1R - 392

REPORTS

DATE:

2004

Saga Petroleum LLC
State AE Battery
Site Investigation
Section 36, Township 16S, Range 36E
Lea County, New Mexico

January 29, 2004

Prepared for:

Saga Petroleum LLC
415 W. Wall, Suite 1900
Midland, Texas 79701

By:

Safety & Environmental Solutions, Inc.
703 E. Clinton Suite 103
Hobbs, New Mexico 88240
(505) 397-0510

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I. Background

Safety & Environmental Solutions, Inc. (SESI) was contracted by Saga Petroleum LLC to perform a site investigation of the State AE Battery. The subject area is located in Section 36, Township 16S, Range 36E in Lea County, New Mexico. (See Figure 1) This site was used as a produced fluid storage area. The site has been abandoned and the storage tanks and vessels have been removed.

II. Surface and Ground Water

According to the database provided by the New Mexico State Engineer's Office there is no groundwater of record in Section 36, Township 16S, Range 36E. The nearest groundwater of record is in Section 1, Township 17S, Range 36 E, in Lea County, New Mexico the depth of water is approximately 83 feet in depth. This measurement was taken May 5, 1992. On January 28, 2004, SESI installed a groundwater monitor well at the Apollo Salt Water Disposal Facility which is located approximately ½ to ¾ of a mile to the south of this location. Groundwater was encountered in this well at approximately 95' A City of Lovington water well is located approximately 430' southeast of this location.

III. Soils

The soils in the area are predominantly sand and sandy loam.

IV. Work Performed

Drilling of Boreholes

On December 29, 2003 SESI drilled 4 boreholes at the State AE Battery Site. See Figure 2 for location of boreholes. All boreholes were drilled to a depth of 10 feet. Grab samples were retrieved from each borehole at the bottom depth. The samples were properly preserved and transported under chain of Custody to Cardinal Laboratories of Hobbs, New Mexico for analysis. All samples were analyzed for Chlorides (EPA methods 4500-Cl^-B), TPH (EPA method 418.1), and BTEX (EPA Method SW-846 8260). The results of the analysis are as follows:

ID	Cl^-	TPH	Benzene	Toluene	Ethyl Benzene	Total Xylenes
BH-1 10"	432	<10	<0.005	<0.005	<0.005	<0.015
BH-2 10'	288	<10	<0.005	<0.005	<0.005	<0.015
BH-3 10'	336	<10	<0.005	<0.005	<0.005	<0.015
BH-4 10'	336	<10	<0.005	<0.005	<0.005	<0.015

