1R - 274

REPORTS

DATE:

1999

Highlander Environmental Corp.

Midland, Texas

April 13, 1999

Mr. William C. Olson
New Mexico Oil Conservation Division
Environmental Bureau
2040 S. Pacheco
Santa Fe, New Mexico 87505

Re: Pit Closure Report, Titan West Lovington Unit Pit ATB 33-1 (Closed), SW/4, Section 33, Township 16 South, Range 36 East, Lea County, New Mexico

Dear Mr. Olson:

Titan Exploration, Inc. (Titan) has retained Highlander Environmental Corp. (Highlander) to supervise the closure of a former pit and collect groundwater sample from one (1) monitoring well (MW-1) at an abandoned pit designated ATB 33-1, Titan West Lovington Unit (Site) located in the SW/4, Section 33, Township16 South, Range 36 East, Lea County, New Mexico. This report presents the results of pit closure and groundwater sampling activities conducted at the Site. Figure 1 presents a Site location. Figure 2 presents the Site drawing.

1.0 Chronology of Events

4-9-98	Submitted a workplan to NMOCD to complete subsurface investigation. The workplan was approved by the NMOCD.
8-3-98	Removed and disposed oily sludge material from the pit and disposed at Control Recovery, Inc. located in Hobbs, New Mexico.
6-30-98	Highlander supervised the installation of four (4) boreholes (BH-1 through BH-4) around the pit.
8-17-98	Highlander supervised the installation of one (1) borehole (BH-5) in the center of the pit.
11-5-98	Highlander supervised the installation of one (1) monitor well (MW-1). The monitor well was purged and sampled.
12-99	Highlander submitted the Subsurface Investigation Report to the NMOCD for review.

2-16-99 NMOCD response letter approving recommendations in the Subsurface Investigation Report for closure with following conditions: Site closure with clay cap and additional water quality sampling of the Site monitor well.

3-12-99 Highlander purged and sampled Site monitor well (MW-1) for silver analysis.

3-29-99 Scarborough Drilling plugged monitor well (MW-1).

3-31-99 Highlander supervised the clay capping of the pit.

2.0 Previous Investigations

From June 18 through November 5, 1998, Highlander personnel conducted subsurface investigations at the Site to determine the potential for impacts to soil and groundwater from the abandoned open pit. The pit measured approximately 30' x 30' and contained approximately 1' of oil and sludge material. Prior to the subsurface investigation, the oily sludge material was excavated and disposed of at Control Recovery, Inc. located in Hobbs, New Mexico. The subsurface investigations consisted of the installation of five (5) boreholes for the collection and analysis of soil samples, installation of one (1) groundwater monitoring well (MW-1) and collection of one groundwater sample for laboratory analysis. The location of the boreholes and monitor well are shown in Figure 2. The investigation results were presented in the report titled, " Subsurface Investigation Report, West Lovington Unit – Pit, Titan Exploration, Inc., Lea County, New Mexico, December 1998", incorporated here by reference.

The report also presented recommendations, which proposed closure of the pit (Site) and recommended a clay cap and resampling the Site monitor well (MW-1) due to the silver detected in the groundwater. The New Mexico Oil Conservation Division (NMOCD) response letter dated February 16, 1999 approved the recommendations with conditions, which include the specifics of the clay cap and results of the groundwater sampling. Appendix A presents a copy of the NMOCD correspondence. The following report summarizes all the activities.

3.0 Site Closure Activities

3.1 Groundwater Sampling and Analysis

An additional, groundwater sample was collected, in accordance with the Recommendations in the Subsurface Investigation Report, from the onsite monitoring well (MW-1). The groundwater sample was collected on March 12, 1999. Prior to sampling, groundwater was purged using an electric submersible pump. A minimum of three (3)-casing volumes of groundwater was removed from the well. The purged water was contained in a portable tank and transported to the Titan Exploration and Production, Inc. and discharged at the tank battery sump for disposal. The groundwater sample was collected from the monitor well, following purging, using clean dedicated disposable PVC bailer and nylon line. The ground water sample was field filtered with a 0.45 micron filter. The groundwater

sample was carefully transferred to an appropriate container, preserved, and transported under chain-of-custody control to Trace Analysis, Inc., Lubbock, Texas. The sample was analyzed for total dissolved metal (Silver) by method EPA SW-846-1311, 6010B.

