Apache

EXPLORING WHAT'S POSSIBLE

APACHE CORPORATION

P.O.Box 1849
Eunice, NM 88231
Phone 575.394.3159

Loco Federal #001

2RP-1661

Termination Request

API 30-015-30144

Release Date: March 11th, 2013

Unit Letter B, Section 21, Township 17S, Range 30E

Rice Environmental Consulting & Safety
P.O. Box 2948, Hobbs, NM 88241
Phone 575.393.2967

January 7th, 2014

Mike Bratcher
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau – District 2
811 S. First St.
Artesia, NM 88210

RE: **Termination Request**
Apache Corporation – Loco Federal #001 (2RP-1661)
UL/B sec. 21 T17S R30E
API No. 30-015-30144

Mr. Bratcher:

Apache Corporation (Apache) has retained Rice Environmental Consulting and Safety (RECS) to address potential environmental concerns at the above-referenced site.

Background and Previous Work

The site is located approximately 0.4 miles northeast of Loco Hills, New Mexico at UL/B sec. 21 T17S R30E. This site is in an area of no known groundwater.

On March 11th, 2013, Apache discovered a hole in the main production tank at the Loco Federal #001. A total of 95 barrels of oil was released, which covered 3,470 square feet inside the bermed tank battery. A vacuum truck was called to the site and removed the remaining oil from the tank. Approximately 90 barrels of oil were placed into the secondary production tank and re-circulated. The damaged tank was repaired. A hydrovac was called to the site to remove the wet soil from the battery. NMOCD was notified of the release on March 11th, 2013 and the initial C-141 was approved on May 28th, 2013 (Appendix A).

RECS personnel were on site beginning on March 11th, 2013 to assess the release. The release was sampled at the surface in three locations and the samples were taken to a commercial laboratory for analysis (Figure 1). Laboratory chloride readings returned results below regulatory standards at Pt. 1 and Pt. 2 and a result of 5,400 mg/kg at Pt. 3. Gasoline Range Organics (GRO) readings and Diesel Range Organics (DRO) readings were elevated at all three points (Appendix B).

The release area was scraped down to 1 ft bgs by hand. On April 2nd, 2013, a 5 point composite sample was taken at the base of the 1 ft scrape and sent to a commercial laboratory for analysis. The laboratory analyses returned a chloride result of 448 mg/kg, a GRO result of 3,050 mg/kg and a DRO result of 12,300 mg/kg (Appendix C). Apache met with NMOCD on May 21st, 2013 and NMOCD requested that individual samples from the base of the 1 ft scrape be taken to determine if the entire area showed elevated

constituent readings or if the elevated readings were from only one location. On May 28th, 2013, individual samples throughout the bottom of the release were taken to a commercial laboratory for analysis (Figure 2). Laboratory analysis of the individual points returned relatively low GRO readings but elevated DRO readings (Appendix C).

On November 18th, 2013, the site was delineated vertically at Pt. 1, Pt. 2 and Pt. 5. These three points showed the highest concentrations from the previous sampling event (Figure 3). Pt. 1 and Pt. 2 were hand augured to a depth of 2 ft bgs and Pt. 5 was hand augured to a depth of 3 ft bgs. All samples were taken to a commercial laboratory for analysis of GRO and DRO. All three sample points returned GRO and DRO results below regulatory standards at 2 ft bgs (Appendix C).

Based on the vertical laboratory data, Apache asked NMOCD and BLM for approval to backfill the site. On December 10th, 2013, NMOCD approved the site to be backfilled and on December 11th, 2013, BLM approved the site to be backfilled. A total of 144 yards of caliche was imported to the site to serve as backfill. A sample of the caliche was taken to a commercial laboratory for analysis and returned a chloride reading of 128 mg/kg (Appendix C). The site was backfilled with the clean, imported caliche and contoured to the surrounding location.

Photo documentation of these activities can be found in Appendix D.

Given that the majority of the contamination has been removed from the site, and the remaining constituents pose no threat to groundwater, Apache respectfully requests 'remediation termination' and site closure. A final C-141 can be found in Appendix E.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder at (575) 393-2967 or me if you have any questions or wish to discuss the site.

Sincerely,

Lara Weinheimer
Project Scientist
RECS
(575) 441-0431

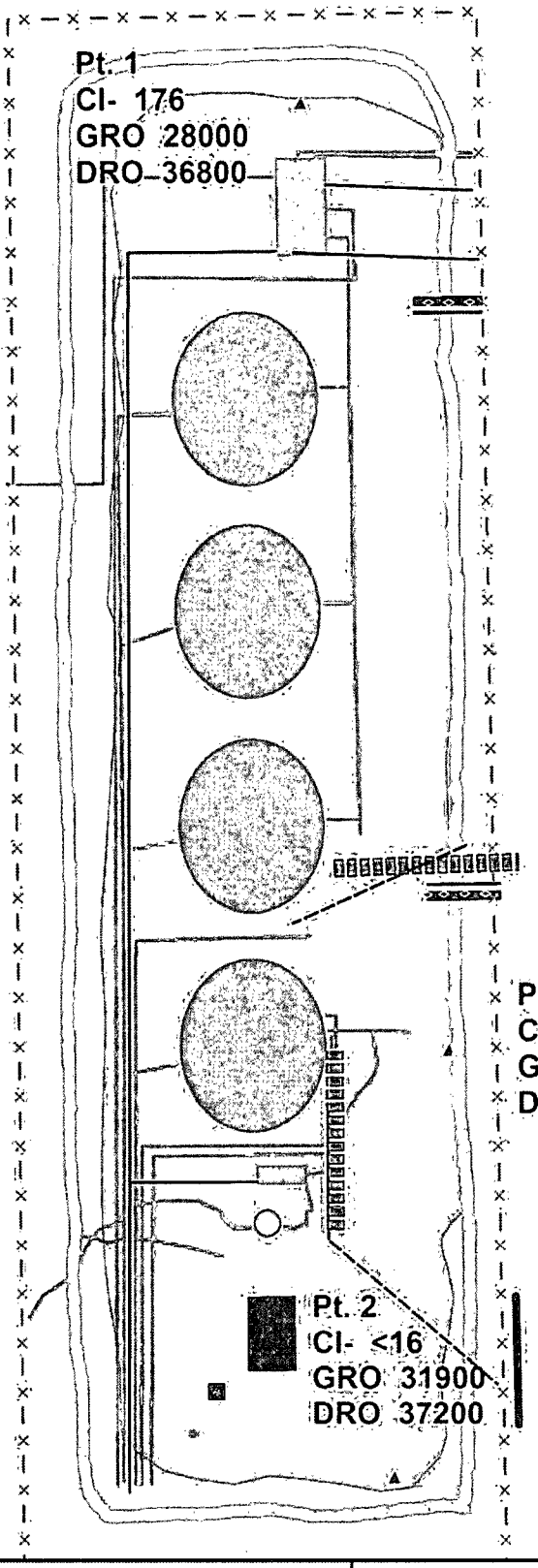
Attachments:

- Figure 1 – Initial Sampling Data
- Figure 2 – Individual Sampling Data
- Figure 3 – Individual Sampling Data
- Appendix A – Initial C-141
- Appendix B – Initial Sampling Lab
- Appendix C – Scrape Sampling Labs
- Appendix D – Photo Documentation
- Appendix E – Final C-141

Figures

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948, Hobbs, NM 88241
Phone 575.393.2967

Initial Sampling Data



Legend

- ELECTRICAL BOX
- 8 FT STEEL POLE
- FILTER TANK
- BURIED ELECTRICAL LINE
- FENCE
- BERM
- CROSSOVER
- ELECTRICAL PANEL
- STAIRS
- SURFACE ELECTRICAL CHANNEL
- SURFACE PIPELINE
- PUMP
- CHEMICAL NOT CONNECTED
- TANK
- SAMPLE POINT
- STAIN (3,470 SQ FT)

DGW - None
Landowner - BLM

RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

APACHE LOCO FEDERAL #1 BATTERY (2RP-1661)