V. Conclusions and Recommendations

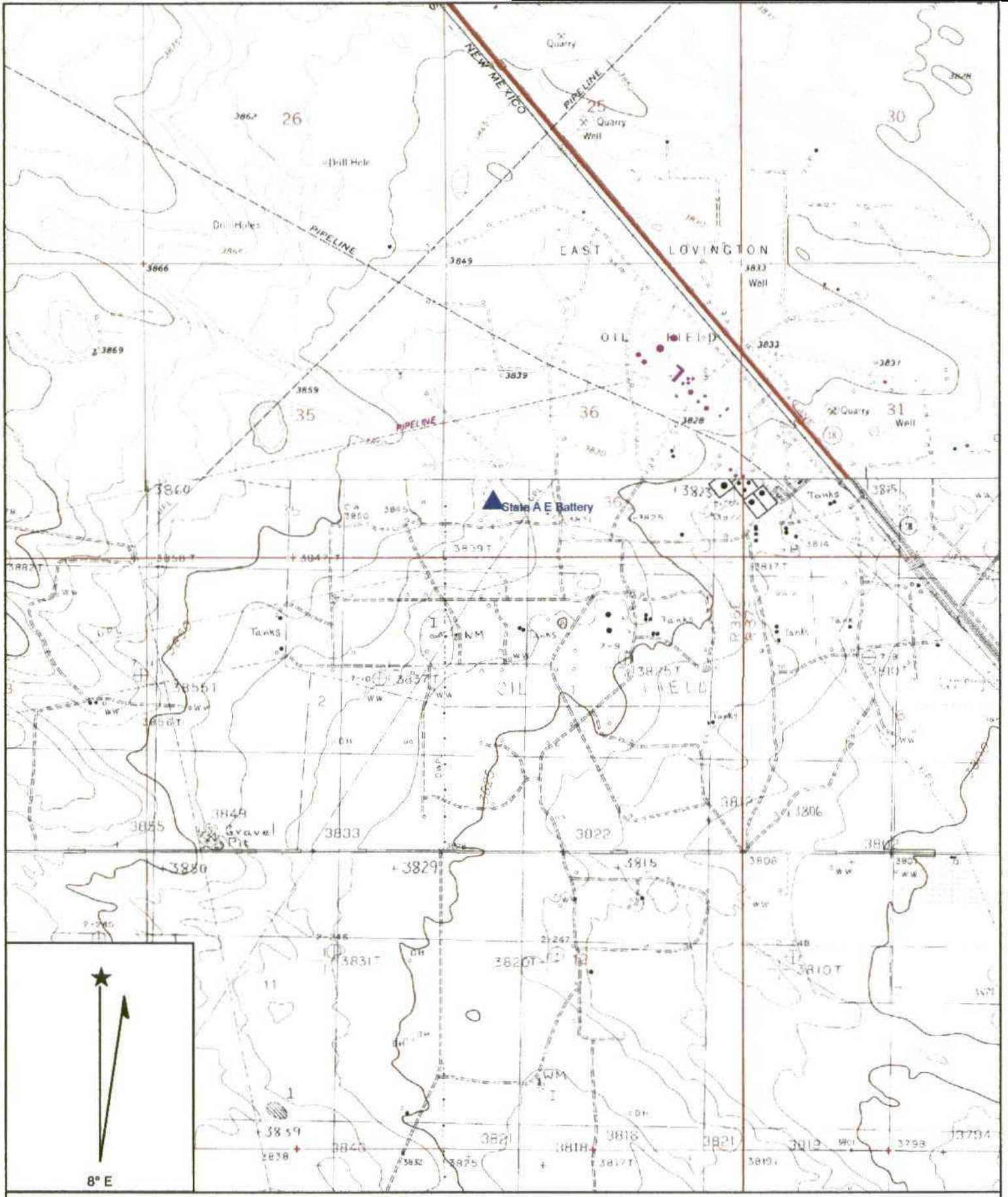
The results of the analysis indicate that the vertical extent of TPH or chloride contamination does not exceed 10' in depth. It is recommended that all highly contaminated and/or saturated soils be removed and transported to an approved NMOCD disposal facility. The remaining soils with TPH levels above 1000 ppm will be excavated and blended on site with clean soils from off site. In order to protect the City

of Lovington water well to the southeast, the horizontal extent of contamination will be determined by excavation and all soils with TPH levels above 100 ppm will be removed horizontally to the depth of the excavation stated above. The soils will be blended to a TPH level no greater than 1000 ppm. The excavation will be backfilled with the blended soils and returned to normal grade.

VI. Figures & Appendices

Figure 1 - Vicinity Map
Figure 2 - Site Plan
Figure 3 - Log of Boring
Appendix A - Analytical Results
Appendix B - Site Photos

