



# New Mexico Energy, Minerals and Natural Resources Department

**Bill Richardson**  
Governor

**Joanna Prukop**  
Cabinet Secretary  
**Reese Fullerton**  
Deputy Cabinet Secretary

**Mark Fesmire**  
Division Director  
Oil Conservation Division



April 7, 2008

BTA Oil Producers  
104 S Pecos  
Midland, TX 79701

RE: Remediation Work Plan  
Pardue SWD Battery N-11-23S-28E Eddy County, New Mexico  
**2RP-155**

Operator;

The New Mexico Oil Conservation Division District 2 office (OCD) is in receipt of a remediation work plan (plan). Included in the plan is a form C-144 requesting closure of a pit. The C-144 assigned a site ranking score of sixty (60) points. The C-144 is accepted for record. The plan proposes to "... excavate approximately one foot of impacted soil, backfill the excavation with a veneer of clean sand, install a 20 mil poly-liner, backfill with a veneer of clean sand and backfill with approximately 2-feet of clean soil to prevent further issues ..."

As presented, the plan cannot be approved. Chloride analytical data only was presented to OCD from soil samples obtained on March 18, 2008. An alternate remediation work plan based on further vertical and horizontal delineation to address TPH, BTEX, and Chlorides must be presented to OCD.

- Notify the OCD 48 hours prior to obtaining samples where analyses are to be submitted to the OCD.

Please submit the delineation results and alternate remediation work plan on or before May 7, 2008.

Thank you for your attention to this matter. If I can be of assistance or should you have any questions/concerns, please don't hesitate to contact me.

Respectfully,

A handwritten signature in black ink, appearing to read "Sherry Bonham", is written over a horizontal line.

Sherry Bonham  
NMOCD District 2  
1301 W Grand Avenue  
575.748.1283 Ext. 109  
[sherry.bonham@state.nm.us](mailto:sherry.bonham@state.nm.us)

cc: Ben Grimes  
Skip Baca





MAR 31 2008  
OCD-ARTESIA

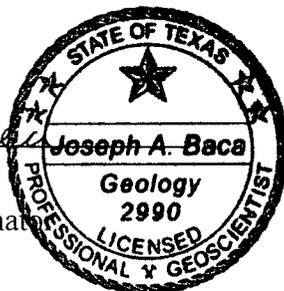
# PARDUE SWD SITE REMEDIATION PLAN

8808 JV-P Pardue SWD Injection Facility  
20 Miles southeast of Carlsbad, New Mexico  
Carlsbad, New Mexico  
BTA Project Number Env. 2008-25

Prepared for:  
**New Mexico Oil Conservation Division**  
1301 W. Grand Avenue  
Artesia, New Mexico 88210

Prepared By:  
**BTA Oil Producers**  
104 S. Pecos St.  
Midland, Texas 79701

  
Joseph A. Baca, P.G.  
Environmental Coordinator  
BTA Oil Producers



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## 1.0 INTRODUCTION

BTA Oil Producers (BTA) is pleased to submit this Pardue SWD Site Remediation Plan for the 8808 JV-P Pardue SWD Injection Facility (Pardue). The Pardue site is located approximately 20 miles southeast of the town of Carlsbad, in the NE/4, NE/4, of Section 11, Township 23 South, Range 28 East, and Eddy County, New Mexico. Ground Positioning Satellite (GPS) coordinates are N32°18.771' and W104°03.633'. A site map is provided with this report as Figure 1.

On February 15, 2008 soil samples were collected from the floor of the impacted site and submitted for laboratory analysis. Three soil samples, identified as 1-1'-Spl, 2-2'-Spl and 2-3'-Spl were collected from two (2) separate sample excavations within the impacted area. Sample 1-1'-Spl was collected from an excavation labeled Sample Excavation No. 1 on the floor of the impacted area at a depth of approximately 1-foot below ground surface (bgs). Samples 2-2'-Spl and 2-3'-Spl were collected from an excavation labeled Sample Excavation No. 2 also on the floor of the impacted area at a depth of 2-feet and 3-feet bgs (Figure 2). The samples were submitted for laboratory analysis and the analytical results indicated that the samples exhibited GRO and DRO (8015) concentrations of <50.0 mg/Kg to 680 mg/Kg. The sample exhibiting the highest GRO and DRO was subsequently run for BTEX (8021B) and exhibited <0.100 mg/Kg for Benzene, 0.712 mg/Kg Toluene, .0322 for Ethylbenzene and 2.01 mg/Kg for Xylene. Chloride analytical results ranged from 2,430 mg/Kg to 15,900 mg/Kg (Table 1).

Laboratory submitted samples were placed in a new sterile glass container, equipped with a Teflon-lined lid furnished by the laboratory. The samples were labeled, placed on ice, chilled to a temperature of approximately 4°C and transported to Trace Analysis, Inc in Midland, Texas for analysis of GRO, DRO by method 8015, BTEX by method 8021B and Chlorides by titration. Appropriate chain-of-custody documentation and shipping protocols were followed. The laboratory analytical reports are provided in Appendix A. Figure 2 displays the excavation limits and the location of each confirmation soil sample. Table 1 displays the analytical results of field tested and laboratory analyzed confirmation soil samples.

BTA's Pardue SWD Injection Facility (Pardue) is located on top of an east trending topographic nose, approximately 40-feet above the west bank of the Pecos River. The area of interest is located on the southern end of the topographic nose. The overall nose area measures approximately 541-feet long by 485-feet wide. The impacted site measures approximately 177-feet on the west side, 77-feet on the east side and is approximately 163-feet long. The area is parallelogram shaped with the wider end to the west. Soil in the site area is composed of fine sandy loam with large limestone cobbles on the surface and solid rock at approximately 2 to 3 feet below ground surface (bgs). During the sample event of February 15, 2008, while collecting initial soil samples, it was found that solid rock existed below 1-foot and was difficult to excavate with the back-hoe. It is BTA's intention to remove one-foot of impacted soil backfill the excavation with a veneer of clean sand, install a 20 mil poly-liner, backfill with a veneer of clean sand and backfill with approximately 2-feet of clean soil to prevent further issues (Figure 4). The area would be backfilled and leveled to meet the general lay of the existing surface grade. It would not be cost effective to excavate to a greater depth as the solid rock would prevent it.

On March 18, 2008 four soil samples, identified as North-1@1', South-2@1', East-3@-1' and West -4@1' were collected from the historical pit, 1-foot below ground surface (bgs) (Figure 2). The samples were submitted to an analytical laboratory for Chloride analysis, and results were

received March 21, 2008. The samples ranged from 898 mg/Kg to 3110 mg/Kg (Table 1). This would define the area to be excavated at approximately 60-feet by 60-feet.

Laboratory submitted samples were placed in a new sterile glass container, equipped with a Teflon-lined lid furnished by the laboratory. The samples were labeled, placed on ice, chilled to a temperature of approximately 4°C and transported to Trace Analysis, Inc in Midland, Texas for analysis of Chlorides by titration. Appropriate chain-of-custody documentation and shipping protocols were followed. The laboratory analytical reports are provided in Appendix A. Figure 2 displays the excavation limits and the location of each confirmation soil sample. Table 1 displays the analytical results of field tested and laboratory analyzed confirmation soil samples.

