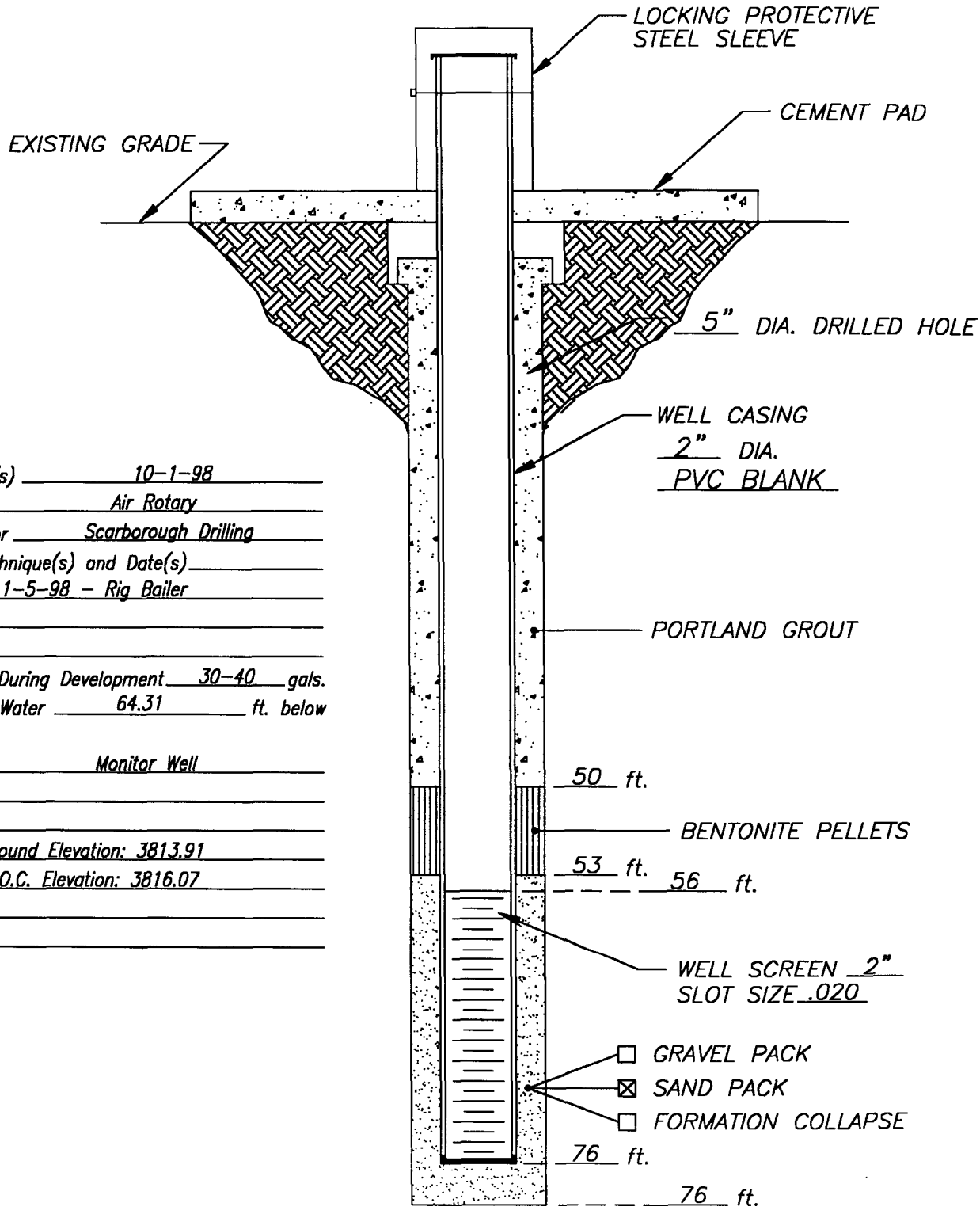
Installation Date(s) 10-1-98
Drilling Method Air Rotary
Drilling Contractor Scarborough Drilling
Development Technique(s) and Date(s)
11-5-98 - Rig Bailer

Water Removed During Development 30-40 gals.
Static Depth to Water 65.45 ft. below Ground Level
Well Purpose Monitor Well

Remarks
Ground Elevation: 3814.96
T.O.C. Elevation: 3817.26

DATE: 10-1-98 *Highlander Environmental*	CLIENT: *TITAN EXPLORATION & PRODUCTION, INC.* PROJECT: *LOVINGTON PADDOCK UNIT-PIT, ATB 1-1* LOCATION: *LEA COUNTY, NEW MEXICO*	WELL NO. MW-1

WELL CONSTRUCTION LOG



Installation Date(s) 10-1-98
Drilling Method Air Rotary
Drilling Contractor Scarborough Drilling
Development Technique(s) and Date(s)
11-5-98 - Rig Bailer

Water Removed During Development 30-40 gals.
Static Depth to Water 64.31 ft. below Ground Level
Well Purpose Monitor Well

Remarks
Ground Elevation: 3813.91
T.O.C. Elevation: 3816.07

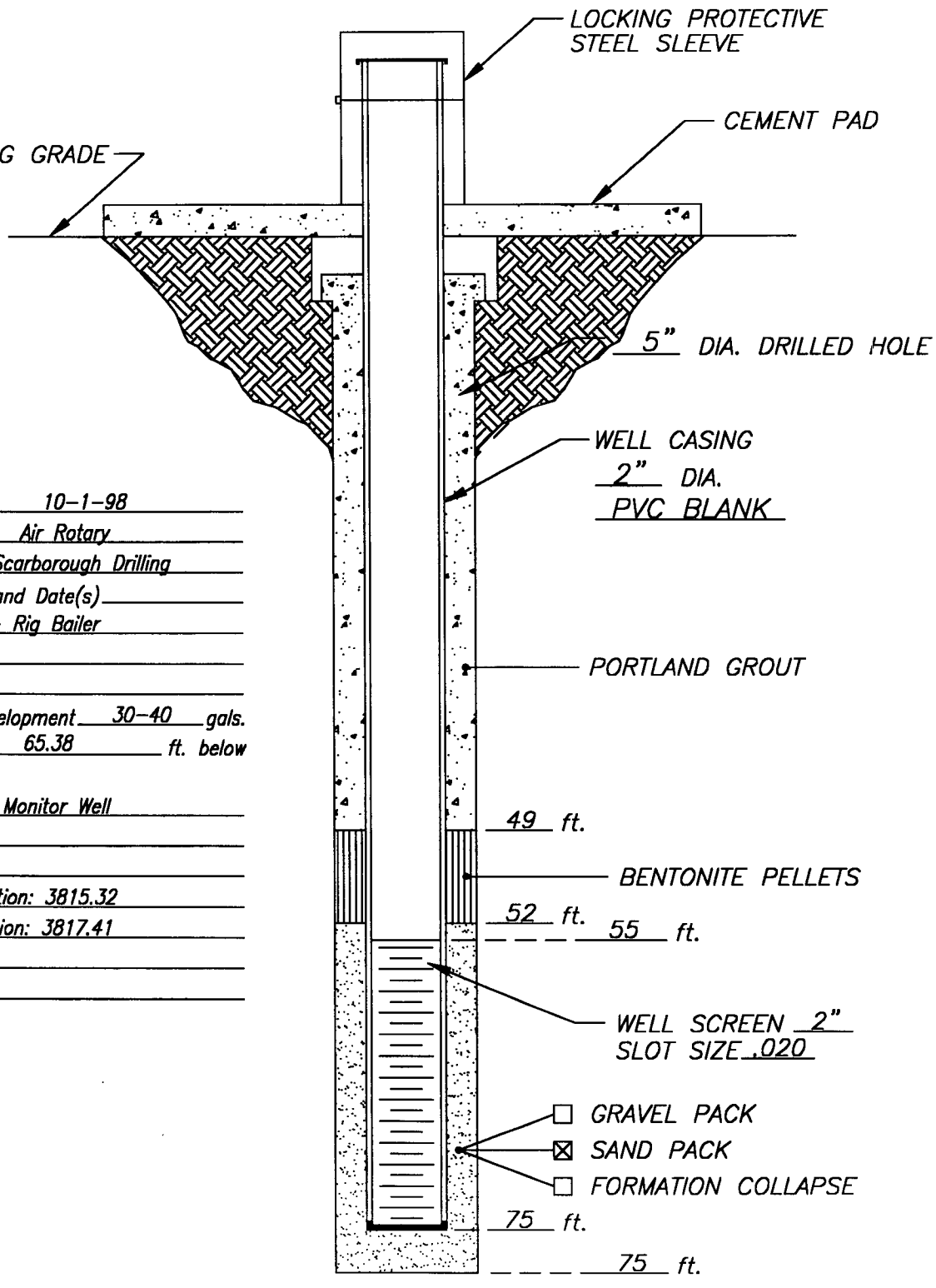
DATE: 10-1-98

Highlander Environmental

CLIENT: TITAN EXPLORATION & PRODUCTION, INC.
PROJECT: LOVINGTON PADDOCK UNIT-PIT, ATB 1-1
LOCATION: LEA COUNTY, NEW MEXICO

WELL NO. MW-2

WELL CONSTRUCTION LOG



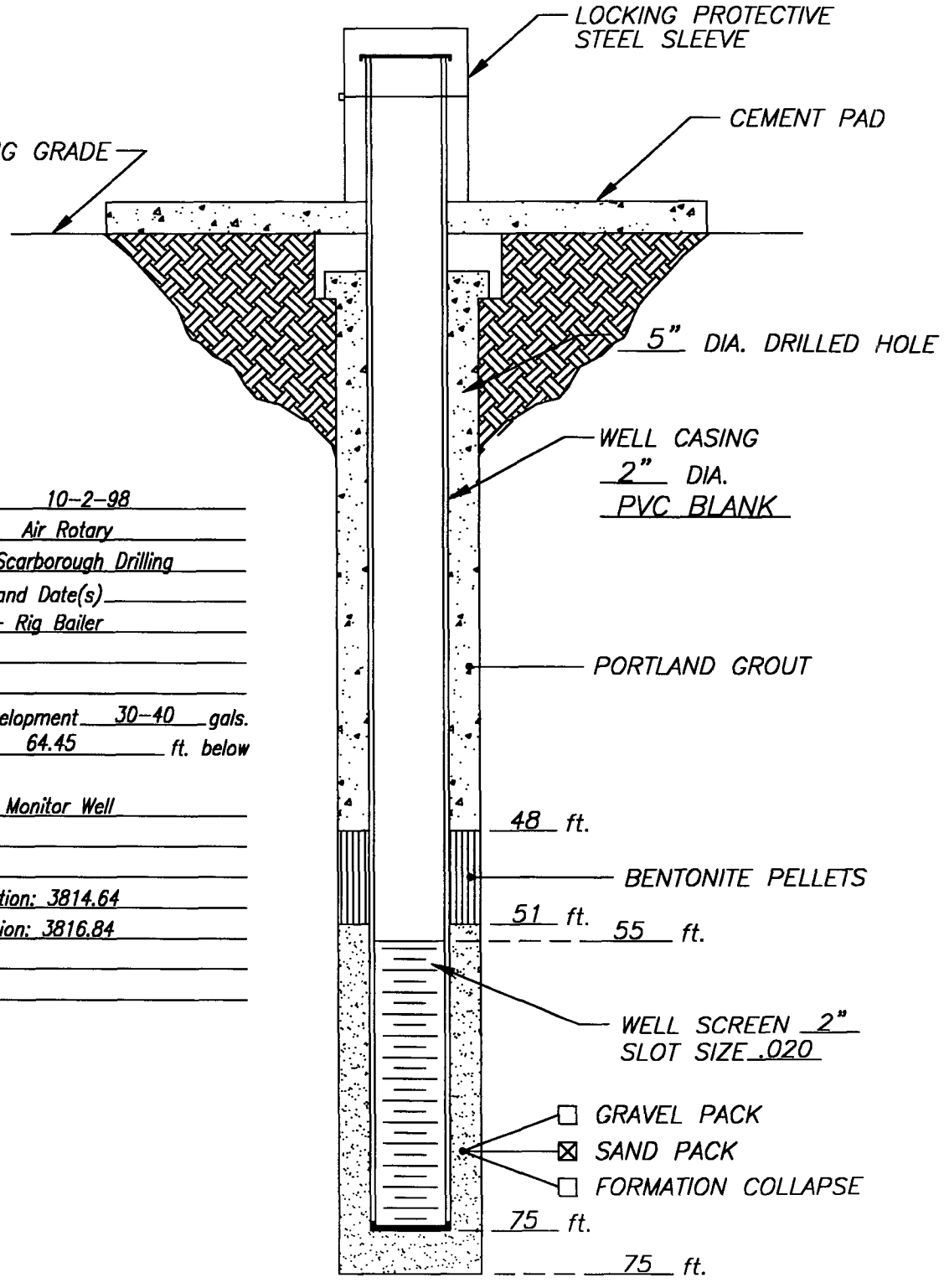
Installation Date(s) 10-1-98
Drilling Method Air Rotary
Drilling Contractor Scarborough Drilling
Development Technique(s) and Date(s)
11-5-98 - Rig Bailer

Water Removed During Development 30-40 gals.
Static Depth to Water 65.38 ft. below Ground Level
Well Purpose Monitor Well

Remarks
Ground Elevation: 3815.32
T.O.C. Elevation: 3817.41

DATE: 10-1-98 **Highlander Environmental**	CLIENT: *TITAN EXPLORATION & PRODUCTION, INC.* PROJECT: *LOVINGTON PADDOCK UNIT-PIT, ATB 1-1* LOCATION: *LEA COUNTY, NEW MEXICO*	WELL NO. MW-3

WELL CONSTRUCTION LOG



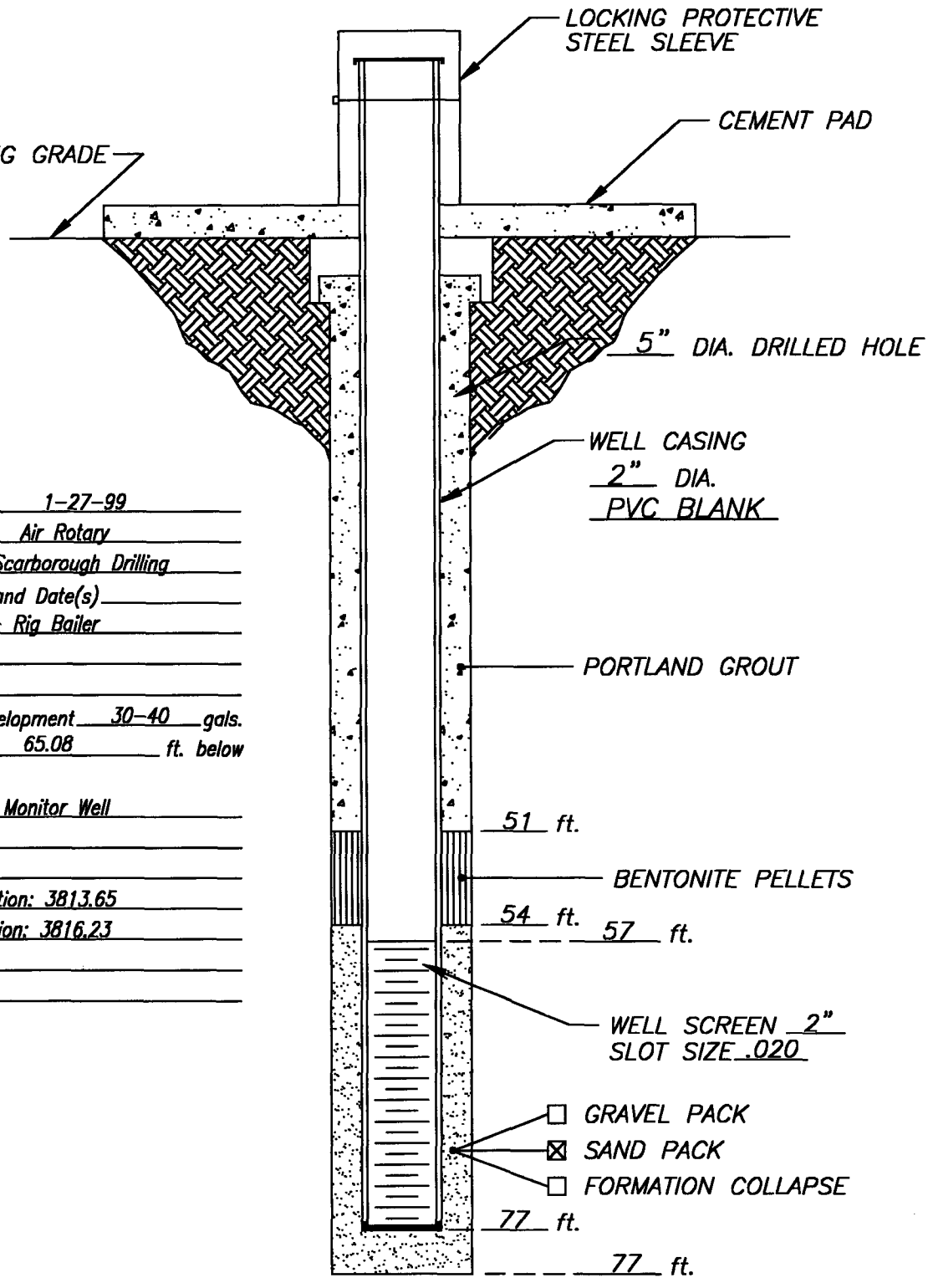
Installation Date(s) 10-2-98
Drilling Method Air Rotary
Drilling Contractor Scarborough Drilling
Development Technique(s) and Date(s)
11-5-98 - Rig Bailer

Water Removed During Development 30-40 gals.
Static Depth to Water 64.45 ft. below Ground Level
Well Purpose Monitor Well

Remarks
Ground Elevation: 3814.64
T.O.C. Elevation: 3816.84

DATE: 10-2-98 **Highlander Environmental**	CLIENT: TITAN EXPLORATION & PRODUCTION, INC. PROJECT: LOVINGTON PADDOCK UNIT-PIT, ATB 1-1 LOCATION: LEA COUNTY, NEW MEXICO	WELL NO. MW-4