Table 1 presents a summary of the total dissolved silver analysis. Appendix B presents the laboratory reports. Referring to Table 1, the silver was not observed above the test method detection limits in the groundwater sample from monitor well (MW-1). Scarbrough Drilling Inc. of Lamesa, Texas plugged monitor well (MW-1) according to NMOCD guidelines.

3.2 Pit Closure/Capping

On March 31, 1999, Titan contracted with Gilbert's Lease Service, Inc., Lovington, New Mexico to backfill the pit with the clay material. The depth of the bottom of the pit measured approximately 1.0 feet. The proctor analysis (ASTM D 698-91, Method A) of the clay is presented in Appendix C. The layer of clay, approximately 1 feet thick, was placed into the bottom of the pit and compacted to 95 % proctor in 6" lifts. After compaction of each lift, John West Engineering, Inc, Hobbs, New Mexico collected field dry densities by method ASTM D2922. The dry density report is shown in Appendix C. Once compacted, the remainder area was covered with clean fill material and compacted. Approximately 30 cubic yards of clay and 10 cubic yards of fill material was used to close the pit. The pit closure schematic is shown in Figure 2. The Site will be seeded at the landowner's request. Site closure photographs are presented in the photograph section.

4.0 Conclusions

- The groundwater metal analysis collected on November 5, 1998 detected silver of 0.07 mg/l in MW-1 which exceeded the NMWQCC human health standard for silver of 0.05 mg/l. On March 12, 1999, the monitor well was resampled for silver and was not observed above the test method detection limits. The monitor well was properly plugged according to NMOCD guidelines.

- The 30'x 30' pit was backfilled with compacted clay material and clean fill material. The layer of clay, approximately 1 feet thick, was placed into the bottom of the excavation and compacted to 95 % proctor. Once compacted, the clay cap was covered with clean fill material and compacted. Approximately 30 cubic yards of clay was placed into the pit. The Site will be seeded at the landowner's request.

5.0 Recommendations

Based on the pit capping and groundwater sample results, Highlander recommends that the NMOCD consider the Site formally closed in accordance with its guidelines and standards.

Sincerely,
Highlander Environmental Corp.

Ike Tavarez
Project Manager

Encl.