## **PURPOSE OF PLAN**

The purpose of this report is to document field activities that will take place at the Pardue in order to remediate the site and present supporting data to meet that end.

## **2.0 SUMMARY OF FIELD ACTIVITIES**

BTA will move in a track-hoe and a front-end loader onto the Pardue site. The track-hoe will excavate the top 1 to 2-feet, remove the material, and level the excavation floor. A 20-mil poly liner would be installed and new fresh soil place over the new liner

## **4.0 WATER WELLS AND SURFACE WATER**

There are two water wells and surface water in close proximity. There are two water wells approximately 3,600-feet west of the impacted site in Section 11, Township 23 South, Range 28 East, Eddy County, New Mexico. Well C00512 has a depth to water at 15-feet and is used for irrigation. Well C 00608 has no depth to water recorded according to the New Mexico Office of the State Engineer and it is used as a domestic well (Figure 3).

## **5.0 LIMITATIONS**

BTA has prepared this Site Remediation Plan to the best of its ability. No other warranty, expressed or implied, is made or intended. BTA has examined and relied upon documents referenced in the plan and on oral statements made by certain individuals. BTA has not conducted an independent examination of the facts contained in referenced materials and statements. We have presumed the genuineness of the documents and that the information provided in documents or statements are true and accurate. BTA has prepared this plan in a professional manner, using a degree of skill and care. BTA also notes that the facts and conditions referenced in this report may change over time, and the conclusions set forth herein are applicable only to the facts and conditions as described at the time of this plan.

**6.0 DISTRIBUTION LIST**  
**Pardue SWD Injection Facility Remediation Plan**  
**BTA Oil Producers**  
**8808 JV-P Pardue SWD Injection Facility**  
**BTA Project No. Env. 2008-025**