WELL CONSTRUCTION LOG



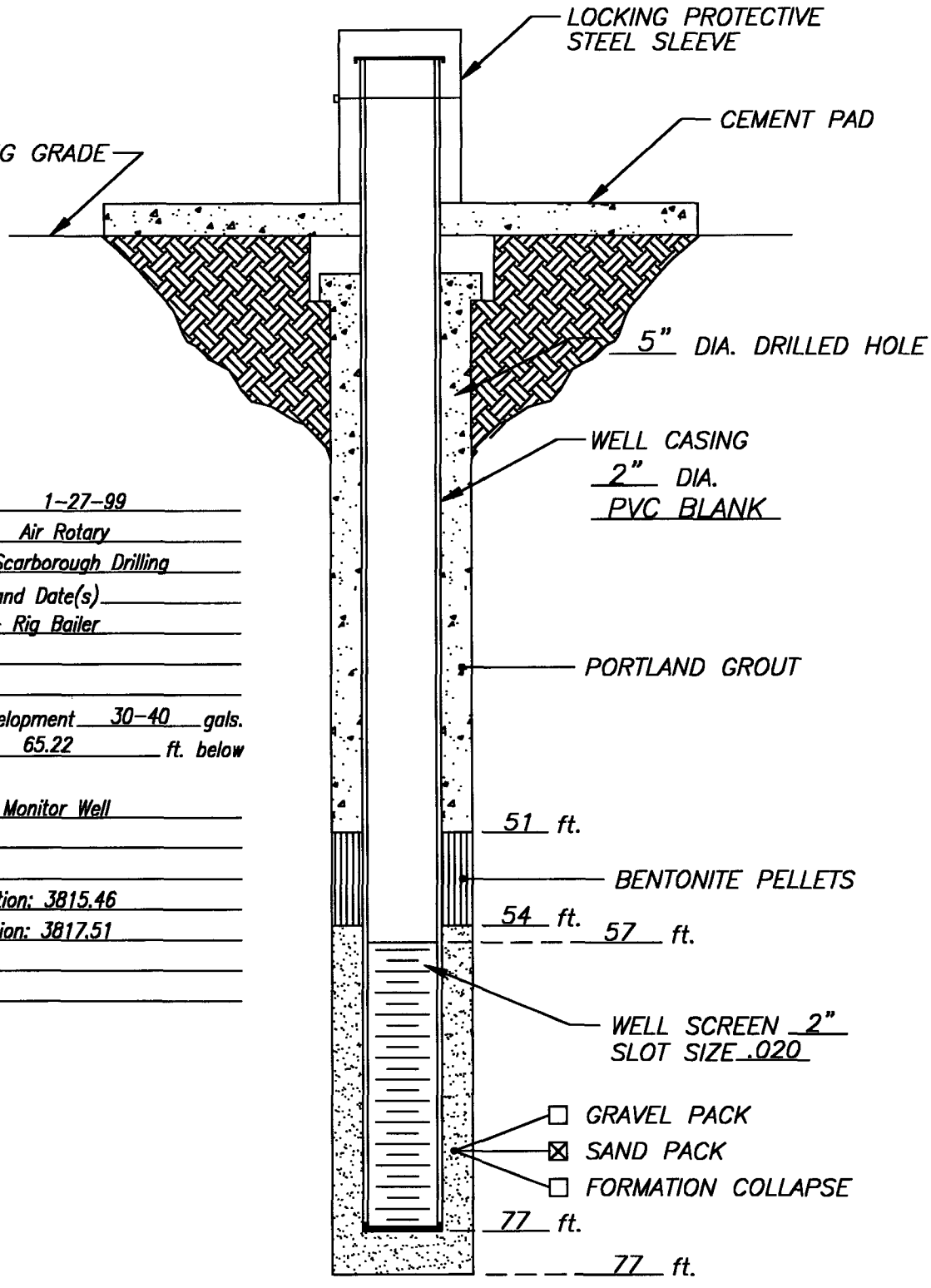
Installation Date(s) 1-27-99
Drilling Method Air Rotary
Drilling Contractor Scarborough Drilling
Development Technique(s) and Date(s)
1-27-99 - Rig Bailer

Water Removed During Development 30-40 gals.
Static Depth to Water 65.08 ft. below Ground Level
Well Purpose Monitor Well

Remarks
Ground Elevation: 3813.65
T.O.C. Elevation: 3816.23

DATE: 1/28/99	CLIENT: TITAN EXPLORATION & PRODUCTION, INC.	WELL NO.
Highlander Environmental	PROJECT: LOVINGTON PADDOCK UNIT-PIT, ATB 1-1	MW-5
	LOCATION: LEA COUNTY, NEW MEXICO	

WELL CONSTRUCTION LOG



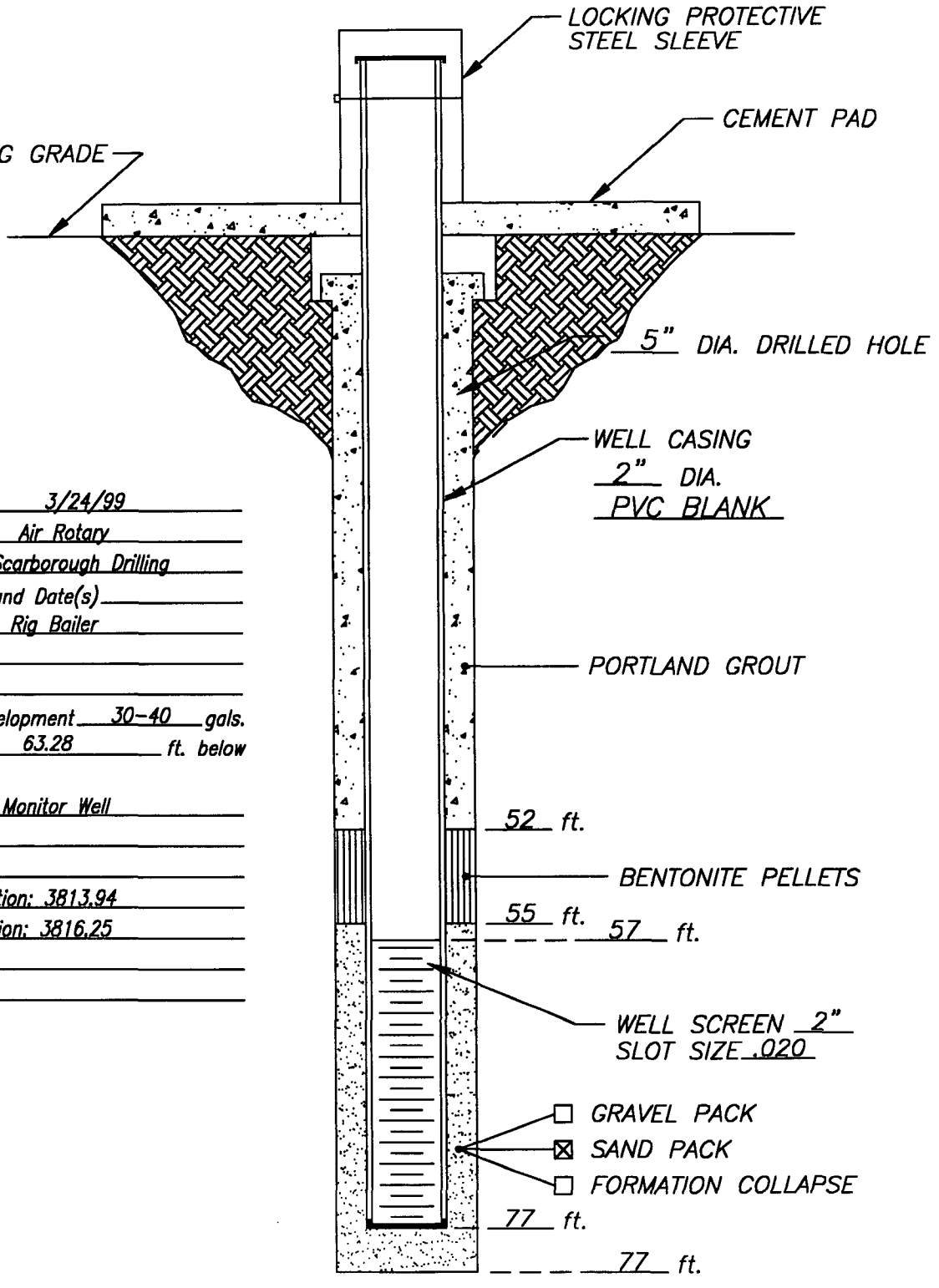
Installation Date(s) 1-27-99
Drilling Method Air Rotary
Drilling Contractor Scarborough Drilling
Development Technique(s) and Date(s)
1-27-99 - Rig Bailer

Water Removed During Development 30-40 gals.
Static Depth to Water 65.22 ft. below Ground Level
Well Purpose Monitor Well

Remarks
Ground Elevation: 3815.46
T.O.C. Elevation: 3817.51

DATE: 1/28/99 **Highlander Environmental**	**CLIENT:** TITAN EXPLORATION & PRODUCTION, INC. **PROJECT:** LOVINGTON PADDOCK UNIT-PIT, ATB 1-1 **LOCATION:** LEA COUNTY, NEW MEXICO	WELL NO. MW-6

WELL CONSTRUCTION LOG



Installation Date(s) 3/24/99
Drilling Method Air Rotary
Drilling Contractor Scarborough Drilling
Development Technique(s) and Date(s)
3/25/99 – Rig Bailer

Water Removed During Development 30–40 gals.
Static Depth to Water 63.28 ft. below Ground Level
Well Purpose Monitor Well

Remarks
Ground Elevation: 3813.94
T.O.C. Elevation: 3816.25

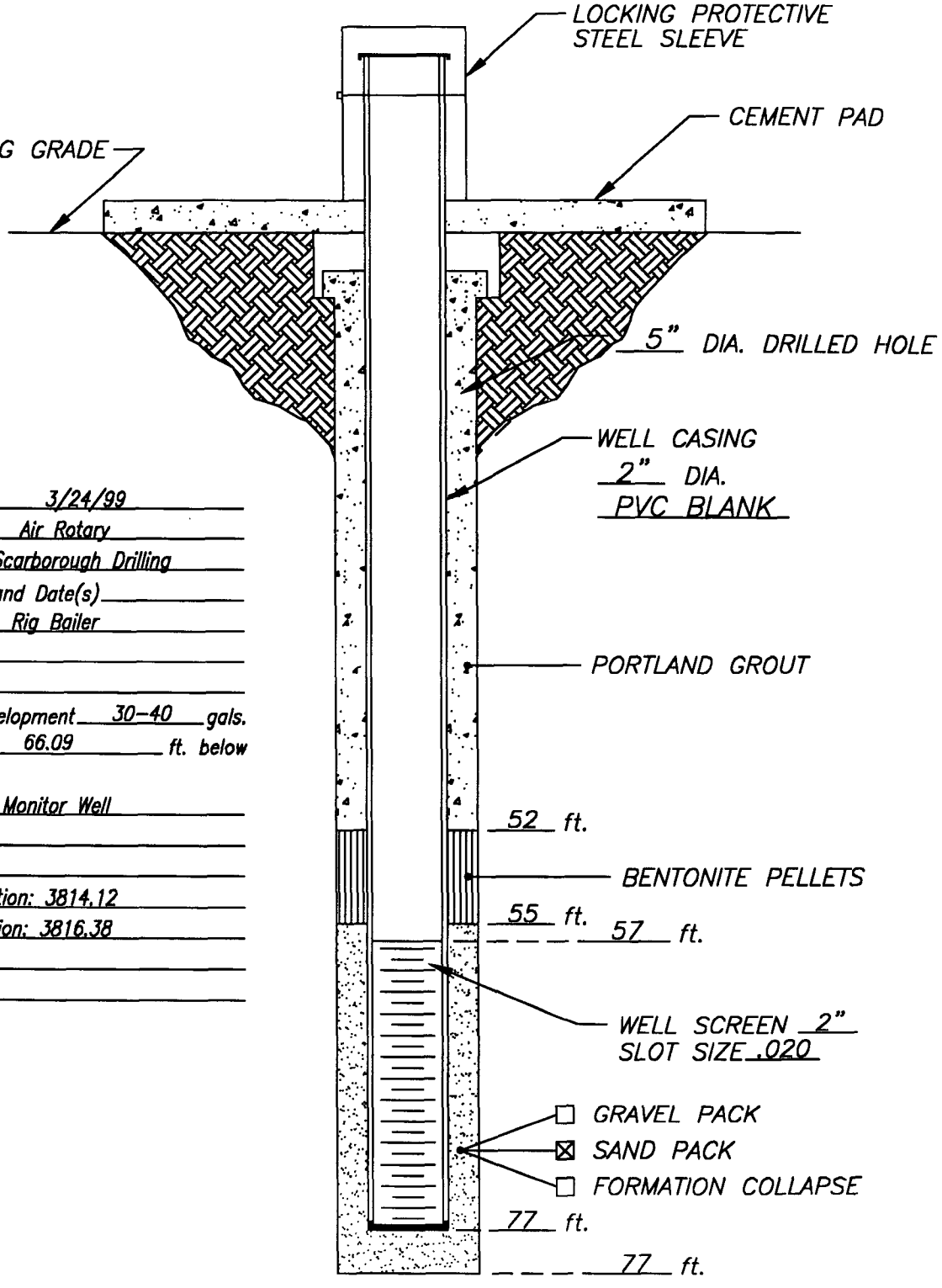
DATE: 3/24/99

Highlander Environmental

CLIENT: TITAN EXPLORATION & PRODUCTION, INC.
PROJECT: LOVINGTON PADDOCK UNIT–PIT, ATB 1–1
LOCATION: LEA COUNTY, NEW MEXICO

WELL NO. MW–7

WELL CONSTRUCTION LOG



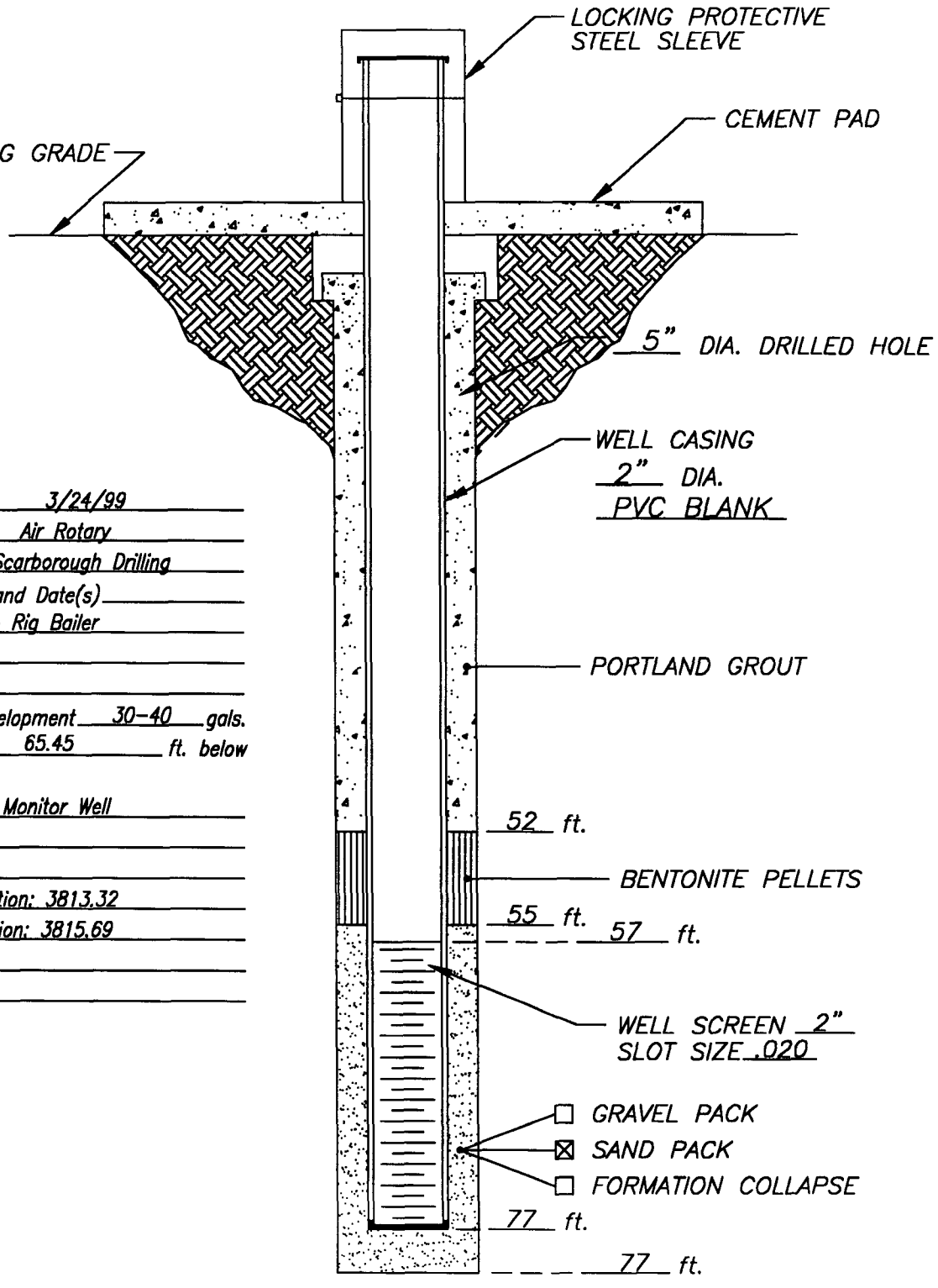
Installation Date(s) 3/24/99
Drilling Method Air Rotary
Drilling Contractor Scarborough Drilling
Development Technique(s) and Date(s)
3/25/99 - Rig Bailer

Water Removed During Development 30-40 gals.
Static Depth to Water 66.09 ft. below Ground Level
Well Purpose Monitor Well

Remarks
Ground Elevation: 3814.12
T.O.C. Elevation: 3816.38

DATE: 3/24/99 **Highlander Environmental**	CLIENT: *TITAN EXPLORATION & PRODUCTION, INC.* PROJECT: *LOVINGTON PADDOCK UNIT-PIT, ATB 1-1* LOCATION: *LEA COUNTY, NEW MEXICO*	WELL NO. MW-8

WELL CONSTRUCTION LOG



Installation Date(s) 3/24/99
Drilling Method Air Rotary
Drilling Contractor Scarborough Drilling
Development Technique(s) and Date(s)
3/25/99 – Rig Bailer

Water Removed During Development 30–40 gals.
Static Depth to Water 65.45 ft. below Ground Level
Well Purpose Monitor Well

Remarks
Ground Elevation: 3813.32
T.O.C. Elevation: 3815.69

DATE: 3/24/99

Highlander Environmental

CLIENT: TITAN EXPLORATION & PRODUCTION, INC.
PROJECT: LOVINGTON PADDOCK UNIT–PIT, ATB 1–1
LOCATION: LEA COUNTY, NEW MEXICO

WELL NO. MW–9

APPENDIX E

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

June 29, 1998
Receiving Date: 06/20/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Paddock Pit/
W. Lovington Pit

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL CORP.
Attention: Tim Reed
1910 N. Big Spring Street
Midland, TX 79705

Prep Date: 06/22/98
Analysis Date: 06/24/98
Sampling Date: 06/18/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Titan

TOTAL METALS (mg/kg)

TA#	Field Code	As	Se	Cd	Cr	Pb	Ag	Ba	Hg
T100765	W. Lovington Pit @ ATB 33-1	<10	<10	<2.0	<5.0	24	<2.0	12	<0.25
T100766	Lovington Paddock Pit @ ATB 1-1	<10	<10	<2.0	<5.0	14	<2.0	240	<0.25
ICV		0.99	1.0	1.0	1.0	1.0	0.19	0.97	5.0
CCV		0.99	1.0	1.0	1.0	1.0	0.19	1.0	5.0
Reporting Limit		10	10	2.0	5.0	10	2.0	10	0.25
RPD		2	4	2	3	7	2	2	9
% Extraction Accuracy		95	93	94	102	110	84	95	92
% Instrument Accuracy		99	100	100	100	100	95	98	100

CHEMIST: As, Se, Cd, Cr, Pb, Ag, Ba, Sb: RR Hg: HC
METHODS: EPA SW 846-3015, 6010B, 7470.
TOTAL METALS SPIKE: 200 mg/kg As, Se, Cd, Cr, Pb, Ba, Sb; 5.0 mg/kg Ag; 2.5 mg/kg Hg.
TOTAL METALS CV: 1.0 mg/L As, Se, Cd, Cr, Pb, Ba, Sb; 0.20 mg/L Ag; 5.0 mg/L Hg.