cc: Mr. Ron Lechwar

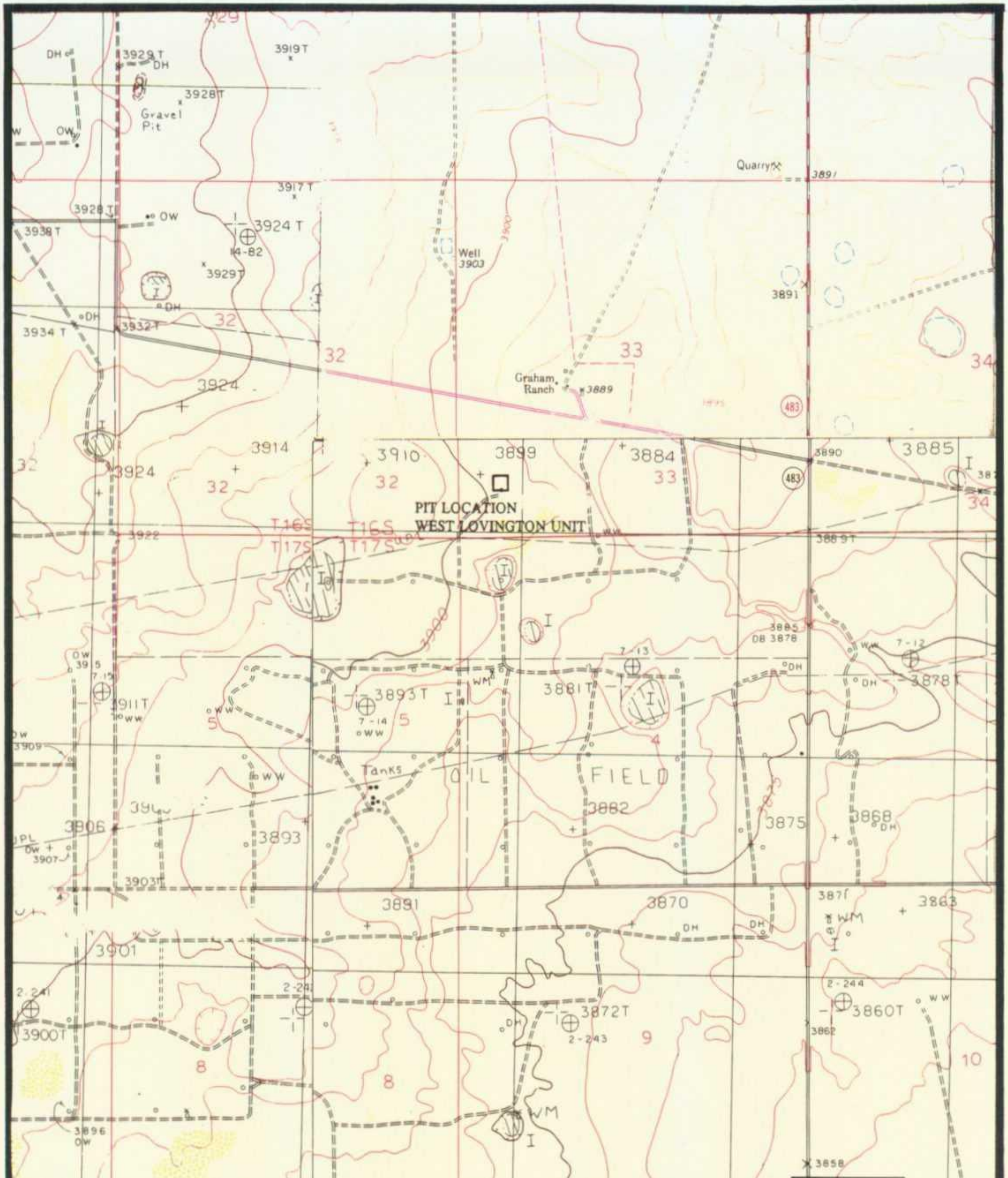


FIGURE NO. 1

LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

TOPOGRAPHIC MAP

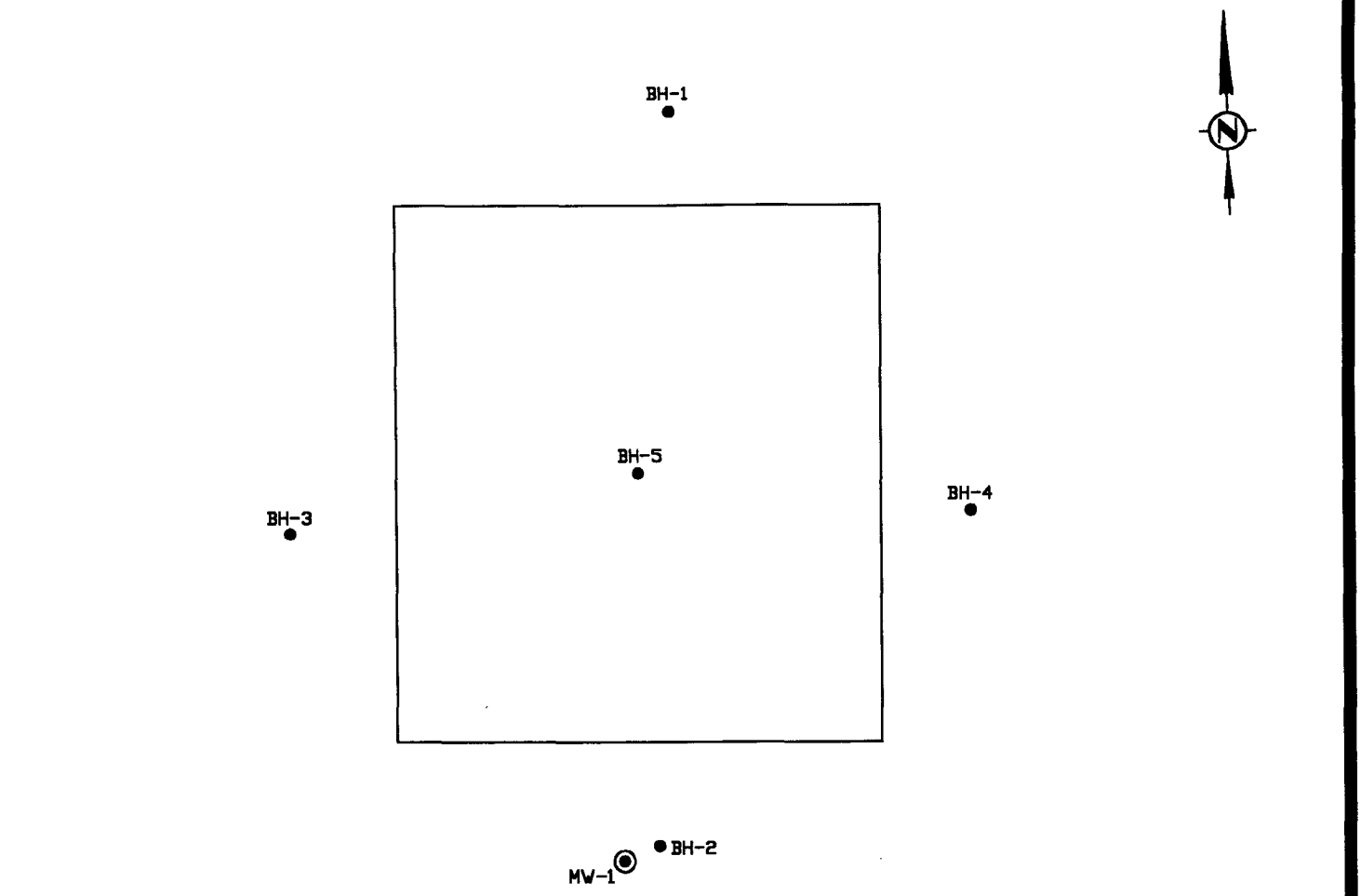
HIGHLANDER ENVIRONMENTAL CORP. MIDLAND, TEXAS

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

LEGEND

☐ **TANK BATTERY**

SCALE: 1"=2000'



● BOREHOLES (GROUTED TO SURFACE)
◉ MONITOR WELL (PLUGGED 3-26-99)

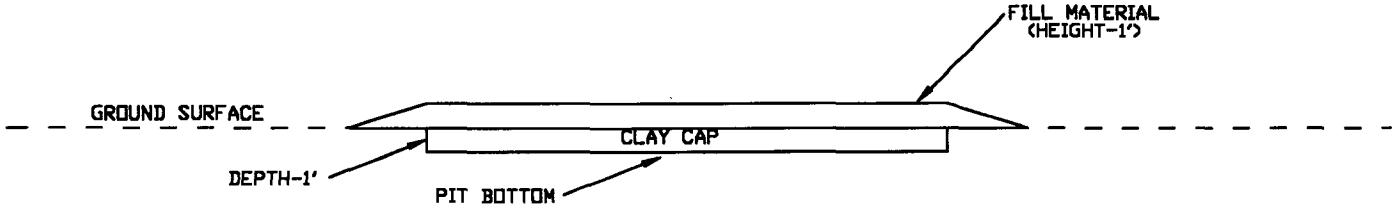


FIGURE NO. 2

LEA COUNTY, NEW MEXICO

TITAN EXPLORATION, INC.

WEST LOVINGTON UNIT
SITE PLAN & PIT CLOSURE
SCHEMATIC

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

DATE: 4/12/99
DRWN. BY: JDA
FILE: C:\TITAN\1099\WEST-SCHEMATIC

VERTICAL SCALE: 1"=10'
HORIZONTAL SCALE: 1"=10'

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

February 16, 1999

CERTIFIED MAIL
RETURN RECEIPT NO: Z-274-520-623

Mr. Ron Lechwar
Titan Exploration and Production, Inc.
500 West North Lorraine, Suite 500
Midland, Texas 79701

RE: CLOSURE REPORT
WEST LOVINGTON UNIT PIT

Dear Mr. Lechwar:

The New Mexico Oil Conservation Division (OCD) has completed a review of Titan Exploration and Production, Inc.'s (Titan) January 5, 1999 "SUBSURFACE INVESTIGATION REPORT, TITAN EXPLORATION AND PRODUCTION, INC., WEST LOVINGTON UNIT - PIT, LEA COUNTY, NEW MEXICO" which was submitted on behalf of Titan by their consultant Highlander Environmental Corporation. This document contains the results of Titan's closure of unlined pit ATB 33-1 at the Titan Lovington Unit located in the SW/4, Section 33, Township 16 South, Range 36 East, Lea County, New Mexico. The document also recommends closing the site with a clay cap at the surface and additional water quality sampling of the site monitor well.