**Copy 1**

**Oil Conservation Division (OCD)**  
**1301 W. Grand Avenue**  
**Artesia, New Mexico 88210**

**Copy 2**

**BTA Central File**

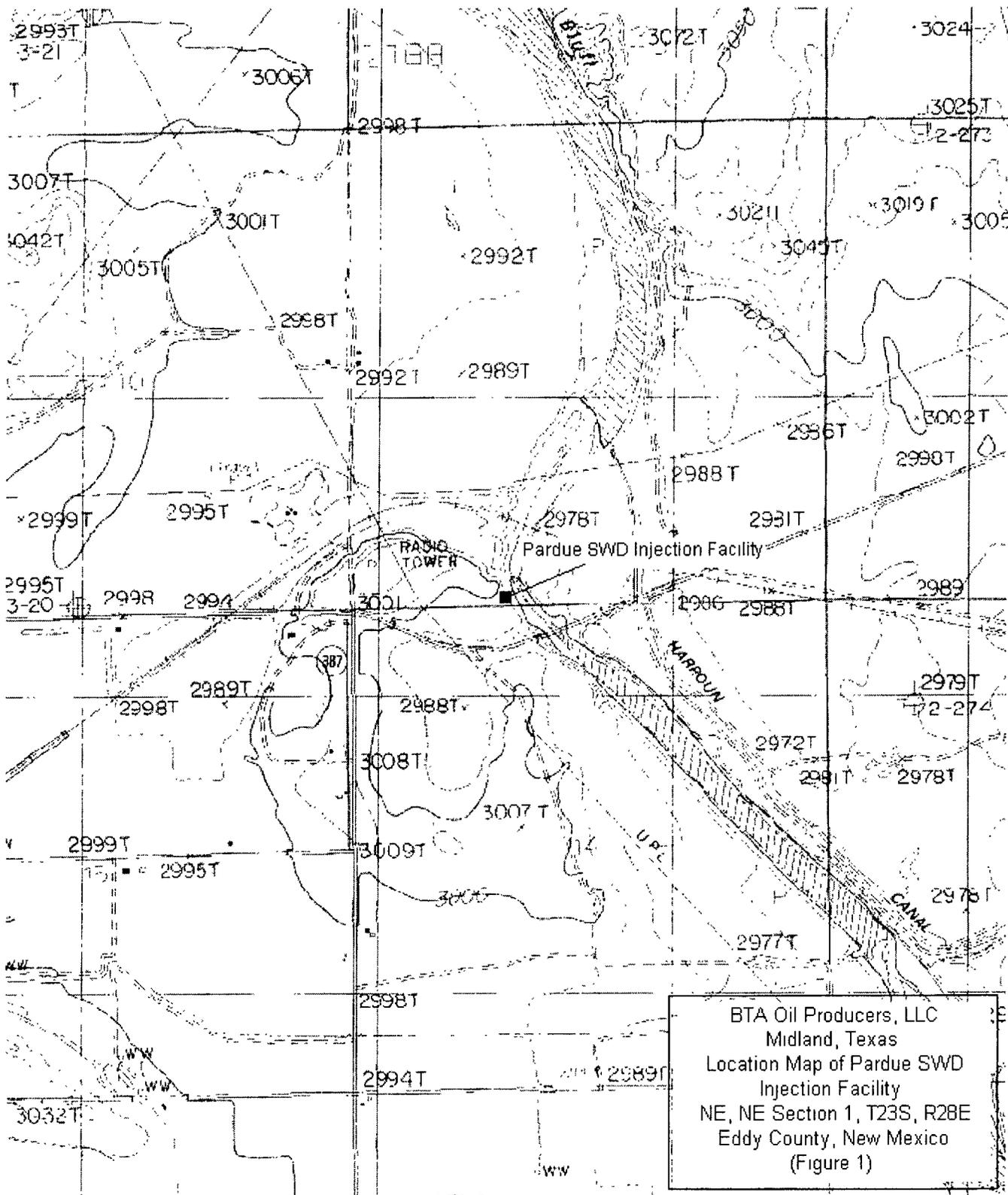
# **ATTACHMENTS**



# FIGURES



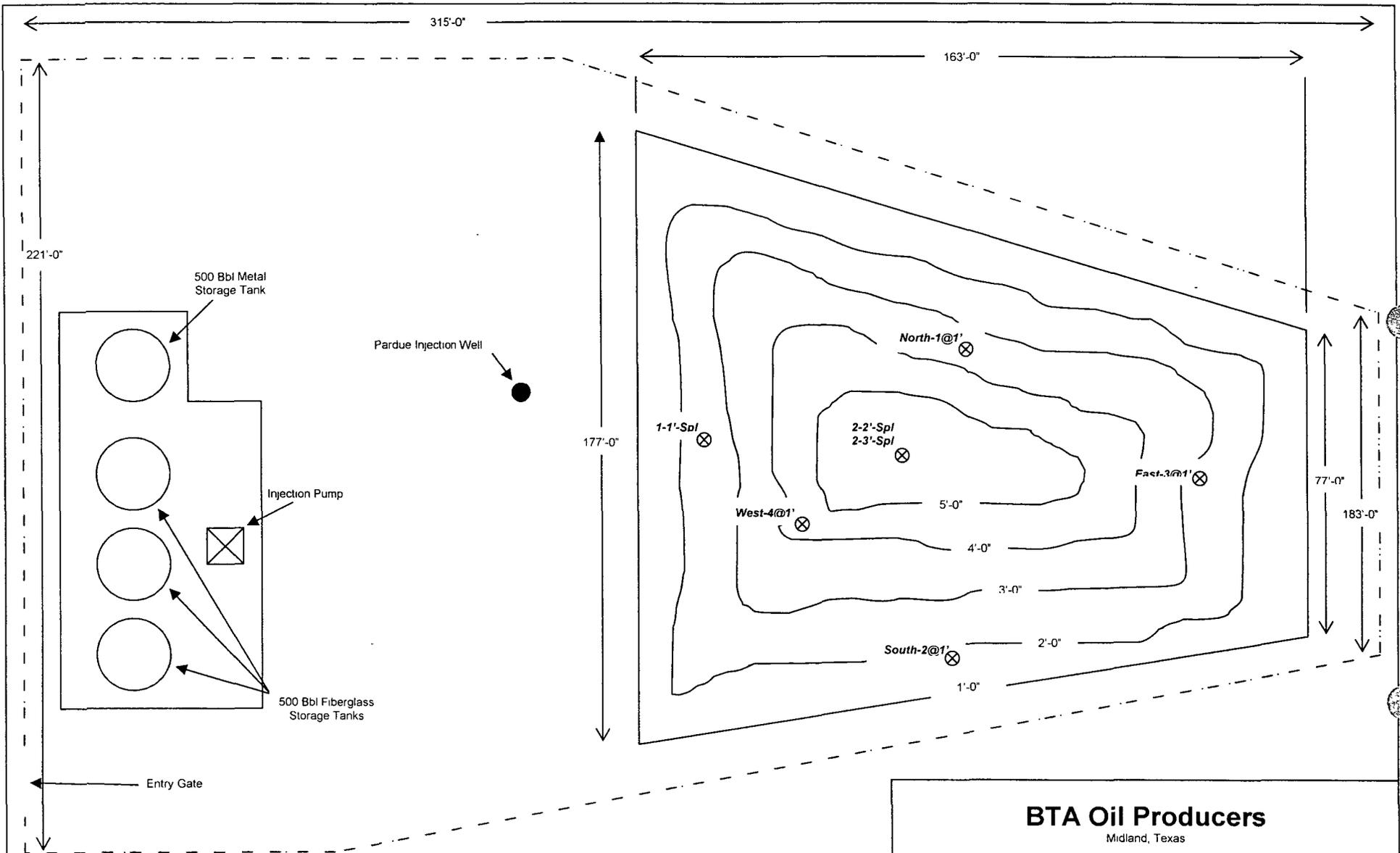
# Figure 1



BTA Oil Producers, LLC  
 Midland, Texas  
 Location Map of Pardue SWD  
 Injection Facility  
 NE, NE Section 1, T23S, R28E  
 Eddy County, New Mexico  
 (Figure 1)



**Figure 2**



**DRAWING NOT TO SCALE**

Sample ID ⊗ — Sample Point



**BTA Oil Producers**  
Midland, Texas  
**Site Map of Pardue SWD Injection Facility Battery**

Section 11, T23S, R28E  
Eddy County, New Mexico  
(Figure 2)