Director, Dr. Blair Leftwich

6-29-98
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 CORP.
Attention: Tim Reed
1910 N. Big Spring Street
Midland, TX 79705

June 26, 1998
Receiving Date: 06/20/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Paddock Pit/W. Lovington Pit

Prep Date: 06/24/98
Analysis Date: 06/24/98
Sampling Date: 06/18/98
Sample Condition: Intact
Sample Received by: VW
Project Name: Titan

TA#	FIELD CODE	TVHC (mg/kg)
T100765	W. Lovington Pit @ ATB 33-1	7,136
T100766	Lovington Paddock Pit @ ATB 1-1	7,390
QC		0.950
Reporting Limit		100
Method Blank		<100
RPD		0
% Instrument Accuracy		95

METHODS: EPA SW 846-8015 Modified.
CHEMIST: JG
TVHC QC: 1.0 mg/kg TVHC.

Director, Dr. Blair Leftwich

6-26-98
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 CORP.
Attention: Tim Reed
1910 N. Big Spring Street
Midland, TX 79705

June 29, 1998
Receiving Date: 06/20/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Paddock Pit/W. Lovington Pit

Prep Date: 06/22/98
Analysis Date: 06/22/98
Sampling Date: 06/18/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Titan

TA #: T100766
FIELD CODE: Lovington Paddock Pit @ ATB 1-1

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dichlorodifluoromethane	10,000	ND				
Chloromethane	10,000	ND				
Vinyl chloride	20,000	ND	98			98
Bromomethane	50,000	ND				
Chloroethane	10,000	ND				
Trichlorofluoromethane	10,000	ND				
1,1-Dichloroethene	10,000	ND	113	1	89	113
Methylene chloride	50,000	110,000				
trans-1,2-Dichloroethene	10,000	ND				
1,1-Dichloroethane	10,000	ND				
cis-1,2-Dichloroethene	10,000	ND				
Chloroform	10,000	ND	114			114
2,2-Dichloropropane	10,000	ND				
Bromochloromethane	10,000	ND				
1,2-Dichloroethane	10,000	ND				
1,1,1-Trichloroethane	10,000	ND				
Carbon Tetrachloride	10,000	ND				
1,1-Dichloropropene	10,000	ND				
Benzene	10,000	56,000		0	99	
1,2-Dichloropropane	10,000	ND	106			106
Trichloroethene	10,000	ND		1	105	
Dibromomethane	10,000	ND				
Bromodichloromethane	10,000	ND				
cis-1,3-Dichloropropene	10,000	ND				
trans-1,3-Dichloropropene	10,000	ND				
Toluene	10,000	130,000	106	0	88	106
1,1,2-Trichloroethane	10,000	ND				
1,3-Dichloropropane	10,000	ND				
MTBE	10,000	ND				

HIGHLANDER SERVICES

Project No: 1085/1086
Client Name: Titan
Project Name: Paddock Pit/W. Lovington Pit

TA #: T100766
Field Code: Lovington Paddock Pit @ ATB 1-1

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dibromochloromethane	10,000	ND				
1,2-Dibromoethane	10,000	ND				
Tetrachloroethene	10,000	ND				
Chlorobenzene	10,000	ND	109	2	100	109
1,1,1,2-Tertachloroethane	10,000	ND				
Ethylbenzene	10,000	160,000	115			115
m & p-Xylene	10,000	100,000				
Bromoform	10,000	ND				
Styrene	10,000	ND				
o-Xylene	10,000	42,000				
1,1,2,2-Tetrachloroethane	10,000	ND				
1,2,3-Trichloropropane	10,000	ND				
Isopropylbenzene	10,000	26,000				
Bromobenzene	10,000	ND				
2-Chlorotoluene	10,000	ND				
n-Propylbenzene	10,000	43,000				
4-Chlorotoluene	10,000	ND				
1,3,5-Trimethylbenzene	10,000	15,000				
tert-Butylbenzene	10,000	ND				
1,2,4-Trimethylbenzene	10,000	55,000				
1,4-Dichlorobenzene	20,000	ND				
sec-Butylbenzene	10,000	12,000				
1,3-Dichlorobenzene	20,000	ND				
4-Isopropyltoluene	10,000	ND				
1,2-Dichlorobenzene	20,000	ND				
n-Butylbenzene	10,000	22,000				
1,2-Dibromo-3-chloropropane	50,000	ND				
1,2,3-Trichlorobenzene	50,000	ND				
Naphthalene	10,000	22,000				
1,2,4-Trichlorobenzene	50,000	ND				
Hexachlorobutadiene	50,000	ND				

	% Recovery
Dibromofluoromethane	96
Toluene-d8	100
4-Bromofluorobenzene	103

ND = Not Detected

Methods: EPA SW 846-5030, 8260.
CHEMIST: AG

Director, Dr. Blair Leftwich

6-25-98
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

June 30, 1998
Receiving Date: 06/20/98
Sample Type: Soil
Sampling Date: 06/18/98
TA # T100766
Field Code: Lovington Paddock Pit @ ATB 1-1

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL
Attention: Tim Reed
1910 N. Big Spring Street
Midland, TX 79705

Sample Condition: Intact
Sample Received by: BL
Project Location: Levelland Unit
Central Battery
Project Name: Chemical Dock
Extraction Date: 06/22/98
Analysis Date: 06/25/98

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
N-Nitrosodimethylamine	500	ND				
2-Picoline	500	ND				
Methyl methanesulfonate	500	ND				
Ethyl methanesulfonate	500	ND				
Phenol	500	ND	81	3	75	101
Aniline	2500	ND				
bis(2-Chloroethyl)ether	2500	ND				
2-Chlorophenol	2500	ND		2	72	
1,3-Dichlorobenzene	500	ND				
1,4-Dichlorobenzene	500	ND	80	1	78	100
Benzyl alcohol	2500	ND				
1,2-Dichlorobenzene	500	ND				
2-Methylphenol	500	ND				
bis(2-chloroisopropyl)ether	2500	ND				
4-Methylphenol/3-Methylphenol	500	ND				
Acetophenone	2500	ND				
n-Nitrosodi-n-propylamine	500	ND		2	84	
Hexachloroethane	500	ND				
Nitrobenzene	500	ND				
N-Nitrosopiperidine	2500	ND				
Isophorone	2500	ND				
2-Nitrophenol	2500	ND	86			100
2,4-Dimethylphenol	2500	ND				
bis(2-Chloroethoxy)methane	500	ND				
Benzoic acid	5000	ND				
2,4-Dichlorophenol	2500	ND	70			88
1,2,4-Trichlorobenzene	500	ND		3	79	
a,a-Dimethylphenethylamine	5000	ND				
Naphthalene	500	ND				

[redacted] T100766
FIELD CODE: Lovington Paddock Pit @ ATB 1-1

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Chloroaniline	2500	ND				
2,6-Dichlorophenol	2500	ND				
Hexachlorobutadiene	500	ND	82			103
N-Nitroso-di-n-butylamine	2500	ND				
4-Chloro-3-methylphenol	2500	ND	88	3	90	110
2-Methylnaphthalene	500	ND				
1,2,4,5-Tetrachlorobenzene	500	ND				
Hexachlorocyclopentadiene	500	ND				
2,4,6-Trichlorophenol	2500	ND	84			105
2,4,5-Trichlorophenol	2500	ND				
2-Chloronaphthalene	500	ND				
1-Chloronaphthalene	500	ND				
2-Nitroaniline	2500	ND				
Dimethylphthalate	500	ND				
Acenaphthylene	500	ND				
2,6-Dinitrotoluene	500	ND				
3-Nitroaniline	2500	ND				
[redacted]aphthene	500	ND	78	2	82	98
2,4-Dinitrophenol	2500	ND				
Dibenzofuran	2500	ND				
Pentachlorobenzene	500	ND				
4-Nitrophenol	2500	ND			134	
1-Napthylamine	2500	ND				
2,4-Dinitrotoluene	500	ND		3	89	
2-Napthylamine	2500	ND				
2,3,4,6-Tetrachlorophenol	2500	ND				
Fluorene	500	ND				
Diethylphthalate	500	ND				
4-Chlorophenyl-phenylether	500	ND				
4-Nitroaniline	2500	ND				
4,6-Dinitro-2-methylphenol	2500	ND				
n-Nitrosodiphenylamine & Diphenylamine	500	ND	76			95
Diphenylhydrazine	2500	ND				

TA #100766
FIELD CODE: Lovington Paddock Pit @ ATB 1-1

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Bromophenyl-phenylether	500	ND				
Phenacetin	2500	ND				
Hexachlorobenzene	500	ND				
4-Aminobiphenyl	2500	ND				
Pentachlorophenol	2500	ND	95	21**	60	119
Pentachloronitrobenzene	2500	ND				
Pronamide	500	ND				
Phenanthrene	500	ND				
Anthracene	500	ND				
Di-n-butylphthalate	500	ND				
Fluoranthene	500	ND	76			95
Benzidine	5000	ND				
[illegible]rene	500	ND		1	83	
p-Dimethylaminoazobenzene	500	ND				
Butylbenzylphthalate	500	ND				
Benzo[a]anthracene	500	ND				
3,3-Dichlorobenzidine	2500	ND				
Chrysene	500	ND				
bis(2-Ethylhexyl)phthalate	500	ND				
Di-n-octlphthalate	500	ND	73			91
Benzo[b]fluoranthene	500	ND				
7,12-Dimethylbenz(a)anthracene	500	ND				
Benzo[k]fluoranthene	500	ND				
Benzo[a]pyrene	500	ND	79			99
3-Methylcholanthrene	500	ND				
Dibenzo(a,j)acridine	500	ND				
Indeno[1,2,3-cd]pyrene	500	ND				
Dibenz[a,h]anthracene	500	ND				
Benzo[g,h,i]perylene	500	ND				
[illegible]itrosodimethylamine	500	ND				

HIGHLANDER SERVICES
Project Location: Paddock Pit/W. Lovington Pit
Project Name: Titan

A #T100766
Field Code: Lovington Paddock Pit @ ATB 1-1

SURROGATES	% RECOVERY
2-Fluorophenol SURR	69
Phenol-d6 SURR	2***
Nitrobenzene-d5 SURR	78
2-Fluorobiphenyl SURR	99
2,4,6-Tribromophenol SURR	0***
Terphenyl-d14 SURR	118

*NOTE: Elevated reporting limits due to sample matrix interference.
**NOTE: RPD out of control limits <20 Pentachlorophenol
***NOTE: Surrogate out of control limits due to matrix

ND = NOT DETECTED

METHODS: EPA SW 8270, 3550.
CHEMIST: MB

Director, Dr. Blair Leftwich

6-30-98
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 CORP.
Attention: Tim Reed
1910 N. Big Spring Street
Midland, TX 79705

June 29, 1998
Receiving Date: 06/20/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Paddock Pit/W. Lovington Pit

Prep Date: 06/22/98
Analysis Date: 06/22/98
Sampling Date: 06/18/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Titan

TA #: T100765
FIELD CODE: W. Lovington Pit @ ATB 33-1

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dichlorodifluoromethane	10,000	ND				
Chloromethane	10,000	ND				
Vinyl chloride	20,000	ND	98			98
Bromomethane	50,000	ND				
Chloroethane	10,000	ND				
Trichlorofluoromethane	10,000	ND				
1,1-Dichloroethene	10,000	ND	113	1	89	113
Methylene chloride	50,000	ND				
trans-1,2-Dichloroethene	10,000	ND				
1,1-Dichloroethane	10,000	ND				
cis-1,2-Dichloroethene	10,000	ND				
Chloroform	10,000	ND	114			114
2,2-Dichloropropane	10,000	ND				
Bromochloromethane	10,000	ND				
1,2-Dichloroethane	10,000	ND				
1,1,1-Trichloroethane	10,000	ND				
Carbon Tetrachloride	10,000	ND				
1,1-Dichloropropene	10,000	ND				
Benzene	10,000	48,000		0	99	
1,2-Dichloropropane	10,000	ND	106			106
Trichloroethene	10,000	ND		1	105	
Dibromomethane	10,000	ND				
Bromodichloromethane	10,000	ND				
cis-1,3-Dichloropropene	10,000	ND				
trans-1,3-Dichloropropene	10,000	ND				
Toluene	10,000	220,000	106	0	88	106
1,1,2-Trichloroethane	10,000	ND				
1,3-Dichloropropane	10,000	ND				
MTBE	10,000	ND				

HIGHLANDER SERVICES

Project No: 1085/1086
Client Name: Titan
Project Name: Paddock Pit/W. Lovington Pit

TA #: T100765
Field Code: W. Lovington Pit @ ATB 33-1

8260 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	EA	IA
Dibromochloromethane	10,000	ND				
1,2-Dibromoethane	10,000	ND				
Tetrachloroethene	10,000	ND				
Chlorobenzene	10,000	ND	109	2	100	109
1,1,1,2-Tertachloroethane	10,000	ND				
Ethylbenzene	10,000	220,000	115			115
m & p-Xylene	10,000	170,000				
Bromoform	10,000	ND				
Styrene	10,000	ND				
o-Xylene	10,000	77,000				
1,1,2,2-Tetrachloroethane	10,000	ND				
1,2,3-Trichloropropane	10,000	ND				
Isopropylbenzene	10,000	34,000				
Bromobenzene	10,000	ND				
2-Chlorotoluene	10,000	ND				
n-Propylbenzene	10,000	55,000				
4-Chlorotoluene	10,000	ND				
1,3,5-Trimethylbenzene	10,000	25,000				
tert-Butylbenzene	10,000	ND				
1,2,4-Trimethylbenzene	10,000	95,000				
1,4-Dichlorobenzene	20,000	ND				
sec-Butylbenzene	10,000	20,000				
1,3-Dichlorobenzene	20,000	ND				
4-Isopropyltoluene	10,000	ND				
1,2-Dichlorobenzene	20,000	ND				
n-Butylbenzene	10,000	31,000				
1,2-Dibromo-3-chloropropane	50,000	ND				
1,2,3-Trichlorobenzene	50,000	ND				
Naphthalene	10,000	49,000				
1,2,4-Trichlorobenzene	50,000	ND				
Hexachlorobutadiene	50,000	ND				

	% Recovery
Dibromofluoromethane	92
Toluene-d8	100
4-Bromofluorobenzene	102

ND = Not Detected

Methods: EPA SW 846-5030, 8260.
CHEMIST: AG

Director, Dr. Blair Leftwich

6-25-98
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

June 30, 1998
Receiving Date: 06/20/98
Sample Type: Soil
Sampling Date: 06/18/98
TA # T100765
Field Code: W. Lovington Pit @ ATB 33-1

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL
Attention: Tim Reed
1910 N. Big Spring Street
Midland, TX 79705

Sample Condition: Intact
Sample Received by: BL
Project Location: Levelland Unit
Central Battery
Project Name: Chemical Dock
Extraction Date: 06/22/98
Analysis Date: 06/25/98

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
N-Nitrosodimethylamine	250	ND				
2-Picoline	250	ND				
Methyl methanesulfonate	250	ND				
Ethyl methanesulfonate	250	ND				
Phenol	250	ND	81	3	75	101
Aniline	1250	ND				
bis(2-Chloroethyl)ether	1250	ND				
2-Chlorophenol	1250	ND		2	72	
1,3-Dichlorobenzene	250	ND				
1,4-Dichlorobenzene	250	ND	80	1	78	100
Benzyl alcohol	1250	ND				
1,2-Dichlorobenzene	250	ND				
2-Methylphenol	250	ND				
bis(2-chloroisopropyl)ether	1250	ND				
4-Methylphenol/3-Methylphenol	250	ND				
Acetophenone	1250	ND				
n-Nitrosodi-n-propylamine	250	ND		2	84	
Hexachloroethane	250	ND				
Nitrobenzene	250	ND				
N-Nitrosopiperidine	1250	ND				
Isophorone	1250	ND				
2-Nitrophenol	1250	ND	86			100
2,4-Dimethylphenol	1250	ND				
bis(2-Chloroethoxy)methane	250	ND				
Benzoic acid	2500	ND				
2,4-Dichlorophenol	1250	ND	70			88
1,2,4-Trichlorobenzene	250	ND		3	79	
a,a-Dimethylphenethylamine	2500	ND				
Naphthalene	250	ND				

[redacted] T100765
FIELD CODE: W. Lovington Pit @ ATB 33-1

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Chloroaniline	1250	ND				
2,6-Dichlorophenol	1250	ND				
Hexachlorobutadiene	250	ND	82			103
N-Nitroso-di-n-butylamine	1250	ND				
4-Chloro-3-methylphenol	1250	ND	88	3	90	110
2-Methylnaphthalene/1-Methylnapthalene	250	260/390				
1,2,4,5-Tetrachlorobenzene	250	ND				
Hexachlorocyclopentadiene	250	ND				
2,4,6-Trichlorophenol	1250	ND	84			105
2,4,5-Trichlorophenol	1250	ND				
2-Chloronaphthalene	250	ND				
1-Chloronaphthalene	250	ND				
2-Nitroaniline	1250	ND				
Dimethylphthalate	250	ND				
Acenaphthylene	250	ND				
2,6-Dinitrotoluene	250	ND				
3-Nitroaniline	1250	ND				
[redacted]aphthene	250	ND	78	2	82	98
2,4-Dinitrophenol	1250	ND				
Dibenzofuran	12550	ND				
Pentachlorobenzene	250	ND				
4-Nitrophenol	1250	ND			134	
1-Napthylamine	1250	ND				
2,4-Dinitrotoluene	250	ND		3	89	
2-Napthylamine	1250	ND				
2,3,4,6-Tetrachlorophenol	1250	ND				
Fluorene	250	ND				
Diethylphthalate	250	ND				
4-Chlorophenyl-phenylether	250	ND				
4-Nitroaniline	1250	ND				
4,6-Dinitro-2-methylphenol	1250	ND				
n-Nitrosodiphenylamine & Diphenylamine	250	ND	76			95
Diphenylhydrazine	1250	ND				

IA #100765
FIELD CODE: W. Lovington Pit @ ATB 33-1

EPA 8270	Reporting Limit*	Concentration (mg/kg)	QC	RPD	%EA	%IA
4-Bromophenyl-phenylether	250	ND				
Phenacetin	1250	ND				
Hexachlorobenzene	250	ND				
4-Aminobiphenyl	1250	ND				
Pentachlorophenol	1250	ND	95	21**	60	119
Pentachloronitrobenzene	1250	ND				
Pronamide	250	ND				
Phenanthrene	250	ND				
Anthracene	250	ND				
Di-n-butylphthalate	250	ND				
Fluoranthene	250	ND	76			95
Benzidine	2500	ND				
[illegible]ene	250	ND		1	83	
p-Dimethylaminoazobenzene	250	ND				
Butylbenzylphthalate	250	ND				
Benzo[a]anthracene	250	ND				
3,3-Dichlorobenzidine	1250	ND				
Chrysene	250	ND				
bis(2-Ethylhexyl)phthalate	250	ND				
Di-n-octlphthalate	250	ND	73			91
Benzo[b]fluoranthene	250	ND				
7,12-Dimethylbenz(a)anthracene	250	ND				
Benzo[k]fluoranthene	250	ND				
Benzo[a]pyrene	250	ND	79			99
3-Methylcholanthrene	250	ND				
Dibenzo(a,j)acridine	250	ND				
Indeno[1,2,3-cd]pyrene	250	ND				
Dibenz[a,h]anthracene	250	ND				
Benzo[g,h,i]perylene	250	ND				
[illegible]itrosodimethylamine	250	ND				

HIGHLANDER SERVICES
Project Location: Paddock Pit/W. Lovington Pit
Project Name: Titan

#T100765
Field Code: W. Lovington Pit @ ATB 33-1

SURROGATES	% RECOVERY
2-Fluorophenol SURR	51
Phenol-d6 SURR	7***
Nitrobenzene-d5 SURR	87
2-Fluorobiphenyl SURR	103
2,4,6-Tribromophenol SURR	52
Terphenyl-d14 SURR	112

*NOTE: Elevated reporting limits due to sample matrix interference.
**NOTE: RPD out of control limits <20 Pentachlorophenol
***NOTE: Surrogate out of control limits due to matrix

ND = NOT DETECTED

METHODS: EPA SW 8270, 3550.
CHEMIST: MB

Director, Dr. Blair Leftwich

6-30-98
Date

100765-   354

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: Titan
SITE MANAGER: Tim Reed
PROJECT NO.: 1085/1086
PROJECT NAME: Paddock Pit / W. Lovington Pit

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 (modified 8015)	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)
100765	6.18.98	2:00	SL		X	W. Lovington Pit @ ATB 33-1					X				X		X					X	X						
766	6.18.98	2:45	SL		X	~~Paddock~~ Lovington Paddock Pit @ ATB 1-1					X				X		X					X	X						

RELINQUISHED BY: (Signature) Lynn A Ward	Date: 6-19-98 Time: 3:10 pm	RECEIVED BY: (Signature) [signature] Date: 6/19/98 Time: 3:10
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: Lubbock STATE: ZIP: CONTACT: PHONE:		RECEIVED BY: (Signature) Vicki Wondham DATE: 6-20-98 TIME: 9:30 Am

SAMPLED BY: (Print & Sign) Lynn Ward   Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS UPS (HAND DELIVERED) AIRBILL #: 6-30-98 OTHER:
HIGHLANDER CONTACT PERSON: Tim Reed
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: Need results by 6-26-98   fax 6-26-98   F6-30   HTUHCS (8-1...)

