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

HOBBS OCD
FEB 12 2014
RECEIVED

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 PO Box 1849, Eunice, NM 88231	Telephone No. (432) 631-6982
Facility Name H Corrigan Battery	Facility Type Tank Battery

Surface Owner Priscilla Brunson Moody	Mineral Owner	API No. 30-025-37747

NEAREST WELL H CORRIGAN 017

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
G	4	22S	37E	1,351 ft	FNL	1,524 ft	FEL	Lea

Latitude 32°25'27.779"N Longitude 103°9'51.661"W

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 120 barrels	Volume Recovered 110 barrels
Source of Release Produced Water Tank	Date and Hour of Occurrence 5/10/13	Date and Hour of Discovery 5/10/13
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Geoff Leking, NMOCD	
By Whom? Xavier Martinez	Date and Hour 5/10/13	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.* DTW = 115'

Describe Cause of Problem and Remedial Action Taken.* The produced water tank at the H Corrigan Tank Battery was hit by lightning on May 10, 2013 which caused the release of 120 barrels of produced water. Vacuum trucks were called to the site and recovered a total of 110 barrels. The site was field sampled at the surface and representative samples were taken to a commercial laboratory for analysis.

Describe Area Affected and Cleanup Action Taken.* A total of 9,504 square feet of pasture land battery was affected with 1,274 square feet in the pasture. RECS personnel arrived at the site beginning on May 10th, 2013. Apache had already removed the contaminated gravel in the battery and replaced it with clean, imported gravel. RECS personnel sampled the release in 5 places and took the samples to a commercial laboratory for analysis. All 5 samples returned chloride readings above regulatory standards. Gasoline Range Organics (GRO) readings returned non-detect except for Pt. 4, which returned a value of 1,070 mg/kg. Diesel Range Organics (DRO) readings were below regulatory standards except for Pt. 4, which had a DRO reading of 5,710 mg/kg. The release area outside the battery was scraped down 6 inches. A total of 48 yards of contaminated soil was taken to a NMOCD approved facility for disposal. Once the scrape was completed, a 6 point bottom composite of the road was taken and field tested for chlorides and organic vapors. The sample was then taken to a commercial laboratory and retuned a chloride value of 63.7 mg/kg and GRO and DRO values of non-detect. A total of 48 yards of caliche was imported to the site to serve as backfill. A sample of the imported caliche was taken to a commercial laboratory and returned a chloride value of 73.5 mg/kg. Clean, imported top soil was imported to the site by Apache to serve as backfill for the pasture area. The lease road and pasture area were backfilled and contoured to the surrounding location. Inside the battery, surface samples were taken and field tested for chlorides. On July 1st, 2013, NMOCD reviewed the surface sample field data and requested that the two highest points within the battery be augured to determine the depth of contaminants. The southeast corner of the battery and the center point between the tanks were hand augured for depth. Representative samples were taken to a commercial laboratory for analysis. The southeast augur point returned chloride values below regulatory standards starting at 2 ft bgs. The center augur point returned chloride values below regulatory standards at 3.5 ft bgs. GRO samples for both augur points were non-detect. DRO samples for the southeast augur point returned values below regulatory standards at 2.5 ft bgs. DRO samples for the center augur point returned values below regulatory standards at 3.5 ft bgs.

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	
Printed Name: Bruce Baker	Approved by Environmental Specialist: Environmental Specialist	
Title: Environmental Tech	Approval Date: 2/12/14	Expiration Date: -
E-mail Address: larry.baker@apachecorp.com	Conditions of Approval: -	Attached ☐ IRP-11-13-2993
Date: 1-29-14 Phone: (432) 631-6982		

* Attach Additional Sheets If Necessary

JUN 18 2014

NSAD 1416848234

Apache

EXPLORING WHAT'S POSSIBLE

APACHE CORPORATION

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

H Corrigan Battery

(1RP-11-13-2993)

Termination Request

approved
Jeffrey Lekins
Environmental Specialist
NMOCD - DIST 1
2/12/14

Release Date: May 5th, 2013

Unit Letter G, Section 4, Township 22S, Range 37E

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

January 29th, 2014

Geoffrey Leking
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau – District 1
1625 N. French Dr.
Hobbs, NM 88240-9273

RE: **Termination Request**
Apache Corporation – H Corrigan Battery (1RP-11-13-2993)
UL/G sec. 4 T22S R37E

Mr. Leking:

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 1 mile southwest of Eunice, New Mexico at UL/G sec. 4 T22S R37E. Groundwater at this site will likely be encountered at a depth of approximately 81 +/- feet.

On May 5th, 2013, Apache discovered a release of produced water at the H Corrigan Battery. The produced water tank was hit by lightning, which caused the release of 120 barrels over 9,504 square feet of battery lease pad and pasture land. Vacuum trucks were called to the site and recovered 110 barrels of produced water. NMOCD was notified of the release on May 10th, 2013 and an initial C-141 was submitted to NMOCD on May 28th, 2013 for their approval (Appendix A).

RECS personnel arrived at the site beginning on May 10th, 2013. Apache had already removed the contaminated gravel in the battery and replaced it with clean, imported gravel. RECS personnel sampled the release in 5 places and took the samples to a commercial laboratory for analysis (Figure 1). All 5 samples returned chloride readings above regulatory standards. Gasoline Range Organics (GRO) readings returned non-detect except for Pt. 4, which returned a value of 1,070 mg/kg. Diesel Range Organics (DRO) readings were below regulatory standards except for Pt. 4, which had a DRO reading of 5,710 mg/kg (Appendix B).

The release area outside the battery was scraped down 6 inches. A total of 48 yards of contaminated soil was taken to a NMOCD approved facility for disposal. Once the scrape was completed, a 6 point bottom composite of the road was taken and field tested for chlorides and organic vapors. The sample was then taken to a commercial laboratory and retuned a chloride value of 63.7 mg/kg and GRO and DRO values of non-detect. A total of 48 yards of caliche was imported to the site to serve as backfill. A sample of the

imported caliche was taken to a commercial laboratory and returned a chloride value of 73.5 mg/kg. Clean, imported top soil was imported to the site by Apache to serve as backfill for the pasture area. The lease road and pasture area were backfilled and contoured to the surrounding location.

Inside the battery, surface samples were taken and field tested for chlorides. On July 1st, 2013, NMOCD reviewed the surface sample field data and requested that the two highest points within the battery be augured to determine the depth of contaminants. The southeast corner of the battery and the center point between the tanks were hand augured for depth. Representative samples were taken to a commercial laboratory for analysis. The southeast augur point returned chloride values below regulatory standards starting at 2 ft bgs. The center augur point returned chloride values below regulatory standards at 3.5 ft bgs. GRO samples for both augur points were non-detect. DRO samples for the southeast augur point returned values below regulatory standards at 2.5 ft bgs. DRO samples for the center augur point returned values below regulatory standards at 3.5 ft bgs.

Photo documentation of all activities can be found in Appendix C.

The lease road and pasture were scraped to remove all contaminated soil and then backfilled with clean, imported soil. The battery shows a precipitous decline in chloride and TPH values. Given the depth to groundwater, the remaining constituents will not impact groundwater at this site and will be remediated during facility abandonment. Therefore, Apache requests 'remediation termination' and closure for the site. The final C-141 can be found in Appendix D.

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 – Excavation Sampling Data
- Appendix A – Initial C-141
- Appendix B – Laboratory Analyses
- Appendix C – Photo Documentation
- Appendix D – Final C-141

Figures

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

Initial Sampling Data

9,504 total square feet affected with 1,274 sqare feet in the pasture.

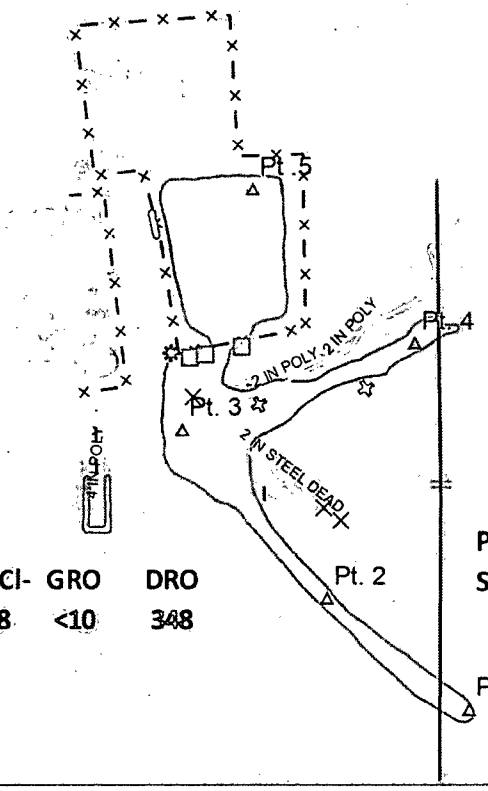
PT.5	LAB Cl-	GRO	DRO
SURFACE SAMPLE	1220	<10	100

PT.4	LAB Cl-	GRO	DRO
SURFACE SAMPLE	1730	1070	5710

PT.3	LAB Cl-	GRO	DRO
SURFACE SAMPLE	608	<10	348

PT.2	LAB Cl-	GRO	DRO
SURFACE SAMPLE	816	<10	279

PT.1	LAB Cl-	GRO	DRO
SURFACE SAMPLE	656	<10	337



Legend

- ELECTRIC POLE
- CONTAINMENT BOX
- END LINEFINDER HIT
- LIGHT POLE
- PIPE END
- SAMPLE POINTS
- ELECTRICAL PANEL
- LINEFINDER HIT
- RISER
- OVERHEAD ELECTRIC LINE
- SURFACE PIPELINE
- FENCE
- STAIN

DGW = 81 ft

Landowner: Priscilla Brunson Moody

obe, GeoEye, i-cubed, USDA, USGS, AEX, , IGN, IGP, swisstopo, and the GIS User Community

RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC — RECS

APACHE H CORRIGAN BATTERY AD (1RP-11-13-2993)

LEGALS: UL/G sec. 4
T-22-S R-37-E
LEA COUNTY, NM

Figure 1

N W E S

0 90 180 Feet

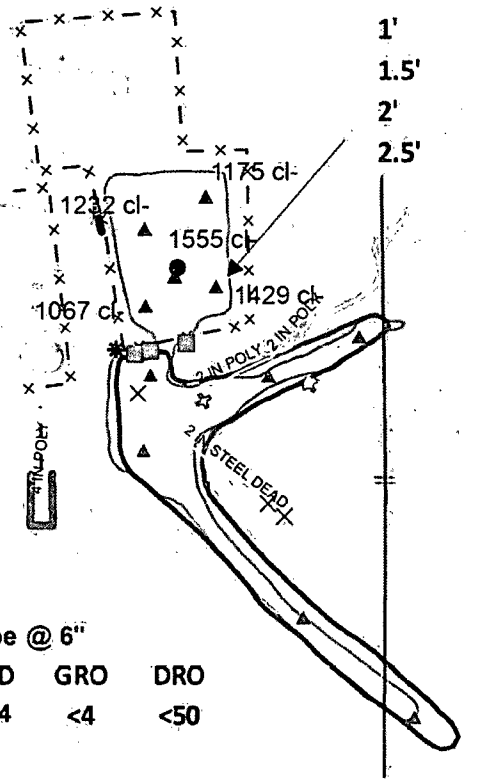
GPS date: 5/10/13
Drawing date: 5/16/13
Drafted by: L. Weinheimer

Excavation Sampling Data

9,504 total square feet affected with 1,274 sqare feet in the pasture.