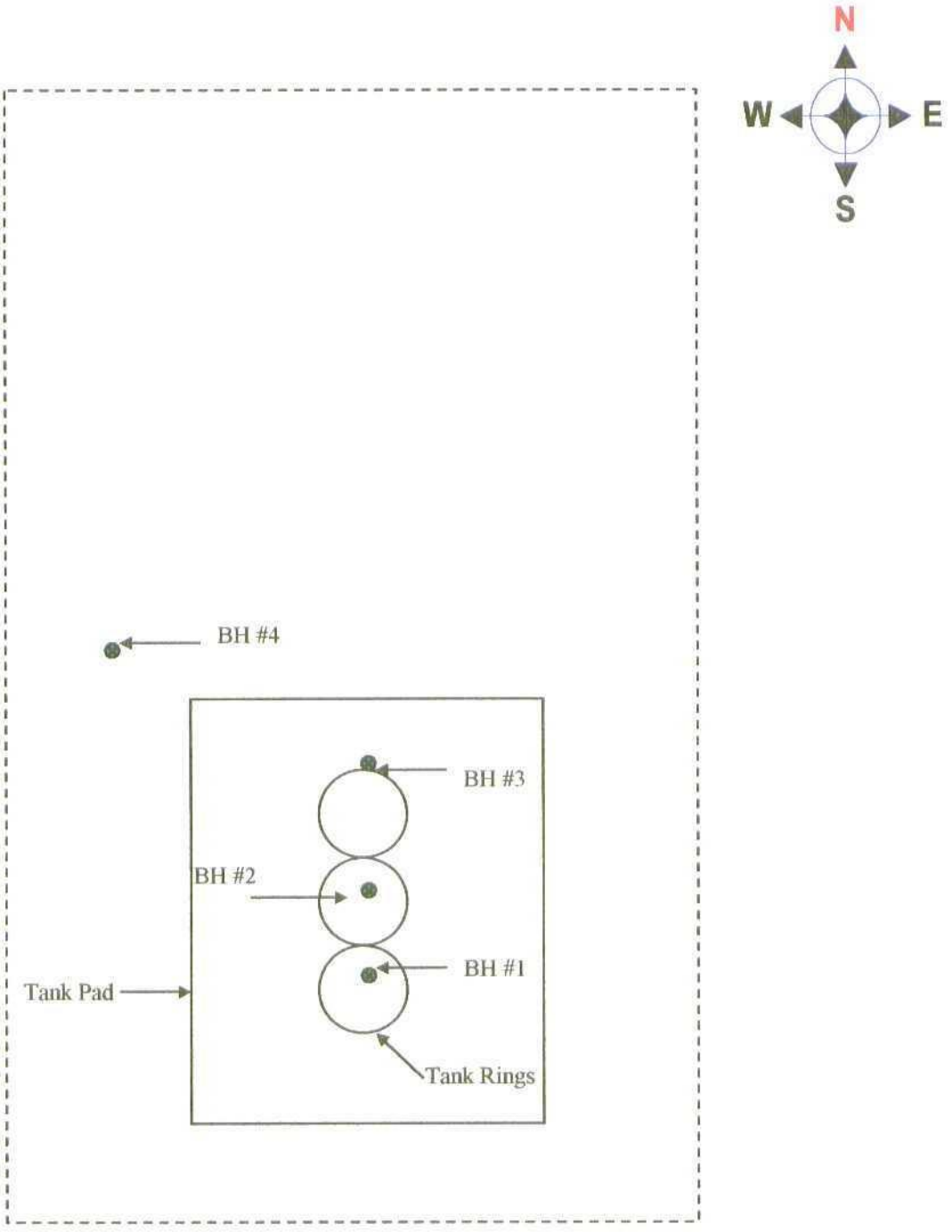
Figure 1
Vicinity Map



Name: LOVINGTON SE
Date: 1/29/2004
Scale: 1 inch equals 2222 feet

Location: 032° 52' 09.2" N 103° 18' 45.9" W
Caption: Saga Petroleum LLC
State AE Battery
S36, T16S, R36E
Lea County, New Mexico

Figure 2
Site Plan



Not To Scale

Saga Petroleum LLC	**State AE Battery** **Section 36, T16S, R36E** **Lea County, New Mexico**	***Safety & Environmental Solutions, Inc.***

Figure 3
Log of Boring

Safety & Environmental Solutions, Inc.

LOG OF BORING BH-1

Saga Petroluem LLC
State AE Battery
S36, T16S, R36E
Lea County, New Mexico

Date Started	: 12/29/03	Sampling Method	: Cuttings, core barrel
Date Completed	: 12/29/03	Drilled By	: Eco Drilling
Hole Diameter	: 8 1/4 in.	Logged By	: Bob Allen
Drilling Method	: Hollow Stem Auger	Company Rep.	: Bruce Woodard
Drilling Equipment	: CME-75		

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Lab No.	Samples	TPH (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethyl Benzene (mg/Kg)	Total Xylenes (mg/Kg)	Chlorides (mg/Kg)
0–3	SP/CA		Tank Pad Material Stained Black								
3–5	CA		Caliche Gray Streaked Black								
5–6	CA		Caliche								
6–10	SP		Pink Sand	H8305-1	—1—	<10	<0.005	<0.005	<0.005	<0.015	432

Notes:
Plugged back to surface with bentonite upon completion

Safety & Environmental Solutions, Inc.

LOG OF BORING BH-2

(Page 1 of 1)

Saga Petroluem LLC
State AE Battery
S36, T16S, R36E
Lea County, New Mexico

Date Started	: 12/29/03	Sampling Method	: Cuttings, core barrel
Date Completed	: 12/29/03	Drilled By	: Eco Drilling
Hole Diameter	: 8 1/4 in.	Logged By	: Bob Allen
Drilling Method	: Hollow Stem Auger	Company Rep.	: Bruce Woodard
Drilling Equipment	: CME-75		

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Lab No.	Samples	TPH (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethyl Benzene (mg/Kg)	Total Xylenes (mg/Kg)	Chlorides (mg/Kg)
0–5	SP/CA		Tank Pad Material Heavey Stains & Odor								
5–6	CA		Caliche								
6–10	SP		Pink Sand	H8305-2	—1—	<10	<0.005	<0.005	<0.005	<0.015	288

Notes:
Plugged back to surface with bentonite upon completion

Safety & Environmental Solutions, Inc.