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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

July 13, 1998
Receiving Date: 07/03/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Lea County, NM

Prep Date: 07/10/98
Analysis Date: 07/10/98
Sampling Date: 06/30/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc.
Project Name: Titan - Lovington
Padlock & West Lovington
Lea County

TA#	Field Code	TVHC (mg/kg)
T101932	LPU BH-1 (20-21')	12.1
T101933	LPU BH-1 (30-31')	12.0
T101935	LPU BH-2 (15-16')	<5.00
T101937	LPU BH-2 (30-31')	<5.00
T101939	LPU BH-3 (15-16')	<5.00
T101941	LPU BH-3 (30-31')	<5.00
T101943	LPU BH-4 (15-16')	<5.00
T101944	LPU BH-4 (30-31')	<5.00
T101945	WLU BH-1 (10-11')	<5.00
T101947	WLU BH-1 (30-31')	<5.00
T101948	WLU BH-2 (10-11')	<5.00
T101950	WLU BH-2 (30-31')	<5.00
T101951	WLU BH-3 (10-11')	<5.00
T101953	WLU BH-3 (30-31')	<5.00
T101955	WLU BH-4 (10-11')	<5.00
T101957	WLU BH-4 (30-31')	<5.00
QC	Quality Control	0.880
METHOD BLANK		<5.00
REPORTING LIMIT		5.00
RPD		1
% Extraction Accuracy		92
% Instrument Accuracy		88

METHODS: EPA SW 846-5030, Modified 8015.
CHEMIST: JG
TVHC SPIKE: 1.000 mg/kg TVHC.
TVHC QC: 1.000 mg/L TVHC.

Director, Dr. Blair Leftwich

7-13-98
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, TX 79705

July 10, 1998
Receiving Date: 07/03/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Lea County, NM

Prep Date: 07/07/98
Analysis Date: 07/07/98
Sampling Date: 06/30/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc
Project Name: Titan - Lovington
Padlock & West Lovington
Lea County

TA#	Field Code	DRO (mg/kg)
T101932	LPU BH-1 (20-21')	<50
T101933	LPU BH-1 (30-31')	<50
T101935	LPU BH-2 (15-16')	<50
T101937	LPU BH-2 (30-31')	<50
T101939	LPU BH-3 (15-16')	<50
T101941	LPU BH-3 (30-31')	<50
T101943	LPU BH-4 (15-16')	<50
T101944	LPU BH-4 (30-31')	<50
T101945	WLU BH-1 (10-11')	<50
T101947	WLU BH-1 (30-31')	<50
T101948	WLU BH-2 (10-11')	<50
T101955	WLU BH-4 (10-11')	<50
T101957	WLU BH-4 (30-31')	<50
QC	Quality Control	224
REPORTING LIMIT		50
RPD		24
% Extraction Accuracy		85
% Insturment Accuracy		90

METHODS: EPA SW 846-8015B, 8011.
CHEMIST: MS
DRO SPIKE: 250 mg/kg DRO.
DRO QC: 250 mg/L DRO.

Director, Dr. Blair Leftwich

7-10-98
Date

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

July 10, 1998
Receiving Date: 07/03/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Lea County, NM

Prep Date: 07/07/98
Analysis Date: 07/07/98
Sampling Date: 06/30/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc
Project Name: Titan - Lovington
Padlock & West Lovington
Lea County

TA#	Field Code	DRO (mg/kg)
T101950	WLU BH-2 (30-31)	<50
T101951	WLU BH-3 (10-11)	<50
T101953	WLU BH-3 (30-31)	<50
QC	Quality Control	218
REPORTING LIMIT		50
RPD		24
% Extraction Accuracy		83
% Insturment Accuracy		87

METHODS: EPA SW 846-8015B, 8011.
CHEMIST: MS
DRO SPIKE: 250 mg/kg DRO.
DRO QC: 250 mg/L DRO.

Director, Dr. Blair Leftwich

7-10-98
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

Lab Receiving # : 9807000072
Sampling Date: 6/29/98 - 6/30/98
Sample Condition: Intact and Cool
Sample Received By: VW

Date: Jul 13, 1998
Date Rec: 7/3/98
Project: 1085-1086
Proj Name: Paddock Pit /W. Lovington Pit
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)
101932	LPU BH-1 (20-21')	Soil	<0.050	0.057	<0.050	<0.050	0.057
101933	LPU BH-1 (30-31')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101935	LPU BH-2 (15-16')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101937	LPU BH-2 (30-31')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101939	LPU BH-3 (15-16')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101941	LPU BH-3 (30-31')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101943	LPU BH-4 (15-16')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101944	LPU BH-4 (30-31')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101945	WLU BH-1 (10-11)	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101947	WLU BH-1 (30-31)	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			0.098	0.098	0.097	0.312	
RPD			3	4	3	2	
% Extraction Accuracy			102	101	101	109	
% Instrument Accuracy			98	98	97	104	

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
BTEX	EPA 5030	7/10/98	EPA 8021B	7/10/98	JG	0.100 ea	5 ea

BL

Director, Dr. Blair Leftwich

7-13-98

Date

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

Date: Jul 10, 1998
Date Rec: 7/3/98
Project: 1085-1086
Proj Name: Paddock Pit /W. Lovington Pit
Proj Loc: N/A

Lab Receiving # : 9807000072
Sampling Date: 6/30/98 - 7/1/98
Sample Condition: Intact and Cool
Sample Received By: VW

TA#	Field Code	MATRIX	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL-BENZENE (mg/Kg)	M,P,O XYLENE (mg/Kg)	TOTAL BTEX (mg/Kg)
101948	WLU BH-2 (10-11)	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101950	WLU BH-2 (30-31)	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101951	WLU BH-3 (10-11')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101953	WLU BH-3 (30-31')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101955	WLU BH-4 (10-11')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
101957	WLU BH-4 (30-31')	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			0.098	0.098	0.097	0.312	
RPD			3	4	3	2	
% Extraction Accuracy			102	101	101	109	
% Instrument Accuracy			98	98	97	104	

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
BTEX	EPA 5030	7/10/98	EPA 8021B	7/10/98	JG	0.100 ea	5 ea

BZ
Director, Dr. Blair Leftwich

7-10-98
Date

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

July 13, 1998
Receiving Date: 07/03/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Lea County, NM

Prep Date: 07/07/98
Analysis Date: 07/07/98
Sampling Date: 06/30/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc.
Project Name: Titan - Lovington
Padlock & West Lovington
Lea County

TA#	Field Code	CHLORIDE (mg/kg)
T101931	LPU BH-1 (10-11')	190
T101932	LPU BH-1 (20-21')	140
T101933	LPU BH-1 (30-31')	210
T101934	LPU BH-2 (10-11')	16
ICV		13
CCV		11
REPORTING LIMIT		0.5
RPD		1
% Extraction Accuracy		93
% Instrument Accuracy		95

METHODS: EPA 300.0.
CHEMIST: JS
CHLORIDE SPIKE: 12.5 mg/kg CHLORIDE.
CHLORIDE CV: 12.5 mg/L CHLORIDE.

Director, Dr. Blair Leftwich

7-13-98
Date

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

July 13, 1998
Receiving Date: 07/03/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Lea County, NM

Prep Date: 07/07/98
Analysis Date: 07/07/98
Sampling Date: 06/30/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc.
Project Name: Titan - Lovington
Padlock & West Lovington
Lea County

TA#	Field Code	CHLORIDE (mg/kg)
T101935	LPU BH-2 (15-16')	14
T101937	LPU BH-2 (30-31')	17
T101938	LPU BH-3 (10-11')	8.9
T101939	LPU BH-3 (15-16')	14
T101941	LPU BH-3 (30-31')	12
ICV		11
CCV		11
REPORTING LIMIT		0.5
RPD		0
% Extraction Accuracy		94
% Instrument Accuracy		95

METHODS: EPA 300.0.
CHEMIST: JS
CHLORIDE SPIKE: 12.5 mg/kg CHLORIDE.
CHLORIDE CV: 12.5 mg/L CHLORIDE.

Director, Dr. Blair Leftwich

7-13-98
Date

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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

July 13, 1998
Receiving Date: 07/03/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Lea County, NM

Prep Date: 07/07/98
Analysis Date: 07/07/98
Sampling Date: 06/30/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc.
Project Name: Titan - Lovington
Padlock & West Lovington
Lea County

TA#	Field Code	CHLORIDE (mg/kg)
T101942	LPU BH-4 (10-11')	13
T101943	LPU BH-4 (15-16')	10
T101944	LPU BH-4 (30-31')	13
T101945	WLU BH-1 (10-11')	200
ICV		11
CCV		11
REPORTING LIMIT		0.5
RPD		0
% Extraction Accuracy		94*
% Instrument Accuracy		95

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

METHODS: EPA 300.0.
CHEMIST: JS
CHLORIDE SPIKE: 12.5 mg/kg CHLORIDE.
CHLORIDE CV: 12.5 mg/L CHLORIDE.

Director, Dr. Blair Leftwich

7-13-98
Date

TRACEANALYSIS, INC.

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

July 13, 1998
Receiving Date: 07/03/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Lea County, NM

Prep Date: 07/07/98
Analysis Date: 07/07/98
Sampling Date: 06/30/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc.
Project Name: Titan - Lovington
Padlock & West Lovington
Lea County

TA#	Field Code	CHLORIDE (mg/kg)
T101948	WLU BH-2 (10-11')	50
T101950	WLU BH-2 (30-31')	360
T101951	WLU BH-3 (10-11')	190
T101953	WLU BH-3 (30-31')	440
ICV		11
CCV		12
REPORTING LIMIT		0.5
RPD		1
% Extraction Accuracy		99*
% Instrument Accuracy		96

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

METHODS: EPA 300.0.
CHEMIST: JS
CHLORIDE SPIKE: 12.5 mg/kg CHLORIDE.
CHLORIDE CV: 12.5 mg/L CHLORIDE.

Director, Dr. Blair Leftwich

7-13-98
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

July 13, 1998
Receiving Date: 07/03/98
Sample Type: Soil
Project No: 1085/1086
Project Location: Lea County, NM

Prep Date: 07/09/98
Analysis Date: 07/09/98
Sampling Date: 06/30/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc.
Project Name: Titan - Lovington
Padlock & West Lovington
Lea County

TA#	Field Code	CHLORIDE (mg/kg)
T101947	WLU BH-1 (30-31')	71
T101954	WLU BH-4 (5-6')	59
T101955	WLU BH-4 (10-11')	790
T101957	WLU BH-4 (30-31')	520
ICV		12
CCV		12
REPORTING LIMIT		0.5
RPD		0
% Extraction Accuracy		85
% Instrument Accuracy		98

METHODS: EPA 300.0.
CHEMIST: JS
CHLORIDE SPIKE: 62.5 mg/kg CHLORIDE.
CHLORIDE CV: 12.5 mg/L CHLORIDE.

Director, Dr. Blair Leftwich

7-13-98
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: Titan Exploration, Inc.

SITE MANAGER: Ike Tavarez

PROJECT NO.: 1085/1086

PROJECT NAME: Titan-Lovington Paddock & West Lovington 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)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH (8015) Gro/Dro per Standard	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)	Chloride
101931	6/29/98		S		1	LPU BH-1 (10-11')	1				✓																		X
32			S		1	LPU BH-1 (20-21')	1				✓		X		X														X
33			S		1	LPU BH-1 (30-31')	1				✓		X		X														X
34			S		1	LPU BH-2 (10-11')	1				✓																		X
35			S		1	LPU BH-2 (15-16')	1				✓		X		X														X
36			S		1	LPU BH-2 (20-21')	1				✓				Hold.														
37			S		1	LPU BH-2 (30-31')	1				✓		X		X														X
38	6-30-98		S		1	LPU BH-3 (10-11')	1				✓																		X
39	6-30-98		S		1	LPU BH-3 (15-16')	1				✓		X		X														X
40	6-30-98		S		1	LPU BH-3 (20-21')	1				✓				Hold.														

RELINQUISHED BY: (Signature) Ike Tavarez — Date: 7/2/98 Time: 3:00

RECEIVED BY: (Signature) Helen Shelton — Date: 7/2/98 Time: 3:00 PM

SAMPLED BY: (Print & Sign) Ike Tavarez — Date: Time:

RELINQUISHED BY: (Signature) Helen Shelton — Date: 7/2/98 Time: 5:30 PM

RECEIVED BY: (Signature) — Date: Time:

SAMPLE SHIPPED BY: (Circle) FEDEX BUS UPS HAND DELIVERED — AIRBILL # 55-758 9560 — 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) Kelly Windham B

DATE: 7-3-98 TIME: 9:40 AM

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

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

REMARKS:

7/13/98

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: 2 OF: 3

CLIENT NAME: Titan Exploration Inc. SITE MANAGER: Ike Tavarez

PROJECT NO.: 1085/1086 PROJECT NAME: Titan - Lovington Pollock & West Lovington Lea County.

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 per M. Larsen 7-3-98 mb	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)	Chloride
101941	6-30-98		S		1	LPU. BH-3 (30-31')	1				✓		X		X														X
42			S		1	LPU BH-4 (10-11')	1				✓																		X
43			S		1	LPU BH-4 (15-16')	1				✓		X		X														X
44			S		1	LPU BH-4 (30-31')	1				✓		X		X														X
45			S		1	W.LU. BH-1 (10-11)	1				✓		X		X														X
46			S		1	W.LU. BH-1 (20-21)	1				✓		Hold.																
47			S		1	WLU BH-1 (30-31)	1				✓		X		X														X
48			S		1	WLU. BH-2 (10-11)	1				✓		X		X														X
49			S		1	WLU. BH-2 (20-21)	1				✓		Hold																
50			S		1	WLU. BH-2 (30-31)	1				✓		X		X														X

RELINQUISHED BY: (Signature) Date: 7/2/98 Time: 3:00 RECEIVED BY: (Signature) Helen Shelton Date: 7/2/98 Time: 3:00 PM

RELINQUISHED BY: (Signature) Helen Shelton Date: 7-2-98 Time: 5:30 PM RECEIVED BY: (Signature) Date: Time:

RELINQUISHED BY: (Signature) Date: Time: RECEIVED BY: (Signature) Date: 7-3-98 Time: 5:40 PM

RECEIVING LABORATORY: Trace RECEIVED BY: (Signature)

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

SAMPLED BY: (Print & Sign) Ike Tavarez Date: Time:

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

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:

4/0

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: 3 OF: 3

CLIENT NAME: Intex Exploration Inc. SITE MANAGER: IKE Tavarez

PROJECT NO.: 1085/1086 PROJECT NAME: IKE Tavarez

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 GC/FID	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)	Chloride
101951	7/1/98		S		1	WLW. BH-3 (10-11')	1				✓		X		X															X
52			S		1	WLW BH-3 (20-21')	1				✓				Hold.															
53			S		1	WLW. BH-3 (30-31')	1				✓		X		X															X
54			S		1	WLW. BH-4 ~~(10-11')~~ (5-6')	1				✓																			X
55			S		1	WLW. BH-4 (10-11')	1				✓		X		X															X
56			S		1	WLW. BH-4 (20-21')	1				✓				Hold.															
57			S		1	WLW. BH-4 (30-31')	1				✓		X		X															X

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature) Date: 7/2/98 Time: 5:00
RECEIVED BY: (Signature) Helen Shelton Date: 7/2/98 Time: 3:00 PM

RELINQUISHED BY: (Signature) Helen Shelton Date: 7/2/98 Time: 5:30PM
RECEIVED BY: (Signature) Date: Time:

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

SAMPLED BY: (Print & Sign) IKE Tavarez Date: Time:

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

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

RECEIVED BY: (Signature) Richard Wrocher
DATE: 7-3-98 TIME: 9:40 AM

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:

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

TRACE ANALYSIS, INC.