SE Augur Point

Depth	Cl-	GRO	DRO
surface	624	<4	203
6"	667		
1'	373		
1.5'	266		
2'	172	<20	1350
2.5'	98	<8	377



Facility @ surface

	Cl-	PID
5 pt comp	1178	0

Imported caliche

Cl-

73.5

Road Scrape @ 6"

	Cl-	PID	GRO	DRO
6 pt comp	63.7	5.4	<4	<50

Center Augur Point

	Cl-	PID	GRO	DRO
surface	726	46.2	<80	1470
6"	564	88.5		
1'	462	64.2		
1.5'	451	31.2		
2'	535	33.7		
2.5'	384	16.6		
3'	255	4.4		
3.5'	126	9.3	<4	<50
4'	97	4.4	<4	<50

DGW = 81 ft

Landowner: Priscilla Brunson Moody

Legend

- CENTER AUGUR POINT
- FINAL SAMPLE POINTS-PAD
- FINAL SAMPLE POINTS-ROAD
- ELECTRIC POLE
- CONTAINMENT BOX
- END LINEFINDER HIT
- LIGHT POLE
- PIPE END
- ELECTRICAL PANEL
- LINEFINDER HIT
- RISER
- OVERHEAD ELECTRIC LINE
- SURFACE PIPELINE
- FENCE
- SCRAPE
- STAIN
- Cl- LAB DATA
- Cl- FIELD DATA

RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

APACHE H CORRIGAN BATTERY AD (1RP-11-13-2993)

LEGALS: UL/G sec. 4
T-22-S R-37-E
LEA COUNTY, NM

Figure 2

N W E S

0 90 180 Feet

GPS date: 7/31/13
Drawing date: 8/21/13
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

HOBBS OCD
MAY 28 2013
RECEIVED

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 October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Apache Corporation	Contact Trammell, De Valle
Address PO Box 1849, Eunice, NM 88231	Telephone No. (575) 393-7106
Facility Name H Corrigan Battery	Facility Type Tank Battery

Surface Owner Priscilla Brunson Moody	Mineral Owner	Lease No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
G	4	22S	37E	1,351 ft	FNL	1,524 ft	FEL	Lea

Latitude 32°25'27.779"N **Longitude** 103°9'51.661"W

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 120 barrels	Volume Recovered 110 barrels
Source of Release Produced Water Tank	Date and Hour of Occurrence 5/10/13	Date and Hour of Discovery 5/10/13
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Geoff Leking, NMOCD	
By Whom? Xavier Martinez	Date and Hour 5/10/13	
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 produced water tank at the H Corrigan Tank Battery was hit by lightning on May 10, 2013 which caused the release of 120 barrels of produced water. Vacuum trucks were called to the site and recovered a total of 110 barrels. The site was field sampled at the surface and representative samples were taken to a commercial laboratory for analysis.

Describe Area Affected and Cleanup Action Taken.*
A total of 9,504 sq ft was affected by the release with 1,274 sq ft in the pasture.

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: De Valle Trammell	OIL CONSERVATION DIVISION	
Printed Name: Trammell, De Valle	Approved by District Supervisor: Geoffrey Leking Environmental Specialist	
Title: Production Foreman	Approval Date:	Expiration Date:
E-mail Address: devalle.trammell@apachecorp.com	Conditions of Approval:	Attached ☐
Date: Phone: (575) 393-7106		

* Attach Additional Sheets If Necessary

Appendix B

Laboratory Analyses

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

May 16, 2013

STEVEN FLEMING

APACHE - EUNICE

P. O. BOX 1849

EUNICE, NM 88231

RE: CORRIGAN BATTERY

Enclosed are the results of analyses for samples received by the laboratory on 05/14/13 8:25.

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
STEVEN FLEMING
P. O. BOX 1849
EUNICE NM, 88231
Fax To: 394-2425

Received:	05/14/2013	Sampling Date:	05/10/2013
Reported:	05/16/2013	Sampling Type:	Soil
Project Name:	CORRIGAN BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 1 SURFACE SAMPLE (H301142-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**656**	16.0	05/14/2013	ND	432	108	400	0.00	

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	05/14/2013	ND	211	106	200	1.96	
DRO >C10-C28	**337**	10.0	05/14/2013	ND	208	104	200	1.47	

Surrogate: 1-Chlorooctane	*108 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*113 %*	*63.6-154*

Sample ID: PT. 2 SURFACE SAMPLE (H301142-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**816**	16.0	05/14/2013	ND	432	108	400	0.00	

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	05/14/2013	ND	211	106	200	1.96	
DRO >C10-C28	**279**	10.0	05/14/2013	ND	208	104	200	1.47	

Surrogate: 1-Chlorooctane	*111 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*116 %*	*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
STEVEN FLEMING
P. O. BOX 1849
EUNICE NM, 88231
Fax To: 394-2425

Received:	05/14/2013	Sampling Date:	05/10/2013
Reported:	05/16/2013	Sampling Type:	Soil
Project Name:	CORRIGAN BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 3 SURFACE SAMPLE (H301142-03)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**608**	16.0	05/14/2013	ND	432	108	400	0.00	

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	05/14/2013	ND	211	106	200	1.96	
DRO >C10-C28	**348**	10.0	05/14/2013	ND	208	104	200	1.47	

Surrogate: 1-Chlorooctane	*112 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*116 %*	*63.6-154*

Sample ID: PT. 4 SURFACE SAMPLE (H301142-04)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1730**	16.0	05/14/2013	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	**1070**	50.0	05/14/2013	ND	211	106	200	1.96	
DRO >C10-C28	**5710**	50.0	05/14/2013	ND	208	104	200	1.47	

Surrogate: 1-Chlorooctane	*201 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*195 %*	*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
STEVEN FLEMING
P. O. BOX 1849
EUNICE NM, 88231
Fax To: 394-2425

Received:	05/14/2013	Sampling Date:	05/10/2013
Reported:	05/16/2013	Sampling Type:	Soil
Project Name:	CORRIGAN BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 5 SURFACE SAMPLE (H301142-05)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1220**	16.0	05/14/2013	ND	432	108	400	0.00	

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	05/14/2013	ND	211	106	200	1.96	
DRO >C10-C28	**100**	10.0	05/14/2013	ND	208	104	200	1.47	

Surrogate: 1-Chlorooctane	*108 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*112 %*	*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

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 CORP.	**BILL TO**	
Project Manager:	STEVE FLEMMINGS	P.O. #:	
Address:		Company:	
City:	State: Zip:	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:		State: Zip:	
Project Location:	CORRIGAN BATTERY	Phone #:	
Sampler Name:	EDWARD CESAREO	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
H301142	Initial															
1	Pt.1 Surface Sample	G				✓							5-10-13	6:40	✓	✓
2	Pt.2 Surface Sample	G				✓								7:05	✓	✓
3	Pt.3 Surface Sample	G				✓								7:10	✓	✓
4	Pt.4 Surface Sample	G				✓								7:15	✓	✓
5	Pt.5 Surface Sample	G				✓								7:20	✓	✓

Relinquished By:	Date: ~~5-10-13~~ 5-10-13	Received By:	Phone Result: ☐ Yes ☐ No	Add'l Phone #:
Edward Cesareo	Time: 8:25	Jodi Henson	Fax Result: ☐ Yes ☐ No	Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:	
	Time:			

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: -3°

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

CHECKED BY: (Initials)

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

#54

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 | Lubbock, Texas 79424 | 800-378-1296 | 806-794-1296 | FAX 806-794-1298
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(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 14, 2013

Work Order: 13060508

Project Name: Apache H Corrigan Battery AD, NM
Project Number: Apache H Corrigan Battery AD, 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
331032	6 pt. Comp. outside Facility	soil	2013-06-03	11:00	2013-06-05
331033	Imported Caliche	soil	2013-06-03	12:25	2013-06-05

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.

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

Report Contents

Case Narrative

Samples for project Apache H Corrigan Battery AD, NM were received by TraceAnalysis, Inc. on 2013-06-05 and assigned to work order 13060508. Samples for work order 13060508 were received intact at a temperature of 2.1 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	86466	2013-06-06 at 08:00	102056	2013-06-06 at 12:00
TPH DRO - NEW	S 8015 D	86642	2013-06-12 at 14:30	102265	2013-06-12 at 21:30
TPH GRO	S 8015 D	86577	2013-06-11 at 15:03	102190	22013-06-11 at 15:03

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 13060508 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: 331032 - 6 pt. Comp. outside Facility

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	102056	Date Analyzed:	2013-06-06	Analyzed By:	GS
Prep Batch:	86466	Sample Preparation:	2013-06-06	Prepared By:	GS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**63.7**	mg/Kg	1	5.00

Sample: 331032 - 6 pt. Comp. outside Facility

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	102265	Date Analyzed:	2013-06-12	Analyzed By:	CM
Prep Batch:	86642	Sample Preparation:	2013-06-12	Prepared By:	DS

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			104	mg/Kg	1	100	104	70 - 130

Sample: 331032 - 6 pt. Comp. outside Facility

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	102190	Date Analyzed:	22013-06-11	Analyzed By:	JS
Prep Batch:	86577	Sample Preparation:	2013-06-11	Prepared By:	JS

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.27	mg/Kg	1	2.00	114	69.6 - 124

continued ...

sample continued ...