UL B SECTION 21
T-17-S R-30-E
EDDY COUNTY, NM

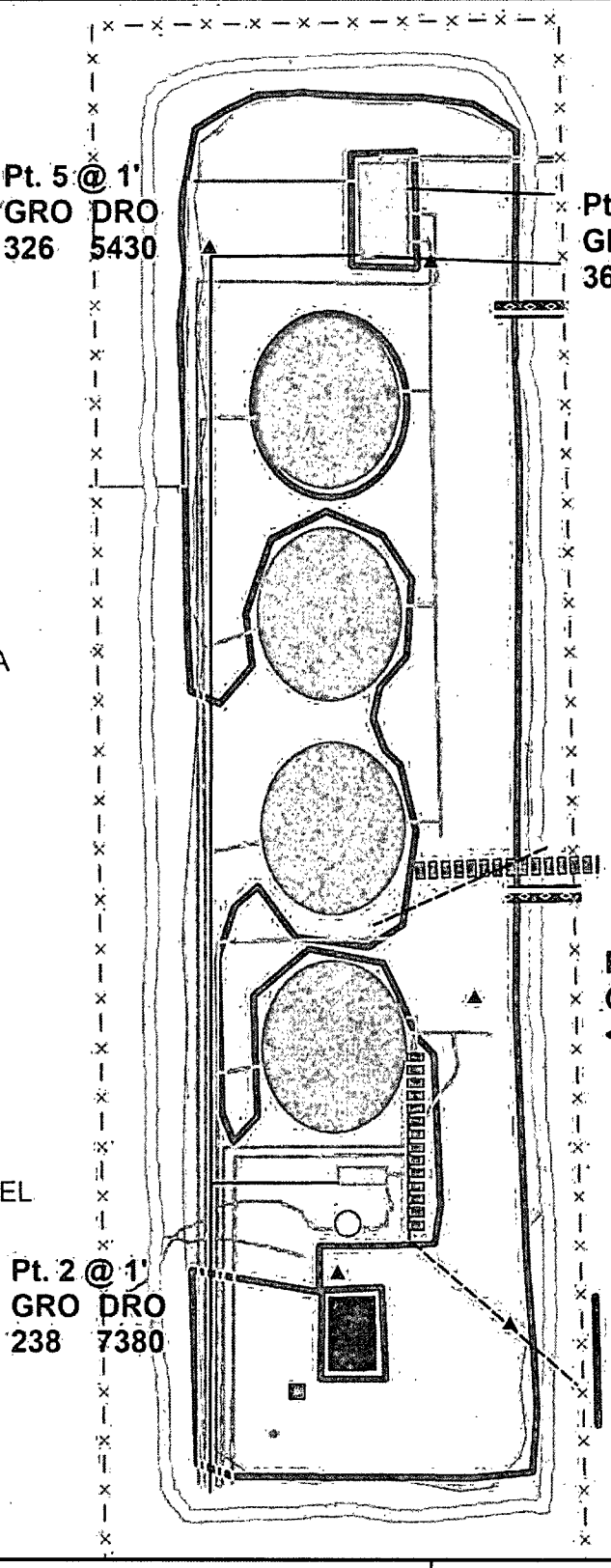
Figure 1

N W E S

0 10 20 Feet

GPS date: 3/14/13 TG
Drawing date: 3/14/13
Drafted by: T. Grieco

Individual Sampling Data



5 pt. bottom composite lab
Cl- 448
GRO 3050
DRO 12300

Legend

- 5 PT SAMPLE POINTS LAB DATA
- ELECTRICAL BOX
- 8 FT STEEL POLE
- FILTER TANK
- BURIED ELECTRICAL LINE
- FENCE
- BERM
- CROSSOVER
- ELECTRICAL PANEL
- STAIRS
- SURFACE ELECTRICAL CHANNEL
- SURFACE PIPELINE
- SCRAPE @ 1'
- PUMP
- CHEMICAL NOT CONNECTED
- TANK
- STAIN (3,470 SQ FT)

DGW - None
Landowner - BLM

RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

APACHE LOCO FEDERAL #1 BATTERY (2RP-1661)

UL B SECTION 21
T-17-S R-30-E
EDDY COUNTY, NM

Figure 2

N W E S

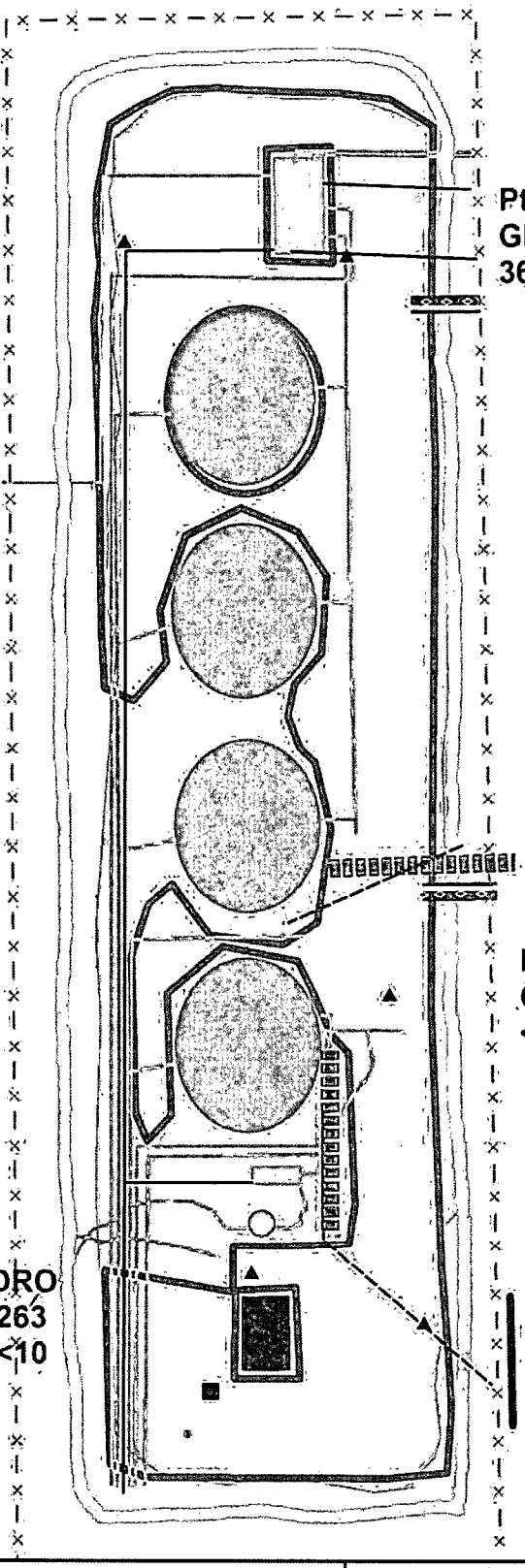
0 10 20 Feet

GPS date: 4/9/13
Drawing date: 6/5/13
Drafted by: L. Weinheimer

Individual Sampling Data

Pt. 5

	GRO	DRO	B	T	E	X	BTEX
1'	160	5040	<1	<1	4.34	7.24	11.6
2'	<10	<10					
3'	<10	<10					



Pt. 4 @ 1'

GRO	DRO
365	4280

Pt. 3 @ 1'

GRO	DRO
<80	2610

Pt. 2

	GRO	DRO
1'	<10	263
2'	<10	<10

Pt. 1

	GRO	DRO
1'	<50	4950
2'	<10	69.8

Legend

- 5 PT SAMPLE POINTS LAB DATA
- ELECTRICAL BOX
- 8 FT STEEL POLE
- FILTER TANK
- BURIED ELECTRICAL LINE
- FENCE
- BERM
- CROSSOVER
- ELECTRICAL PANEL
- STAIRS
- SURFACE ELECTRICAL CHANNEL
- SURFACE PIPELINE
- SCRAPE @ 1'
- PUMP
- CHEMICAL NOT CONNECTED
- TANK
- STAIN (3,470 SQ FT)

DGW - None

Landowner - BLM

RICE ENVIRONMENTAL CONSULTING, & SAFETY, LLC

APACHE LOCO FEDERAL #1 BATTERY (2RP-1661)

UL B SECTION 21
T-17-S R-30-E
EDDY COUNTY, NM

Figure 3

N W E S

0 10 20 Feet

GPS date: 4/9/13
Drawing date: 12/4/13
Drafted by: L. Weinheimer

Appendix A

Initial C-141

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948 Hobbs, NM 88241
Phone 575.393.2967

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

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

RECEIVED
MAY 17 2013
NMOCD ARTESIA

Form C-141
Revised October 10, 2003

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Please include API # when Submitting

Release Notification and Corrective Action

nJMW1314848582

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Apache Corporation 873	Contact Craig Maxwell
Address 2350 W. Marland Blvd.	Telephone No. (575) 441-2568
Facility Name Loco Federal #1	Facility Type Tank Battery

Surface Owner BLM	Mineral Owner	Lease No. API: 30-015-30144

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
B	21	17S	30E	987'	FNL	2424'	FEL	Lea

Latitude 32°49'29.093"N **Longitude** 103°58'34.842"W

NATURE OF RELEASE

Type of Release Oil	Volume of Release 95 barrels	Volume Recovered 90 barrels
Source of Release Hole in a tank	Date and Hour of Occurrence 3/11/13	Date and Hour of Discovery 3/11/13 12:15 pm
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher	
By Whom? Natalie Gladden, Apache Corp.	Date and Hour 3/11/13 3:35 pm	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
The pumper arrived on site to find that the main production tank was leaking through a hole in the bottom of the tank. The remaining liquid in the tank was removed by vacuum truck and approximately 90 barrels of oil was put into the secondary production tank and re-circulated. All the released fluid remained inside the battery's containment walls of the unlined facility. The corroded tank was repaired.

Describe Area Affected and Cleanup Action Taken.*
A total of 3,470 sq ft of the facilities containment area was affected. A hydrovac was called to the site to remove the wet soil. Starting on March 11th, 2013, the site was excavated down one foot. A 5 pt composite sample of the bottom of the excavation was taken to a commercial laboratory for analysis.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: Craig Maxwell

Printed Name: Craig Maxwell

Title: Production Foreman

E-mail Address: Craig.maxwell@apachecorp.com

Date: 5-17-13 Phone: (575) 441-2568

* Attach Additional Sheets If Necessary

OIL CONSERVATION DIVISION

Approved by District Supervisor: Signed By Mike Bratcher

Approval Date: MAY 28 2013 Expiration Date:

Conditions of Approval:
Remediation per OCD Rule & Guidelines. **SUBMIT REMEDIATION PROPOSAL NO LATER THAN:** June 28, 2013

Attached ☐

2RP-1661

Appendix B

Initial Sampling Lab

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948 Hobbs, NM 88241
Phone 575.393.2967

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

March 14, 2013

NATALIE GLADDEN

APACHE - EUNICE

P. O. BOX 1849

EUNICE, NM 88231

RE: LOCO FEDERAL #1 CENTRAL BATTERY

Enclosed are the results of analyses for samples received by the laboratory on 03/12/13 16:25.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

APACHE - EUNICE
NATALIE GLADDEN
P. O. BOX 1849
EUNICE NM, 88231
Fax To: 394-2425

Received:	03/12/2013	Sampling Date:	03/11/2013
Reported:	03/14/2013	Sampling Type:	Soil
Project Name:	LOCO FEDERAL #1 CENTRAL BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT 1 (H300620-01)