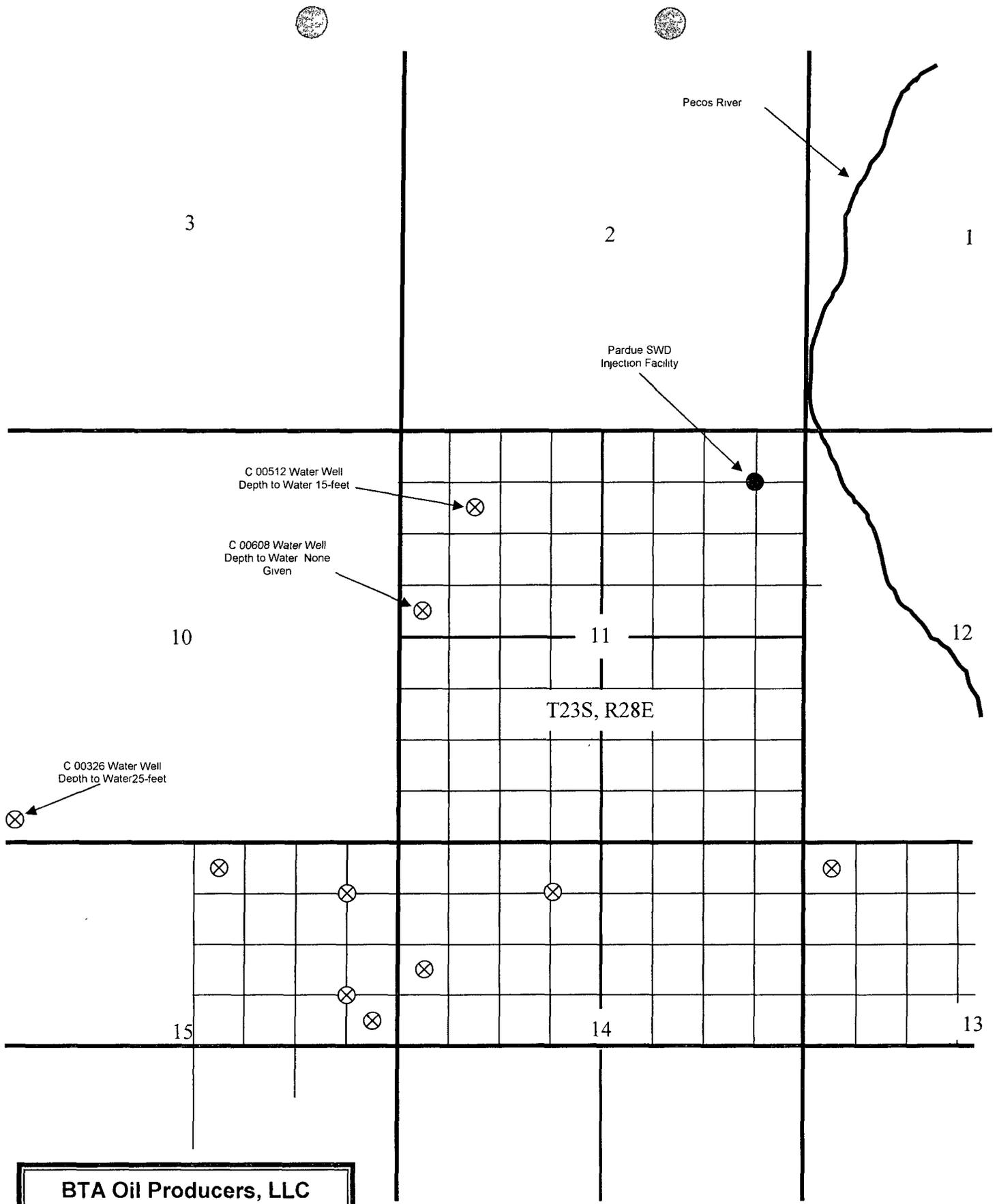
Date 3/19/2008  
Drawn by JAB

Scale None  
Checked by JAB





## **Figure 3**



**BTA Oil Producers, LLC**  
 Midland Texas

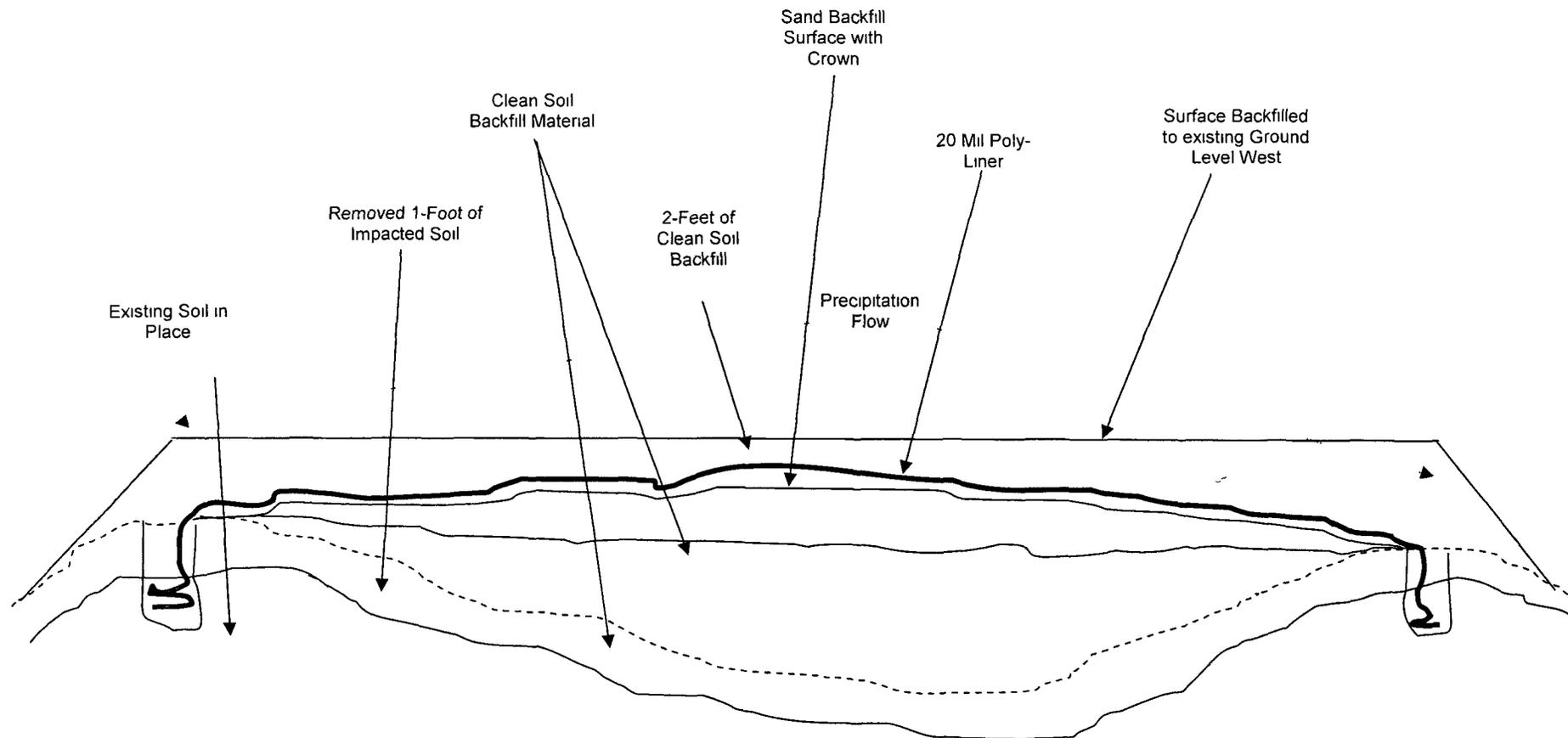
**Site Map of Pardue SWD Injection Facility with Closest Water Wells**  
 NE, NE, Sec 11, T18S, R28E, Eddy County New Mexico  
 (Figure 3)

Drawn By JAB  
 Scale None

Checked By JAB  
 Date 03/11/2008



**Figure 4**



**DRAWING NOT TO**  
**SCALE**



**BTA Oil Producers**  
Midland, Texas  
**Exaggerated Diagrammatical  
Representation Showing Excavation, Liner  
and Backfill Materials**

Section 11, T23S, R28E  
Eddy County, New Mexico  
(Figure 4)

Date 3/19/2008  
Drawn by JAB

Scale None  
Checked by JAB



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# **TABLES**

## BTA Oil Producers

104 S. Pecos St.  
Midland, Texas 79701  
Tele: 432-682-3753  
Fax: 432-683-0325

### Table I

**Excavation Soil TPH GRO and DRO Analytical Results**  
**Excavation Soil BTEX Analysis**  
**Excavation Soil Chloride Analysis**  
**BTA - Pardue SWD Injection Facility - Lea County, New Mexico**  
**New Mexico NMOCD Inspection # iREI0724042324**  
**BTA Project Number Env. 2008-025**

GLE 3,804'

			Analytical Methods						
			Mod. 8015B	S 8015B	S 8021B				SM 4500-CL B
SAMPLE DATE	SAMPLE IDENTIFICATION	TOTAL TPH	TPH DRO mg/Kg	TPH GRO mg/Kg	BENZENE mg/Kg	TOLUENE mg/Kg	ETHYLBENZEN E mg/Kg	XYLENE mg/Kg	CHLORIDES (mg/Kg)
<b>Excavation</b>									
2/15/2008	1-1'-Spl	685.00	455.00	230.00	<0.100	0.71	0.32	2.01	<b>15,900.00</b>
2/15/2008	2-2'-Spl	216.80	139.00	77.80	NA	NA	NA	NA	<b>3,510.00</b>
2/15/2008	2-3'-Spl	51.80	<50.0	1.08	NA	NA	NA	NA	<b>2,430.00</b>
3/19/2008	North-1@1'	NA	NA	NA	NA	NA	NA	NA	<b>3,110.00</b>
3/19/2008	South-2@1'	NA	NA	NA	NA	NA	NA	NA	<b>1,190.00</b>
3/19/2008	East-3@1'	NA	NA	NA	NA	NA	NA	NA	<b>898.00</b>
3/19/2008	West-4@1'	NA	NA	NA	NA	NA	NA	NA	<b>2,540.00</b>

Note: Values in bold are outside regulatory limits



# **APPENDICES**



# **Appendix A**

## Summary Report

Skip Baca  
 BTA Oil Producers  
 104 S. Pecos  
 Midland, TX, 79701

Report Date: February 19, 2008

Work Order: 8021530



Project Location: 20 miles SE of Carlsbad, NM  
 Project Name: Pardue SWD Battery  
 Project Number: ENV 2008-25

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
150812	1-1'-Spl	soil	2008-02-15	10:00	2008-02-15
150813	2-2'-Spl	soil	2008-02-15	10:09	2008-02-15
150814	2-3'-Spl	soil	2008-02-15	10:14	2008-02-15

Sample - Field Code	BTEX				TPH DRO	TPH GRO
	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	DRO (mg/kg)	GRO (mg/kg)
150812 - 1-1'-Spl	<0.100	0.712	0.322	2.01	455	230
150813 - 2-2'-Spl					139	77.8
150814 - 2-3'-Spl					<50.0	1.08