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)			2.35	mg/Kg	1	2.00	118	77.7 - 120

Sample: 331033 - Imported Caliche

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	102056	Date Analyzed:	2013-06-06	Analyzed By:	GS
Prep Batch:	86466	Sample Preparation:	2013-06-06	Prepared By:	GS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**73.5**	mg/Kg	1	5.00

Method Blanks

Method Blank (1) QC Batch: 102056

QC Batch: 102056 | Date Analyzed: 2013-06-06 | Analyzed By: GS
Prep Batch: 86466 | QC Preparation: 2013-06-06 | Prepared By: GS

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.05	mg/Kg	5

Method Blank (1) QC Batch: 102190

QC Batch: 102190 | Date Analyzed: 22013-06-11 | Analyzed By: JS
Prep Batch: 86577 | QC Preparation: 2013-06-11 | Prepared By: JS

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)			2.00	mg/Kg	1	2.00	100	69.6 - 124
4-Bromofluorobenzene (4-BFB)			1.98	mg/Kg	1	2.00	99	77.7 - 120

Method Blank (1) QC Batch: 102265

QC Batch: 102265 | Date Analyzed: 2013-06-12 | Analyzed By: CM
Prep Batch: 86642 | QC Preparation: 2013-06-12 | Prepared By: CM

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<5.22	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			101	mg/Kg	1	100	101	70 - 130

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 102190
Prep Batch: 86577

Date Analyzed: 22013-06-11
QC Preparation: 2013-06-11

Analyzed By: JS
Prepared By: JS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	15.6	mg/Kg	1	20.0	<0.230	78	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	16.2	mg/Kg	1	20.0	<0.230	81	66.9 - 120	4	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)	1.85	1.86	mg/Kg	1	2.00	92	93	69.6 - 124
4-Bromofluorobenzene (4-BFB)	2.01	2.07	mg/Kg	1	2.00	100	104	77.7 - 120

Laboratory Control Spike (LCS-1)

QC Batch: 102265
Prep Batch: 86642

Date Analyzed: 2013-06-12
QC Preparation: 2013-06-12

Analyzed By: CM
Prepared By: CM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	312	mg/Kg	1	250	<5.22	125	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	324	mg/Kg	1	250	<5.22	130	70 - 130	4	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	95.2	99.9	mg/Kg	1	100	95	100	70 - 130

Matrix Spike (MS-1) Spiked Sample: 331033

QC Batch: 102056 | Date Analyzed: 2013-06-06 | Analyzed By: GS
Prep Batch: 86466 | QC Preparation: 2013-06-06 | Prepared By: GS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			534	mg/Kg	1	500	73.5	92	63.6 - 131

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
Chloride			529	mg/Kg	1	500	73.5	91	63.6 - 131	1	20

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

Matrix Spike (MS-1) Spiked Sample: 331472

QC Batch: 102190 | Date Analyzed: 22013-06-11 | Analyzed By: JS
Prep Batch: 86577 | QC Preparation: 2013-06-11 | Prepared By: JS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	18.4	mg/Kg	1	20.0	0.278	91	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	18.0	mg/Kg	1	20.0	0.278	89	38.8 - 120	2	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)	2.13	2.00	mg/Kg	1	2	106	100	69.6 - 124
4-Bromofluorobenzene (4-BFB)	2.37	2.29	mg/Kg	1	2	118	114	77.7 - 120

Matrix Spike (MS-1) Spiked Sample: 331032

QC Batch: 102265 | Date Analyzed: 2013-06-12 | Analyzed By: CM
Prep Batch: 86642 | QC Preparation: 2013-06-12 | Prepared By: CM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	292	mg/Kg	1	250	88.1	82	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	294	mg/Kg	1	250	88.1	82	70 - 130	1	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	98.4	98.2	mg/Kg	1	100	98	98	70 - 130

Calibration Standards

Standard (ICV-1)

QC Batch: 102056 Date Analyzed: 2013-06-06 Analyzed By: GS

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.0	99	85 - 115	2013-06-06

Standard (CCV-1)

QC Batch: 102056 Date Analyzed: 2013-06-06 Analyzed By: GS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	101	101	85 - 115	2013-06-06

Standard (CCV-1)

QC Batch: 102190 Date Analyzed: 22013-06-11 Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.996	100	80 - 120	22013-06-11

Standard (CCV-2)

QC Batch: 102190 Date Analyzed: 22013-06-11 Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.975	98	80 - 120	22013-06-11

Standard (CCV-3)

QC Batch: 102190 Date Analyzed: 22013-06-11 Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.941	94	80 - 120	22013-06-11

Standard (CCV-1)

QC Batch: 102265 Date Analyzed: 2013-06-12 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	244	98	80 - 120	2013-06-12

Standard (CCV-2)

QC Batch: 102265 Date Analyzed: 2013-06-12 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	239	96	80 - 120	2013-06-12

Standard (CCV-3)

QC Batch: 102265 Date Analyzed: 2013-06-12 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	235	94	80 - 120	2013-06-12

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

Attachments

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

LAB Order ID # 13060508 Page 1 of 1

TraceAnalysis, Inc.

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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: S. Flemings
E-mail:
Invoice to: (If different from above)
Project #:
Project Name:
Project Location (including state): H Corrigan Battery AD, NM
Sampler Signature: [signature]

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
331032	Opt. Comp out side facility	1			✓							✓		6-3-13	11:00				✓														✓			
033	Imported Caliche	1			✓							✓		6-3-13	12:25																		✓			

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	Temp
[signature]				[signature]		6-4-13		INST ___ °C OBS ___ °C COR ___ °C
				PES	BFL	6-4-13	9:20	INST ___ °C OBS ___ °C COR ___ °C
				Brittani Ritchenson		6/5	9:00	INST 1R3 OBS 1.8 °C COR 2.1 °C

LAB USE ONLY
Intact Y / N
Headspace Y / N / NA
Log-in-Review: MA

REMARKS:
Sbaker@rice-ecs.com
Hcorde@riceecs.com
Lweinheimer@rice-ecs.com
Jkamplain@rice-ecs.com

- [ ] Dry Weight Basis Required
- [-] TRRP Report Required
- [ ] Check If Special Reporting Limits Are Needed

Carrier # LS 2Q004984

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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 24, 2013

Work Order: 13060727

Project Name: Apache H Corrigan Battery AD, NM
Project Number: Apache H Corrigan Battery AD, 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
331476	Southeast Corner Surface	soil	2013-06-03	12:00	2013-06-07
331477	Southeast Corner @ 2'	soil	2013-06-03	12:05	2013-06-07
331478	Southeast Corner @ 2.5'	soil	2013-06-03	12:10	2013-06-07

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.

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

Report Contents

Case Narrative

Samples for project Apache H Corrigan Battery AD, NM were received by TraceAnalysis, Inc. on 2013-06-07 and assigned to work order 13060727. Samples for work order 13060727 were received intact at a temperature of 6.6 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	86577	2013-06-11 at 15:03	102189	22013-06-11 at 15:03
Chloride (Titration)	SM 4500-Cl B	86871	2013-06-21 at 10:00	102552	2013-06-24 at 09:00
TPH DRO - NEW	S 8015 D	86642	2013-06-12 at 14:30	102265	2013-06-12 at 21:30
TPH DRO - NEW	S 8015 D	86754	2013-06-17 at 16:00	102417	2013-06-18 at 22:30
TPH GRO	S 8015 D	86577	2013-06-11 at 15:03	102190	22013-06-11 at 15:03

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 13060727 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: 331476 - Southeast Corner Surface

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	102552	Date Analyzed:	2013-06-24	Analyzed By:	GS
Prep Batch:	86871	Sample Preparation:	2013-06-21	Prepared By:	GS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**624**	mg/Kg	1	5.00

Sample: 331476 - Southeast Corner Surface

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	102265	Date Analyzed:	2013-06-12	Analyzed By:	CM
Prep Batch:	86642	Sample Preparation:	2013-06-12	Prepared By:	DS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**203**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			123	mg/Kg	1	100	123	70 - 130

Sample: 331476 - Southeast Corner Surface

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	102190	Date Analyzed:	22013-06-11	Analyzed By:	JS
Prep Batch:	86577	Sample Preparation:	2013-06-11	Prepared By:	JS

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.80	mg/Kg	1	2.00	90	69.6 - 124

continued ...

sample continued ...

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)			2.25	mg/Kg	1	2.00	112	77.7 - 120

Sample: 331477 - Southeast Corner @ 2'

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	102189	Date Analyzed:	22013-06-11	Analyzed By:	JS
Prep Batch:	86577	Sample Preparation:	2013-06-11	Prepared By:	JS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Benzene	U	1	<0.100	mg/Kg	5	0.0200
Toluene	U	1	<0.100	mg/Kg	5	0.0200
Ethylbenzene	U	1	<0.100	mg/Kg	5	0.0200
Xylene	U	1	<0.100	mg/Kg	5	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.70	mg/Kg	5	2.00	85	69.6 - 120
4-Bromofluorobenzene (4-BFB)			2.18	mg/Kg	5	2.00	109	69.2 - 120

Sample: 331477 - Southeast Corner @ 2'

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	102552	Date Analyzed:	2013-06-24	Analyzed By:	GS
Prep Batch:	86871	Sample Preparation:	2013-06-21	Prepared By:	GS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**172**	mg/Kg	5	5.00

Sample: 331477 - Southeast Corner @ 2'

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	102417	Date Analyzed:	2013-06-18	Analyzed By:	DS
Prep Batch:	86754	Sample Preparation:	2013-06-17	Prepared By:	DS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**1350**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			231	mg/Kg	1	100	231	35.2 - 240

Sample: 331477 - Southeast Corner @ 2'

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	102190	Date Analyzed:	22013-06-11	Analyzed By:	JS
Prep Batch:	86577	Sample Preparation:	2013-06-11	Prepared By:	JS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO [2]		1	<20.0	mg/Kg	5	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.61	mg/Kg	5	2.00	80	69.6 - 124
4-Bromofluorobenzene (4-BFB)			2.00	mg/Kg	5	2.00	100	77.7 - 120

Sample: 331478 - Southeast Corner @ 2.5'

Laboratory:	Lubbock				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	102189	Date Analyzed:	22013-06-11	Analyzed By:	JS
Prep Batch:	86577	Sample Preparation:	2013-06-11	Prepared By:	JS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene [3]	U	1	<0.0400	mg/Kg	2	0.0200
Toluene	U	1	<0.0400	mg/Kg	2	0.0200
Ethylbenzene	U	1	<0.0400	mg/Kg	2	0.0200
Xylene	U	1	<0.0400	mg/Kg	2	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.82	mg/Kg	2	2.00	91	69.6 - 120
4-Bromofluorobenzene (4-BFB)			2.08	mg/Kg	2	2.00	104	69.2 - 120

Sample: 331478 - Southeast Corner @ 2.5'

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	102552	Date Analyzed:	2013-06-24	Analyzed By:	GS
Prep Batch:	86871	Sample Preparation:	2013-06-21	Prepared By:	GS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**98.0**	mg/Kg	1	5.00

Sample: 331478 - Southeast Corner @ 2.5'

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	102417	Date Analyzed:	2013-06-18	Analyzed By:	DS
Prep Batch:	86754	Sample Preparation:	2013-06-17	Prepared By:	DS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO		1	**377**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			158	mg/Kg	1	100	158	35.2 - 240

Sample: 331478 - Southeast Corner @ 2.5'