Chloride, SM4500Cl-B mg/kg **Analyzed By: DW**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**176**	16.0	03/13/2013	ND	448	112	400	3.64	

TPH 8015M mg/kg **Analyzed By: MS** **S-06**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**28000**	50.0	03/13/2013	ND	209	105	200	2.42	
DRO >C10-C28	**36800**	50.0	03/13/2013	ND	208	104	200	3.91	

Surrogate: 1-Chlorooctane	*359 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*1160 %*	*63.6-154*

Sample ID: PT 2 (H300620-02)

Chloride, SM4500Cl-B mg/kg **Analyzed By: DW**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	03/13/2013	ND	448	112	400	3.64	

TPH 8015M mg/kg **Analyzed By: MS** **S-06**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**31900**	50.0	03/13/2013	ND	209	105	200	2.42	
DRO >C10-C28	**37200**	50.0	03/13/2013	ND	208	104	200	3.91	

Surrogate: 1-Chlorooctane	*364 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*1120 %*	*63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

APACHE - EUNICE
NATALIE GLADDEN
P. O. BOX 1849
EUNICE NM, 88231
Fax To: 394-2425

Received:	03/12/2013	Sampling Date:	03/11/2013
Reported:	03/14/2013	Sampling Type:	Soil
Project Name:	LOCO FEDERAL #1 CENTRAL BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT 3 (H300620-03)

Chloride, SM4500Cl-B mg/kg **Analyzed By: DW**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**5400**	16.0	03/13/2013	ND	448	112	400	3.64	

TPH 8015M mg/kg **Analyzed By: MS** **S-06**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**15600**	50.0	03/13/2013	ND	209	105	200	2.42	
DRO >C10-C28	**28600**	50.0	03/13/2013	ND	208	104	200	3.91	

Surrogate: 1-Chlorooctane	*288 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*869 %*	*63.6-154*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name:	APACHE	**BILL TO**	
Project Manager:	NATALIE GLADDEN	P.O. #:	
Address:		Company:	
City:	State: Zip:	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:		State: Zip:	
Project Location:	COCO FEDERAL #1	Phone #:	
Sampler Name:	RODERICK WILLIAMS	Fax #:	

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	CHLORIDES	TPH 8015-M
H300620																
1	PT1	G	1			1					1		3-11-13		1	1
2	PT2	G	1			1					1		3-11-13		1	1
3	PT3	G	1			1					1		3-11-13		1	1

Relinquished By:	Date: 3-12-13	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 4:25	Jodi Henson	Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:
	Time:		

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: -2°C

Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No

CHECKED BY: (Initials)

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

#26

Appendix C

Scrape Sampling Labs

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948 Hobbs, NM 88241
Phone 575.393.2967

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

April 05, 2013

NATALIE GLADDEN

APACHE - EUNICE

P. O. BOX 1849

EUNICE, NM 88231

RE: LOCO FEDERAL BATTERY #1

Enclosed are the results of analyses for samples received by the laboratory on 04/03/13 8:50.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

APACHE - EUNICE
NATALIE GLADDEN
P. O. BOX 1849
EUNICE NM, 88231
Fax To: 394-2425

Received:	04/03/2013	Sampling Date:	04/02/2013
Reported:	04/05/2013	Sampling Type:	Soil
Project Name:	LOCO FEDERAL BATTERY #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: 5 PT. COMP @ 1' (H300783-01)

Chloride, SM4500Cl-B mg/kg **Analyzed By: DW**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**448**	16.0	04/03/2013	ND	432	108	400	0.00	

TPH 8015M mg/kg **Analyzed By: MS** **S-06**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**3050**	50.0	04/04/2013	ND	189	94.6	200	0.711	
DRO >C10-C28	**12300**	50.0	04/04/2013	ND	188	93.9	200	0.621	

Surrogate: 1-Chlorooctane	*300 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*400 %*	*63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Celey D. Keene, Lab Director/Quality Manager

CARDINAL LABORATORIES

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

Company Name: Apache Corp.	BILL TO
Project Manager: Natalie Gladden	P.O. #:
Address:	Company:
City: State: Zip:	Attn:
Phone #: Fax #:	Address:
Project #: Project Owner:	City:
Project Name: Loco Fed Batty #1 A0	State: Zip:
Project Location:	Phone #:
Sampler Name: JKAMPLAIN	Fax #:

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST										
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS					
H30078																									
1	5pt comp @ 1'	C	1			✓					✓		4-2-13	11:30	✓	✓									

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:	Date: 4/3/13 Time: 8:50	Received By: Jodi Henson	Phone Result: ☐ Yes ☑ No Add'l Phone #:
Relinquished By:	Date: Time:	Received By:	Fax Result: ☐ Yes ☑ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other: -7°	Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)	REMARKS: email results natalie.gladden@apachecorp.com Zconder@rice-ecs.com; Bbaker@rice-ecs.com; hconder@rice-ecs.com; Lweinheimer@rice-ecs.com; JKAMPLAIN@RICE-ECS.COM

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

#26

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
200 East Sunset Road, Suite E El Paso, Texas 79922 915-585-3443 FAX 915-585-4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432-689-6301 FAX 432-689-6313
(BioAquatic) 2501 Mayes Rd., Suite 100, Carrollton, Texas 75006 972-242-7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Steven Fleming
Apache Corp. - Midland
303 Veterans Airpark Lane
Suite #3000
Midland, TX, 79705

Report Date: June 4, 2013

Work Order: 13053007

Project Name: Loco Federal #1 NM
Project Number: Loco Federal #1 NM

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
330406	Sample Pt. 1 @ 1'	soil	2013-05-28	10:00	2013-05-28
330407	Sample Pt. 2 @ 1'	soil	2013-05-28	10:05	2013-05-28
330408	Sample Pt. 3 @ 1'	soil	2013-05-28	10:10	2013-05-28
330409	Sample Pt. 4 @ 1'	soil	2013-05-28	10:15	2013-05-28
330410	Sample Pt. 5 @ 1'	soil	2013-05-28	10:20	2013-05-28

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.

Michael Abel

Dr. Blair Leftwich, Director
Dr. Michael Abel, Project Manager

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Case Narrative

Samples for project Loco Federal #1 NM were received by TraceAnalysis, Inc. on 2013-05-28 and assigned to work order 13053007. Samples for work order 13053007 were received intact at a temperature of 10.0 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
TPH DRO - NEW	S 8015 D	86354	2013-06-02 at 12:00	101923	2013-06-03 at 09:24
TPH GRO	S 8015 D	86391	2013-06-03 at 15:36	101968	2013-06-03 at 15:36

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 13053007 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 330406 - Sample Pt. 1 @ 1'

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	101923	Date Analyzed:	2013-06-03	Analyzed By:	CM
Prep Batch:	86354	Sample Preparation:	2013-06-02	Prepared By:	CM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**9630**	mg/Kg	5	50.0

Surrogate		Flag		Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr			456	mg/Kg	5	100	456	70 - 130

Sample: 330406 - Sample Pt. 1 @ 1'

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	101968	Date Analyzed:	2013-06-03	Analyzed By:	MT
Prep Batch:	86391	Sample Preparation:	2013-06-03	Prepared By:	MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	**544**	mg/Kg	20	4.00

Surrogate	Flag		Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)				1.65	mg/Kg	20	2.00	82	69.6 - 124
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr		23.0	mg/Kg	20	2.00	1150	77.7 - 120

Sample: 330407 - Sample Pt. 2 @ 1'

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	101923	Date Analyzed:	2013-06-03	Analyzed By:	CM
Prep Batch:	86354	Sample Preparation:	2013-06-02	Prepared By:	CM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**7380**	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr Qsr		450	mg/Kg	5	100	450	70 - 130

Sample: 330407 - Sample Pt. 2 @ 1'

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	101968	Date Analyzed:	2013-06-03	Analyzed By:	MT
Prep Batch:	86391	Sample Preparation:	2013-06-03	Prepared By:	MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	**238**	mg/Kg	20	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.77	mg/Kg	20	2.00	88	69.6 - 124
4-Bromofluorobenzene (4-BFB)	Qsr Qsr		12.3	mg/Kg	20	2.00	615	77.7 - 120

Sample: 330408 - Sample Pt. 3 @ 1'

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	101923	Date Analyzed:	2013-06-03	Analyzed By:	CM
Prep Batch:	86354	Sample Preparation:	2013-06-02	Prepared By:	CM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**2610**	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr Qsr		285	mg/Kg	5	100	285	70 - 130

Sample: 330408 - Sample Pt. 3 @ 1'

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	101968	Date Analyzed:	2013-06-03	Analyzed By:	MT
Prep Batch:	86391	Sample Preparation:	2013-06-03	Prepared By:	MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	<80.0	mg/Kg	20	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.99	mg/Kg	20	2.00	100	69.6 - 124
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	3.07	mg/Kg	20	2.00	154	77.7 - 120

Sample: 330409 - Sample Pt. 4 @ 1'

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	101923	Date Analyzed:	2013-06-03	Analyzed By:	CM
Prep Batch:	86354	Sample Preparation:	2013-06-02	Prepared By:	CM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**4280**	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	272	mg/Kg	5	100	272	70 - 130

Sample: 330409 - Sample Pt. 4 @ 1'

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	101968	Date Analyzed:	2013-06-03	Analyzed By:	MT
Prep Batch:	86391	Sample Preparation:	2013-06-03	Prepared By:	MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	**365**	mg/Kg	20	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.49	mg/Kg	20	2.00	74	69.6 - 124
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	16.3	mg/Kg	20	2.00	815	77.7 - 120

Sample: 330410 - Sample Pt. 5 @ 1'

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	101923	Date Analyzed:	2013-06-03	Analyzed By:	CM
Prep Batch:	86354	Sample Preparation:	2013-06-02	Prepared By:	CM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**5430**	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	386	mg/Kg	5	100	386	70 - 130