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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: Aug 27, 1998
Date Rec: 8/19/98
Project: Titan-Paddock Pit & West Lovington Pit
Proj Name: Titan-Paddock Pit & West Lovington Pit
Proj Loc: Lea County,NM

Lab Receiving # : 9808000372
Sampling Date: 8/17/98 - 8/19/98
Sample Condition: Intact and Cool
Sample Received By: VW

TA#	Field Code	MATRIX	GRO (mg/Kg)
105363	LPU BH-5 (10-11')	Soil	397
105366	LPU BH-5 (25-26')	Soil	182
105369	LPU BH-5 (40-41')	Soil	274
105371	LPU BH-5 (50-51')	Soil	10.1
105374	WLU BH-5 (5-6')	Soil	<5.00
105378	WLU BH-5 (30-31')	Soil	<5.00
105381	WLU BH-5 (60-61')	Soil	7.88
Method Blank			<5.00
Reporting Limit			5
QC			0.98

RPD	4
% Extraction Accuracy	100
% Instrument Accuracy	98

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
GRO	EPA 5030	8/26/98	EPA 8015B	8/27/98	CS	1	1

BB

Director, Dr. Blair Leftwich

8-27-98

Date

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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

September 01, 1998
Receiving Date: 08/19/98
Sample Type: Soil
Project No: 1085/1086
Project Location: NA

Prep Date: 08/27/98
Analysis Date: 08/27/98
Sampling Date: 08/17/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc.
Project Name: Titan - Paddock Pit & West Lovington Pit
Lea County, NM

TA#	FIELD CODE	DRO (mg/kg)
T105363	LPU BH-5 (10-11')	3,940
T105378	WLU BH-5 (30-31')	<50
QC	Quality Control	536
REPORTING LIMIT		50
RPD		3
% Extraction Accuracy		84
% Instrument Accuracy		107

METHODS: EPA SW 846-8011, 8015B Modified.
CHEMIST: SLR
DRO SPIKE: 500 mg/kg DRO.
DRO CV: 500 mg/L DRO.

Director, Dr. Blair Leftwich

9-1-98
DATE

TRACEANALYSIS, 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 25, 1998
Receiving Date: 08/19/98
Sample Type: Soil
Project No: 1085/1086
Project Location: NA

Prep Date: 08/18/98
Analysis Date: 08/18/98
Sampling Date: 08/17/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc.
Project Name: Titan - Paddock Pit & West Lovington Pit
Lea County, NM

TA#	FIELD CODE	DRO (mg/kg)
T105366	LPU BH-5 (25-26')	1,840
T105369	LPU BH-5 (40-41')	2,080
T105371	LPU BH-5 (50-51')	1,709
T105374	WLU BH-5 (5-6')	210
T105381	WLU BH-5 (60-61')	<50
QC	Quality Control	227
REPORTING LIMIT		50
RPD		4
% Extraction Accuracy		101
% Instrument Accuracy		91

METHODS: EPA SW 846-8011, 8015B Modified.
CHEMIST: SLR
DRO SPIKE: 250 mg/kg DRO.
DRO CV: 250 mg/L DRO.

Director, Dr. Blair Leftwich

8-25-98
DATE

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

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

Lab Receiving # : 9808000372
Sampling Date: 8/17/98 - 8/19/98
Sample Condition: Intact and Cool
Sample Received By: VW

Date: Aug 27, 1998
Date Rec: 8/19/98
Project: Titan-Paddock Pit & West L
Proj Name: Titan-Paddock Pit & West Lovington Pit
Proj Loc: Lea County,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)
105363	LPU BH-5 (10-11')	Soil	<0.050	3.57	0.189	59.8	63.6
105366	LPU BH-5 (25-26')	Soil	0.167	6.24	21.3	28.4	56.1
105369	LPU BH-5 (40-41')	Soil	<0.100	1.63	7.76	17.8	27.2
105371	LPU BH-5 (50-51')	Soil	<0.100	<0.100	<0.100	<0.100	<0.100
105374	WLU BH-5 (5-6')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
105378	WLU BH-5 (30-31')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
105381	WLU BH-5 (60-61')	Soil	<0.050	<0.050	<0.050	0.785	0.785
Method Blank			<0.050	<0.050	<0.050	<0.050	
Reporting Limit			0.05	0.05	0.05	0.05	
QC			0.106	0.107	0.107	0.315	
RPD			3	4	3	4	
% Extraction Accuracy			105	106	107	105	
% Instrument Accuracy			106	107	107	105	

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
BTEX	EPA 5030	8/26/98	EPA 8021B	8/26/98	CS	0.100 ea	5 ea

Director, Dr. Blair Leftwich

8-27-98
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 28, 1998
Receiving Date: 08/19/98
Sample Type: Soil
Location Address: Lea County, NM
Project No: 1085/1086
Project Name: Titan-Paddock Pit & West Lovington Pit

Prep Date: 08/25/98
Analysis Date: 08/25/98
Sampling Date: 08/17/98
Sample Condition: Intact & Cool
Sample Received by: VW

TA#	FIELD CODE	CHLORIDE (mg/kg)
T105363	LPU BH-5 (10-11)	13
ICV		11.79
CCV		11.87
REPORTING LIMIT		0.5
RPD		3
% Extraction Accuracy		93
% Instrument Accuracy		95

METHODS: EPA 300.0
CHEMIST: JS
TOTAL Cl SPIKE: 12.5 mg/kg TOTAL Cl.
TOTAL Cl CV: 12.5 mg/L TOTAL Cl.

Director, Dr. Blair Leftwich

8-28-98
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 28, 1998
Receiving Date: 08/19/98
Sample Type: Soil
Location Address: Lea County, NM
Project No: 1085/1086
Project Name: Titan-Paddock Pit & West Lovington Pit

Prep Date: 08/25/98
Analysis Date: 08/25/98
Sampling Date: 08/17/98
Sample Condition: Intact & Cool
Sample Received by: VW

TA#	FIELD CODE	CHLORIDE (mg/kg)
T105366	LPU BH-5 (25-26)	24
ICV		11.85
CCV		11.81
REPORTING LIMIT		0.5
RPD		0
% Extraction Accuracy		95
% Instrument Accuracy		95

METHODS: EPA 300.0
CHEMIST: JS
TOTAL Cl SPIKE: 12.5 mg/kg TOTAL Cl.
TOTAL Cl CV: 12.5 mg/L TOTAL Cl.

Director, Dr. Blair Leftwich

8-28-98
DATE

TRACEANALYSIS, 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

September 02, 1998
Receiving Date: 08/19/98
Sample Type: Soil
Project No: 1085/1086
Project Location: NA

Prep Date: 09/01/98
Analysis Date: 09/01/98
Sampling Date: 08/17/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration, Inc.
Project Name: Titan-Paddock Pit &
West Lovington Pit
Lea County, NM

TA#	FIELD CODE	CHLORIDE (mg/kg)
T105369	LPU BH-5 (40-41')	12
T105371	LPU BH-5 (50-51')	13
T105374	WLU BH-5 (5-6')	1,600
T105379	WLU BH-5 (40-41')	530
T105380	WLU BH-5 (50-51')	180
T105381	WLU BH-5 (60-61')	510
ICV		502
CCV		495
REPORTING LIMIT		2.0
RPD		0
% Extraction Accuracy		105
% Instrument Accuracy		100

METHODS: EPA SM 4500 Cl-B.
CHEMIST: JS
CHLORIDE SPIKE: 10,000 mg/kg CHLORIDE.
CHLORIDE CV: 500 mg/L CHLORIDE.

Director, Dr. Blair Leftwich

9-2-98
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 SERVICES CORP.
Attention: Ike Tavarez
1910 N. Big Spring Street
Midland, Texas 79705

August 28, 1998
Receiving Date: 08/19/98
Sample Type: Soil
Location Address: Lea County, NM
Project No: 1085/1086
Project Name: Titan-Paddock Pit & West Lovington Pit

Prep Date: 08/25/98
Analysis Date: 08/25/98
Sampling Date: 08/17/98
Sample Condition: Intact & Cool
Sample Received by: VW

TA#	FIELD CODE	CHLORIDE (mg/kg)
T105377	WLU BH-5 (20-21)	1,200
T105378	WLU BH-5 (30-31)	870
ICV		11.84
CCV		11.82
REPORTING LIMIT		0.5
RPD		0
% Extraction Accuracy		85
% Instrument Accuracy		95

METHODS: EPA 300.0
CHEMIST: JS
TOTAL Cl SPIKE: 12.5 mg/kg TOTAL Cl.
TOTAL Cl CV: 12.5 mg/L TOTAL Cl.

Director, Dr. Blair Leftwich

8-28-98
DATE

05362-82

372

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: Titan Exploration, Inc.

SITE MANAGER: Ike Tavarez

PROJECT NO.: 1085/1086

PROJECT NAME: Titan-Paddock Pit: West Lovington Pit, 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 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)	Chloride
105362	8/17/98		S		X	LPU BH-5 (5-7)	1				✓				Hold.															
105363			S		X	LPU BH-5 (10-11')	1				✓		X		X															X
105364			S		X	LPU BH-5 (15-16')	1				✓				Hold															
105365			S		X	LPU BH-5 (20-21')	1				✓				Hold.															
105366			S		X	LPU BH-5 (25-26')	1				✓		X		X															X
105367			S		X	LPU BH-5 (30-31')	1				✓				Hold															
105368			S		X	LPU BH-5 (35-36')	1				✓				Hold.															
105369			S		X	LPU BH-5 (40-41')	1				✓		X		X															X
105370			S		X	LPU BH-5 (45-46')	1				✓				Hold.															
71	↓		S		X	LPU BH-5 (50-51')	1				✓		X		X															X

RELINQUISHED BY: (Signature) [signature] Date: 8/18/98 Time: 4:40 PM

RECEIVED BY: (Signature) Helen Shelton Date: 8/18/98 Time: 4:40 PM

RELINQUISHED BY: (Signature) Helen Shelton Date: 8/18/98 Time: 6:30 PM

RECEIVED BY: (Signature) Date: Time:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

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

RECEIVED BY: (Signature) Vicki Windham
DATE: 8-19-98 TIME: 9:15 Am

SAMPLED BY: (Print & Sign) Ike Tavarez Date: Time:

SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS AIRBILL # Bus 1557589766 OTHER:

HIGHLANDER CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: Hi Drobb. XLS ([illegible])

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

REMARKS: 3

8/28/98

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. 8/21

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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: Titan Exploration, Inc. SITE MANAGER: Ike Tavarez

PROJECT NO.: 1085/1086 PROJECT NAME: Titan - Paddock Pit & Lovington Pit, Lea County

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. 8270/825	PCB's 8080/808	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Others
105372	8/17/98		S		X	LPU BH-5 (60-61')	1				X					Hold													
73			S		X	LPU BH-5 (70-71')	1				X					Hold													
74			S		X	WLU BH-5 (5-6')	1				X		X		X														X
75			S		X	WLU BH-5 (10-11')	1				X					Hold													
76			S		X	WLU BH-5 (15-16')	1				X					Hold													
77			S		X	WLU BH-5 (20-21')	1				X																		X
78			S		X	WLU BH-5 (30-31')	1				X		X		X														X
79			S		X	WLU BH-5 (40-41')	1				X																		X
80			S		X	WLU BH-5 (50-51')	1				X																		X
81			S		X	WLU BH-5 (60-61')	1				X		X		X														X

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature) Date: 8/18/98 Time: 4:40 PM
RECEIVED BY: (Signature) Helen Shelton Date: 8-18-98 Time: 4:40 PM

RELINQUISHED BY: (Signature) Helen Shelton Date: 8/18/98 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) Vicki Wyndham
DATE: 8-19-98 TIME: 9:15 AM

SAMPLED BY: (Print & Sign) Date: Time:

SAMPLE SHIPPED BY: (Circle)
FEDEX BUS
HAND DELIVERED UPS
AIRBILL # 155 258 9760
OTHER: Bus

HIGHLANDER CONTACT PERSON:

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: ONS

Please Fill out all spaces - 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: Titan Exploration, Inc. SITE MANAGER: Ike Tavarez

PROJECT NO.: 1085/1086 PROJECT NAME: Titan - Paddock Pit & W. Lovington P.I. Lea County.

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	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. 808/808	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
10538	8/17/98		SS		✓	WELL BH-5 (70-71)	1				X				Hold.														

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature)	Date: 8/18/98 Time: 1:40 PM	RECEIVED BY: (Signature) Helen Stetton	Date: 8/18/98 Time: 4:40 PM
RELINQUISHED BY: (Signature) Helen Stetton	Date: 8/18/98 Time: 6:30 PM	RECEIVED BY: (Signature)	Date: Time:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
RECEIVING LABORATORY: True Lab		RECEIVED BY: (Signature) Vicki Windham	
ADDRESS:			
CITY: STATE: ZIP:		DATE: 8-19-98 TIME: 9:15 AM	
CONTACT: PHONE:			

SAMPLED BY: (Print & Sign) Ike Tavarez Date: Time:

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

AIRBILL # Bus 155 758 926 D

OTHER: Bus

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: ND

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

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: Oct 30, 1998
Date Rec: 10/8/98
Project: 1085-1086
Proj Name: Paddock Pit /W. Lovington Pit
Proj Loc: N/A

Lab Receiving # : 9810000165
Sampling Date: 10/1/98
Sample Condition: Intact and Cool
Sample Received By: VW

TA#	Field Code	MATRIX	GRO (mg/Kg)
109442	MW-2 (60-61')	Soil	<5.00
109443	MW-3 (60-61')	Soil	<5.00
109444	MW-4 (60-61')	Soil	20.5
	Method Blank		<5.00
	Reporting Limit		5
	QC		89

RPD	0
% Extraction Accuracy	81
% Instrument Accuracy	89

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
GRO	EPA 5030	10/29/98	EPA 8015B	10/29/98	CS	100	100

Director, Dr. Blair Leftwich

10-30-98
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, TX 79705

October 16, 1998
Receiving Date: 10/08/98
Sample Type: Soil
Project No: 1085
Project Location: NA

Prep Date: 10/09/98
Analysis Date: 10/13/98
Sampling Date: 10/01-02/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Titan - Lovington Paddock Unit Lea County
Client Name: Titan Exploration

TA#	Field Code	DRO (mg/kg)
T109442	MW-2 (60-61')	<50
T109443	MW-3 (60-61')	<50
T109444	MW-4 (60-61')	1,180
QC	Quality Control	280
REPORTING LIMIT		50
RPD		10
% Extraction Accuracy		107
% Insturment Accuracy		112

METHODS: EPA SW 846-8015B, 8011.
CHEMIST: MF
DRO SPIKE: 250 mg/kg DRO.
DRO QC: 250 mg/L DRO.

Director, Dr. Blair Leftwich

10-16-98
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 Spirng St.
Midland TX 79705

Date: Oct 30, 1998
Date Rec: 10/8/98
Project: 1085-1086
Proj Name: Paddock Pit /W. Lovington Pit
Proj Loc: N/A

Lab Receiving # : 9810000165
Sampling Date: 10/1/98
Sample Condition: Intact and Cool
Sample Received By: VW

TA#	Field Code	MATRIX	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL-BENZENE (mg/Kg)	M,P,O XYLENE (mg/Kg)	TOTAL BTEX (mg/Kg)
109442	MW-2 (60-61')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
109443	MW-3 (60-61')	Soil	<0.050	<0.050	<0.050	<0.050	<0.050
109444	MW-4 (60-61')	Soil	<0.050	1.52	4.70	25.6	31.9
Method Blank			<0.050	<0.050	<0.050	<0.050	
Reporting Limit			0.05	0.05	0.05	0.05	
QC			0.086	0.085	0.084	0.244	

RPD	1	1	2	2
% Extraction Accuracy	90	90	89	87
% Instrument Accuracy	86	85	84	81

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/Kg)
BTEX	EPA 5030	10/29/98	EPA 8021B	10/29/98	CS	0.100 ea	5 ea

Director, Dr. Blair Leftwich

10-30-98
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: Titan Exploration
SITE MANAGER: Ike Tavarez
PROJECT NO.: 1085
PROJECT NAME: Titan - Lovington Paddock Unit Lea County.

ANALYSIS REQUEST (Circle or Specify Method No.): 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)

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) DRO/GRO
109442	10/1/98		S		✓	MW-2 (60-61)	1					✓	X		X
109443	10/1/98		S		✓	MW-3 (60-61)	1					✓	X		X
109444	10/2/98		S		✓	MW-4 (60-61)	1					✓	X		X

RELINQUISHED BY: (Signature) [signature] Date: 10/7/98 Time: 3:00 PM
RECEIVED BY: (Signature) Helen Shelton Date: 10/7/98 Time: 3:00 PM

RELINQUISHED BY: (Signature) Helen Shelton Date: 10/7/98 Time: 4:00 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 Wardlaw
DATE: 10-8-98 TIME: 9:15 AM

SAMPLED BY: (Print & Sign) Ike Tavarez Date: Time:

SAMPLE SHIPPED BY: (Circle) FEDEX (BUS) HAND DELIVERED UPS
AIRBILL # 1543813823 OTHER: Bus

HIGHLANDER CONTACT PERSON: Ike Tavarez
Results by:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: H'd in 442.A (1:01)

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

REMARKS: ANY

3° 10/30

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

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

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

Lab Receiving # : 9811000155
Sampling Date: 11/5/98
Sample Condition: Intact and Cool
Sample Received By: BL

Date: Nov 10, 1998
Date Rec: 11/7/98
Project: 1085
Proj Name: Lovington Paddock Unit
Proj Loc: N/A

TA#	Field Code	MATRIX	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL-BENZENE (mg/L)	M,P,O XYLENE (mg/L)	TOTAL BTEX (mg/L)
112189	MW-1	Water	<0.001	<0.001	<0.001	<0.001	<0.001
112190	MW-2	Water	<0.001	<0.001	<0.001	<0.001	<0.001
112191	MW-3	Water	0.147	<0.001	<0.001	<0.001	0.147
112192	MW-4	Water	0.882	0.808	0.085	0.214	1.989
Method Blank			<0.001	<0.001	<0.001	<0.001	
Reporting Limit			0.001	0.001	0.001	0.001	
QC			0.128	0.118	0.109	0.317	
RPD			5	5	5	6	
% Extraction Accuracy			133	123	113	114	
% Instrument Accuracy			128	118	109	106	

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	EPA 5030	11/7/98	EPA 8021B	11/7/98	CS	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

11-10-98
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

November 13, 1998

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

Receiving Date: 11/07/98
Sample Type: Water
Project No: 1085
Sampling Date: 11/05/98
Sample Condition: I & C
Sample Received by: VW
Client Name: Titan
Proj. Name: Lovington Paddock Unit
Extraction Date: 11/09/98
Analysis Date: 11/10/98

PAH Reporting T112189

8270 Compounds (mg/L)	Limit	MW-1	QC	RPD	%EA	%IA
Naphthalene	0.001	ND	74	0	81	93
Acenaphthylene	0.001	ND	74	2	93	93
Acenaphthene	0.001	ND	77	2	84	96
Fluorene	0.001	ND	72	1	81	90
Phenanthrene	0.001	ND	71	1	77	89
Anthracene	0.001	ND	73	0	80	91
Fluoranthene	0.001	ND	67	0	75	84
Pyrene	0.001	ND	76	3	88	95
Benzo[a]anthracene	0.001	ND	71	1	82	89
Chrysene	0.001	ND	73	0	57	91
Benzo[b]fluoranthene	0.001	ND	91	13	101	114
Benzo[k]fluoranthene	0.001	ND	87	13	100	109
Benzo[a]pyrene	0.001	ND	84	2	99	105
Indeno[1,2,3-cd]pyrene	0.001	ND	86	6	93	108
Dibenz[a,h]anthracene	0.001	ND	91	6	76	114
Benzo[g,h,i]perylene	0.001	ND	82	8	92	103

ND = Not Detected

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	19*
2-Fluorobiphenyl SURR	16*
Terphenyl-d14 SURR	10*

*Surrogates out of control limits due to evaporative looses which occurred as prep analyst was attempting to remove H2O from the badly emulsed sample.