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	102190	Date Analyzed:	22013-06-11	Analyzed By:	JS
Prep Batch:	86577	Sample Preparation:	2013-06-11	Prepared By:	JS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	4	1	<8.00	mg/Kg	2	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.81	mg/Kg	2	2.00	90	69.6 - 124
4-Bromofluorobenzene (4-BFB)			2.12	mg/Kg	2	2.00	106	77.7 - 120

Method Blanks

Method Blank (1) QC Batch: 102189

QC Batch: 102189 Date Analyzed: 22013-06-11 Analyzed By: JS
Prep Batch: 86577 QC Preparation: 2013-06-11 Prepared By: JS

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00473	mg/Kg	0.02
Toluene		1	<0.00416	mg/Kg	0.02
Ethylbenzene		1	<0.00511	mg/Kg	0.02
Xylene		1	0.00930	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.95	mg/Kg	1	2.00	98	69.6 - 120
4-Bromofluorobenzene (4-BFB)			2.05	mg/Kg	1	2.00	102	69.2 - 120

Method Blank (1) QC Batch: 102190

QC Batch: 102190 Date Analyzed: 22013-06-11 Analyzed By: JS
Prep Batch: 86577 QC Preparation: 2013-06-11 Prepared By: JS

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)			2.00	mg/Kg	1	2.00	100	69.6 - 124
4-Bromofluorobenzene (4-BFB)			1.98	mg/Kg	1	2.00	99	77.7 - 120

Method Blank (1) QC Batch: 102265

QC Batch: 102265 Date Analyzed: 2013-06-12 Analyzed By: CM
Prep Batch: 86642 QC Preparation: 2013-06-12 Prepared By: CM

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<5.22	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			101	mg/Kg	1	100	101	70 - 130

Method Blank (1) QC Batch: 102417

QC Batch: 102417 Date Analyzed: 2013-06-18 Analyzed By: DS
Prep Batch: 86754 QC Preparation: 2013-06-17 Prepared By: DS

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<15.3	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			105	mg/Kg	1	100	105	35.2 - 240

Method Blank (1) QC Batch: 102552

QC Batch: 102552 Date Analyzed: 2013-06-24 Analyzed By: GS
Prep Batch: 86871 QC Preparation: 2013-06-21 Prepared By: GS

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.05	mg/Kg	5

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 102189
Prep Batch: 86577

Date Analyzed: 22013-06-11
QC Preparation: 2013-06-11

Analyzed By: JS
Prepared By: JS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.90	mg/Kg	1	2.00	<0.00473	95	74.6 - 120
Toluene		1	1.98	mg/Kg	1	2.00	<0.00416	99	77.1 - 120
Ethylbenzene		1	2.10	mg/Kg	1	2.00	<0.00511	105	75 - 120
Xylene		1	6.22	mg/Kg	1	6.00	0.0093	104	77 - 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
Benzene		1	1.75	mg/Kg	1	2.00	<0.00473	88	74.6 - 120	8	20
Toluene		1	1.82	mg/Kg	1	2.00	<0.00416	91	77.1 - 120	8	20
Ethylbenzene		1	1.92	mg/Kg	1	2.00	<0.00511	96	75 - 120	9	20
Xylene		1	5.69	mg/Kg	1	6.00	0.0093	95	77 - 120	9	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)	2.09	1.91	mg/Kg	1	2.00	104	96	69.6 - 120
4-Bromofluorobenzene (4-BFB)	2.20	2.02	mg/Kg	1	2.00	110	101	69.2 - 120

Laboratory Control Spike (LCS-1)

QC Batch: 102190
Prep Batch: 86577

Date Analyzed: 22013-06-11
QC Preparation: 2013-06-11

Analyzed By: JS
Prepared By: JS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	15.6	mg/Kg	1	20.0	<0.230	78	66.9 - 120

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

continued ...

control spikes continued ...

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	16.2	mg/Kg	1	20.0	<0.230	81	66.9 - 120	4	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)	1.85	1.86	mg/Kg	1	2.00	92	93	69.6 - 124
4-Bromofluorobenzene (4-BFB)	2.01	2.07	mg/Kg	1	2.00	100	104	77.7 - 120

Laboratory Control Spike (LCS-1)

QC Batch: 102265
Prep Batch: 86642

Date Analyzed: 2013-06-12
QC Preparation: 2013-06-12

Analyzed By: CM
Prepared By: CM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	312	mg/Kg	1	250	<5.22	125	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	324	mg/Kg	1	250	<5.22	130	70 - 130	4	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	95.2	99.9	mg/Kg	1	100	95	100	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 102417
Prep Batch: 86754

Date Analyzed: 2013-06-18
QC Preparation: 2013-06-17

Analyzed By: DS
Prepared By: DS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	250	mg/Kg	1	250	<15.3	100	64.8 - 138

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	245	mg/Kg	1	250	<15.3	98	64.8 - 138	2	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	98.5	97.0	mg/Kg	1	100	98	97	35.2 - 240

Laboratory Control Spike (LCS-1)

QC Batch: 102552
Prep Batch: 86871

Date Analyzed: 2013-06-24
QC Preparation: 2013-06-21

Analyzed By: GS
Prepared By: GS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			100	mg/Kg	1	100	<3.05	100	85 - 115

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
Chloride			100	mg/Kg	1	100	<3.05	100	85 - 115	0	20

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

Matrix Spike (xMS-1) Spiked Sample: 331472

QC Batch: 102189
Prep Batch: 86577

Date Analyzed: 22013-06-11
QC Preparation: 2013-06-11

Analyzed By: JS
Prepared By: JS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.88	mg/Kg	1	2.00	<0.00473	94	68.8 - 120
Toluene		1	1.98	mg/Kg	1	2.00	0.0063	99	71.8 - 122
Ethylbenzene		1	2.14	mg/Kg	1	2.00	0.0058	107	75 - 130
Xylene		1	6.31	mg/Kg	1	6.00	0.0205	105	75.4 - 129

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

continued ...

matrix spikes continued ...

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.97	mg/Kg	1	2.00	<0.00473	98	68.8 - 120	5	20
Toluene		1	2.05	mg/Kg	1	2.00	0.0063	102	71.8 - 122	4	20
Ethylbenzene		1	2.17	mg/Kg	1	2.00	0.0058	108	75 - 130	1	20
Xylene		1	6.41	mg/Kg	1	6.00	0.0205	106	75.4 - 129	2	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)	1.99	2.11	mg/Kg	1	2	100	106	69.6 - 120
4-Bromofluorobenzene (4-BFB)	2.20	2.29	mg/Kg	1	2	110	114	69.2 - 120

Matrix Spike (MS-1) Spiked Sample: 331472

QC Batch: 102190
Prep Batch: 86577

Date Analyzed: 22013-06-11
QC Preparation: 2013-06-11

Analyzed By: JS
Prepared By: JS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	18.4	mg/Kg	1	20.0	0.278	91	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	18.0	mg/Kg	1	20.0	0.278	89	38.8 - 120	2	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)	2.13	2.00	mg/Kg	1	2	106	100	69.6 - 124
4-Bromofluorobenzene (4-BFB)	2.37	2.29	mg/Kg	1	2	118	114	77.7 - 120

Matrix Spike (MS-1) Spiked Sample: 331032

QC Batch: 102265
Prep Batch: 86642

Date Analyzed: 2013-06-12
QC Preparation: 2013-06-12

Analyzed By: CM
Prepared By: CM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	292	mg/Kg	1	250	88.1	82	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	294	mg/Kg	1	250	88.1	82	70 - 130	1	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	98.4	98.2	mg/Kg	1	100	98	98	70 - 130

Matrix Spike (MS-1) Spiked Sample: 331478

QC Batch: 102417
Prep Batch: 86754

Date Analyzed: 2013-06-18
QC Preparation: 2013-06-17

Analyzed By: DS
Prepared By: DS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	789	mg/Kg	1	250	377	165	15.5 - 174

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	707	mg/Kg	1	250	377	132	15.5 - 174	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	166	189	mg/Kg	1	100	166	189	35.2 - 240

Matrix Spike (MS-1) Spiked Sample: 331478

QC Batch: 102552
Prep Batch: 86871

Date Analyzed: 2013-06-24
QC Preparation: 2013-06-21

Analyzed By: GS
Prepared By: GS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			491	mg/Kg	5	500	98	79	63.6 - 131

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
Chloride			467	mg/Kg	5	500	98	74	63.6 - 131	5	20

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

Calibration Standards

Standard (CCV-1)

QC Batch: 102189 Date Analyzed: 22013-06-11 Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.100	100	80 - 120	22013-06-11
Toluene		1	mg/kg	0.100	0.0958	96	80 - 120	22013-06-11
Ethylbenzene		1	mg/kg	0.100	0.0974	97	80 - 120	22013-06-11
Xylene		1	mg/kg	0.300	0.287	96	80 - 120	22013-06-11

Standard (CCV-2)

QC Batch: 102189 Date Analyzed: 22013-06-11 Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.104	104	80 - 120	22013-06-11
Toluene		1	mg/kg	0.100	0.101	101	80 - 120	22013-06-11
Ethylbenzene		1	mg/kg	0.100	0.101	101	80 - 120	22013-06-11
Xylene		1	mg/kg	0.300	0.295	98	80 - 120	22013-06-11

Standard (CCV-3)

QC Batch: 102189 Date Analyzed: 22013-06-11 Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0976	98	80 - 120	22013-06-11
Toluene		1	mg/kg	0.100	0.0940	94	80 - 120	22013-06-11
Ethylbenzene		1	mg/kg	0.100	0.0947	95	80 - 120	22013-06-11
Xylene		1	mg/kg	0.300	0.277	92	80 - 120	22013-06-11

Standard (CCV-1)

QC Batch: 102190 Date Analyzed: 22013-06-11 Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.996	100	80 - 120	22013-06-11

Standard (CCV-2)

QC Batch: 102190 Date Analyzed: 22013-06-11 Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.975	98	80 - 120	22013-06-11

Standard (CCV-3)

QC Batch: 102190 Date Analyzed: 22013-06-11 Analyzed By: JS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.941	94	80 - 120	22013-06-11

Standard (CCV-1)

QC Batch: 102265 Date Analyzed: 2013-06-12 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	244	98	80 - 120	2013-06-12

Standard (CCV-2)

QC Batch: 102265 Date Analyzed: 2013-06-12 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	239	96	80 - 120	2013-06-12

Standard (CCV-3)

QC Batch: 102265 Date Analyzed: 2013-06-12 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	235	94	80 - 120	2013-06-12

Standard (CCV-1)

QC Batch: 102417 Date Analyzed: 2013-06-18 Analyzed By: DS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	223	89	80 - 120	2013-06-18

Standard (CCV-2)

QC Batch: 102417 Date Analyzed: 2013-06-18 Analyzed By: DS

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	2013-06-18

Standard (ICV-1)

QC Batch: 102552 Date Analyzed: 2013-06-24 Analyzed By: GS

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2013-06-24

Standard (CCV-1)

QC Batch: 102552 Date Analyzed: 2013-06-24 Analyzed By: GS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2013-06-24

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 hydrocarbons.
2 Dilution due to turbidity.
3 Sample dilution due to hydrocarbons.
4 Dilution due to turbidity.