**Sample: 150812 - 1-1'-Spl**

Param	Flag	Result	Units	RL
Chloride		15900	mg/Kg	1.00

**Sample: 150813 - 2-2'-Spl**

Param	Flag	Result	Units	RL
Chloride		3510	mg/Kg	1.00

**Sample: 150814 - 2-3'-Spl**

Param	Flag	Result	Units	RL
Chloride		2430	mg/Kg	1.00

# TRACE ANALYSIS, INC.

1774 Avenue A, Suite 100, Carlsbad, NM 88502 • 505-885-1234 • Fax: 505-885-1235  
2001 East Loper, Suite 100, El Paso, TX 79901 • 915-796-1111 • Fax: 915-796-1122  
1001 B. W. Street, Suite 100, San Antonio, TX 78205 • 214-349-0300 • Fax: 214-349-0301  
1001 East Loper, Suite 100, El Paso, TX 79901 • 915-796-1111 • Fax: 915-796-1122

## Analytical and Quality Control Report

Skip Baca  
BTA Oil Producers  
104 S. Pecos  
Midland, TX, 79701

Report Date: February 20, 2008

Work Order: 8021530



Project Location: 20 miles SE of Carlsbad, NM  
Project Name: Pardue SWD Battery  
Project Number: ENV 2008-25

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
150812	1-1'-Spl	soil	2008-02-15	10:00	2008-02-15
150813	2-2'-Spl	soil	2008-02-15	10:09	2008-02-15
150814	2-3'-Spl	soil	2008-02-15	10:14	2008-02-15

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 10 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

### Standard Flags

**B** - The sample contains less than ten times the concentration found in the method blank

# Analytical Report

## Sample: 150812 - 1-1'-Spl

Analysis BTEX Analytical Method: S 8021B Prep Method: S 5035  
QC Batch 45693 Date Analyzed: 2008-02-18 Analyzed By: DC  
Prep Batch 39337 Sample Preparation: 2008-02-18 Prepared By: DC

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.100	mg/Kg	10	0.0100
Toluene		0.712	mg/Kg	10	0.0100
Ethylbenzene		0.322	mg/Kg	10	0.0100
Xylene		2.01	mg/Kg	10	0.0100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		10.7	mg/Kg	10	10.0	107	70 - 130
4-Bromofluorobenzene (4-BFB)		11.1	mg/Kg	10	10.0	111	70 - 130

## Sample: 150812 - 1-1'-Spl

Analysis Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A  
QC Batch 45695 Date Analyzed: 2008-02-19 Analyzed By: AR  
Prep Batch 39345 Sample Preparation: 2008-02-18 Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		15900	mg/Kg	1000	1.00

## Sample: 150812 - 1-1'-Spl

Analysis TPH DRO Analytical Method: Mod 8015B Prep Method: N/A  
QC Batch 45679 Date Analyzed: 2008-02-18 Analyzed By: LD  
Prep Batch 39332 Sample Preparation: 2008-02-18 Prepared By: LD

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		455	mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane	<sup>1</sup>	173	mg/Kg	1	100	173	39.1 - 137.7

## Sample: 150812 - 1-1'-Spl

Analysis TPH GRO Analytical Method: S 8015B Prep Method: S 5035  
QC Batch 45689 Date Analyzed: 2008-02-18 Analyzed By: DC  
Prep Batch 39337 Sample Preparation: 2008-02-18 Prepared By: DC

<sup>1</sup>High surrogate recovery due to peak interference

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<b>230</b>	mg/Kg	10	1 00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		10.2	mg/Kg	10	10 0	102	70 - 130
4-Bromofluorobenzene (4-BFB)		11.6	mg/Kg	10	10 0	116	70 - 130

**Sample: 150813 - 2-2'-Spl**

Analysis: Chloride (IC)      Analytical Method: E 300 0      Prep Method: N/A  
 QC Batch: 45695      Date Analyzed: 2008-02-19      Analyzed By: AR  
 Prep Batch: 39345      Sample Preparation: 2008-02-18      Prepared By: AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<b>3510</b>	mg/Kg	500	1 00

**Sample: 150813 - 2-2'-Spl**

Analysis: TPH DRO      Analytical Method: Mod 8015B      Prep Method: N/A  
 QC Batch: 45679      Date Analyzed: 2008-02-18      Analyzed By: LD  
 Prep Batch: 39332      Sample Preparation: 2008-02-18      Prepared By: LD

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<b>139</b>	mg/Kg	1	50 0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		129	mg/Kg	1	100	129	39 1 - 137 7

**Sample: 150813 - 2-2'-Spl**

Analysis: TPH GRO      Analytical Method: S 8015B      Prep Method: S 5035  
 QC Batch: 45689      Date Analyzed: 2008-02-18      Analyzed By: DC  
 Prep Batch: 39337      Sample Preparation: 2008-02-18      Prepared By: DC

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<b>77.8</b>	mg/Kg	10	1 00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		10.2	mg/Kg	10	10 0	102	70 - 130
4-Bromofluorobenzene (4-BFB)		10.6	mg/Kg	10	10 0	106	70 - 130

**Sample: 150814 - 2-3'-Spl**

Analysis	Chloride (IC)	Analytical Method	E 300.0	Prep Method	N/A
QC Batch:	45695	Date Analyzed:	2008-02-19	Analyzed By:	AR
Prep Batch:	39345	Sample Preparation:	2008-02-18	Prepared By:	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		2430	mg/Kg	100	1.00

**Sample: 150814 - 2-3'-Spl**

Analysis	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	45679	Date Analyzed:	2008-02-18	Analyzed By:	LD
Prep Batch:	39332	Sample Preparation:	2008-02-18	Prepared By:	LD

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<50.0	mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		88.8	mg/Kg	1	100	89	39.1 - 137.7

**Sample: 150814 - 2-3'-Spl**

Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method	S 5035
QC Batch	45689	Date Analyzed:	2008-02-18	Analyzed By:	DC
Prep Batch:	39337	Sample Preparation:	2008-02-18	Prepared By:	DC

Parameter	Flag	RL Result	Units	Dilution	RL
GRO	B	1.08	mg/Kg	1	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.953	mg/Kg	1	1.00	95	70 - 130
4-Bromofluorobenzene (4-BFB)		1.00	mg/Kg	1	1.00	100	70 - 130

**Method Blank (1)**      QC Batch: 45679

QC Batch:	45679	Date Analyzed:	2008-02-18	Analyzed By:	LD
Prep Batch:	39332	QC Preparation:	2008-02-18	Prepared By:	LD

Parameter	Flag	MDL Result	Units	RL
DRO		<14.6	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		131	mg/Kg	1	100	131	33.3 - 157.4

**Method Blank (1)**      QC Batch: 45689

QC Batch: 45689      Date Analyzed: 2008-02-18      Analyzed By: DC  
 Prep Batch: 39337      QC Preparation: 2008-02-18      Prepared By: DC

Parameter	Flag	MDL Result	Units	RL
GRO		0.790	mg/Kg	1

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.990	mg/Kg	1	1.00	99	70 - 130
4-Bromofluorobenzene (4-BFB)		1.02	mg/Kg	1	1.00	102	70 - 130