Sample: 330410 - Sample Pt. 5 @ 1'

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	101968	Date Analyzed:	2013-06-03	Analyzed By:	MT
Prep Batch:	86391	Sample Preparation:	2013-06-03	Prepared By:	MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	**326**	mg/Kg	50	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.97	mg/Kg	50	2.00	98	69.6 - 124
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	17.3	mg/Kg	50	2.00	865	77.7 - 120

Method Blanks

Method Blank (1) QC Batch: 101923

QC Batch: 101923 Date Analyzed: 2013-06-03 Analyzed By: CM
Prep Batch: 86354 QC Preparation: 2013-06-02 Prepared By: CM

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	9.65	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	133	mg/Kg	1	100	133	70 - 130

Method Blank (1) QC Batch: 101968

QC Batch: 101968 Date Analyzed: 2013-06-03 Analyzed By: MT
Prep Batch: 86391 QC Preparation: 2013-06-03 Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.230	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.04	mg/Kg	1	2.00	102	69.6 - 124
4-Bromofluorobenzene (4-BFB)			2.14	mg/Kg	1	2.00	107	77.7 - 120

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 101923 | Date Analyzed: 2013-06-03 | Analyzed By: CM
Prep Batch: 86354 | QC Preparation: 2013-06-02 | Prepared By: CM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	227	mg/Kg	1	250	9.65	87	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	227	mg/Kg	1	250	9.65	87	70 - 130	0	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-Tricosane	89.1	88.6	mg/Kg	1	100	89	89	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 101968 | Date Analyzed: 2013-06-03 | Analyzed By: MT
Prep Batch: 86391 | QC Preparation: 2013-06-03 | Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	17.4	mg/Kg	1	20.0	<0.230	87	66.9 - 120

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	17.3	mg/Kg	1	20.0	<0.230	86	66.9 - 120	1	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)	1.94	1.88	mg/Kg	1	2.00	97	94	69.6 - 124
4-Bromofluorobenzene (4-BFB)	2.16	2.14	mg/Kg	1	2.00	108	107	77.7 - 120

Matrix Spike (MS-1) Spiked Sample: 330595

QC Batch: 101923
Prep Batch: 86354

Date Analyzed: 2013-06-03
QC Preparation: 2013-06-02

Analyzed By: CM
Prepared By: CM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	388	mg/Kg	1	250	199	76	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	433	mg/Kg	1	250	199	94	70 - 130	11	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-Tricosane	109	109	mg/Kg	1	100	109	109	70 - 130

Matrix Spike (MS-1) Spiked Sample: 330416

QC Batch: 101968
Prep Batch: 86391

Date Analyzed: 2013-06-03
QC Preparation: 2013-06-03

Analyzed By: MT
Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	22.8	mg/Kg	5	20.0	5.6	86	38.8 - 120

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	22.2	mg/Kg	5	20.0	5.6	83	38.8 - 120	3	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)	1.50	1.10	mg/Kg	5	2	75	55	69.6 - 124
4-Bromofluorobenzene (4-BFB)	2.28	1.90	mg/Kg	5	2	114	95	77.7 - 120

Calibration Standards

Standard (CCV-1)

QC Batch: 101923 Date Analyzed: 2013-06-03 Analyzed By: CM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	214	86	80 - 120	2013-06-03

Standard (CCV-2)

QC Batch: 101923 Date Analyzed: 2013-06-03 Analyzed By: CM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	245	98	80 - 120	2013-06-03

Standard (CCV-3)

QC Batch: 101923 Date Analyzed: 2013-06-03 Analyzed By: CM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	219	88	80 - 120	2013-06-03

Standard (CCV-1)

QC Batch: 101968 Date Analyzed: 2013-06-03 Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.936	94	80 - 120	2013-06-03

Standard (CCV-2)

QC Batch: 101968

Date Analyzed: 2013-06-03

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.923	92	80 - 120	2013-06-03

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704219-13-9	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Result Comments

1 Sample dilution due to surfactants.

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

LAB Order ID.# 13053007

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

BioAquatic Testing
2501 Mayes Rd., Ste 100
Carrollton, Texas 75006
Tel (972) 242-7750

Company Name: APACHE | **Phone #:**
Address: (Street, City, Zip) | **Fax #:**
Contact Person: STEVE FLEMMINGS | **E-mail:**
Invoice to: (If different from above)
Project #: LOCO FEDERAL #1, N.M. | **Project Name:**
Project Location (including state): | **Sampler Signature:** Edward O'Connor

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX: WATER	SOIL	AIR	SLUDGE		PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE		SAMPLING: DATE	TIME	MTBE 8021 / 602 / 8260 / 624	BTEX 8021 / 602 / 8260 / 624	TPH 418.1 / TX1005 / TX1005 Ext(C35)	TPH 8015 GRO / DRO / TVHC	PAH 8270 / 625	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260 / 624	GC/MS Semi. Vol. 8270 / 625	PCB's 8082 / 608	Pesticides 8081 / 608	BOD, TSS, pH	Moisture Content	Cl, F, SO_4, NO_3-N, NO_2-N, PO_4-P, Alkalinity	Na, Ca, Mg, K, TDS, EC					Turn Around Time if different from standard	Hold
	Sample Point																																										
330406	Pt. 1 @ 1'				✓											5-28-13	10:00				✓																						
407	Pt. 2 @ 1'				✓											5-28-13	10:05				✓																						
408	Pt. 3 @ 1'				✓											5-28-13	10:10				✓																						
409	Pt. 4 @ 1'				✓											5-28-13	10:15				✓																						
410	Pt. 5 @ 1'				✓											5-28-13	10:20				✓																						

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
Edward O'Connor	RECS	5-28-13	4:18	BCJ	BTC	5-28-13	4:20	INST ___ OBS 1.0 °C COR 1.0 °C
								INST ___ OBS ___ °C COR ___ °C
				Brittani Fitzwilliams		5-30	9:15	INST IR-2 OBS 4.4 °C COR 4.4 °C

LAB USE ONLY
Intact (Y) / N
Headspace Y / N / NA
Log-in-Review BP

REMARKS:
Lweinheimer @ rice-ecs.com
Bbaker @ rice-ecs.com
Hconder @ rice-ecs.com

☐ Dry Weight Basis Required
☐ TRRP Report Required
☐ Check If Special Reporting Limits Are Needed

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

Carrier # CS ZP750210

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

November 21, 2013

BRUCE BAKER

APACHE - EUNICE

P. O. BOX 1849

EUNICE, NM 88231

RE: LOCO FEDERAL #1

Enclosed are the results of analyses for samples received by the laboratory on 11/18/13 14:20.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

APACHE - EUNICE
BRUCE BAKER
P. O. BOX 1849
EUNICE NM, 88231
Fax To: 394-2425

Received:	11/18/2013	Sampling Date:	11/18/2013
Reported:	11/21/2013	Sampling Type:	Soil
Project Name:	LOCO FEDERAL #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 1 @ 1' (H302814-01)

TPH 8015M mg/kg **Analyzed By: MS** S-06

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	11/20/2013	ND	193	96.4	200	5.24	
DRO >C10-C28	**4950**	50.0	11/20/2013	ND	189	94.5	200	5.46	

Surrogate: 1-Chlorooctane	*77.4 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*227 %*	*63.6-154*

Sample ID: PT. 1 @ 2' (H302814-02)

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/20/2013	ND	193	96.4	200	5.24	
DRO >C10-C28	**69.8**	10.0	11/20/2013	ND	189	94.5	200	5.46	

Surrogate: 1-Chlorooctane	*95.9 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*108 %*	*63.6-154*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

APACHE - EUNICE
BRUCE BAKER
P. O. BOX 1849
EUNICE NM, 88231
Fax To: 394-2425

Received:	11/18/2013	Sampling Date:	11/18/2013
Reported:	11/21/2013	Sampling Type:	Soil
Project Name:	LOCO FEDERAL #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 2 @ 1' (H302814-03)

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/20/2013	ND	193	96.4	200	5.24	
DRO >C10-C28	**263**	10.0	11/20/2013	ND	189	94.5	200	5.46	

Surrogate: 1-Chlorooctane	*83.5 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*107 %*	*63.6-154*

Sample ID: PT. 2 @ 2' (H302814-04)

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/20/2013	ND	193	96.4	200	5.24	
DRO >C10-C28	<10.0	10.0	11/20/2013	ND	189	94.5	200	5.46	

Surrogate: 1-Chlorooctane	*88.1 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*92.5 %*	*63.6-154*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

APACHE - EUNICE
BRUCE BAKER
P. O. BOX 1849
EUNICE NM, 88231
Fax To: 394-2425

Received:	11/18/2013	Sampling Date:	11/18/2013
Reported:	11/21/2013	Sampling Type:	Soil
Project Name:	LOCO FEDERAL #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 5 @ 1' (H302814-05)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<1.00	1.00	11/20/2013	ND	2.13	107	2.00	4.28	
Toluene*	<1.00	1.00	11/20/2013	ND	2.14	107	2.00	5.97	
Ethylbenzene*	**4.34**	1.00	11/20/2013	ND	2.15	107	2.00	5.77	
Total Xylenes*	**7.24**	3.00	11/20/2013	ND	6.50	108	6.00	8.38	
Total BTEX	**11.6**	6.00	11/20/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID *126 %* *89.4-126*

TPH 8015M mg/kg **Analyzed By: MS** **S-06**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**160**	50.0	11/20/2013	ND	193	96.4	200	5.24	
DRO >C10-C28	**5040**	50.0	11/20/2013	ND	189	94.5	200	5.46	

Surrogate: 1-Chlorooctane *89.0 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *238 %* *63.6-154*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