METHODS: EPA SW 846-8270, 3510.

CHEMIST: DG

Director, Dr. Blair Leftwich

11-13-98
DATE

TRACEANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

November 13, 1998

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

Receiving Date: 11/07/98
Sample Type: Water
Project No: 1086
Sampling Date: 11/05/98
Sample Condition: I & C
Sample Received by: VW
Client Name: Titan
Proj. Name: W. Lovington Unit
Extraction Date: 11/09/98
Analysis Date: 11/10/98

PAH Reporting T112193

8270 Compounds (mg/L)	Limit	MW-1	QC	RPD	%EA	%IA
Naphthalene	0.001	0.001	74	0	81	93
Acenaphthylene	0.001	ND	74	2	93	93
Acenaphthene	0.001	ND	77	2	84	96
Fluorene	0.001	ND	72	1	81	90
Phenanthrene	0.001	ND	71	1	77	89
Anthracene	0.001	ND	73	0	80	91
Fluoranthene	0.001	ND	67	0	75	84
Pyrene	0.001	ND	76	3	88	95
Benzo[a]anthracene	0.001	ND	71	1	82	89
Chrysene	0.001	ND	73	0	57	91
Benzo[b]fluoranthene	0.001	ND	91	13	101	114
Benzo[k]fluoranthene	0.001	ND	87	13	100	109
Benzo[a]pyrene	0.001	ND	84	2	99	105
Indeno[1,2,3-cd]pyrene	0.001	ND	86	6	93	108
Dibenz[a,h]anthracene	0.001	ND	91	6	76	114
Benzo[g,h,i]perylene	0.001	ND	82	8	92	103

ND = Not Detected

SURROGATES

Nitrobenzene-d5 SURR	63
2-Fluorobiphenyl SURR	63
Terphenyl-d14 SURR	53

METHODS: EPA SW 846-8270, 3510.
CHEMIST: DG

Director, Dr. Blair Leftwich

11-13-98
DATE

TRACEANALYSIS, 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

November 13, 1998

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

Receiving Date: 11/07/98
Sample Type: Water
Project No: 1085
Sampling Date: 11/05/98
Sample Condition: I & C
Sample Received by: VW
Client Name: Titan
Proj. Name: Lovington Paddock Unit
Extraction Date: 11/09/98
Analysis Date: 11/10/98

PAH Reporting T112190

8270 Compounds (mg/L)	Limit	MW-2	QC	RPD	%EA	%IA
Naphthalene	0.001	0.001	74	0	81	93
Acenaphthylene	0.001	ND	74	2	93	93
Acenaphthene	0.001	ND	77	2	84	96
Fluorene	0.001	ND	72	1	81	90
Phenanthrene	0.001	ND	71	1	77	89
Anthracene	0.001	ND	73	0	80	91
Fluoranthene	0.001	ND	67	0	75	84
Pyrene	0.001	ND	76	3	88	95
Benzo[a]anthracene	0.001	ND	71	1	82	89
Chrysene	0.001	ND	73	0	57	91
Benzo[b]fluoranthene	0.001	ND	91	13	101	114
Benzo[k]fluoranthene	0.001	ND	87	13	100	109
Benzo[a]pyrene	0.001	ND	84	2	99	105
Indeno[1,2,3-cd]pyrene	0.001	ND	86	6	93	108
Dibenz[a,h]anthracene	0.001	ND	91	6	76	114
Benzo[g,h,i]perylene	0.001	ND	82	8	92	103

ND = Not Detected

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	79
2-Fluorobiphenyl SURR	76
Terphenyl-d14 SURR	62

METHODS: EPA SW 846-8270, 3510.
CHEMIST: DG

Director, Dr. Blair Leftwich

11-13-98
DATE

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

November 13, 1998

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

Receiving Date: 11/07/98
Sample Type: Water
Project No: 1085
Sampling Date: 11/05/98
Sample Condition: I & C
Sample Received by: VW
Client Name: Titan
Proj. Name: Lovington Paddock Unit
Extraction Date: 11/09/98
Analysis Date: 11/10/98

PAH Reporting T112191

8270 Compounds (mg/L)	Limit	MW-3	QC	RPD	%EA	%IA
Naphthalene	0.001	ND	74	0	81	93
Acenaphthylene	0.001	ND	74	2	93	93
Acenaphthene	0.001	ND	77	2	84	96
Fluorene	0.001	ND	72	1	81	90
Phenanthrene	0.001	ND	71	1	77	89
Anthracene	0.001	ND	73	0	80	91
Fluoranthene	0.001	ND	67	0	75	84
Pyrene	0.001	ND	76	3	88	95
Benzo[a]anthracene	0.001	ND	71	1	82	89
Chrysene	0.001	ND	73	0	57	91
Benzo[b]fluoranthene	0.001	ND	91	13	101	114
Benzo[k]fluoranthene	0.001	ND	87	13	100	109
Benzo[a]pyrene	0.001	ND	84	2	99	105
Indeno[1,2,3-cd]pyrene	0.001	ND	86	6	93	108
Dibenz[a,h]anthracene	0.001	ND	91	6	76	114
Benzo[g,h,i]perylene	0.001	ND	82	8	92	103

ND = Not Detected

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	111
2-Fluorobiphenyl SURR	110
Terphenyl-d14 SURR	82

METHODS: EPA SW 846-8270, 3510.
CHEMIST: DG

Director, Dr. Blair Leftwich

11-13-98
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

November 13, 1998

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

Receiving Date: 11/07/98
Sample Type: Water
Project No: 1085
Sampling Date: 11/05/98
Sample Condition: I & C
Sample Received by: VW
Client Name: Titan
Proj. Name: Lovington Paddock Unit
Extraction Date: 11/09/98
Analysis Date: 11/10/98

PAH Reporting T112192

8270 Compounds (mg/L)	Limit	MW-4	QC	RPD	%EA	%IA
Naphthalene	0.001	0.002	74	0	81	93
Acenaphthylene	0.001	ND	74	2	93	93
Acenaphthene	0.001	ND	77	2	84	96
Fluorene	0.001	ND	72	1	81	90
Phenanthrene	0.001	ND	71	1	77	89
Anthracene	0.001	ND	73	0	80	91
Fluoranthene	0.001	ND	67	0	75	84
Pyrene	0.001	ND	76	3	88	95
Benzo[a]anthracene	0.001	ND	71	1	82	89
Chrysene	0.001	ND	73	0	57	91
Benzo[b]fluoranthene	0.001	ND	91	13	101	114
Benzo[k]fluoranthene	0.001	ND	87	13	100	109
Benzo[a]pyrene	0.001	ND	84	2	99	105
Indeno[1,2,3-cd]pyrene	0.001	ND	86	6	93	108
Dibenz[a,h]anthracene	0.001	ND	91	6	76	114
Benzo[g,h,i]perylene	0.001	ND	82	8	92	103

ND = Not Detected

SURROGATES

Nitrobenzene-d5 SURR	47
2-Fluorobiphenyl SURR	47
Terphenyl-d14 SURR	48

METHODS: EPA SW 846-8270, 3510.
CHEMIST: DG

BB 11-13-98

Director, Dr. Blair Leftwich DATE

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

November 13, 1998
Receiving Date: 11/07/98
Sample Type: Water
Project No: 1085
Project Location:

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

Sampling Date: 11/05/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan
Project Name: Lovington Paddock Unit

TOTAL METALS (mg/L)

TA#	Field Code	As	Se	Cd	Cr	Pb	Ag	Ba	Hg
T112189	MW-1	<0.10	<0.10	<0.02	<0.05	<0.10	<0.05	0.11	<0.0010
T112190	MW-2	<0.10	<0.10	<0.02	<0.05	<0.10	<0.05	<0.10	<0.0010
T112191	MW-3	<0.10	<0.10	<0.02	<0.05	<0.10	<0.05	<0.10	<0.0010
T112192	MW-4	<0.10	<0.10	<0.02	<0.05	<0.10	<0.05	0.12	<0.0010
ICV		0.96	0.99	0.99	1.0	0.98	0.20	0.96	0.0052
CCV		0.95	0.94	0.97	0.98	0.96	0.20	0.92	0.0055
Reporting Limit		0.10	0.10	0.02	0.05	0.10	0.05	0.10	0.0010
RPD		11	16	15	15	15	19	15	2
% Extraction Accuracy		85	85	90	90	90	78	90	93
% Instrument Accuracy		95	97	98	99	97	100	94	104
PREP DATE		11/09/98	11/09/98	11/09/98	11/09/98	11/09/98	11/09/98	11/09/98	11/08/98
ANALYSIS DATE		11/10/98	11/10/98	11/10/98	11/10/98	11/10/98	11/10/98	11/10/98	11/09/98

CHEMIST: As, Se, Cd, Cr, Pb, Ag, Ba, : RR Hg: MS
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

11-13-98
Date

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

November 24, 1998
Receiving Date: 11/07/98
Sample Type: Water
Project No: 1085
Project Location:

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

Sampling Date: 11/05/98
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan
Project Name: Lovington Paddock Unit

TA#	FIELD CODE	pH (s.u.)	FLUORIDE (mg/L)	FLUORIDE (mg/L)	CHLORIDE (mg/L)	SULFATE (mg/L)	N03-N (mg/L)	ALKALINITY (mg/L as CaCo3) HC03	ALKALINITY (mg/L as CaCo3) C03	TDS (mg/L)
T112189	MW-1	7.3	2.0	----	77	59	1.1	180	<1.00	450
T112190	MW-2	7.2	2.1	----	22	45	0.99	210	<1.00	360
T112191	MW-3	7.3	2.2	----	33	38	0.53	210	<1.00	380
T112192	MW-4	7.3	----	2.2	71	25	1.2	220	<1.00	490
ICV		7.0	2.58	2.59	12.42	11.60	0.121	1,140	1,140	---
CCV		7.0	2.59	2.60	12.73	11.55	0.115	1,160	1,100	---
PREP DATE		11/07/98	11/09/98	11/09/98	11/23/98	11/23/98	11/11/98	11/23/98		11/10/98
ANALYSIS DATE		11/07/98	11/09/98	11/09/98	11/23/98	11/23/98	11/11/98	11/23/99		11/10/98
RPD		0	1	0	0	2	2	6	6	1
% Extraction Accuracy		---	100	95	98	94	101	----	----	---
% Instrument Accuracy		100	103	104	101	93	91	94	94	95
REPORTING LIMIT		---	0.1	0.01	0.5	0.5	0.10	1.00	1.00	10

METHODS: EPA 150.1, 300.0, 353.3, 310.1, 160.1.
CHEMIST: pH: SA FLUORIDE/CHLORIDE/SULFATE/N03-N: JS ALKALINITY/TDS: RS
FLUORIDE SPIKE: 12.5 mg/L FLUORIDE.
CHLORIDE SPIKE: 62.5 mg/L CHLORIDE.
SULFATE SPIKE: 62.5 mg/L SULFATE.
N03-N SPIKE: 0.665 mg/L N03-N.

FLUORIDE CV: 2.5 mg/L FLUORIDE.
CHLORIDE CV: 12.5 mg/L CHLORIDE.
SULFATE CV: 12.5 mg/L SULFATE.
N03-N CV: 0.133 mg/L N03-N.

Director, Dr. Blair Leftwich

11-24-98
Date

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

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

November 19, 1998
Receiving Date: 11/07/98
Sample Type: Water
Project No: 1085
Project Location:
Client Name: Titan

Prep Date: 11/09/98
Prep Date: 11/18/99
Sampling Date: 11/05/98
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Lovington Paddock Unit

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)	HARDNESS (mg/L CaC03)
T112189	MW-1	2.6	10	93	39	273
T112190	MW-2	2.1	6.1	57	48	167
T112191	MW-3	2.0	9.2	78	30	233
T112192	MW-4	2.0	14	108	15	327
ICV		25	25	25	25	---
CCV		25	24	24	25	---
Reporting Limit		0.20	0.20	0.20	0.20	---
RPD		3	1	1	2	---
% Extraction Accuracy		95	104	100	97	---
% Instrument Accuracy		100	100	98	8	---

METHODS: EPA SW 846-6010B, 3015, SM 2340B.
CHEMIST: RR
SPIKE: 100 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.
CV: 25 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich

11-19-98
Date

Cation-Anion Balance Sheet

DATE:

Sample #	Calcium ppm	Magnesium ppm	Sodium ppm	Potassium ppm	Alkalinity ppm	Sulfate ppm	Chloride ppm	Nitrate ppm	Fluoride ppm	TDS ppm	EC µMHOs/cm
T113253	221	30	214	9.1	230	400	390	9.3	1.6		
T113254	212	35	239	6.3	240	380	420	7.3	2.1		
T112189	92	10	39	2.6	180	59	77	1.1	2	450	
T112190	59	6.1	48	2.1	210	45	22	0.99	2.1	360	
T112191	81	9.2	30	2	210	38	33	0.53	2.2	380	
T112192	110	14	15	2	220	25	71	1.2	2.2	490	

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
T113253	11.03	2.47	9.31	0.23	4.60	8.33	11.00	0.663927	0.084224	23.04	24.68	6.872572128
T113254	10.58	2.88	10.40	0.16	4.80	7.91	11.85	0.521147	0.110544	24.02	25.19	4.775177743
T112189	4.59	0.82	1.70	0.07	3.60	1.23	2.17	0.078529	0.10528	7.18	7.18	0.106551971
T112190	2.94	0.50	2.09	0.05	4.20	0.94	0.62	0.0706761	0.110544	5.59	5.94	6.089485531
T112191	4.04	0.76	1.31	0.05	4.20	0.79	0.93	0.0378367	0.115808	6.16	6.08	1.298245299
T112192	5.49	1.15	0.65	0.05	4.40	0.52	2.00	0.085668	0.115808	7.34	7.12	3.038562349
	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!

	EC/Cation	EC/Anion					TDS/EC	TDS/Cat	TDS/Anion	
T113253	2303.8378	2467.8051	range	0	to	0	#DIV/0!	0.00	0.00	needs to be 0.55-0.77
T113254	2401.6604	2519.1491	range	0	to	0	#DIV/0!	0.00	0.00	needs to be 0.55-0.77
T112189	717.6708	718.4359	range	0	to	0	#DIV/0!	0.63	0.63	needs to be 0.55-0.77
T112190	558.7787	593.87401	range	0	to	0	#DIV/0!	0.64	0.61	needs to be 0.55-0.77
T112191	615.5128	607.57347	range	0	to	0	#DIV/0!	0.62	0.63	needs to be 0.55-0.77
T112192	734.472	712.4886	range	0	to	0	#DIV/0!	0.67	0.69	needs to be 0.55-0.77
	#VALUE!	#VALUE!	range	0	to	0	#DIV/0!	#VALUE!	#VALUE!	needs to be 0.55-0.77
	#VALUE!	#VALUE!	range	0	to	0	#DIV/0!	#VALUE!	#VALUE!	needs to be 0.55-0.77
	#VALUE!	#VALUE!	range	0	to	0	#DIV/0!	#VALUE!	#VALUE!	needs to be 0.55-0.77
	#VALUE!	#VALUE!	range	0	to	0	#DIV/0!	#VALUE!	#VALUE!	needs to be 0.55-0.77

112189-93

155 pg 1 of 2

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: Titan

SITE MANAGER: Elke Tavarez

PROJECT NO.: 1035

PROJECT NAME: Lovington Paddock Unit

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	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)	Cations + Anions
112189	11/5/93	11:10	W	✓		MW-1	5	Y	✓	✓	✓	✓	✓			✓	✓									✓			✓	
112190		13:10	W	✓		MW-2	5	Y	✓	✓	✓	✓	✓			✓	✓									✓			✓	
112191		13:55	W	✓		MW-3	5	Y	✓	✓	✓	✓	✓			✓	✓									✓			✓	
112192		14:40	W	✓		MW-4	5	Y	✓	✓	✓	✓	✓			✓	✓									✓			✓	

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature) Date: 11/6/93 Time: 14:00

RECEIVED BY: (Signature) Helen Shelton Date: 11/6/98 Time: 2:30PM

SAMPLED BY: (Print & Sign) M.J. Linam Date: 11/5/93 Time: 14:40

RELINQUISHED BY: (Signature) Helen Shelton Date: 11/6/98 Time: 5:30 PM

RECEIVED BY: (Signature) Date: Time:

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

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: Trace Analysis
ADDRESS: 6701 Aberdeen
CITY: Lubbock STATE: TX ZIP:
CONTACT: Neil PHONE: (800) 378-1296

RECEIVED BY: (Signature) Blair Leftwich
DATE: 11/7/98 TIME: 9:30

HIGHLANDER CONTACT PERSON: Elke Tavarez

Results by: 11/12/98
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.

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

February 02, 1999
Receiving Date: 01/29/99
Sample Type: Water
Project No: 1085
Project Location: NA

Prep Date: 01/29/99
Analysis Date: 01/29/99
Sampling Date: 01/28/99
Sample Condition: Intact & Cool
Sample Received by: NG
Project Name: Titan - Lovington Paddock Unit Lea County, NM
Client Name: Titan Exploration

TA#	Field Code	DRO (mg/L)
T117864	MW-1	<5
T117865	MW-2	<5
T117866	MW-3	<5
T117867	MW-4	<5
T117868	MW-5	<5
T117869	MW-6	<5
QC	Quality Control	238
REPORTING LIMIT		5
RPD		0
% Extraction Accuracy		79
% Instrument Accuracy		95

METHODS: EPA SW 846-8015B, 8011.
CHEMIST: MF
DRO SPIKE: 25 mg/L DRO.
DRO QC: 250 mg/L DRO.