The above referenced recommendations are **approved with the following conditions:**

1. Titan will provide the OCD with a final closure report by April 16, 1999. The report will be submitted to the OCD Santa Fe Office with a copy provided to the OCD Hobbs District Office. The report will contain:

   a. A description of all activities including conclusions and recommendations.

   b. The final as built construction specifics of the clay cap.

   c. The analytical results of the ground water sampling

Please be advised that OCD approval does not relieve Titan of liability if the work plan fails to adequately control migration of contamination related to Titan's activities. In addition, OCD approval does not relieve Titan of responsibility for compliance with any other federal, state or local laws and regulations.

If you have any questions, please contact me at (505) 827-7154.

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

xc: Chris Williams, OCD Hobbs District Office
Mark J. Larson, Highlander Environmental Corporation

Titan Exploration, Inc.
West Lovington Unit

Table 1

Groundwater Sample Results
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	<0.10	<0.02	<0.05	<0.10	<0.0010	0.07	<0.10
MW-1	3/12/99	*	*	*	*	*	*	<0.05	*

* Not analyzed

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: Ike Taverez
1910 N. Big Spring St.
Midland, TX 79705

March 22, 1999
Receiving Date: 03/13/99
Sample Type: Water
Project No: 1086
Project Location: N/A

Prep Date: 3/15/99
Analysis Date: 3/16/99
Sampling Date: 3/12/99
Sample Condition: Intact & Cool
Sample Received by: JT
Project Name: Titan/ West Lovington Uni
Lea County, NM

CORRECTED

TA#	FIELD CODE	Ag (mg/L)
T120852	MW-1	<0.05
ICV		0.20
CCV		0.20
REPORTING LIMIT		0.050
RPD		0
% Extraction Accuracy		75
% Instrument Accuracy		100

METHODS: EPA SW 846-1311, 6010 B.
CHEMIST: RR
Ag CV : 2.0 mg/L Ag
Ag SPIKE : 2.0 mg/L Ag

***Corrected TA# and Field Code.**

Director, Dr. Blair Leftwich

03/22/99
DATE

120852

990313 06

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.: 1086 PROJECT NAME: Titan / West Lovington 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	ANALYSIS REQUEST (Circle or Specify Method No.): 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)	X Metal - Silver (Ag)
120852	3/12/99		W		X	MW-1	1	Y		✓	✓																			X

RELINQUISHED BY: (Signature) Date: 3/12/99 Time: 4:35 PM
RECEIVED BY: (Signature) Helen Shelton Date: 3/12/99 Time: 4:35 PM

RELINQUISHED BY: (Signature) Helen Shelton Date: 3/12/99 Time: 6:00 PM
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 HAND DELIVERED (BUS) UPS AIRBILL #: Greyhound OTHER:

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

RECEIVED BY: (Signature)
DATE: 3/12/99 TIME:

HIGHLANDER CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes (No)

SAMPLE CONDITION WHEN RECEIVED:

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

REMARKS: Temp 30C Bill 159-384-479-1

Project Manager retains pink copy - Accounting receives Gold copy.