APACHE - EUNICE
BRUCE BAKER
P. O. BOX 1849
EUNICE NM, 88231
Fax To: 394-2425

Received:	11/18/2013	Sampling Date:	11/18/2013
Reported:	11/21/2013	Sampling Type:	Soil
Project Name:	LOCO FEDERAL #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 5 @ 2' (H302814-06)

TPH 8015M **mg/kg** **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/20/2013	ND	190	95.0	200	13.1	
DRO >C10-C28	<10.0	10.0	11/20/2013	ND	180	89.8	200	4.80	

Surrogate: 1-Chlorooctane	*89.8 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*96.1 %*	*63.6-154*

Sample ID: PT. 5 @ 3' (H302814-07)

TPH 8015M **mg/kg** **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/20/2013	ND	190	95.0	200	13.1	
DRO >C10-C28	<10.0	10.0	11/20/2013	ND	180	89.8	200	4.80	

Surrogate: 1-Chlorooctane	*95.7 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*103 %*	*63.6-154*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Celey D. Keene, Lab Director/Quality Manager

CARDINAL LABORATORIES

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

Company Name:	Apache	BILL TO	ANALYSIS REQUEST
Project Manager:	Bruce Baker	P.O. #:	
Address:		Company:	
City: Hobbs	State: NM Zip: 88240	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:		State: Zip:	
Project Location:	Loco Federal #1	Phone #:	
Sampler Name:	Zach Conder	Fax #:	

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS
H3D28614																				
1	Pt 1 @ 1'	G	1			✓					✓		11-18-13			✓				
2	Pt 1 @ 2'	G	1			✓					✓		"			✓				
3	Pt 2 @ 1'	G	1			✓					✓		"			✓				
4	Pt 2 @ 2'	G	1			✓					✓		"			✓				
5	Pt 5 @ 1'	G	1			✓					✓		"			✓	✓			
6	Pt 5 @ 2'	G	1			✓					✓		"			✓				
7	Pt 5 @ 3'	G	1			✓					✓		"			✓				

Relinquished By:	Date: 11-18-13	Received By: Jodi Henson	Phone Result: ☐ Yes ☑ No Add'l Phone #:
	Time: 2:20		Fax Result: ☐ Yes ☑ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS: email results Bruce Baker, Jacob Kanplain, Lara Weinheimer, Zach Conder, Hack Conder
	Time:		
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition Cool: ☐ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)	

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

#54

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

December 23, 2013

BRUCE BAKER

APACHE - EUNICE

P. O. BOX 1849

EUNICE, NM 88231

RE: LOCO FEDERAL BATTERY #1

Enclosed are the results of analyses for samples received by the laboratory on 12/17/13 16:15.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

APACHE - EUNICE
BRUCE BAKER
P. O. BOX 1849
EUNICE NM, 88231
Fax To: 394-2425

Received:	12/17/2013	Sampling Date:	12/17/2013
Reported:	12/23/2013	Sampling Type:	Soil
Project Name:	LOCO FEDERAL BATTERY #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	NOT GIVEN		

Sample ID: CALICHE BACKFILL (H303055-01)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**128**	16.0	12/21/2013	ND	400	100	400	7.69	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Celey D. Keene, Lab Director/Quality Manager

CARDINAL LABORATORIES

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325) 673-7020

Company Name: Apache	BILL TO
Project Manager: Jacob Lamplain	P.O. #:
Address: Larry.baker@apachecorp.com	Company:
City: Hobbs State: NM Zip: 88240	Attn:
Phone #: Fax #:	Address:
Project #: Project Owner:	City:
Project Name: LOCO Federal #1 Battery	State: Zip:
Project Location: T17S R30E	Phone #:
Sampler Name: Amber Groves	Fax #:

FOR LAB USE ONLY				MATRIX						PRESERV			SAMPLING		ANALYSIS REQUEST										
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID/BASE:	ICE / COOL	OTHER:	DATE	TIME	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS					
H30305-01	Caliche Backfill	G	1			✓							12-17-13	8:30	✓										

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: Amber Groves	Date: 12-17-13 Time: 4:15	Received By:	Phone Result: ☐ Yes ☑ No Add'l Phone #:
Relinquished By:	Date: Time:	Received By:	Fax Result: ☐ Yes ☑ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other: 4°C	Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No	CHECKED BY: (Initials) CDK	REMARKS: email results knorman@rice-ecs.com hconder@rice-ecs.com; Lweinheimer@rice-ecs.com; kjones@riceswd.com; Lpena@riceswd.com; sedwards@rice-ecs.com agroves@rice-ecs.com

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

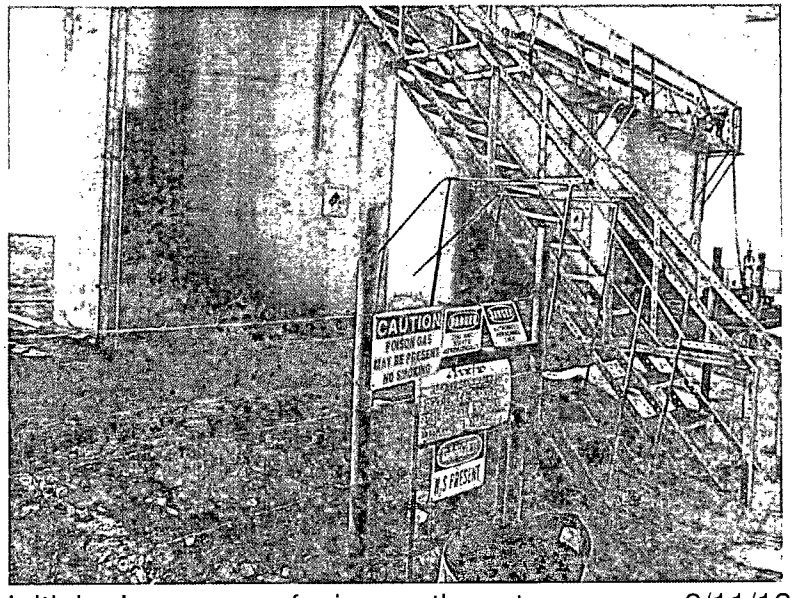
#54

Appendix D
Photo Documentation

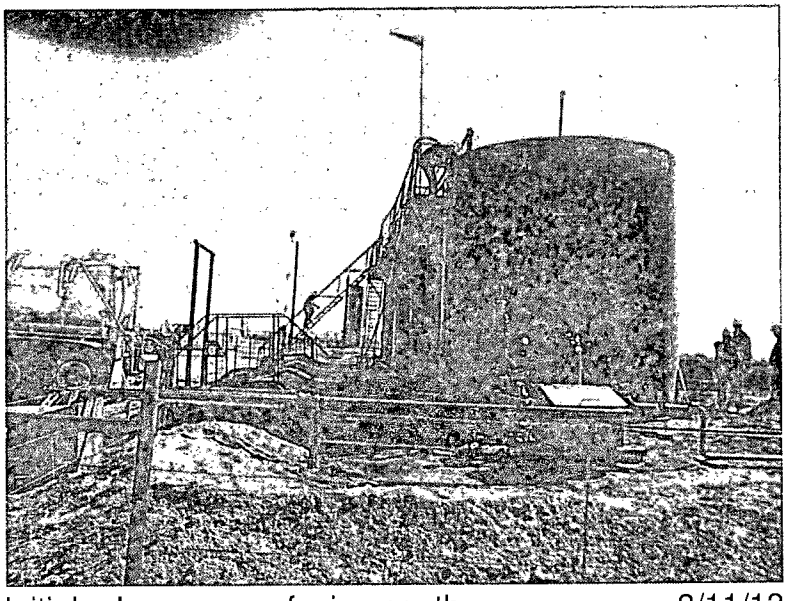
RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948 Hobbs, NM 88241
Phone 575.393.2967

Apache Loco Federal #001 AD

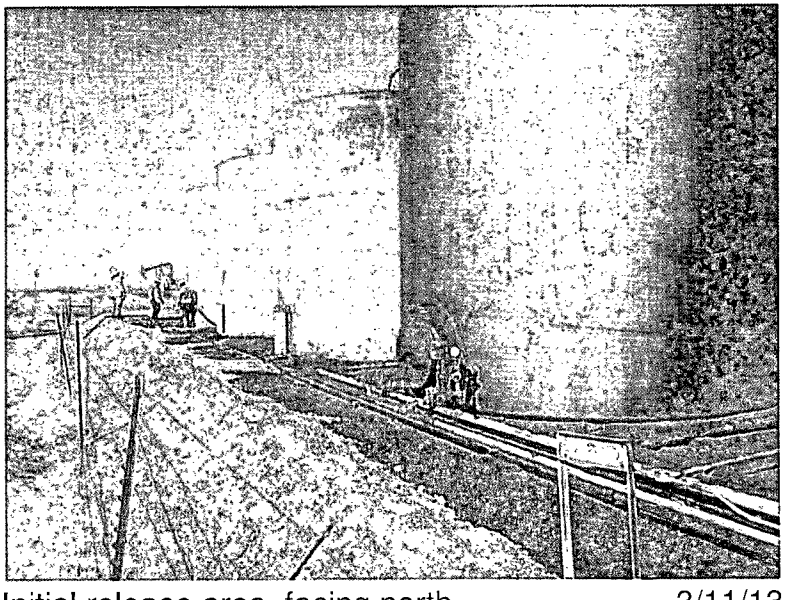
Unit Letter B, Section 21, T17S, R30E



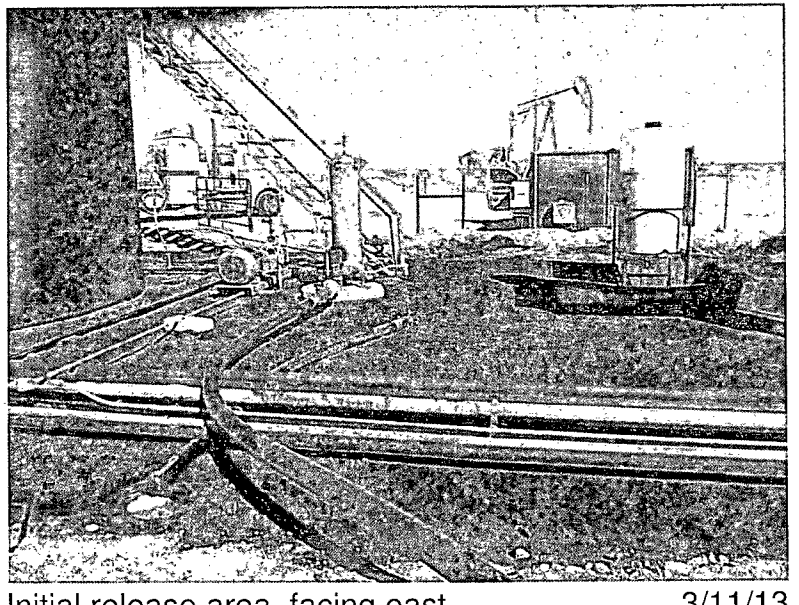
Initial release area, facing northwest 3/11/13