**Method Blank (1)**      QC Batch: 45693

QC Batch: 45693      Date Analyzed: 2008-02-18      Analyzed By: DC  
 Prep Batch: 39337      QC Preparation: 2008-02-18      Prepared By: DC

Parameter	Flag	MDL Result	Units	RL
Benzene		<0.00300	mg/Kg	0.01
Toluene		<0.00300	mg/Kg	0.01
Ethylbenzene		<0.00400	mg/Kg	0.01
Xylene		<0.0140	mg/Kg	0.01

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.03	mg/Kg	1	1.00	103	70 - 130
4-Bromofluorobenzene (4-BFB)		1.03	mg/Kg	1	1.00	103	70 - 130

**Matrix Blank (1)**      QC Batch: 45695

QC Batch: 45695      Date Analyzed: 2008-02-19      Analyzed By: AR  
 Prep Batch: 39345      QC Preparation: 2008-02-18      Prepared By: AR

Parameter	Flag	MDL Result	Units	RL
Chloride		0.816	mg/Kg	1

**Laboratory Control Spike (LCS-1)**

QC Batch: 45679      Date Analyzed: 2008-02-18      Analyzed By: LD  
 Prep Batch: 39332      QC Preparation: 2008-02-18      Prepared By: LD

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec	Rec. Limit
DRO	274	mg/Kg	1	250	<14.6	110	48.1 - 140.9

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec	Rec Limit	RPD	RPD Limit
DRO	312	mg/Kg	1	250	<14.6	125	48.1 - 140.9	13	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil	Spike Amount	LCS Rec	LCSD Rec	Rec. Limit
n-Triacontane	117	133	mg/Kg	1	100	117	133	42.1 - 138.9

**Laboratory Control Spike (LCS-1)**

QC Batch 45689 Date Analyzed: 2008-02-18 Analyzed By: DC  
 Prep Batch 39337 QC Preparation: 2008-02-18 Prepared By: DC

Param	LCS Result	Units	Dil	Spike Amount	Matrix Result	Rec.	Rec Limit
GRO	8.94	mg/Kg	1	10.0	0.79	89	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec	Rec Limit	RPD	RPD Limit
GRO	8.95	mg/Kg	1	10.0	0.79	90	70 - 130	0	

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result

Surrogate	LCS Result	LCSD Result	Units	Dil	Spike Amount	LCS Rec	LCSD Rec	Rec. Limit
Trifluorotoluene (TFT)	1.00	1.01	mg/Kg	1	1.00	100	101	70 - 130
4-Bromofluorobenzene (4-BFB)	1.06	1.07	mg/Kg	1	1.00	106	107	70 - 130

**Laboratory Control Spike (LCS-1)**

QC Batch 45693 Date Analyzed: 2008-02-18 Analyzed By: DC  
 Prep Batch 39337 QC Preparation: 2008-02-18 Prepared By: DC

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec Limit
Benzene	0.983	mg/Kg	1	1.00	<0.00300	98	70 - 130
Toluene	0.984	mg/Kg	1	1.00	<0.00300	98	70 - 130
Ethylbenzene	0.994	mg/Kg	1	1.00	<0.00400	99	70 - 130
Xylene	2.97	mg/Kg	1	3.00	<0.0140	99	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result

Param	LCSD Result	Units	Dil	Spike Amount	Matrix Result	Rec	Rec Limit	RPD	RPD Limit
Benzene	1.01	mg/Kg	1	1.00	<0.00300	101	70 - 130	3	20

*continued*

*control spikes continued*

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec	Rec. Limit	RPD	RPD Limit
Toluene	1.01	mg/Kg	1	1.00	<0.00300	101	70 - 130	3	20
Ethylbenzene	1.02	mg/Kg	1	1.00	<0.00400	102	70 - 130	3	20
Xylene	3.05	mg/Kg	1	3.00	<0.0140	102	70 - 130	3	20

Percent recovery is based on the spike result RPD is based on the spike and spike duplicate result

Surrogate	LCS Result	LCSD Result	Units	Dil	Spike Amount	LCS Rec	LCSD Rec	Rec. Limit
Trifluorotoluene (TFT)	1.04	1.04	mg/Kg	1	1.00	104	104	70 - 130
4-Bromofluorobenzene (4-BFB)	1.05	1.05	mg/Kg	1	1.00	105	105	70 - 130

**Laboratory Control Spike (LCS-1)**

QC Batch: 45695 Date Analyzed: 2008-02-19 Analyzed By: AR  
 Prep Batch: 39345 QC Preparation: 2008-02-18 Prepared By: AR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec	Rec Limit
Chloride	12.7	mg/Kg	1	12.5	<0.0222	101	90 - 110

Percent recovery is based on the spike result RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil	Spike Amount	Matrix Result	Rec	Rec Limit	RPD	RPD Limit
Chloride	12.4	mg/Kg	1	12.5	<0.0222	100	90 - 110	2	

Percent recovery is based on the spike result RPD is based on the spike and spike duplicate result.

**Matrix Spike (MS-1) Spiked Sample: 150813**

QC Batch: 45679 Date Analyzed: 2008-02-18 Analyzed By: LD  
 Prep Batch: 39332 QC Preparation: 2008-02-18 Prepared By: LD

Param	MS Result	Units	Dil	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	281	mg/Kg	1	250	139	57	35.6 - 173.6

Percent recovery is based on the spike result RPD is based on the spike and spike duplicate result

Param	MSD Result	Units	Dil	Spike Amount	Matrix Result	Rec	Rec Limit	RPD	RPD Limit
DRO	406	mg/Kg	1	250	139	107	35.6 - 173.6	36	20

Percent recovery is based on the spike result RPD is based on the spike and spike duplicate result

Surrogate	MS Result	MSD Result	Units	Dil	Spike Amount	MS Rec.	MSD Rec	Rec Limit
n-Triacontane	99.4	99.6	mg/Kg	1	100	99	100	33 - 156.2

<sup>2</sup>MS/MSD RPD out of RPD Limits Use LCS/LCSD to demonstrate analysis is under control

**Matrix Spike (MS-1) Spiked Sample. 150814**

QC Batch 45689 Date Analyzed: 2008-02-18 Analyzed By: DC  
 Prep Batch: 39337 QC Preparation: 2008-02-18 Prepared By: DC

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	11.0	mg/Kg	1	10.0	1.0767	99	70 - 130

Percent recovery is based on the spike result RPD is based on the spike and spike duplicate result

Param	MSD Result	Units	Dil	Spike Amount	Matrix Result	Rec.	Rec Limit	RPD	RPD Limit
GRO	12.4	mg/Kg	1	10.0	1.0767	113	70 - 130	12	

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result

Surrogate	MS Result	MSD Result	Units	Dil	Spike Amount	MS Rec	MSD Rec	Rec Limit
Trifluorotoluene (TFT)	0.851	0.977	mg/Kg	1	1	85	98	70 - 130
4-Bromofluorobenzene (4-BFB)	1.06	1.06	mg/Kg	1	1	106	106	70 - 130

**Matrix Spike (MS-1) Spiked Sample 150805**

QC Batch. 45693 Date Analyzed: 2008-02-18 Analyzed By: DC  
 Prep Batch: 39337 QC Preparation: 2008-02-18 Prepared By: DC