LOG OF BORING BH-3

Saga Petroluem LLC
State AE Battery
S36, T16S, R36E
Lea County, New Mexico

Date Started	: 12/29/03	Sampling Method	: Cuttings, core barrel
Date Completed	: 12/29/03	Drilled By	: Eco Drilling
Hole Diameter	: 8 1/4 in.	Logged By	: Bob Allen
Drilling Method	: Hollow Stem Auger	Company Rep.	: Bruce Woodard
Drilling Equipment	: CME-75		

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Lab No.	Samples	TPH (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethyl Benzene (mg/Kg)	Total Xylenes (mg/Kg)	Chlorides (mg/Kg)
0–3	SP/CA		Tank Pad Material Heavey Stains & Odor								
3–5	CA		Caliche Dark Streaks & Odor								
5–6	CA		Caliche								
6–10	SP		Pink Sand	H8305-3	—1—	<10	<0.005	<0.005	<0.005	<0.015	336

Notes:
Plugged back to surface with bentonite upon completion

Safety & Environmental Solutions, Inc.

LOG OF BORING BH-4

Saga Petroluem LLC
State AE Battery
S36, T16S, R36E
Lea County, New Mexico

Date Started	: 12/29/03	Sampling Method	: Cuttings, core barrel
Date Completed	: 12/29/03	Drilled By	: Eco Drilling
Hole Diameter	: 8 1/4 in.	Logged By	: Bob Allen
Drilling Method	: *Hollow Stem Auger*	*Company Rep.*	: *Bruce Woodard*
Drilling Equipment	: CME-75		

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Lab No.	Samples	TPH (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethyl Benzene (mg/Kg)	Total Xylenes (mg/Kg)	Chlorides (mg/Kg)
0–3	SP/CA		Hard Pad Top Soil Odor								
3–6	CA		Caliche Dark Stains								
6–10	SP		Pink Sand	H8305-4	1	<10	<0.005	<0.005	<0.005	<0.015	336

Notes:
Plugged back to surface with bentonite upon completion

Appendix A
Analytical Results

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
SAFETY & ENVIRONMENTAL SOLUTIONS, INC.
ATTN: BOB ALLEN
703 E. CLINTON, #103
HOBBS, NM 88240
FAX TO: (505) 393-4388

Receiving Date: 12/30/03
Reporting Date: 01/05/04
Project Number: SAG-03-002
Project Name: STATE AE
Project Location: LOVINGTON, NM

Sampling Date: 12/29/03
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: BC

LAB NUMBER	SAMPLE ID	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE		01/02/04	01/02/04	01/02/04	01/02/04
H8305-1	B.H. #1 10'	<0.005	<0.005	<0.005	<0.015
H8305-2	B.H. #2 10'	<0.005	<0.005	<0.005	<0.015
H8305-3	B.H. #3 10'	<0.005	<0.005	<0.005	<0.015
H8305-4	B.H. #4 10'	<0.005	<0.005	<0.005	<0.015
Quality Control		0.098	0.101	0.100	0.311
True Value QC		0.100	0.100	0.100	0.300
% Recovery		98.4	101	99.5	104.0
Relative Percent Difference		5.9	2.9	4.8	2.1

METHOD: EPA SW-846 8260

Chemist

1/5/04
Date

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
SAFETY & ENVIRONMENTAL SOLUTIONS, INC.
ATTN: BOB ALLEN
703 E. CLINTON
HOBBS, NM 88240
FAX TO: (505) 393-4388

Receiving Date: 12/30/03
Reporting Date: 12/31/03
Project Number: SAG03002
Project Name: STATE AE
Project Location: LOVINGTON, NM

Sampling Date: 12/29/03
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: AH/HM

LAB NUMBER	SAMPLE ID	TPH (ppm)	Cl (ppm)
ANALYSIS DATE:		12/30/03	12/30/03
H8305-1	B.H. #1 10'	<10	432
H8305-2	B.H. #2 10'	<10	288
H8305-3	B.H. #3 10'	<10	336
H8305-4	B.H. #4 10'	<10	336
Quality Control		243	940
True Value QC		240	1000
% Recovery		101	94.0
Relative Percent Difference		4.6	1.4

METHODS: EPA 600/4-79-02	418.1	SM 4500 Cl B

Amy Hill
Chemist

12/31/03
Date

H8304

CARDINAL LABORATORIES, INC.