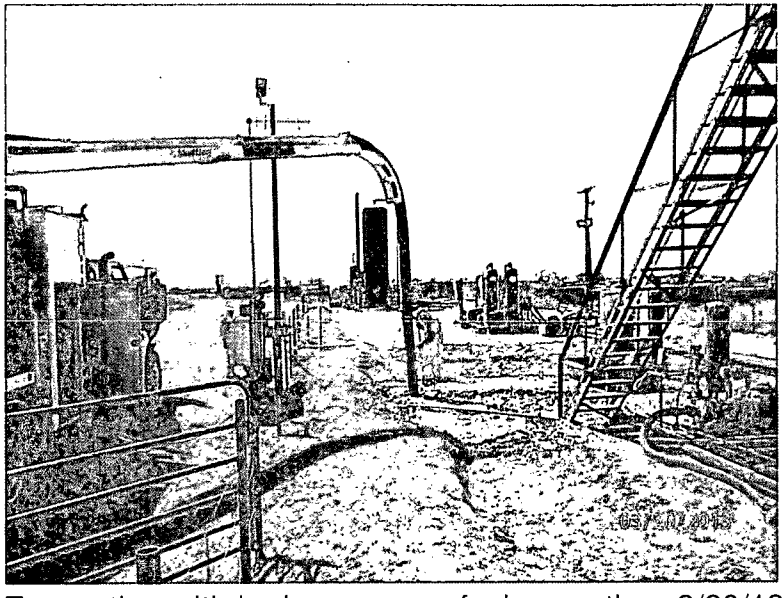
Initial release area, facing south 3/11/13



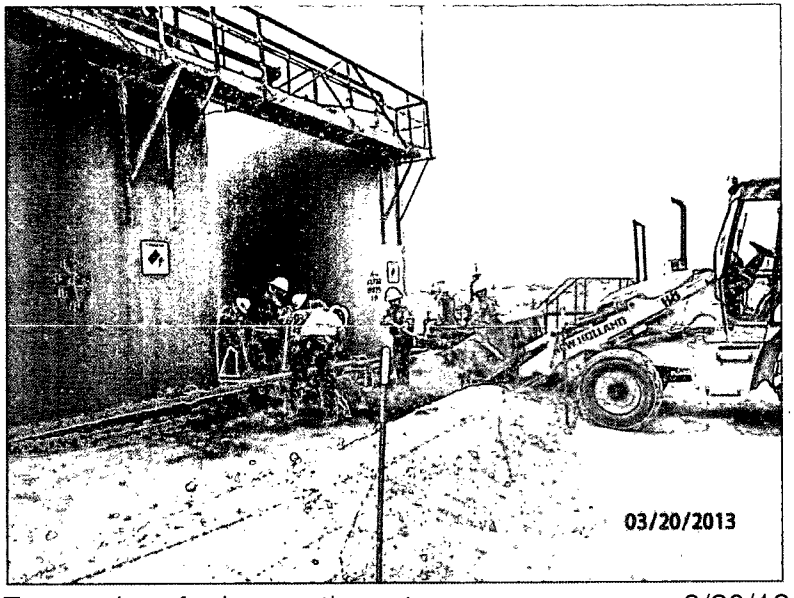
Initial release area, facing north 3/11/13



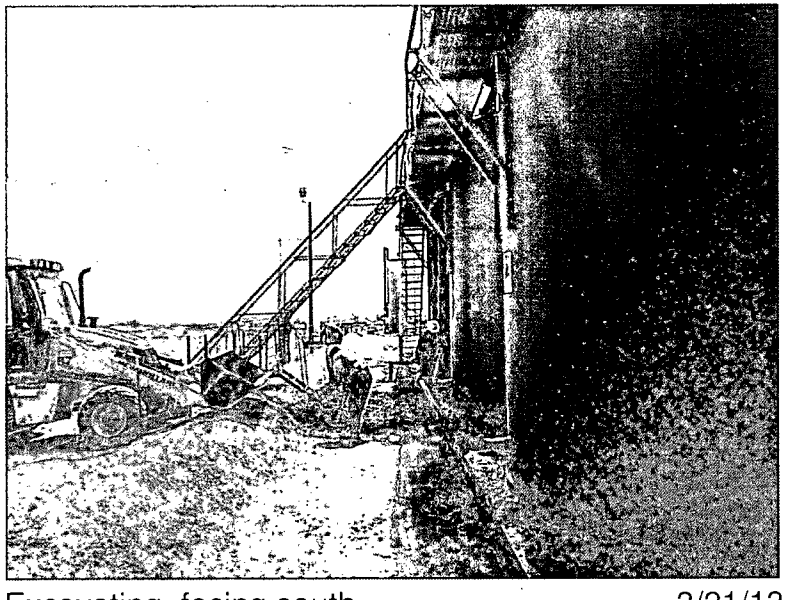
Initial release area, facing east 3/11/13



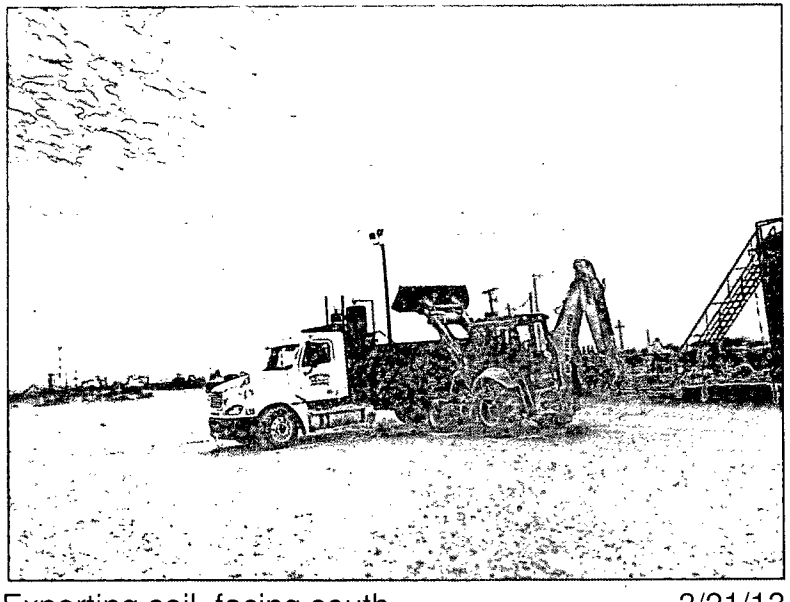
Excavating with hydro-vacuum, facing south 3/20/13