Param	MS Result	Units	Dil	Spike Amount	Matrix Result	Rec	Rec. Limit
Benzene	1.10	mg/Kg	1	1.00	<0.00300	110	70 - 130
Toluene	1.12	mg/Kg	1	1.00	0.0096	111	70 - 130
Ethylbenzene	1.14	mg/Kg	1	1.00	<0.00400	114	70 - 130
Xylene	3.39	mg/Kg	1	3.00	<0.0140	113	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil	Spike Amount	Matrix Result	Rec	Rec. Limit	RPD	RPD Limit
Benzene	<sup>3</sup> 2.54	mg/Kg	1	1.00	<0.00300	254	70 - 130	79	20
Toluene	<sup>4</sup> 2.60	mg/Kg	1	1.00	0.0096	259	70 - 130	80	20
Ethylbenzene	<sup>5</sup> 2.65	mg/Kg	1	1.00	<0.00400	265	70 - 130	80	20
Xylene	<sup>6</sup> 8.11	mg/Kg	1	3.00	<0.0140	270	70 - 130	82	20

Percent recovery is based on the spike result RPD is based on the spike and spike duplicate result

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec	Rec. Limit
Trifluorotoluene (TFT)	1.09	1.03	mg/Kg	1	1	109	103	70 - 130
4-Bromofluorobenzene (4-BFB)	1.06	1.06	mg/Kg	1	1	106	106	70 - 130

<sup>3</sup> Sample double spiked Use LCS/LCSD to show method is in control •  
<sup>4</sup> Sample double spiked Use LCS/LCSD to show method is in control •  
<sup>5</sup> Sample double spiked Use LCS/LCSD to show method is in control •  
<sup>6</sup> Sample double spiked Use LCS/LCSD to show method is in control •

**Matrix Spike (MS-1)** Spiked Sample: 150861

QC Batch: 45695 Date Analyzed: 2008-02-19 Analyzed By: AR  
 Prep Batch: 39345 QC Preparation: 2008-02-18 Prepared By: AR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride	314	mg/Kg	5	62.5	257.59	90	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec Limit	RPD	RPD Limit
Chloride	323	mg/Kg	5	62.5	257.59	105	90 - 110	3	

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

**Standard (ICV-1)**

QC Batch: 45679 Date Analyzed: 2008-02-18 Analyzed By: LD

Param	Flag	Units	ICVs True Conc	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	274	110	85 - 115	2008-02-18

**Standard (CCV-1)**

QC Batch: 45679 Date Analyzed: 2008-02-18 Analyzed By: LD

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	274	110	85 - 115	2008-02-18

**Standard (ICV-1)**

QC Batch: 45689 Date Analyzed: 2008-02-18 Analyzed By: DC

Param	Flag	Units	ICVs True Conc	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.13	113	85 - 115	2008-02-18

**Standard (CCV-1)**

QC Batch: 45689 Date Analyzed: 2008-02-18 Analyzed By: DC

Param	Flag	Units	CCVs True Conc	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.13	113	85 - 115	2008-02-18





## Summary Report

Skip Baca  
BTA Oil Producers  
104 S Pecos  
Midland, TX, 79701

Report Date March 21, 2008

Work Order 8032010



Project Location 20 miles SE Carlsbad, NM  
Project Name Pardue SWD Battery  
Project Number ENV 2008-025

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
154147	North-1 @ 1'	soil	2008-03-19	11 00	2008-03-19
154148	South-2 @ 1'	soil	2008-03-19	11 10	2008-03-19
154149	East-3 @ 1'	soil	2008-03-19	11:22	2008-03-19
154150	West-4 @ 1'	soil	2008-03-19	11.30	2008-03-19

**Sample: 154147 - North-1 @ 1'**

Param	Flag	Result	Units	RL
Chloride		<b>3110</b>	mg/Kg	2.00

**Sample: 154148 - South-2 @ 1'**

Param	Flag	Result	Units	RL
Chloride		<b>1190</b>	mg/Kg	2.00

**Sample: 154149 - East-3 @ 1'**

Param	Flag	Result	Units	RL
Chloride		<b>898</b>	mg/Kg	2.00

**Sample: 154150 - West-4 @ 1'**

Param	Flag	Result	Units	RL
Chloride		<b>2540</b>	mg/Kg	2.00



1111 S. 1st Street, Suite 100, Midland, TX 79701-4400 • 409-692-0111 • Fax: 409-692-0112  
 2000 S. 1st Street, Suite 100, Midland, TX 79701-4400 • 409-692-0111 • Fax: 409-692-0112  
 1000 S. 1st Street, Suite 100, Midland, TX 79701-4400 • 409-692-0111 • Fax: 409-692-0112  
 1000 S. 1st Street, Suite 100, Midland, TX 79701-4400 • 409-692-0111 • Fax: 409-692-0112

## Analytical and Quality Control Report

Skip Baca  
 BTA Oil Producers  
 104 S Pecos  
 Midland, TX, 79701

Report Date March 21, 2008

Work Order: 8032010



Project Location. 20 miles SE Carlsbad, NM  
 Project Name. Pardue SWD Battery  
 Project Number. ENV 2008-025

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
154147	North-1 @ 1'	soil	2008-03-19	11:00	2008-03-19
154148	South-2 @ 1'	soil	2008-03-19	11:10	2008-03-19
154149	East-3 @ 1'	soil	2008-03-19	11:22	2008-03-19
154150	West-4 @ 1'	soil	2008-03-19	11:30	2008-03-19

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 4 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc

Dr. Blair Leftwich, Director

### Standard Flags

**B** - The sample contains less than ten times the concentration found in the method blank

## Analytical Report

### Sample: 154147 - North-1 @ 1'

Analysis	Chloride (Titration)	Analytical Method	SM 4500-Cl B	Prep Method	N/A
QC Batch	46705	Date Analyzed	2008-03-20	Analyzed By	AR
Prep Batch	40179	Sample Preparation	2008-03-20	Prepared By	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<b>3110</b>	mg/Kg	50	2.00

### Sample: 154148 - South-2 @ 1'

Analysis	Chloride (Titration)	Analytical Method	SM 4500-Cl B	Prep Method	N/A
QC Batch	46705	Date Analyzed	2008-03-20	Analyzed By	AR
Prep Batch	40179	Sample Preparation	2008-03-20	Prepared By	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<b>1190</b>	mg/Kg	50	2.00

### Sample: 154149 - East-3 @ 1'

Analysis	Chloride (Titration)	Analytical Method	SM 4500-Cl B	Prep Method	N/A
QC Batch	46705	Date Analyzed	2008-03-20	Analyzed By	AR
Prep Batch	40179	Sample Preparation	2008-03-20	Prepared By	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<b>898</b>	mg/Kg	50	2.00

### Sample: 154150 - West-4 @ 1'

Analysis	Chloride (Titration)	Analytical Method	SM 4500-Cl B	Prep Method	N/A
QC Batch	46705	Date Analyzed	2008-03-20	Analyzed By	AR
Prep Batch	40179	Sample Preparation	2008-03-20	Prepared By	AR

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		<b>2540</b>	mg/Kg	50	2.00

### Method Blank (1) QC Batch 46705

QC Batch	46705	Date Analyzed	2008-03-20	Analyzed By	AR
Prep Batch	40179	QC Preparation	2008-03-20	Prepared By	AR