2111 Beechwood, Abilene, TX 79603 (915) 673-7001 Fax (915) 673-7020
101 East Marland, Hobbs, NM 88240 (505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page 1 of 1

Company Name: SESI	BILL TO
Project Manager: Bob Allen	P.O. #: SAME
Address: 703 E. Clinton STE 101	Company:
City: Hobbs State: NM Zip: 88240	Attn:
Phone #: 505-397-0510 Fax #: 505-393-4388	Address:
Project #: SAG03-002 Project Owner:	City:
Project Name: STATE AE	State: Zip:
Project Location: Lovington N.M.	Phone #:
Sampler Name: Bob Allen	Fax #:

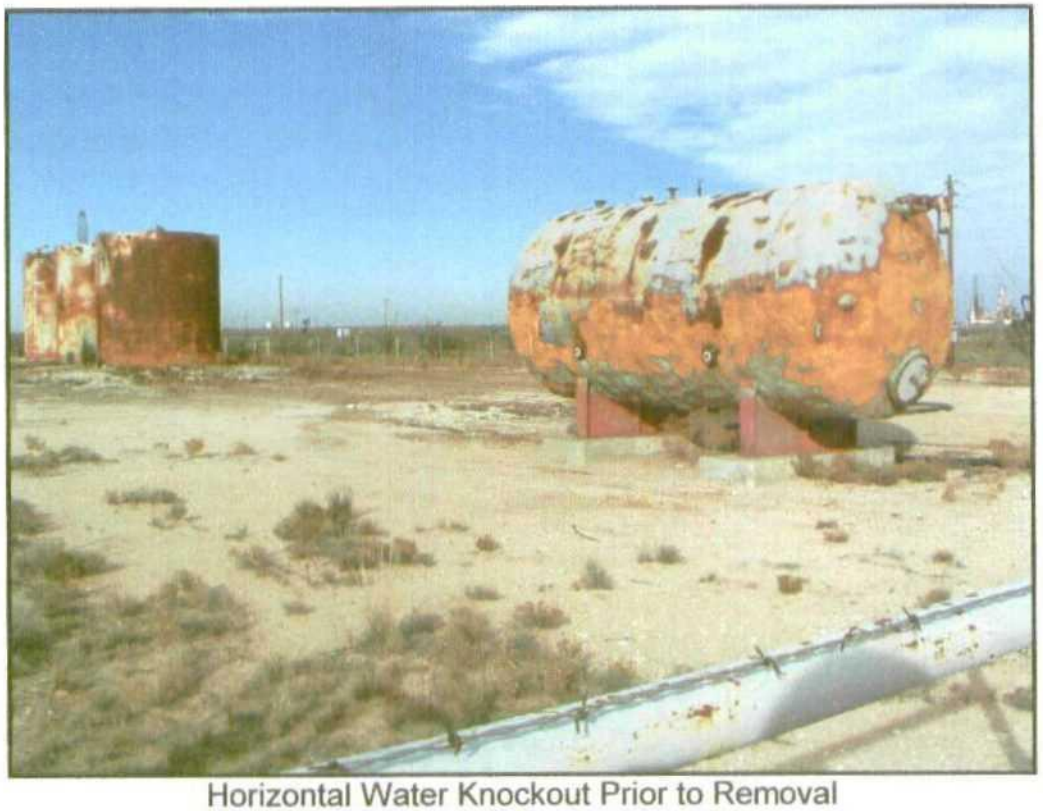
FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX	TPH	Chlorides
H8305-1	B.H. #1 10'	G	1			✓					✓		29 Dec	11:20p	✓	✓	✓
-2	B.H. #2 10'	G	1			✓					✓		29 Dec	11:55p	✓	✓	✓
-3	B.H. #3 10'	G	1			✓					✓		29 Dec	12:50p	✓	✓	✓
-4	B.H. #4 10'	G	1			✓					✓		29 Dec	2:00p	✓	✓	✓

Sampler Relinquished: James R. Allen	Date: Time:	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Relinquished By:	Date: 30 Dec 03 Time:	Received By: (Lab Staff) Amy Hill	Fax Result: ☐ Yes ☐ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)	REMARKS:

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476.

Appendix B
Site Photos

Storage Tanks Prior to Removal



Horizontal Water Knockout Prior to Removal

Tank Pad & Boreholes

Borehole #1 10' Core

Borehole #1 10' Core End

Borehole #2 5' Core

Borehole #2 10' Core

Borehole #3 5' Core

Borehole #3 10' Core

Borehole #4 10' Core