TRINITY ENGINEERING TESTING CORPORATION

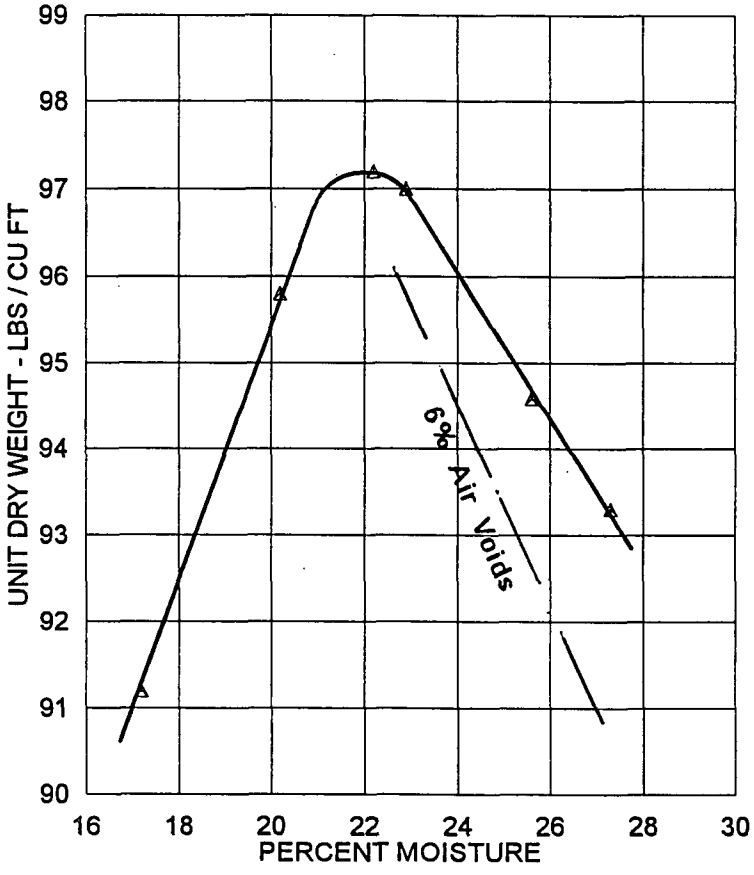
ODESSA, TX

TO: Mr. Timothy M. Reed
Highlander Environmental
1910 Big Spring
Midland, TX 79705

PROJECT: Titan E&P, Inc.
West Lovington Unit
Lea County, New Mexico

DATE: 02/03/99
REPORT NO.: O-67659

MOISTURE - DENSITY RELATIONSHIP



MATERIAL DESCRIPTION:
Red CLAY

SAMPLE NUMBER:
S-9921

SAMPLED BY:
Client from the site; Received by Trinity 2-2-99

TEST PERFORMED BY:
M. Evans

TEST METHOD:
ASTM D 698-91, Method A,
dry prep., 5.5 lb. mech. rammer

TRIAL NO.	PERCENT MOISTURE	UNIT DRY WEIGHT LBS / CU FT
1	17.2	91.2
2	20.2	95.8
3	22.9	97.0
4	25.6	94.6
5	27.3	93.3

COPIES TO: 1-Above

OPTIMUM MOISTURE PERCENT: 22.2

MAXIMUM DENSITY LBS / CU FT: 97.2

TRINITY ENGINEERING TESTING CORPORATION

Thomas R. Schlegel, P. E.

NM

LABORATORY TEST RESULTS

JOHN WEST ENGINEERING COMPANY

412 N. DAL PASO
HOBBS, NM 88240
(505)393-3117

Scott Bussell, P.E.
Dilesh Sheth, E.I.T

TO: Highlander Environmental Corp.
1910 N. Big Spring
Midland, TX 79705

MATERIAL: Clay

TEST METHOD: ASTM: D2922

PROJECT: West Lovington Unit Pit

DEPTH: 6"

DATE OF TEST: 3-31-99

TEST NO.	LOCATION	DRY DENSITY %MAXIMUM	MOISTURE CONTENT %	DEPTH
1	12' South, 10' East of N.W. corner, first lift	91.1	24.3	6"
2	5' South, 5' East of N.W. corner, first lift	99.8	18.62	6"
3	3' South, 25' East of N.W. corner, second lift	95.8	19.06	6"
4	5' South, 20' East of N.W. corner, second lift	91.7	24.17	6"
5	10' South, 27' East of N.W. corner, second lift	95.8	16.26	6"

CONTROL DENSITY: 97.2 AASHTO T-698-91

OPTIMUM MOISTURE: 22.2%

REQUIRED COMPACTION: 95%

MOISTURE CONTENT

COPIES TO:

JOHN WEST ENGINEERING COMPANY

BY: Dilesh Sheth

PHOTOGRAPHIC DOCUMENTATION
TITAN EXPLORATION, INC., WEST LOVINGTON UNIT – PIT CLOSURE

1. Backfilling pit with clay

2. Pit capping/ clay compaction

PHOTOGRAPHIC DOCUMENTATION
TITAN EXPLORATION, INC., WEST LOVINGTON UNIT – PIT CLOSURE

3. Pit capping/ clay compaction

4. Pit capping/ dry density measurements