Attachments

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

LAB Order ID # 13060727 Page _____ of _____

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
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200 East Sunset Rd., Suite E
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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: S. Flemings **E-mail:**

Invoice to: (If different from above)

Project #: **Project Name:**

Project Location (including state): # Corrigan Bttry **Sampler Signature:** J Kamplain

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	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
33476	South East Bttry - Surf	1			✓							✓		5-31-13	12:00				✓														✓							
477	" " " - 02'	1			✓							✓		6-3-13	2:05		✓		✓														✓							
478	" " " - 02.5'	1			✓							✓		6-3-13	2:10		✓		✓														✓							

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	INST / OBS / COR
J Kamplain						6-5-13	2:00	°C
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	INST / OBS / COR
				HO	DTC	6-5-13	2:00	°C
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	INST / OBS / COR
				Brittani Ritterson		6/6/13	9:30	°C

LAB USE ONLY
Inland Y / N
Headspace Y / N / NA
Log-in-Review

REMARKS:

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

Carrier # 1Z 2900 4983

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

ORIGINAL COPY

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: August 20, 2013

Work Order: 13080506

Project Location: Apache H. Corrigan Lease Battery
Project Number: Apache H. Corrigan Lease Battery

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
337506	Center Point Surface	soil	2013-07-31	13:50	2013-08-01
337507	Center Point @ 3.5'	soil	2013-07-31	13:25	2013-08-01
337508	Center Point @ 4'	soil	2013-07-31	13:48	2013-08-01

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

Report Contents

Case Narrative

Samples for project were received by TraceAnalysis, Inc. on 2013-08-01 and assigned to work order 13080506. Samples for work order 13080506 were received intact at a temperature of 2.9 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (Titration)	SM 4500-Cl B	88266	2013-08-19 at 11:00	104172	2013-08-19 at 16:00
TPH DRO - NEW	S 8015 D	87920	2013-08-06 at 12:00	103766	2013-08-07 at 10:53
TPH GRO	S 8015 D	87938	2013-08-06 at 14:21	103788	2013-08-06 at 14:21

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 13080506 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: 337506 - Center Point Surface

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104172	Date Analyzed:	2013-08-19	Analyzed By:	GS
Prep Batch:	88266	Sample Preparation:	2013-08-19	Prepared By:	GS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**726**	mg/Kg	1	5.00

Sample: 337506 - Center Point Surface

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	103766	Date Analyzed:	2013-08-07	Analyzed By:	CM
Prep Batch:	87920	Sample Preparation:	2013-08-06	Prepared By:	CM

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO		1	**1470**	mg/Kg	10	50.0

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		232	mg/Kg	10	100	232	70 - 130

Sample: 337506 - Center Point Surface

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	103788	Date Analyzed:	2013-08-06	Analyzed By:	MT
Prep Batch:	87938	Sample Preparation:	2013-08-06	Prepared By:	MT

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.71	mg/Kg	20	2.00	86	69.6 - 124

continued ...

sample continued ...

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)			1.77	mg/Kg	20	2.00	88	77.7 - 120

Sample: 337507 - Center Point @ 3.5'

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104172	Date Analyzed:	2013-08-19	Analyzed By:	GS
Prep Batch:	88266	Sample Preparation:	2013-08-19	Prepared By:	GS

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**126**	mg/Kg	1	5.00

Sample: 337507 - Center Point @ 3.5'

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	103766	Date Analyzed:	2013-08-07	Analyzed By:	CM
Prep Batch:	87920	Sample Preparation:	2013-08-06	Prepared By:	CM

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			105	mg/Kg	1	100	105	70 - 130

Sample: 337507 - Center Point @ 3.5'

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	103788	Date Analyzed:	2013-08-06	Analyzed By:	MT
Prep Batch:	87938	Sample Preparation:	2013-08-06	Prepared By:	MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	Qr,Qs,U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.53	mg/Kg	1	2.00	76	69.6 - 124
4-Bromofluorobenzene (4-BFB)			2.12	mg/Kg	1	2.00	106	77.7 - 120

Sample: 337508 - Center Point @ 4'

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	104172	Date Analyzed:	2013-08-19	Analyzed By:	GS
Prep Batch:	88266	Sample Preparation:	2013-08-19	Prepared By:	GS

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride			**97.0**	mg/Kg	1	5.00

Sample: 337508 - Center Point @ 4'

Laboratory:	Lubbock				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	103766	Date Analyzed:	2013-08-07	Analyzed By:	CM
Prep Batch:	87920	Sample Preparation:	2013-08-06	Prepared By:	CM

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			106	mg/Kg	1	100	106	70 - 130

Sample: 337508 - Center Point @ 4'

Laboratory:	Lubbock				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	103788	Date Analyzed:	2013-08-06	Analyzed By:	MT
Prep Batch:	87938	Sample Preparation:	2013-08-06	Prepared By:	MT

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	Qr,Qs,U	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.63	mg/Kg	1	2.00	82	69.6 - 124
4-Bromofluorobenzene (4-BFB)			2.11	mg/Kg	1	2.00	106	77.7 - 120

Method Blanks

Method Blank (1) QC Batch: 103766

QC Batch: 103766 Date Analyzed: 2013-08-07 Analyzed By: CM
Prep Batch: 87920 QC Preparation: 2013-08-06 Prepared By: CM

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<5.22	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			114	mg/Kg	1	100	114	70 - 130

Method Blank (1) QC Batch: 103788

QC Batch: 103788 Date Analyzed: 2013-08-06 Analyzed By: MT
Prep Batch: 87938 QC Preparation: 2013-08-06 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)			1.97	mg/Kg	1	2.00	98	69.6 - 124
4-Bromofluorobenzene (4-BFB)			2.03	mg/Kg	1	2.00	102	77.7 - 120

Method Blank (1) QC Batch: 104172

QC Batch: 104172 Date Analyzed: 2013-08-19 Analyzed By: GS
Prep Batch: 88266 QC Preparation: 2013-08-19 Prepared By: GS

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.05	mg/Kg	5

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 103766 Date Analyzed: 2013-08-07 Analyzed By: CM
Prep Batch: 87920 QC Preparation: 2013-08-06 Prepared By: CM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	268	mg/Kg	1	250	<5.22	107	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	262	mg/Kg	1	250	<5.22	105	70 - 130	2	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	98.2	101	mg/Kg	1	100	98	101	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 103788 Date Analyzed: 2013-08-06 Analyzed By: MT
Prep Batch: 87938 QC Preparation: 2013-08-06 Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	15.5	mg/Kg	1	20.0	<0.230	78	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	16.8	mg/Kg	1	20.0	<0.230	84	66.9 - 120	8	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)	1.87	1.86	mg/Kg	1	2.00	94	93	69.6 - 124
4-Bromofluorobenzene (4-BFB)	2.14	2.12	mg/Kg	1	2.00	107	106	77.7 - 120

Laboratory Control Spike (LCS-1)

QC Batch: 104172 | Date Analyzed: 2013-08-19 | Analyzed By: GS
Prep Batch: 88266 | QC Preparation: 2013-08-19 | Prepared By: GS

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			101	mg/Kg	1	100	<3.05	101	85 - 115

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
Chloride			101	mg/Kg	1	100	<3.05	101	85 - 115	0	20

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

Matrix Spike (MS-1) Spiked Sample: 337508

QC Batch: 103766 | Date Analyzed: 2013-08-07 | Analyzed By: CM
Prep Batch: 87920 | QC Preparation: 2013-08-06 | Prepared By: CM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	249	mg/Kg	1	250	<5.22	100	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	253	mg/Kg	1	250	<5.22	101	70 - 130	2	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	104	106	mg/Kg	1	100	104	106	70 - 130

Matrix Spike (MS-1) Spiked Sample: 337579

QC Batch: 103788 | Date Analyzed: 2013-08-06 | Analyzed By: MT
Prep Batch: 87938 | QC Preparation: 2013-08-06 | Prepared By: MT

Param		F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	Qs	Qs	1	28.6	mg/Kg	5	20.0	65.8	-186	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	Qr,Qs	Qr,Qs	1	45.9	mg/Kg	5	20.0	65.8	-98	38.8 - 120	46	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)	Qsr	Qsr	0.704	1.79	mg/Kg	5	2	35	90	69.6 - 124
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	2.71	3.24	mg/Kg	5	2	136	162	77.7 - 120

Matrix Spike (MS-1) Spiked Sample: 337508

QC Batch: 104172 Date Analyzed: 2013-08-19 Analyzed By: GS
Prep Batch: 88266 QC Preparation: 2013-08-19 Prepared By: GS

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			605	mg/Kg	1	500	97	102	80 - 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
Chloride			610	mg/Kg	1	500	97	103	80 - 120	1	20

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

Calibration Standards

Standard (CCV-1)

QC Batch: 103766 Date Analyzed: 2013-08-07 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	267	107	80 - 120	2013-08-07

Standard (CCV-2)

QC Batch: 103766 Date Analyzed: 2013-08-07 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	262	105	80 - 120	2013-08-07

Standard (CCV-3)

QC Batch: 103766 Date Analyzed: 2013-08-07 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	282	113	80 - 120	2013-08-07

Standard (CCV-1)

QC Batch: 103788 Date Analyzed: 2013-08-06 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	0.976	98	80 - 120	2013-08-06

Standard (CCV-2)

QC Batch: 103788 Date Analyzed: 2013-08-06 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	0.977	98	80 - 120	2013-08-06

Standard (CCV-3)

QC Batch: 103788 Date Analyzed: 2013-08-06 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	0.915	92	80 - 120	2013-08-06

Standard (ICV-1)

QC Batch: 104172 Date Analyzed: 2013-08-19 Analyzed By: GS

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	102	102	85 - 115	2013-08-19

Standard (CCV-1)

QC Batch: 104172 Date Analyzed: 2013-08-19 Analyzed By: GS

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	98.0	98	85 - 115	2013-08-19

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 # 130805O6

Page 1 of 1

TraceAnalysis, Inc.

email: lab@traceanalysis.com

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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: Bruce Baker — E-mail: larry.baker@apachecorp.com

Invoice to: (If different from above)

Project #: — Project Name:

Project Location (including state): H Corrigan Lease Battery — Sampler Signature:

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	C, 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
337506	Center point Surface	1	4oz		✓							✓		7-31-13	1:50				✓														✓			
507	Center point @ 3.5'	1	4oz		✓							✓		7-31-13	1:25				✓														✓			
508	Center point @ 4'	1	4oz		✓							✓		7-31-13	1:48				✓														✓			