Director, Dr. Blair Leftwich

2-2-99
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: Feb 03, 1999
Date Rec: 1/29/99
Project: 1085
Proj Name: Lovington Paddock Unit
Proj Loc: N/A

Lab Receiving # : 9901000414
Sampling Date: 1/28/99
Sample Condition: Intact and Cool
Sample Received By: ng

TA#	Field Code	MATRIX	GRO (mg/L)
117864	MW-1	Water	<0.100
117865	MW-2	Water	<0.100
117866	MW-3	Water	<0.100
117867	MW-4	Water	8.07
117868	MW-5	Water	5.18
117869	MW-6	Water	5.38
Method Blank			<0.10
Reporting Limit			0.1
QC			107

RPD	4
% Extraction Accuracy	107
% Instrument Accuracy	107

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
GRO	EPA 5030	1/28/99	EPA 8015B	1/29/99	RC	100	100

Director, Dr. Blair Leftwich

2-3-99
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 # : 9901000414
Sampling Date: 1/28/99
Sample Condition: Intact and Cool
Sample Received By: ng

Date: Feb 03, 1999
Date Rec: 1/29/99
Project: 1085
Proj Name: Lovington Paddock Unit
Proj Loc: N/A

TA#	Field Code	MATRIX	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL-BENZENE (mg/L)	M,P,O XYLENE (mg/L)	TOTAL BTEX (mg/L)
117864	MW-1	Water	<0.001	<0.001	<0.001	0.001	0.001
117865	MW-2	Water	<0.001	<0.001	<0.001	<0.001	<0.001
117866	MW-3	Water	0.102	<0.001	<0.001	<0.001	0.102
117867	MW-4	Water	1.85	1.89	0.123	0.682	4.55
117868	MW-5	Water	2.73	0.001	0.002	0.120	2.85
117869	MW-6	Water	2.58	0.003	0.390	0.108	3.081
Method Blank			<0.001	<0.001	<0.001	<0.001	
Reporting Limit			0.001	0.001	0.001	0.001	
QC			0.103	0.109	0.104	0.305	
RPD			2	1	1	2	
% Extraction Accuracy			106	106	106	101	
% Instrument Accuracy			103	109	104	102	

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
BTEX	EPA 5030	1/28/99	EPA 8021B	1/29/99	RC	0.100 ea	0.1 ea

Director, Dr. Blair Leftwich

2-3-99
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

February 02, 1999

ANALYTICAL RESULTS FOR
HIGHLANDER SERVICES

Attention: Ike Tavarez

1910 N. Big Spring St.

Midland, TX 79705

Receiving Date: 01/29/99
Sample Type: Water
Project No: 1085
Sampling Date: 01/28/99
Sample Condition: I & C
Sample Received by: NG
Project No: 1085
Client Name: Titan Exploration
Proj. Name: Titan - Lovington
Paddock Unit
Lea County, NM
Extraction Date: 01/29/99
Analysis Date: 01/30/99

PAH Reporting T117868

8270 Compounds (mg/L)	Limit	MW-5	QC	RPD	%EA	%IA
Naphthalene	0.001	0.034	78	4	49	98
Acenaphthylene	0.001	ND	79	0	51	99
Acenaphthene	0.001	ND	82	3	61	103
Fluorene	0.001	ND	80	1	60	100
Phenanthrene	0.001	ND	76	2	55	95
Anthracene	0.001	ND	79	0	57	99
Fluoranthene	0.001	ND	78	0	62	98
Pyrene	0.001	ND	82	4	54	103
Benzo[a]anthracene	0.001	ND	80	2	60	100
Chrysene	0.001	ND	80	4	54	100
Benzo[b]fluoranthene	0.001	ND	78	2	50	98
Benzo[k]fluoranthene	0.001	ND	95	1	73	119
Benzo[a]pyrene	0.001	ND	82	2	64	103
Indeno[1,2,3-cd]pyrene	0.001	ND	81	1	71	101
Dibenz[a,h]anthracene	0.001	ND	82	3	80	103
Benzo[g,h,i]perylene	0.001	ND	83	3	69	104

ND = Not Detected

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	97
2-Fluorobiphenyl SURR	56
Terphenyl-d14 SURR	98

METHODS: EPA SW 846-8270C, 3510C.
CHEMIST: DG

Director, Dr. Blair Leftwich

2-2-99
DATE

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February 02, 1999

ANALYTICAL RESULTS FOR
HIGHLANDER SERVICES

Attention: Ike Tavarez

1910 N. Big Spring St.

Midland, TX 79705

Receiving Date: 01/29/99
Sample Type: Water
Project No: 1085
Sampling Date: 01/28/99
Sample Condition: I & C
Sample Received by: NG
Project No: 1085
Client Name: Titan Exploration
Proj. Name: Titan - Lovington
Paddock Unit
Lea County, NM
Extraction Date: 01/29/99
Analysis Date: 01/30/99

PAH Reporting T117869

8270 Compounds (mg/L)	Limit	MW-6	QC	RPD	%EA	%IA
Naphthalene	0.001	0.038	78	4	49	98
Acenaphthylene	0.001	ND	79	0	51	99
Acenaphthene	0.001	ND	82	3	61	103
Fluorene	0.001	ND	80	1	60	100
Phenanthrene	0.001	ND	76	2	55	95
Anthracene	0.001	ND	79	0	57	99
Fluoranthene	0.001	ND	78	0	62	98
Pyrene	0.001	ND	82	4	54	103
Benzo[a]anthracene	0.001	ND	80	2	60	100
Chrysene	0.001	ND	80	4	54	100
Benzo[b]fluoranthene	0.001	ND	78	2	50	98
Benzo[k]fluoranthene	0.001	ND	95	1	73	119
Benzo[a]pyrene	0.001	ND	82	2	64	103
Indeno[1,2,3-cd]pyrene	0.001	ND	81	1	71	101
Dibenz[a,h]anthracene	0.001	ND	82	3	80	103
Benzo[g,h,i]perylene	0.001	ND	83	3	69	104

ND = Not Detected

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	80
2-Fluorobiphenyl SURR	80
Terphenyl-d14 SURR	78

METHODS: EPA SW 846-8270C, 3510C.

CHEMIST: DG

2-2-99

Director, Dr. Blair Leftwich DATE

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

February 5, 1999
Receiving Date: 01/29/99
Sample Type: Water
Project No: 1085
Project Name: Titan-Lovington Paddock Unit

Sampling Date: 01/28/99
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration

DISSOLVED

TA#	Field Code	Ag (mg/L)	As (mg/L)	Ba (mg/L)	Cd (mg/L)	Cr (mg/L)	Pb (mg/L)	Se (mg/L)	Hg (mg/L)
T117868	MW-5	<0.05	<0.10	<1.0	<0.01	<0.05	<0.05	<0.05	<0.0010
T117869	MW-6	<0.05	<0.10	<1.0	<0.01	<0.05	<0.05	<0.05	<0.0010
ICV		0.20	0.99	0.96	0.98	0.97	0.97	0.97	0.0050
CCV		0.19	0.93	0.92	0.93	0.94	0.90	0.91	0.0050
Reporting Limit		0.05	0.10	1.0	0.01	0.05	0.05	0.05	0.0010
RPD		0	0	5	0	0	0	5	2
% Extraction Accuracy		98	100	100	95	95	95	95	88
% Instrument Accuracy		95	96	94	96	96	94	94	100
Prep Date:		01/29/99	01/29/99	01/29/99	01/29/99	01/29/99	01/29/99	01/29/99	02/02/99
Analysis Date:		02/03/99	02/03/99	02/03/99	02/03/99	02/03/99	02/03/99	02/03/99	02/04/99

METHODS: EPA SW-846 6010B, 3015, 7470A
CHEMIST: DISSOVLED METALS: RR Hg: BP
DISSOLVED METAL SPIKE: Ag: 0.40 mg/L As, Ba, Cd, Cr, Pb, Se: 2.0 mg/L Hg SPIKE: 0.0050 mg/L
DISSOLVED METAL CV: Ag: 0.20 mg/L As, Ba, Cd, Cr, Pb, Se: 1.0 mg/L Hg CV: 0.0050 m

Director, Dr. Blair Leftwich

2-5-99
Date

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E-Mail: lab@traceanalysis.com

February 8, 1999
Receiving Date: 01/29/99
Sample Type: Water
Project No: 1085
Project Location:

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

Sampling Date: 01/28/99
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Lovington Paddock Unit

TA#	FIELD CODE	ALKALINITY (mg/L as CaCo3) HC03	C03
T117869	MW-6	500	<1.00
ICV		1240	1080
CCV		1280	1020
PREP DATE		02/08/99	
ANALYSIS DATE		02/08/99	
RPD		1	1
% Extraction Accuracy		97	97
% Instrument Accuracy		96	96
REPORTING LIMIT		0.10	0.10

METHODS: EPA 310.1
CHEMIST: ALKALINITY: JS

Director, Dr. Blair Leftwich

2-8-99
Date

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E-Mail: lab@traceanalysis.com

February 3, 1999
Receiving Date: 01/29/99
Sample Type: Water
Project No: 1085
Project Location:

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

Sampling Date: 01/28/99
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Lovington Paddock Unit

TA#	FIELD CODE	pH (s. u.)	FLUORIDE (mg/L)	CHLORIDE (mg/L)	SULFATE (mg/L)	TDS (mg/L)	ALKALINITY (mg/L as CaCo3) HC03	C03
T117868	MW-5	7.6	1.7	150	78	950	600	<1.00
T117869	MW-6	7.4	1.5	42	30	590	---	---
ICV		7.0	2.43	12.16	11.33	970	1260	920
CCV		7.0	2.45	11.85	11.28	998	2250	1000
PREP DATE		01/29/99	02/01/99	02/01/99	02/01/99	02/01/99	02/01/99	
ANALYSIS DATE		01/29/99	02/01/99	02/01/99	02/01/99	02/01/99	02/01/99	
RPD		0	1	0	0	1	1	1
% Extraction Accuracy		-----	88	91	90	97	91	91
% Instrument Accuracy		100	98	96	90	100	94	94
REPORTING LIMIT		-----	0.1	0.5	0.5	10	1.00	1.00

METHODS: EPA 150.1, 300.0, 310.1, 160.1.
CHEMIST: pH/TDS/: SA FLUORIDE/CHLORIDE/SULFATE/ALKALINITY: JS
FLUORIDE SPIKE: 12.5 mg/L FLUORIDE. FLUORIDE CV: 2.5 mg/L FLUORIDE.
CHLORIDE SPIKE: 62.5 mg/L CHLORIDE. CHLORIDE CV: 12.5 mg/L CHLORIDE.
SULFATE SPIKE: 62.5 mg/L SULFATE. SULFATE CV: 12.5 mg/L SULFATE.

Director, Dr. Blair Leftwich

2-8-99
Date

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E-Mail: lab@traceanalysis.com

February 5, 1999
Receiving Date: 01/29/99
Sample Type: Water
Project No: 1085
Project Name: Titan-Lovington Paddock Unit
Client Name: Titan Exploration

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

Prep Date: 01/29/99
Analysis Date: 02/03/99
Sampling Date: 01/28/99
Sample Condition: Intact & Cool
Sample Received by: VW

DISSOLVED

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)	HARDNESS (mg/L CaC03)
T117868	MW-5	4.9	13	98	269	300
T117869	MW-6	3.0	24	166	24	510
ICV		25	25	24	26	---
CCV		25	23	23	25	---
Reporting Limit		0.50	0.50	0.50	0.50	---
RPD		12	2	7	10	---
% Extraction Accuracy		114	97	103	117	---
% Instrument Accuracy		100	96	94	102	---

METHODS: EPA SW 846-6010B, 3015, SM 2340B.
CHEMIST: RR
DISSOLVED SPIKE: 100 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.
DISSOLVED CV: 25 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich

2-5-99
Date

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

February 5, 1999
Receiving Date: 01/29/99
Sample Type: Water
Project No: 1085
Project Name: Titan-Lovington Paddock Unit

Sampling Date: 01/28/99
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan Exploration

TA#	FIELD CODE	NO3 (mg/L)
T117868	MW-5	3.4
T117869	MW-6	3.2
ICV		
CCV		4.54
REPORTING LIMIT		0.2
RPD		1
% Extraction Accuracy		86
% Instrument Accuracy		91
PREP DATE		02/01/99
ANALYSIS DATE		02/01/99

METHODS: EPA 300.0
CHEMIST: JS
NO3 SPIKE: 25 mg/L NO3
NO3 CV: 5.0 mg/L NO3

Director, Dr. Blair Leftwich

2-5-99
DATE

Cation-Anion Balance Sheet

DATE: 2/8/99

Sample #	Calcium ppm	Magnesium ppm	Sodium ppm	Potassium ppm	Alkalinity ppm	Sulfate ppm	Chloride ppm	Nitrate ppm	Fluoride ppm	TDS ppm	EC µMHOs/cm
117868	98	13	269	4.9	600.00	78	150	3.4	1.7	950	
117869	166	24	24	3	500.00	30	42	3.2	1.5	590	

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**
117868	4.89	1.07	11.70	0.13	12.00	1.62	4.23	0.242726	0.089488	17.79	18.19	2.228590563
117869	8.28	1.97	1.04	0.08	10.00	0.62	1.18	0.228448	0.07896	11.38	12.12	6.279624282

	TDS/Cat	TDS/Anion	
117868	0.53	0.52	needs to be 0.55-0.77
117869	0.52	0.49	needs to be 0.55-0.77

414

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: Hanson Exploration SITE MANAGER: Ike Tavarez

PROJECT NO: 1085 PROJECT NAME: Hanson-Lovington Paddock Unit 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)	Major Ions
117864	1-28-99					MW-1	6		✓		✓		X		X														
117865						MW-2	6		✓		✓		X		X														
66						MW-3	6		✓		✓		X		X														
67						MW-4	6		✓		✓		X		X														
68						MW-5	10	Y	✓	✓	✓	✓	X		X	X	X												X
69	↓					MW-6	10	Y	✓	✓	✓	✓	X		X	X	X												X

RELINQUISHED BY: (Signature) Date: 1-28-99 Time: 5:00

RECEIVED BY: (Signature) Helen Shelton Date: 1/28/99 Time: 5:00PM

SAMPLED BY: (Print & Sign) Ike Tavarez Date: Time:

RELINQUISHED BY: (Signature) Helen Shelton Date: 1-28-99 Time: 6:30PM

RECEIVED BY: (Signature) Date: Time:

SAMPLE SHIPPED BY: (Circle) FEDEX BUS UPS HAND DELIVERED AIRBILL # 159384 9538 OTHER:

RELINQUISHED BY: (Signature) Date: Time:

RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: Trace

ADDRESS:

CITY: STATE: ZIP:

CONTACT: PHONE:

RECEIVED BY: (Signature) Nell Green

DATE: 1-29-99 TIME: 8:45am

HIGHLANDER CONTACT PERSON: Ike Tavarez

Results by: ASAP

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: Hidro64W. X(S (678)

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

REMARKS: BTEX, TPH by Tues 2/2/99 and rest by Wed 2/3/99 if at all possible

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.

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

Date: Apr 02, 1999
Date Rec: 3/27/99
Project: 1085
Proj Name: Lovington Paddock Unit
Proj Loc: N/A

Lab Receiving # : 99032702
Sampling Date: 3/25/99
Sample Condition: Intact and Cool
Sample Received By: BW

TA#	Field Code	MATRIX	DRO (mg/L)
121777	MW-7	Water	<5
121778	MW-8	Water	<5
121779	MW-9	Water	<5
Method Blank			<5
Reporting Limit			5
LCS			22
LCSD			23
CCV			217
CCV 1			280
RPD			4
% Instrument Accuracy			99
% Extraction Accuracy			88

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: (mg/L)
DRO	E 8011	3/29/99	Mod. 8015B	3/29/99	MF	250	250

Director, Dr. Blair Leftwich

4-2-99
Date

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

April 08, 1999
Receiving Date: 03/27/99
Sample Type: Water
Project No: 1085
Project Location: NA

Prep Date: 04/01/99
Analysis Date: 04/01/99
Sampling Date: 03/25/99
Sample Condition: Intact & Cool
Sample Received by: BW
Client Name: Titan Exploration & Production
Project Name: Titan/Lovington Paddock Unit
Lea County, NM

CORRECTED

TA#	FIELD CODE	GRO (mg/L)
T121777	MW - 7	<0.100
T121778	MW - 8	<0.100
T121779	MW - 9	0.155
QC	Quality Control	1.0
METHOD BLANK		0.100
REPORTING LIMIT		0.100
RPD		1
% Extraction Accuracy		99
% Instrument Accuracy		100

METHODS: EPA SW 846-5035, 8015B Modified.
CHEMIST: RC
GRO SPIKE: 1.000 mg/L GRO.
GRO CV: 1.000 mg/L GRO.

Director, Dr. Blair Leftwich

4-8-99
DATE

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E-Mail: lab@traceanalysis.com

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

April 08, 1999
Receiving Date: 03/27/99
Sample Type: Water
Project No: 1085
Project Location: NA

Prep Date: 04/01/99
Analysis Date: 04/01/99
Sampling Date: 03/25/99
Sample Condition: Intact & Cool
Sample Received by: BW
Client Name: Titan Exploration & Production
Project Name: Titan/Lovington Paddock Unit, Lea County, NM

CORRECTED

TA#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL-BENZENE (mg/L)	M,P,O XYLENE (mg/L)	TOTAL BTEX (mg/L)
T121777	MW - 7	<0.001	<0.001	<0.001	<0.001	<0.001
T121778	MW - 8	<0.001	<0.001	<0.001	<0.01	<0.001
T121779	MW - 9	0.104	<0.001	<0.001	0.002	0.106
QC	Quality Control	0.099	0.098	0.097	0.289	
REPORTING LIMIT		<0.001	<0.001	<0.001	<0.001	
RPD		1	1	2	2	
% Extraction Accuracy		100	99	96	96	
% Instrument Accuracy		99	98	97	96	

METHODS: EPA SW 846-8021B, 5035.
CHEMIST: RC
BTEX SPIKE: 0.100 mg/L BTEX.
BTEX QC: 0.100 mg/L BTEX.