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Param	Flag	Units	CCVs True Conc	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	100	98.8	99	85 - 115	2008-03-20

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# TraceAnalysis, Inc.

email: lab@traceanalysis.com

6701 Aberdeen Avenue, Suite 9  
Lubbock, Texas 79424  
Tel (806) 794-1296  
Fax (806) 794-1298  
1 (800) 378-1296

5002 Basin Street, Suite A1  
Midland, Texas 79703  
Tel (432) 689-6301  
Fax (432) 689-6313

200 East Sunset Rd., Suite E  
El Paso, Texas 79922  
Tel (915) 585-3443  
Fax (915) 585-4944  
1 (888) 588-3443

8808 Camp Bowie Blvd. West, Suite 180  
Ft Worth, Texas 76116  
Tel (817) 201-5260  
Fax (817) 560-4336

Company Name: BTA Oil Producers, LLC Phone #: (432) 553-5352  
 Address: (Street, City, Zip) 104 S. Pecos Fax #: (432) 683-0325  
 Contact Person: Skip Baca E-mail: sbaca@btaoil.com  
 Invoice to: (If different from above)  
 Project #: ENV 2008-025 Project Name: Pardue SWD  
 Project Location (including state): 20 miles SE of Carlsbad, N. MEX Sampler Signature: Skip Baca

## ANALYSIS REQUEST (Circle or Specify Method No.)

- MTBE 8021B / 602 / 8260B / 624
  - BTEX 8021B / 602 / 8260B / 624
  - TPH 418 1 / TX1005 / TX1005 Ex(C35)
  - TPH 8015 GRO / DRO / TVHC
  - PAH 8270C / 625
  - Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7
  - TCLP Metals Ag As Ba Cd Cr Pb Se Hg
  - TCLP Volatiles
  - TCLP Semi Volatiles
  - TCLP Pesticides
  - RCI
  - GC/MS Vol 8260B / 624
  - GC/MS Semi Vol 8270C / 625
  - PCBs 8082 / 608
  - Pesticides 8081A / 608
  - BOD, TSS, pH
  - Moisture Content
  - Chlorides
- Turn Around Time if different from standard  
Hold

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX				PRESERVATIVE METHOD					SAMPLING		
				WATER	SOIL	AIR	SLUDGE	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	ICE	NONE	DATE	TIME
15447	North-1@1'	1	4oz	X							X			3/19/08	11:00
148	South-2@1'	~	~	~							~			~	11:10
149	East-3@1'	~	~	~							~			~	11:22
150	West-4@1'	~	~	~							~			~	11:30

Relinquished by: <u>Skip Baca</u>	Company: <u>BTA</u>	Date: <u>3/19/08</u>	Time: <u>5:02p</u>	Received by: <u>[Signature]</u>	Company: <u>Trace</u>	Date: <u>3/19/08</u>	Time: <u>17:02</u>	Temp°c: <u>3.0c</u>
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	Temp°c:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	Temp°c:

<b>LAB USE ONLY</b> Initials: <u>[Signature]</u> Headspace: <u>Y/N/NA</u> <u>3.0</u> Log in Review: <u>[Signature]</u>	REMARKS: <u>All tests - Midland</u>
	<input type="checkbox"/> Dry Weight Basis Required <input type="checkbox"/> TRRP Report Required <input type="checkbox"/> Check If Special Reporting Limits Are Needed

Submission of samples constitutes agreement to Terms and Conditions listed on reverse side of C. O. C.

ORIGINAL COPY

Carrier # camp-i



## **Appendix B**

District I  
1625 N French Dr, Hobbs, NM 88240  
District II  
1301 W Grand Avenue, Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S St Francis Dr, Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources

Form C-144  
June 1, 2004

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

For drilling and production facilities, submit to appropriate NMOCD District Office  
For downstream facilities, submit to Santa Fe office

**Pit or Below-Grade Tank Registration or Closure**

Is pit or below-grade tank covered by a "general plan"? Yes  No   
Type of action Registration of a pit or below-grade tank  Closure of a pit or below-grade tank

Operator BTA Oil Producers Telephone 432-682-3753 e-mail address sbaca@btaoil.com  
Address 104 S Pecos St  
Facility or well name Pardue SWD Injection Facility API # 30-015-26341 U/L or Qtr/Qtr NE/4, NE/4 Sec 11 T 23S R 28E  
County Eddy Latitude 32° 18' 77.1" N Longitude 104° 03' 63.3" NAD 1927  1983   
Surface Owner Federal  State  Private  Indian

Pit	Below-grade tank	
Type <input type="checkbox"/> Drilling <input type="checkbox"/> Production <input type="checkbox"/> Disposal <input checked="" type="checkbox"/> <input type="checkbox"/> Workover <input type="checkbox"/> Emergency <input type="checkbox"/> Lined <input type="checkbox"/> Unlined <input checked="" type="checkbox"/> Liner type Synthetic <input type="checkbox"/> Thickness _____ mil Clay <input type="checkbox"/> Pit Volume <u>758</u> bbl	Volume _____ bbl Type of fluid _____ Construction material _____ Double-walled, with leak detection? Yes <input type="checkbox"/> If not, explain why not _____	
Depth to ground water (vertical distance from bottom of pit to seasonal high water elevation of ground water) <u>15</u> -feet	Less than 50 feet 50 feet or more, but less than 100 feet 100 feet or more	(20 points) (10 points) 20 point ( 0 points)
Wellhead protection area (Less than 200 feet from a private domestic water source, or less than 1000 feet from all other water sources)	Yes No	(20 points) 20 points ( 0 points)
Distance to surface water (horizontal distance to all wetlands, playas, irrigation canals, ditches, and perennial and ephemeral watercourses)	Less than 200 feet 200 feet or more, but less than 1000 feet 1000 feet or more	(20 points) (10 points) 20 points ( 0 points)
<b>Ranking Score (Total Points)</b>		<b>60 points</b>

**If this is a pit closure:** (1) Attach a diagram of the facility showing the pit's relationship to other equipment and tanks (2) Indicate disposal location (check the onsite box if you are burying in place) onsite  offsite  If offsite, name of facility \_\_\_\_\_ CRI \_\_\_\_\_ (3) Attach a general description of remedial action taken including remediation start date and end date (4) Groundwater encountered No  Yes  If yes, show depth below ground surface \_\_\_\_\_ ft and attach sample results (5) Attach soil sample results and a diagram of sample locations and excavations

Additional Comments See Figure 2 for sample locations

I hereby certify that the information above is true and complete to the best of my knowledge and belief I further certify that the above-described pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines , a general permit , or an (attached) alternative OCD-approved plan .

Date 3/20/08  
Printed Name/Title Joseph A. Brea Signature Joseph A. Brea  
Your certification and NMOCD approval of this application/closure does not relieve the operator of liability should the contents of the pit or tank contaminate ground water or otherwise endanger public health or the environment Nor does it relieve the operator of its responsibility for compliance with any other federal, state, or local laws and/or regulations

Approval **Accepted for record NMOCD**  
Printed Name/Title \_\_\_\_\_ Signature [Signature] Date 4-7-08