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
Karalyn Lewis	RECS	8-1-13			RECS	8-1-13		INST ___ OBS ___ COR ___
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
				RCS	BHL	8-1-13	12:40	INST ___ OBS ___ COR ___
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
				Brandi Ritchson		8-3-13	10:45	INST JR OBS 2.6 COR 2.9

LAB USE ONLY: Intact Y / N; Headspace Y / N; Log-In-Review

REMARKS: email results to larry.baker@apachecorp.com, jkamplain@rice-ecs.com, hconder@riceswd.com, lweinheimer@rice-ecs.com, klewis@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 # LS 20197635

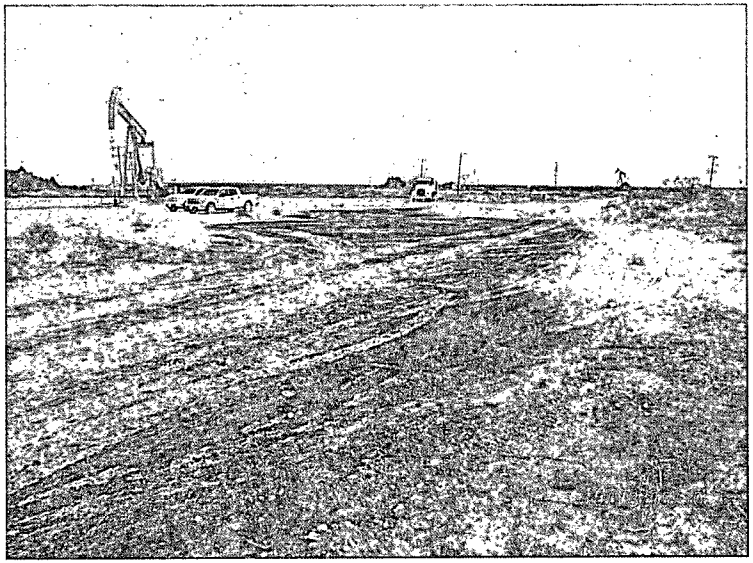
Appendix C

Photo Documentation

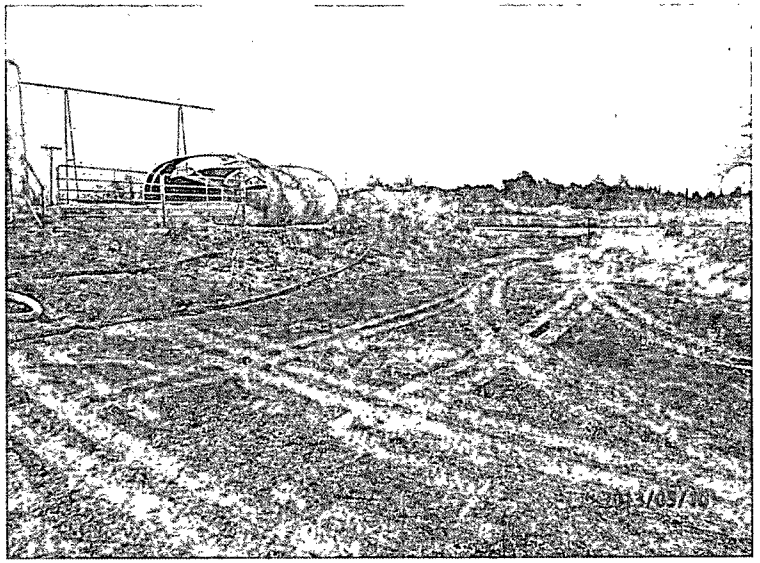
RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948 Hobbs, NM 88241
Phone 575.393.2967

Apache H Corrigan Battery AD

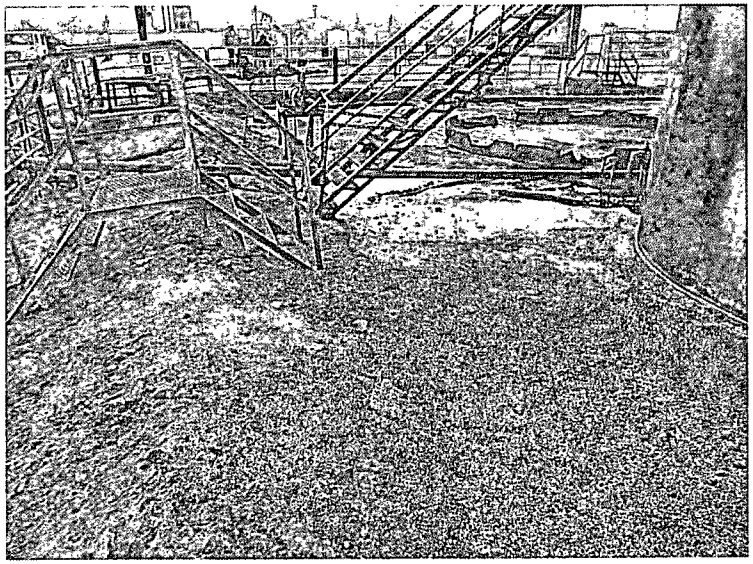
Unit Letter G, Section 4, T22S, R37E



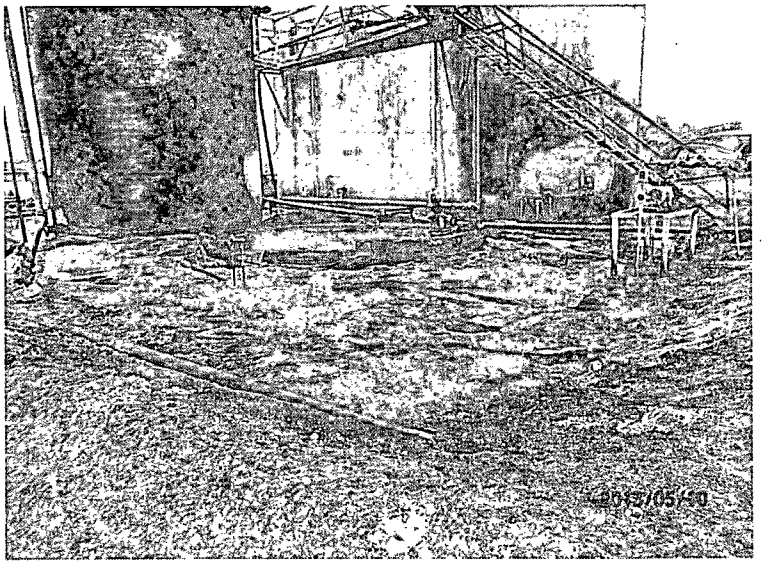
Initial release area, facing east 5/10/13



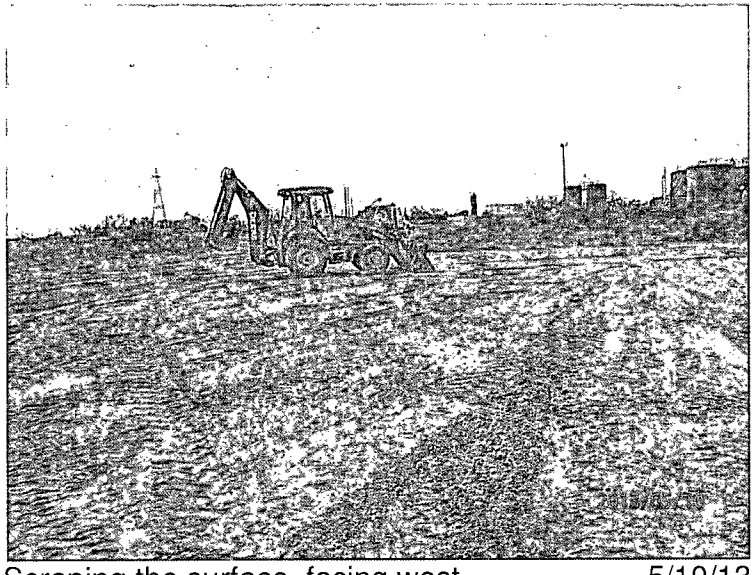
Initial release area, facing east 5/10/13