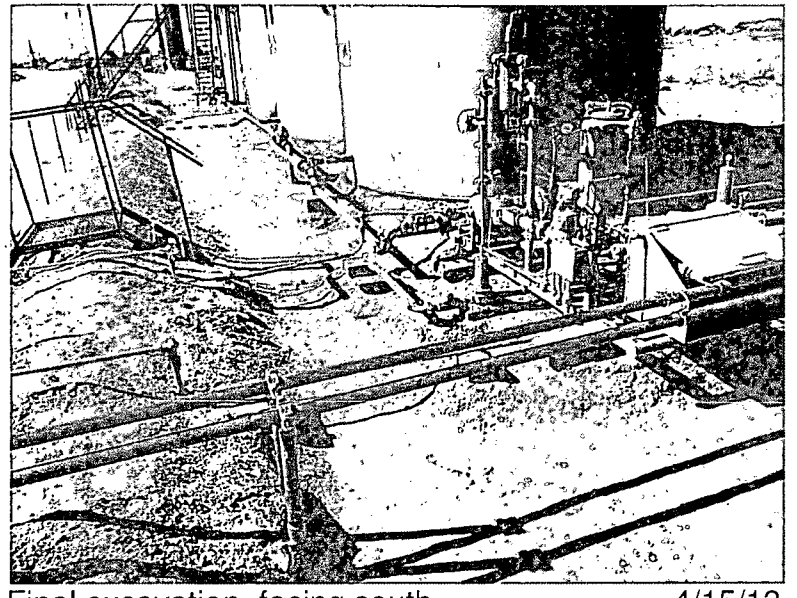
Excavating, facing northwest 3/20/13



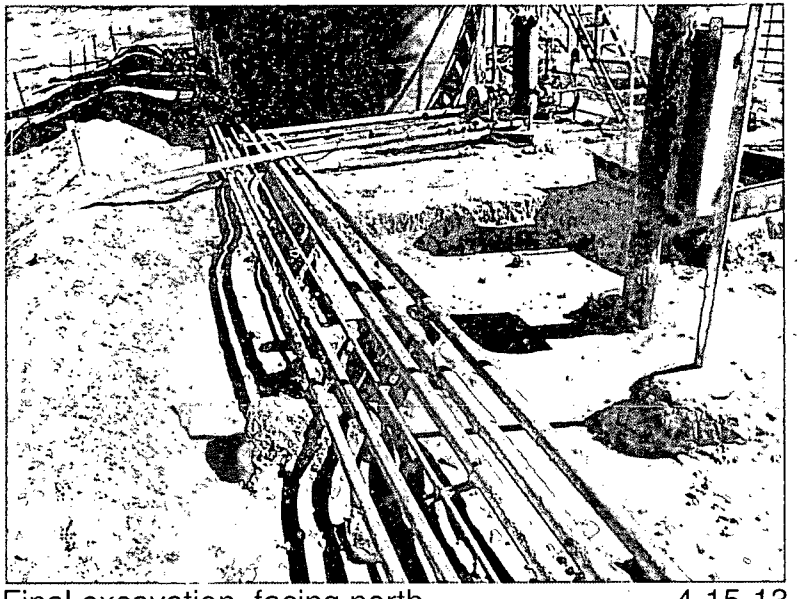
Excavating, facing south 3/21/13



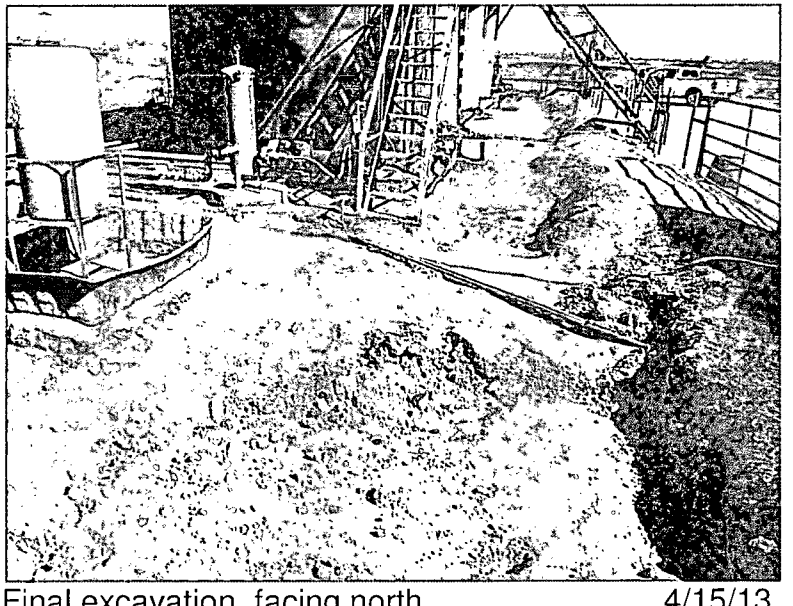
Exporting soil, facing south 3/21/13



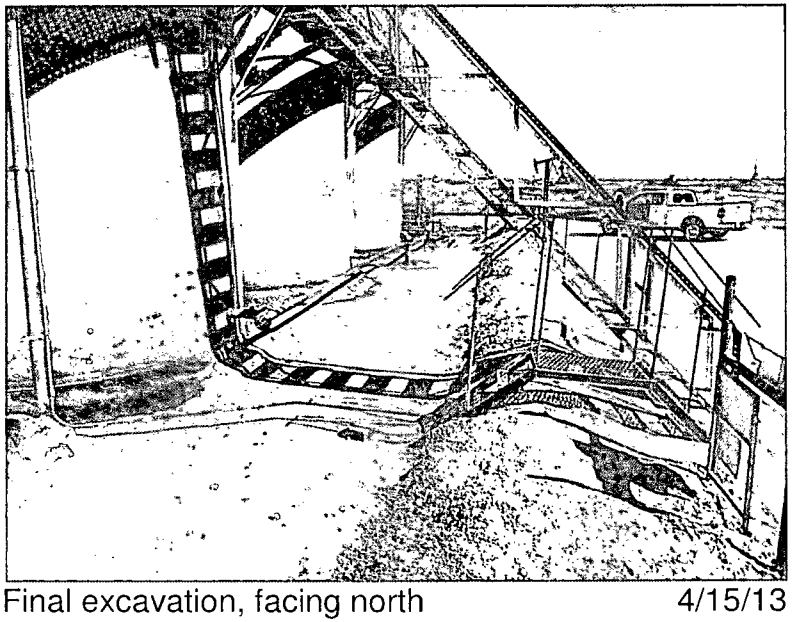
Final excavation, facing south 4/15/13



Final excavation, facing north 4-15-13

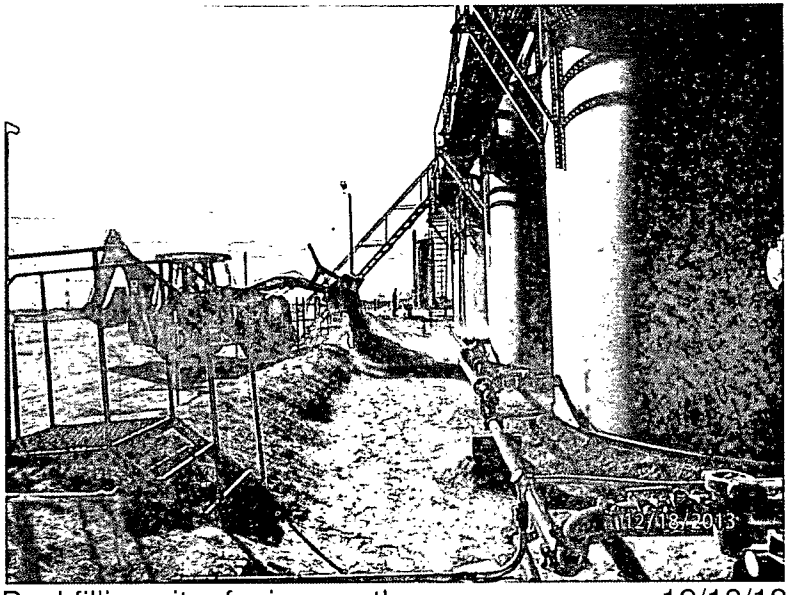


Final excavation, facing north 4/15/13

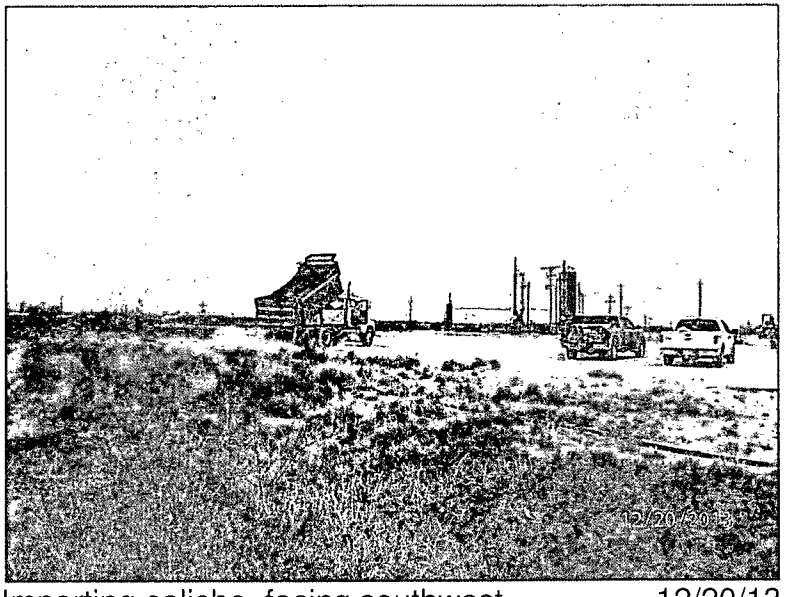


Final excavation, facing north 4/15/13

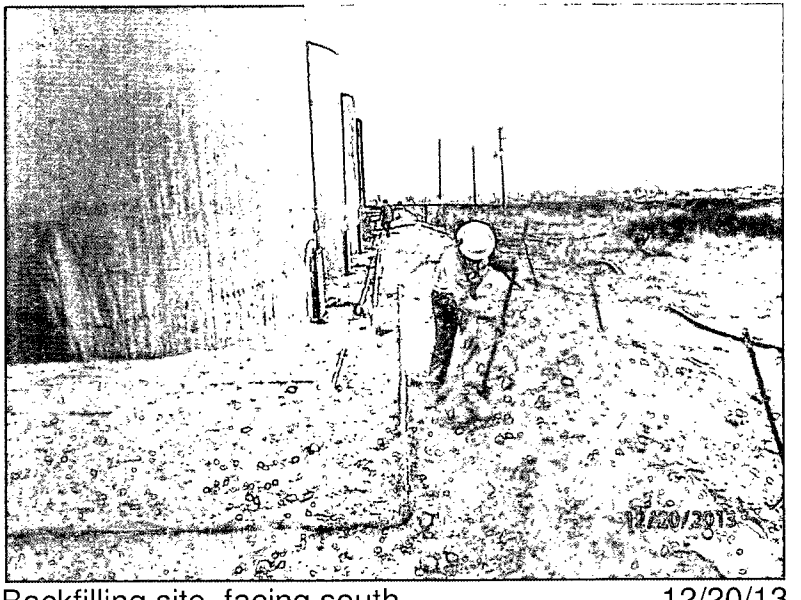
Auguring the site for depth, facing east 11/18/13