Director, Dr. Blair Leftwich

4-8-99
Date

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

April 8, 1999
Receiving Date: 03/27/99
Sample Type: Water
Project No: 1085
Client Name: Titan Exploration & Production
Project Name: Titan/Lovington
Paddock Unit, Lea County, NM
Sampling Date: 03/25/99
Sample Condition: I & C
Sample Received by: VW
Extraction Date: 03/29/99
Analysis Date: 03/30/99

PAH Reporting T121777

8270 Compounds (mg/L)	Limit	MW-7	CV	RPD	%EA	%IA
Naphthalene	0.001	ND	81	9	80	101
Acenaphthylene	0.001	ND	81	6	89	101
Acenaphthene	0.001	ND	78	6	90	98
Fluorene	0.001	ND	81	5	94	101
Phenanthrene	0.001	ND	76	0	90	95
Anthracene	0.001	ND	78	0	88	98
Fluoranthene	0.001	ND	81	2	99	101
Pyrene	0.001	ND	76	3	89	95
Benzo[a]anthracene	0.001	ND	78	0	95	98
Chrysene	0.001	ND	81	1	108	101
Benzo[b]fluoranthene	0.001	ND	82	5	96	103
Benzo[k]fluoranthene	0.001	ND	76	3	94	95
Benzo[a]pyrene	0.001	ND	83	1	100	104
Indeno[1,2,3-cd]pyrene	0.001	ND	75	4	90	94
Dibenz[a,h]anthracene	0.001	ND	78	1	115	98
Benzo[g,h,i]perylene	0.001	ND	76	1	90	95

ND = Not Detected

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	84
2-Fluorobiphenyl SURR	84
Terphenyl-d14 SURR	50

METHODS: EPA SW 846-8270, 3510C
CHEMIST: MA

Director, Dr. Blair Leftwich

4-8-99
Date

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

April 8, 1999
Receiving Date: 03/27/99
Sample Type: Water
Project No: 1085
Client Name: Titan Exploration & Production
Project Name: Titan/Lovington
Paddock Unit, Lea County, NM
Sampling Date: 03/25/99
Sample Condition: I & C
Sample Received by: VW
Extraction Date: 03/29/99
Analysis Date: 03/30/99

PAH	Reporting	T121778				
8270 Compounds (mg/L)	Limit	MW-8	CV	RPD	%EA	%IA
Naphthalene	0.001	ND	81	9	80	101
Acenaphthylene	0.001	ND	81	6	89	101
Acenaphthene	0.001	ND	78	6	90	98
Fluorene	0.001	ND	81	5	94	101
Phenanthrene	0.001	ND	76	0	90	95
Anthracene	0.001	ND	78	0	88	98
Fluoranthene	0.001	ND	81	2	99	101
Pyrene	0.001	ND	76	3	89	95
Benzo[a]anthracene	0.001	ND	78	0	95	98
Chrysene	0.001	ND	81	1	108	101
Benzo[b]fluoranthene	0.001	ND	82	5	96	103
Benzo[k]fluoranthene	0.001	ND	76	3	94	95
Benzo[a]pyrene	0.001	ND	83	1	100	104
Indeno[1,2,3-cd]pyrene	0.001	ND	75	4	90	94
Dibenz[a,h]anthracene	0.001	ND	78	1	115	98
Benzo[g,h,i]perylene	0.001	ND	76	1	90	95

ND = Not Detected

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	87
2-Fluorobiphenyl SURR	81
Terphenyl-d14 SURR	54

METHODS: EPA SW 846-8270, 3510C
CHEMIST: MA

Director, Dr. Blair Leftwich

4-8-99
Date

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

April 7, 1999
Receiving Date: 03/27/99
Sample Type: Water
Project No: 1085
Client Name: Titan Exploration & Production
Project Name: Titan/Lovington
Paddock Unit, Lea County, NM
Sampling Date: 03/25/99
Sample Condition: I & C
Sample Received by: VW
Extraction Date: 03/29/99
Analysis Date: 03/31/99

PAH	Reporting	T121779				
8270 Compounds (mg/L)	Limit	MW-9	CV	RPD	%EA	%IA
Naphthalene	0.001	ND	80	9	80	100
Acenaphthylene	0.001	ND	80	6	89	100
Acenaphthene	0.001	ND	78	6	90	98
Fluorene	0.001	ND	80	5	94	100
Phenanthrene	0.001	ND	78	0	90	98
Anthracene	0.001	ND	79	0	88	99
Fluoranthene	0.001	ND	81	2	99	101
Pyrene	0.001	ND	78	3	89	98
Benzo[a]anthracene	0.001	ND	80	0	95	100
Chrysene	0.001	ND	81	1	108	101
Benzo[b]fluoranthene	0.001	ND	84	5	96	105
Benzo[k]fluoranthene	0.001	ND	76	3	94	95
Benzo[a]pyrene	0.001	ND	83	1	100	104
Indeno[1,2,3-cd]pyrene	0.001	ND	69	4	90	86
Dibenz[a,h]anthracene	0.001	ND	74	1	115	93
Benzo[g,h,i]perylene	0.001	ND	68	1	90	85

ND = Not Detected

SURROGATES	% RECOVERY
Nitrobenzene-d5 SURR	78
2-Fluorobiphenyl SURR	74
Terphenyl-d14 SURR	61

METHODS: EPA SW 846-8270, 3510C
CHEMIST: MA

Director, Dr. Blair Leftwich

4-7-99
Date

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E-Mail: lab@traceanalysis.com

April 2, 1999
Receiving Date: 03/27/99
Sample Type: Water
Project #: 1085
Client Name: Titan Exploration & Production

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

Sampling Date: 03/25/99
Sample Condition: I & C
Sample Received by: VW
Project Name: Titan/Lovington
Paddock Unit, Lea County, NM

TA#	FIELD CODE	TOTAL As (mg/L)	TOTAL Se (mg/L)	TOTAL Cd (mg/L)	TOTAL Cr (mg/L)	TOTAL Pb (mg/L)	TOTAL Ag (mg/L)	TOTAL Ba (mg/L)	TOTAL Hg (mg/L)
T121777	MW-7	<0.10	<0.10	<0.02	<0.05	<0.10	<0.05	0.11	<0.0002
T121778	MW-8	<0.10	<0.10	<0.02	<0.05	<0.10	<0.05	<0.10	<0.0002
T121779	MW-9	<0.10	<0.10	<0.02	<0.05	<0.10	<0.05	<0.10	<0.0002
ICV		1.0	1.0	1.0	1.0	1.0	0.20	1.0	0.0010
CCV		1.0	1.0	1.0	1.0	1.0	0.20	1.0	0.00090
REPORTING LIMIT		0.10	0.10	0.02	0.05	0.10	0.05	0.10	0.0002
RPD		5	0	0	0	0	2	0	2
% Extraction Accuracy		105	100	100	100	100	96	100	89
% Instrument Accuracy		100	100	100	100	100	100	100	95
PREP DATE		03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/29/99	03/30/99
ANALYSIS DATE		03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99	03/30/99

METHODS: EPA SW-846 6010B, 3015
CHEMIST: As, Se, Cd, Cr, Pb, Ag, Ba: RR Hg: BP
TOTAL METAL SPIKE: As, Se, Cd, Cr, Pb, Ba: 2.0 mg/L Ag: 0.10 mg/L Hg: 0.0010 mg/L
TOTAL METAL CV: As, Se, Cd, Cr, Pb, Ba: 1.0 mg/L Ag: 0.20 mg/L Hg: 0.0010 mg/L

Director, Dr. Blair Leftwich

4-2-99
Date

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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

April 7, 1999
Receiving Date: 03/27/99
Sample Type: Water
Project #: 1085
Client Name: Titan Exploration & Production

Sampling Date: 03/25/99
Sample Condition: I & C
Sample Received by: VW
Project Name: Titan/Lovington Paddock Unit, Lea County, NM

Corrected

TA#	Field Code	FLUORIDE (mg/L)	CHLORIDE (mg/L)	NO3-N* (mg/L)	SULFATE (mg/L)
T121777	MW-7	1.8	28	2.7	35
T121778	MW-8	1.8	23	3.3	80
ICV		2.47	12.01	4.81	12.00
CCV		2.48	12.07	4.84	12.07
Reporting Limit		0.1	0.5	0.2	0.5
RPD		13	0	0	1
% Extraction Accuracy		92	91	92	94
% Instrument Accuracy		99	96	97	96
PREP DATE		04/05/99	04/05/99	04/05/99	04/05/99
ANALYSIS DATE		04/05/99	04/05/99	04/05/99	04/05/99

***Re-ran sample out of holding time**

METHODS: EPA 300.0
CHEMIST: JS
FLUORIDE SPIKE: 2.5 mg/L FLUORIDE
NO3-N SPIKE: 5.0 mg/L NO3-N
CHLORIDE SPIKE: 12.5 mg/L CHLORIDE
SULFATE SPIKE: 12.5 mg/L SULFATE

FLUORIDE CV: 2.5 mg/L FLUORIDE
NO3-N CV: 5.0 mg/L NO3-N
CHLORIDE SPIKE: 12.5 mg/L CHLORIDE
SULFATE SPIKE: 12.5 mg/L SULFATE

BL

Director, Dr. Blair Leftwich

4-7-99

Date

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

April 7, 1999
Receiving Date: 03/27/99
Sample Type: Water
Project #: 1085
Client Name: Titan Exploration & Production

Sampling Date: 03/25/99
Sample Condition: I & C
Sample Received by: VW
Project Name: Titan/Lovington
Paddock Unit, Lea County, NM

CORRECTED

				ALKALINITY			
		pH*	TDS	OH	CO3	HC03	TOTAL
TA#	FIELD CODE	(s.u.)	(mg/L)	(mg/L as CaCo3)			
T121777	MW-7	7.8	340	0	0	174	174
T121778	MW-8	7.7	390	0	0	170	170
ICV		7.0	962			2,400	
CCV		7.0	991			2,400	
REPORTING LIMIT		------	10			0.1	
PREP DATE		03/29/99	03/29/99			04/05/99	
ANALYSIS DATE		03/29/99	03/29/99			04/05/99	
RPD		3	4			1	
% Extraction Accuracy		------	96			94	
% Instrument Accuracy		100	99			95	

*Out of holding time.

METHODS: EPA 150.1, 310.1, 160.1

Director, Dr. Blair Leftwich

4-7-99
Date

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

April 2, 1999
Receiving Date: 03/27/99
Sample Type: Water
Project #: 1085
Client Name: Titan Exploration & Production

Prep Date: 03/29/99
Analysis Date: 03/30/99
Sampling Date: 03/25/99
Sample Condition: I & C
Sample Received by: VW
Project Name: Titan/Lovington

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)	HARDNESS (mg/L CaC03)
T121777	MW-7	4.9	10	76	23	272
T121778	MW-8	2.3	10	74	43	226
T121779	MW-9	2.8	15	109	46	334
ICV		24	25	25	24	---
CCV		24	25	26	24	---
Reporting Limit		0.50	0.50	0.50	0.50	---
RPD		0*	2	0	7	---
% Extraction Accuracy		106*	101	97	110	---
% Instrument Accuracy		96	100	102	96	---

***Used LCS/LCSD for EA/RPD due to high concentration in matrix spikes.**

METHODS: EPA SW 846-6010B, 3005A, SM 2340B.
CHEMIST: RR
TOTAL SPIKE: 100 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.
TOTAL CV: 25 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich

4-2-99
Date

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

April 2, 1999
Receiving Date: 03/27/99
Sample Type: Water
Project #: 1085
Client Name: Titan Exploration & Production

Sampling Date: 03/25/99
Sample Condition: I & C
Sample Received by: VW
Project Name: Titan/Lovington Paddock Unit, Lea County, NM

TA#	Field Code	FLUORIDE (mg/L)	CHLORIDE (mg/L)	NO3-N (mg/L)	SULFATE (mg/L)
T121779	MW-9	2.1	95	4.8	70
ICV		2.37	11.95	4.91	12.37
CCV		2.39	11.90	4.89	12.04
Reporting Limit		0.1	0.5	0.2	0.5
RPD		1	0	0	2
% Extraction Accuracy		89	96	96	102
% Instrument Accuracy		95	95	98	98
PREP DATE		03/29/99	03/29/99	03/29/99	03/29/99
ANALYSIS DATE		03/29/99	03/29/99	03/29/99	03/29/99

METHODS: EPA 300.0
CHEMIST: JS
FLUORIDE SPIKE: 12.5 mg/L FLUORIDE
NO3-N SPIKE: 25 mg/L NO3-N
CHLORIDE SPIKE: 62.5 mg/L CHLORIDE
SULFATE SPIKE: 62.5 mg/L SULFATE

FLUORIDE CV: 2.5 mg/L FLUORIDE
NO3-N CV: 5.0 mg/L NO3-N
CHLORIDE SPIKE: 12.5 mg/L CHLORIDE
SULFATE SPIKE: 12.5 mg/L SULFATE

BS

Director, Dr. Blair Leftwich

4-7-99

Date

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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

April 9, 1999
Receiving Date: 03/27/99
Sample Type: Water
Project #: 1085
Client Name: Titan Exploration & Production

Sampling Date: 03/25/99
Sample Condition: I & C
Sample Received by: VW
Project Name: Titan/Lovington
Paddock Unit, Lea County, NM

				ALKALINITY			
		pH*	TDS	OH	CO3	HC03	TOTAL
TA#	FIELD CODE	(s.u.)	(mg/L)	(mg/L as CaCo3)			
T121779	MW-9	7.8	540	0	0	188	188
ICV		7.0	962			2,400	
CCV		7.0	991			2,400	
REPORTING LIMIT		------	10			0.1	
PREP DATE		03/29/99	03/29/99			03/30/99	
ANALYSIS DATE		03/29/99	03/29/99			03/30/99	
RPD		3	4			3	
% Extraction Accuracy		------	96			95	
% Instrument Accuracy		100	99			91	

*Out of holding time.

METHODS: EPA 150.1, 310.1, 160.1

/B

Director, Dr. Blair Leftwich

4-7-99

Date

use

Cation-Anion Balance Sheet

DATE: 4/5/99

Sample #	Calcium ppm	Magnesium ppm	Sodium ppm	Potassium ppm	Alkalinity ppm	Sulfate ppm	Chloride ppm	Nitrate ppm	Fluoride ppm	TDS ppm	EC µMHOs/cm
121777	76	10	23	4.9	174.00	35	28	2.7	1.8	340	
121778	74	10	43	2.3	170.00	80	23	3.3	1.8	390	
121779	109	15	46	2.8	188.00	70	95	4.8	2.1	540	

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**
121777	3.79	0.82	1.00	0.13	3.48	0.73	0.79	0.192753	0.094752	5.74	5.29	8.253335131
121778	3.69	0.82	1.87	0.06	3.40	1.67	0.65	0.235587	0.094752	6.44	6.04	6.406368561
121779	5.44	1.23	2.00	0.07	3.76	1.46	2.68	0.342672	0.110544	8.75	8.35	4.626733674

	EC/Cation	EC/Anion				
121777	574.1142	528.6085	range	0	to	0
121778	644.4834	604.4769	range	0	to	0
121779	874.6074	835.0566	range	0	to	0

TDS/EC	TDS/Cat	TDS/Anion	
#DIV/0!	0.59	0.64	needs to be 0.55-0.77
#DIV/0!	0.61	0.65	needs to be 0.55-0.77
#DIV/0!	0.62	0.65	needs to be 0.55-0.77

121777-79

4403270Z

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: Titan Exploration & Production
SITE MANAGER: IKE Tavarez

PROJECT NO.: 1085
PROJECT NAME: Titan / Lovington Paddock Unit. Lea County, NM

ANALYSIS REQUEST (Circle or Specify Method No.)

PRESERVATIVE METHOD: HCL – TPH: BTEX; HNO3 – metals; ICE – All; NONE – ions

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)	Anions, Cations
121777	3/25/99				X	MW-7	7	Y	/	/	/	/	X		X	X	X													✓
778	3/25/99				X	MW-8	7	Y	/	/	/	/	X		X	X	X													✓
779	3/25/99				X	MW-9	7	Y	/	/	/	/	X		X	X	X													✓

RELINQUISHED BY: (Signature) [signature] Date: 3/26/99 Time: 3:40 PM
RECEIVED BY: (Signature) Helen Skelton Date: 3/26/99 Time: 3:40 PM

RELINQUISHED BY: (Signature) Helen Skelton Date: 3/26/99 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) Brenda Ward
DATE: 3/27/99 TIME: 9:55

SAMPLED BY: (Print & Sign) IKE Tavarez Date: Time:

SAMPLE SHIPPED BY: (Circle) FEDEX, BUS (circled), UPS, HAND DELIVERED — Greyhound
AIRBILL # GLI 159384-4714
OTHER:

HIGHLANDER CONTACT PERSON: IKE Tavarez

Results by: at least by 4/1/99
RUSH Charges Authorized: Yes No — please

SAMPLE CONDITION WHEN RECEIVED: Higr0777.XLS (699)

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

REMARKS: 50

BUS GLI 159-384-4714
4/2 4/5

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.

4182

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

Lab Receiving # : 99041506
Date Rec: 4/15/99
Sampling Date: 4/14/99
Sample Condition: I & C
Sample Received By: VW

Date: April 16, 1999
Project: 1085
Proj Name: Lovington Paddock Pit
Proj Loc: N/A

TA#	Field Code	MATRIX	BENZEN mg/L	TOLUENE mg/L	ETHYL-BENZENE mg/L	M,P,O XYLENE mg/L	TOTAL mg/L
122815	MW-9	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			0.091	0.091	0.092	0.266	
RPD			5	6	6	6	
% Extraction Accuracy			95	94	92	92	
%Instrument Accuracy			92	91	92	92	

TEST	PREP METHOD	PREP DATE	ANALYSIS METHOD	ANALYSIS COMPLETED	CHEMIST	QC: (mg/L)	SPIKE: mg/L
BTEX	EPA SW 846-5035	4/15/99	S 8021B	4/15/99	RC	0.100 ea	0.100 ea

Director, Dr. Blair Leftwich

4-16-99
Date

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E-Mail: lab@traceanalysis.com

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

April 16, 1999
Receiving Date: 04/15/99
Sample Type: Water
Project No: 1085
Project Location: NA
Client Nanme: Titan

Prep Date: 04/15/99
Analysis Date: 04/15/99
Sampling Date: 04/14/99
Sample Condition: Intact & Cool
Sample Received by: VW
Project Name: Lovington Paddock Pit

TA#	FIELD CODE	GRO (mg/L)
T122815	MW-9	<0.100
[illegible]C	Quality Control	<0.100
METHOD BLANK		<0.100
REPORTING LIMIT		0.100
RPD		9
% Extraction Accuracy		88
% Instrument Accuracy		95

METHODS: EPA SW 846-5035, 8015B Modified.
CHEMIST: RC
GRO SPIKE: 1.00 mg/L GRO.
GRO CV: 1.00 mg/L GRO.

BZ 4-16-99

Director, Dr. Blair Leftwich DATE

TRACE ANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

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

April 16, 1999
Receiving Date: 04/15/99
Sample Type: Water
Project No: NA
Project Location: NA

Prep Date: 04/15/99
Analysis Date: 04/15/99
Sampling Date: 04/14/99
Sample Condition: Intact & Cool
Sample Received by: VW
Client Name: Titan
Project Name: Lovington Paddock Pit

TA#	FIELD CODE	DRO (mg/L)
T122815	MW-9	<5
METHOD BLANK		<5
LCS		19
LCSD		18
ICV		202
CCV-1		215
CCV-2		286
CV Average		234
Reporting Limit		5
RPD		5
% Extraction Accuracy		72
% Instrument Accuracy		81

METHODS: EPA SW 846-8011, 8015B Modified.
CHEMIST: MF
DRO SPIKE: 25 mg/L DRO.
DRO CV: 250 mg/L DRO.

BL

Director, Dr. Blair Leftwich

4-16-99

DATE

99041506

Analysis Request and Chain of Custody Record

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HIGHLANDER ENVIRONMENTAL CORP.

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

CLIENT NAME: Titan
SITE MANAGER: Ike Tavarez
PROJECT NO.: 1085
PROJECT NAME: Lovington Paddock Pit

PRESERVATIVE METHOD

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 418.1 (8015 MOD.) TX1005 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)
122815	4/14/99	12:20	W			MW-9	6	N	X		X		X		X														

RELINQUISHED BY: (Signature) Lynn C. Ward	Date: 4/14/99 Time: 4:50 pm	RECEIVED BY: (Signature) Helen Shelton	Date: 4/14/99 Time: 4:50 PM
RELINQUISHED BY: (Signature) Helen Shelton	Date: 4/14/99 Time: 6:30 pm	RECEIVED BY: (Signature)	Date: Time:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:

SAMPLED BY: (Print & Sign) Lynn Ward Date: 4/14/99 Time: 12:20

SAMPLE SHIPPED BY: (Circle) FEDEX (BUS) UPS HAND DELIVERED 4° AIRBILL # 159384514 3 OTHER:

RECEIVING LABORATORY: Trace Analysis
ADDRESS:
CITY: Lubbock STATE: TX ZIP:
CONTACT: PHONE:

RECEIVED BY: (Signature) Vicki Wardhaw
DATE: 4-15-99 TIME: 9:30 a

HIGHLANDER CONTACT PERSON: Ike Tavarez

Results by: 4/16/99 Friday (please)
RUSH Charges Authorized: Yes (No)

SAMPLE CONDITION WHEN RECEIVED:

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

REMARKS: 4/16

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