Initial release area, facing northwest 5/10/13

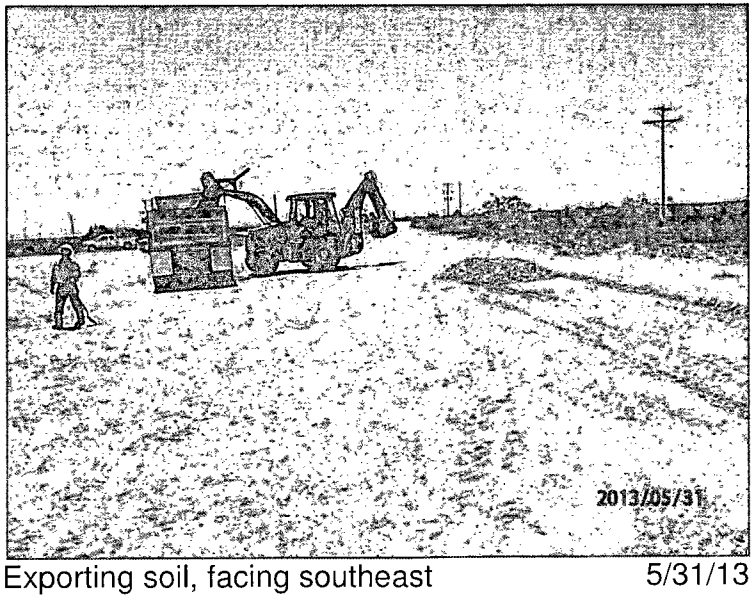


Initial release area, facing northeast 5/10/13

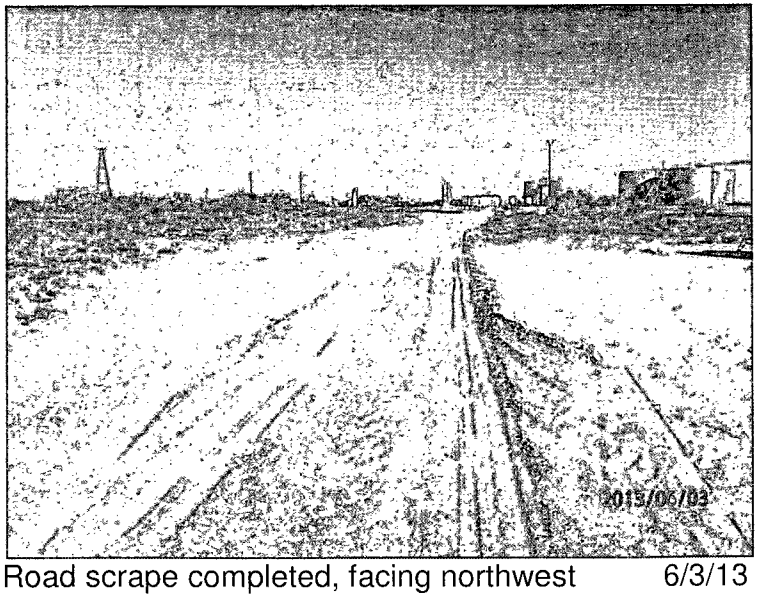


Scraping the surface, facing west 5/10/13

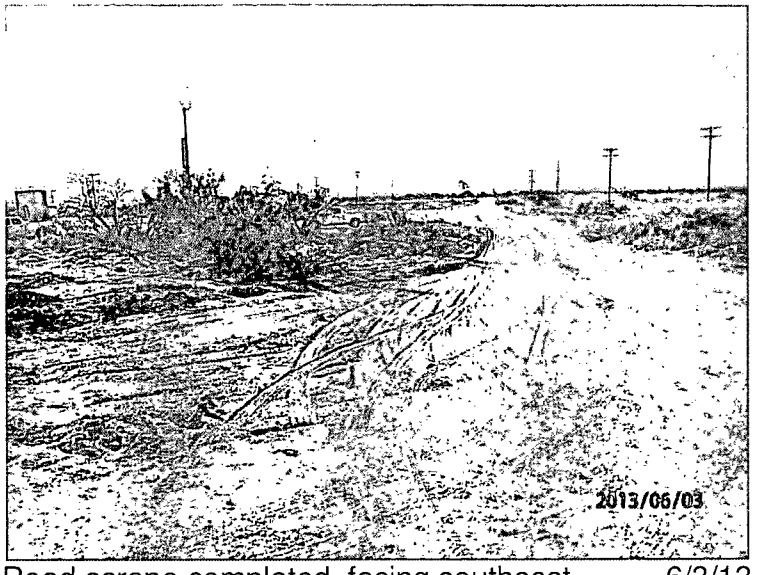
Excavating site, facing southeast 5/31/13



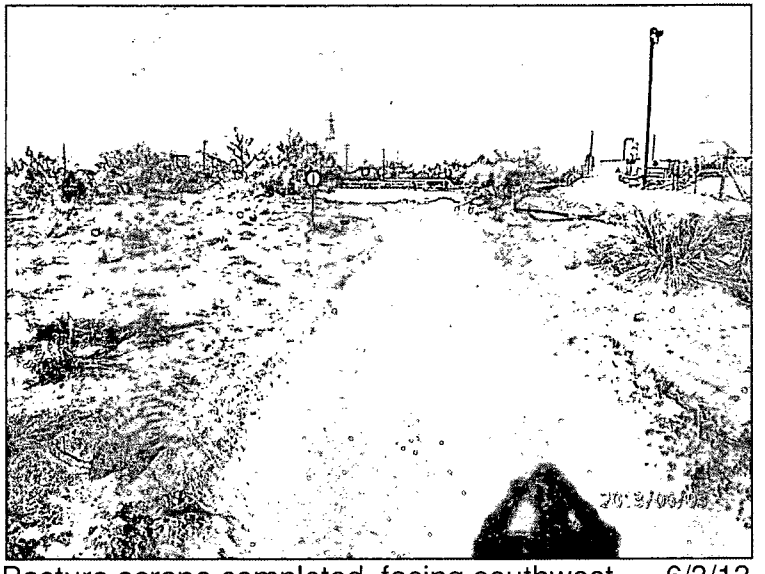
Exporting soil, facing southeast 5/31/13

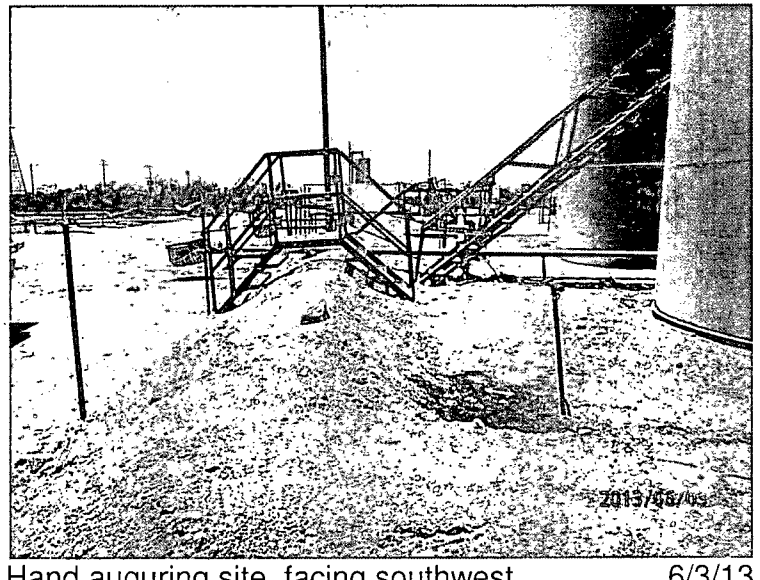


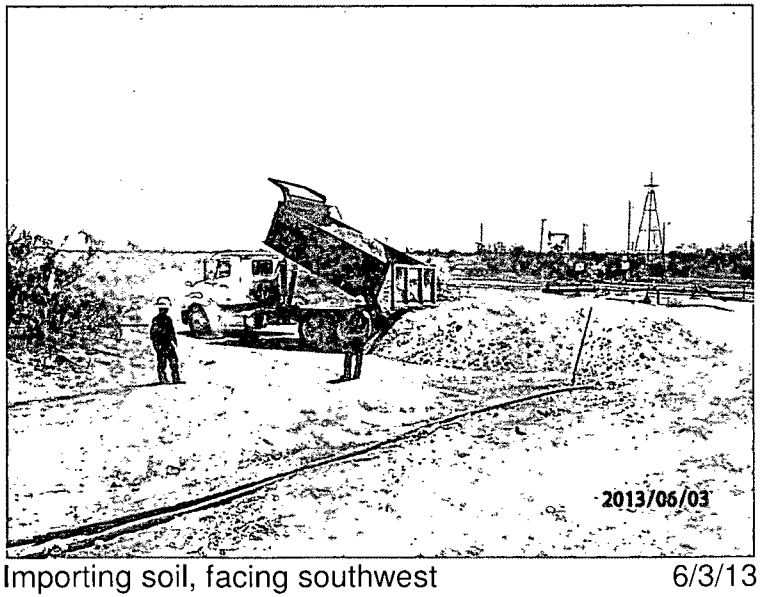
Road scrape completed, facing northwest 6/3/13



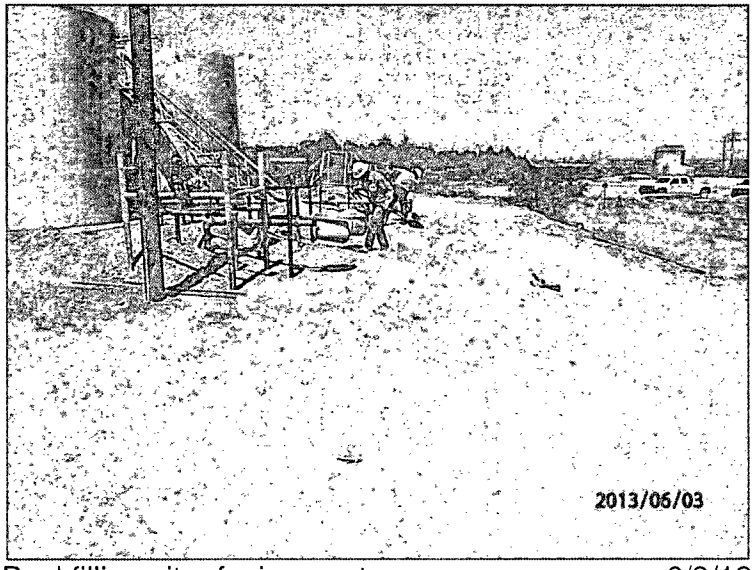
Road scrape completed, facing southeast 6/3/13