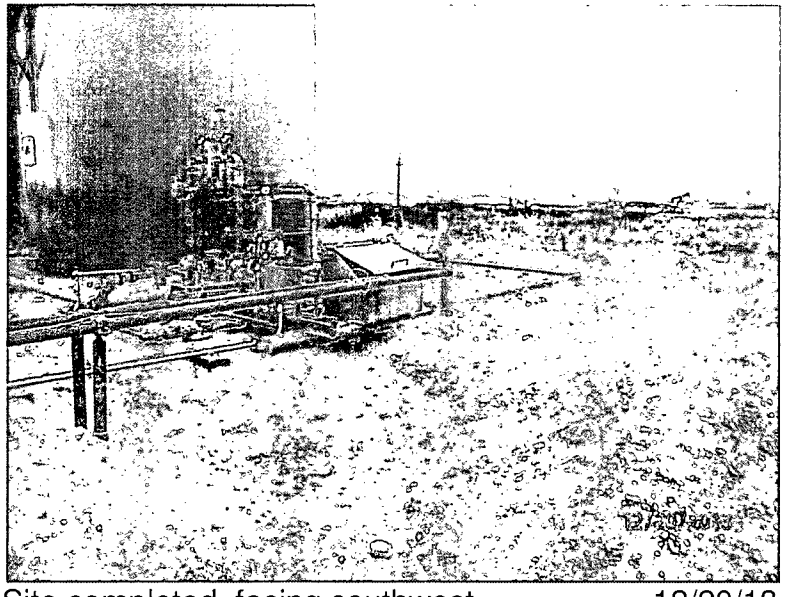
Backfilling site, facing south 12/18/13



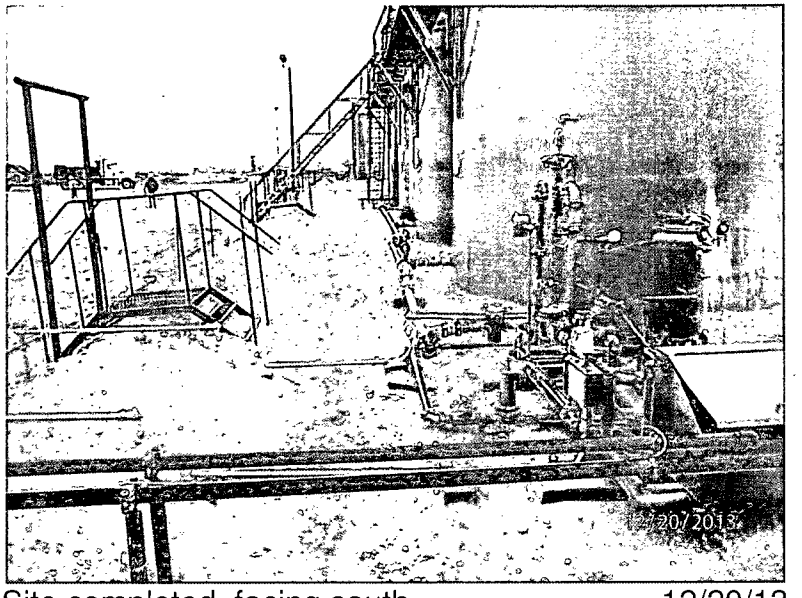
Importing caliche, facing southwest 12/20/13



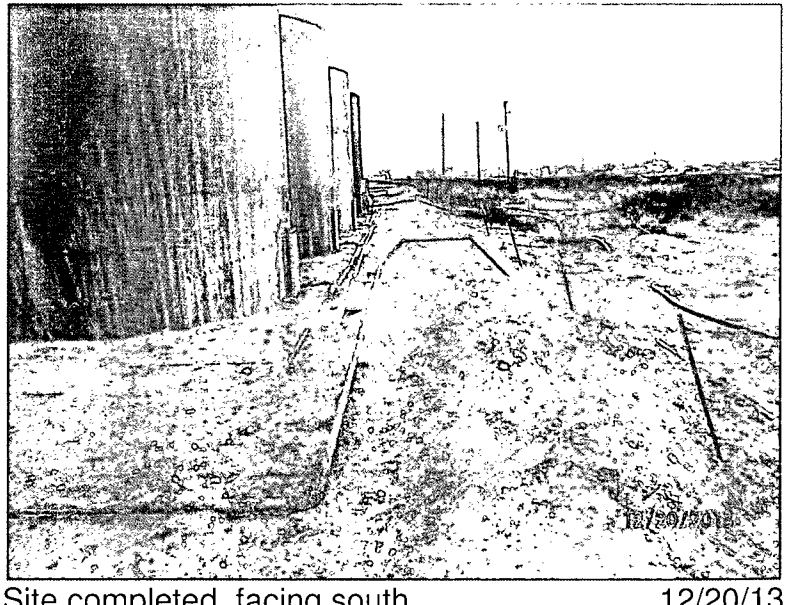
Backfilling site, facing south 12/20/13



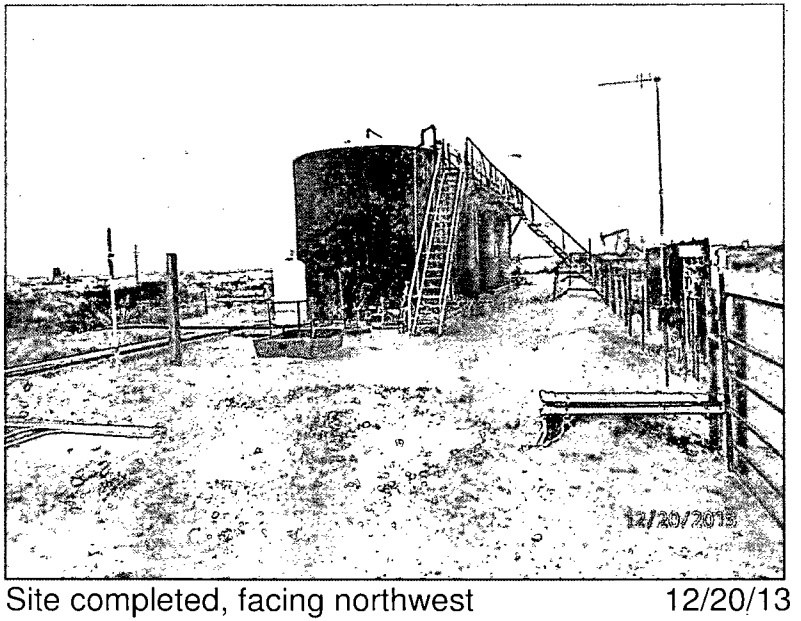
Site completed, facing southwest 12/20/13



Site completed, facing south 12/20/13



Site completed, facing south 12/20/13



Site completed, facing northwest 12/20/13

Appendix E

Final C-141

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948 Hobbs, NM 88241
Phone 575.393.2967

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., 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

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

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company Apache Corporation	Contact Bruce Baker
Address P.O. Box 1849, Eunice, NM 88231	Telephone No. (432) 631-6982
Facility Name Loco Federal #1	Facility Type Tank Battery

Surface Owner BLM	Mineral Owner	API No. 30-015-30144

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
B	21	17S	30E	987'	FNL	2424'	FEL	Eddy

Latitude 32°49'29.093" **Longitude** 103°58'34.842"

NATURE OF RELEASE

Type of Release Oil	Volume of Release 95 barrels	Volume Recovered 90 barrels
Source of Release Hole in tank	Date and Hour of Occurrence 3/11/13	Date and Hour of Discovery 3/11/13 12:15 pm
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher	
By Whom? Natalie Gladden, Apache Corp.	Date and Hour 3/11/13 3:35 pm	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.* The pumper arrived on site to find that the main production tank was leaking through a hole in the bottom of the tank. The remaining liquid in the tank was removed by vacuum truck and approximately 90 barrels of oil was put into the secondary production tank and re-circulated. All the released fluid remained inside the battery's containment walls of the unlined facility. The corroded tank was repaired.

Describe Area Affected and Cleanup Action Taken.*A total of 3,470 sq ft of the facility's containment area was affected. RECS personnel were on site beginning on March 11th, 2013 to assess the release. The release was sampled at the surface in three locations and the samples were taken to a commercial laboratory for analysis. Laboratory chloride readings returned results below regulatory standards at Pt. 1 and Pt. 2 and a result of 5,400 mg/kg at Pt. 3. Gasoline Range Organics (GRO) readings and Diesel Range Organics (DRO) readings were elevated at all three points. The release area was scraped down to 1 ft bgs by hand. On April 2nd, 2013, a 5 point composite sample was taken at the base of the 1 ft scrape and sent to a commercial laboratory for analysis. Apache met with NMOCD on May 21st, 2013 and NMOCD requested that individual samples from the base of the 1 ft scrape be taken to determine if the entire area showed elevated constituent readings or if the elevated readings were from only one location. On May 28th, 2013, individual samples throughout the bottom of the release were taken to a commercial laboratory for analysis. Laboratory analysis of the individual points returned relatively low GRO readings but elevated DRO readings. On November 18th, 2013, the site was delineated vertically at Pt. 1, Pt. 2 and Pt. 5. These three points showed the highest concentrations from the previous sampling event. Pt. 1 and Pt. 2 were hand augured to a depth of 2 ft bgs and Pt. 5 was hand augured to a depth of 3 ft bgs. All samples were taken to a commercial laboratory for analysis of GRO and DRO. All three sample points returned GRO and DRO results below regulatory standards at 2 ft bgs. Based on the vertical laboratory data, Apache asked NMOCD and BLM for approval to backfill the site. On December 10th, 2013, NMOCD approved the site to be backfilled and on December 11th, 2013, BLM approved the site to be backfilled. A total of 144 yards of caliche was imported to the site to serve as backfill. A sample of the caliche was taken to a commercial laboratory for analysis and returned a chloride reading of 128 mg/kg. The site was backfilled with the clean, imported caliche and contoured to the surrounding location.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: Bruce Baker	OIL CONSERVATION DIVISION
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* Attach Additional Sheets If Necessary