Pasture scrape completed, facing southwest 6/3/13

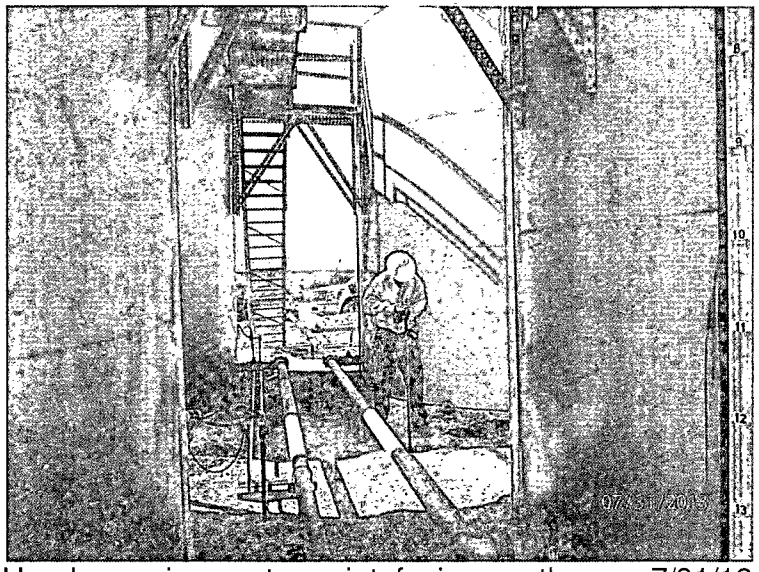

Hand auguring site, facing southwest 6/3/13



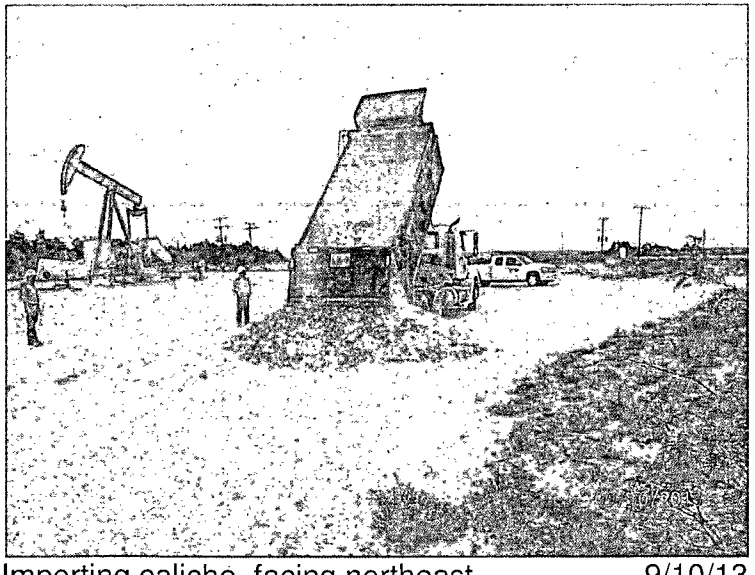
Importing soil, facing southwest 6/3/13



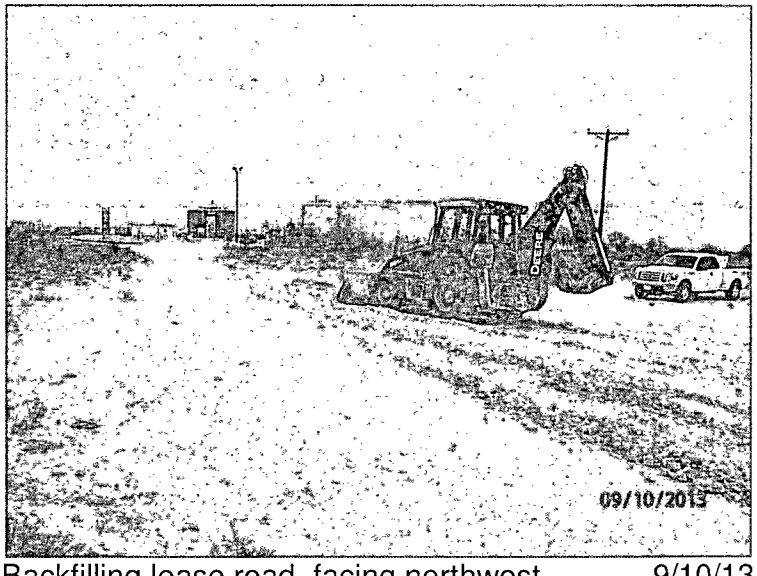
Backfilling site, facing east 6/3/13



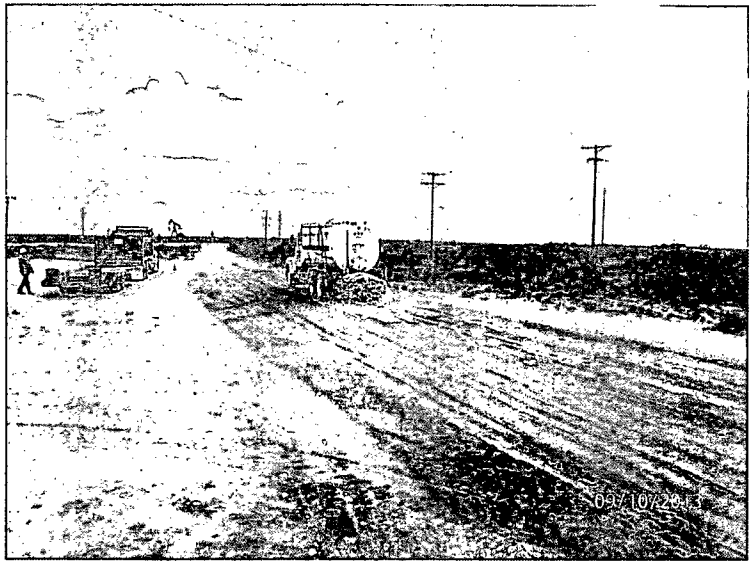
Hand auguring center point, facing south 7/31/13



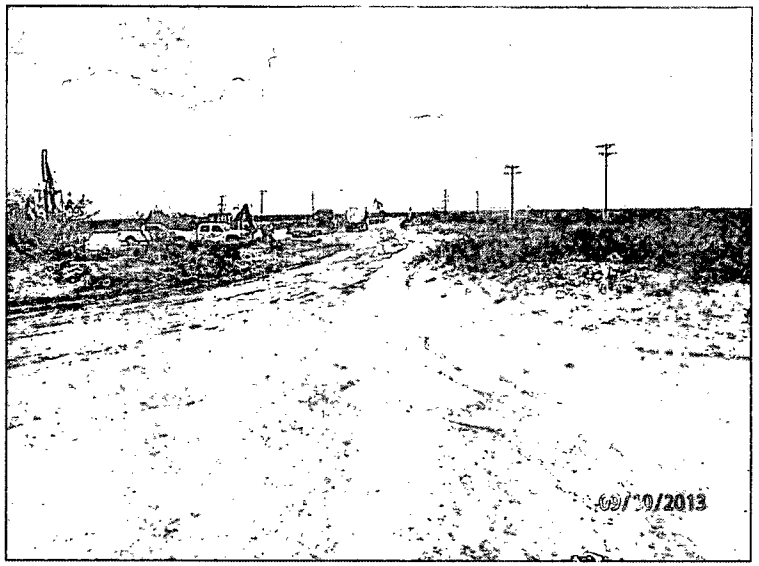
Importing caliche, facing northeast 9/10/13



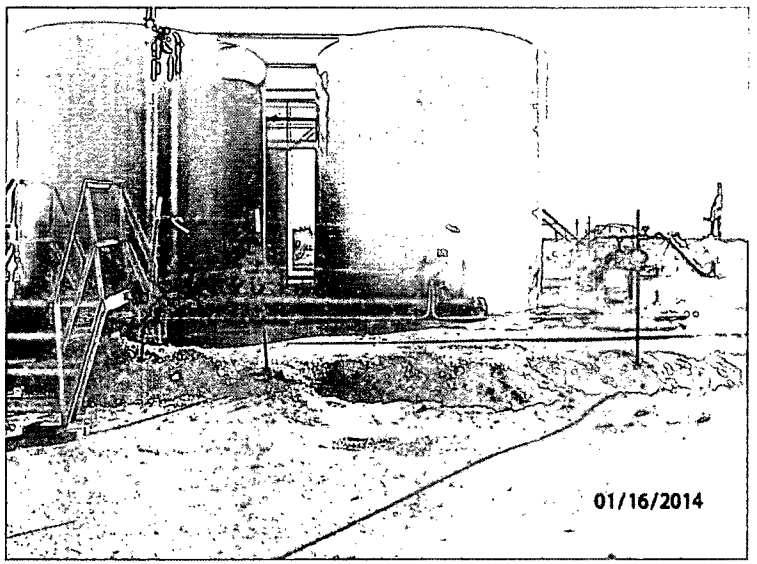
Backfilling lease road, facing northwest 9/10/13



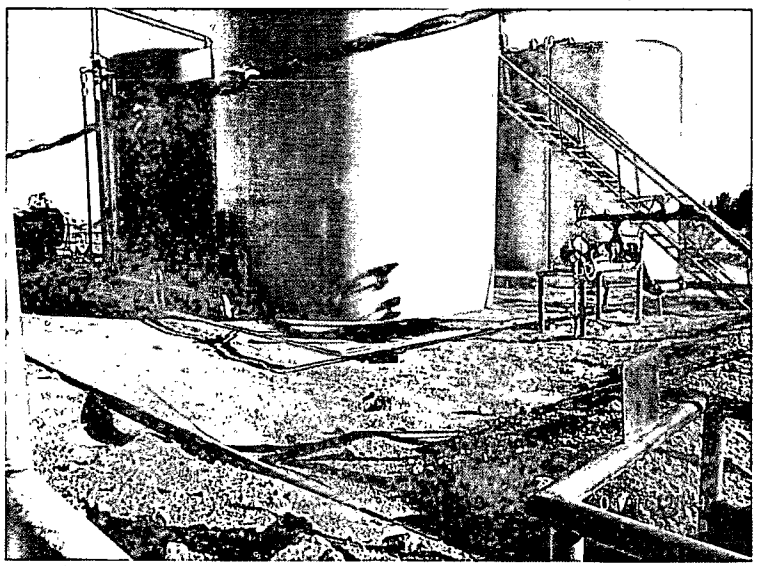
Watering lease road, facing east 9/10/13



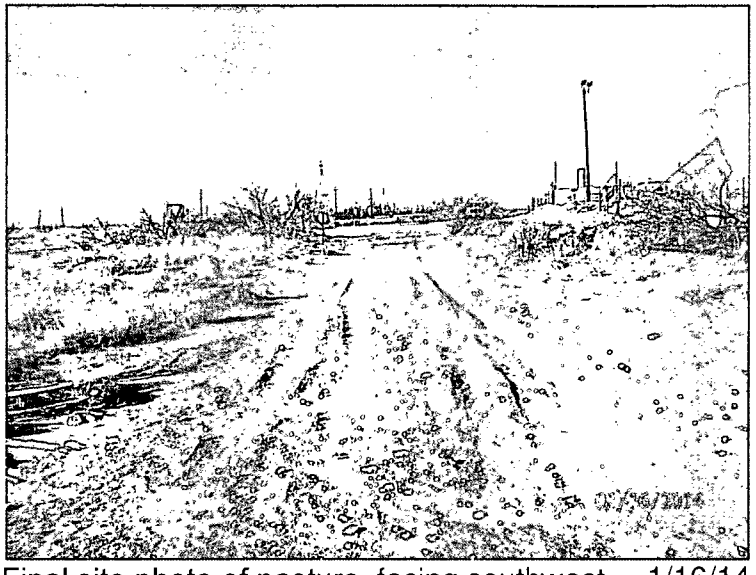
Lease road completed, facing southeast 9/10/13



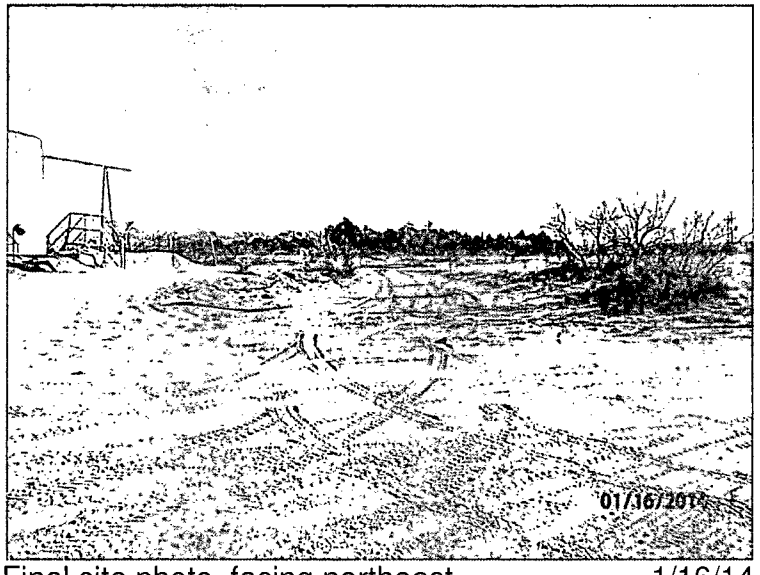
Final site photo, facing east 1/16/14



Final site photo, facing northeast 1/16/14



Final site photo of pasture, facing southwest 1/16/14



Final site photo, facing northeast 1/16/14