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

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: Aspen Operating Co. LLC	Contact: Mike Wilson
Address: 801 Cherry Street Suite 810 Unit 23 FORT WORTH ,TX 76102	Telephone No.: Office: 817-882-9063, ext.19
Facility Name: Aspen Gainer 1	Facility Type: oil well

Surface Owner: Garth A. Coombes	Mineral Owner: New Mexico State Land Office	Lease No.: 1

API # 30-025-34201

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
D	22	10S	36E	1294'	NORTH	39'	WEST	LEA

Latitude: 32.4363059850746 **Longitude:** -103.252897686452

NATURE OF RELEASE

Type of Release: produce water & oil	Volume of Release: Unknown	Volume Recovered: 0
Source of Release: tank overflow due to mechanical failure at battery	Date and Hour of Occurrence: 1-17-13 / unknown	Date and Hour of Discovery: 1-17-13 / unknown
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Geoffrey Leking	
By Whom? Roy R. Rascon Earth Technologies of New Mexico Inc.	Date and Hour: 1-19-133:54pm	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

GW @ 70'

Describe Cause of Problem and Remedial Action Taken.* overflow of tanks into tank berm area, overflow from tank berm area into pasture south of tank battery. Stop overflow, begin immediate cleanup of surrounding area within berm area, mix up solidify area in pasture area.

Describe Area Affected and Cleanup Action Taken.* area within tank battery berm, with overflow breaking berm on east side and flowing out to south of battery and traveling path along old reclaimed road area and fingering to the west. ETNM contracted by Mike Wilson to preform EM38 survey and sample leak area. Clean up action will be determined after ETNM submits approved protocol by Aspen to NMOCD.

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: Mike Wilson

Printed Name: Michael Wilson

Title: Production Manager

E-mail Address: mwilson@aspen-oil.com

Date: 1-22-13 Phone: 817-882-9063

OIL CONSERVATION DIVISION

Approved by District Supervisor: Geoffrey Leking

Environmental Specialist

Approval Date: 2/1/13 Expiration Date: 4/1/13

Conditions of Approval: FULLY DELINEATE THE RELEASE HORIZOTALLY AND VERTICALLY AND REMEDIATE PER RRALs, SUBMIT FINAL C-141 BY 4/1/13

Attached ☐ IRP-2-13-2903

* Attach Additional Sheets If Necessary

MAR 06 2013

District I
1625 N. French Dr., Hobbs, NM 88240
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Facility Name: Aspen Gainer 1	Facility Type: oil well

Surface Owner: Garth A. Coombes	Mineral Owner: New Mexico State Land Office	Lease No.: 1

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By Whom? Roy R. Rascon Earth Technologies of New Mexico Inc.	Date and Hour: 1-19-133:54pm	
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Signature: Mike Wilson

Printed Name: Michael Wilson

Title: Production Manager

E-mail Address: mwilson@aspen-oil.com

Date: 1-22-13 Phone: 817-882-9063

OIL CONSERVATION DIVISION

Approved by District Supervisor: Geoffrey Leking
Environmental Specialist

Approval Date: 2/1/13 Expiration Date: 4/1/13

Conditions of Approval: FULLY DELINEATE THE RELEASE HORIZOTALLY AND VERTICALLY AND REMEDIATE PER RRALS, SUBMIT FINAL C-141 BY 4/1/13

Attached ☐ IRP-2-13-2903

* Attach Additional Sheets If Necessary

ASPEN GAINER #1

IRP-1998 — LJW — APPVD 11/7/8 EXPIRATION 12/29/8
300 BPW ON 10/29/08 250 BPW RECOVERED

IRP-9-10-2291 — 280 BPW 320 BPW REC
7/30/09 — 9/7/9 EXP 11/09/09

ASPEN GAINER #1
3/6/13

MIKE

CALLING ABOUT THE ASPEN GAINER #1

APPRECIATE THE INVESTIGATION WORK DONE SO FAR

HAVE YOU PERFORMED ANY MORE?

YOU NEED TO DO FURTHER DELINEATION OF SITE

YOU NEED TO PERFORM BORINGS OR DEEP TRENCHES

YOU NEED TO SAMPLE IN THE BERM AREA

ALONG THE WHOLE FOOTPRINT OF THE RELEASE

ASPEN HAS MADE A GOOD START HOWEVER FURTHER DELIN IS NECESSARY BEFORE REMED CAN BE PLANNED

THIS SITE'S EXPIRATION OF THE CURRENT C-141 IS 04/01/13

I WILL ALLOW AN EXTENSION BUT BY 04/01/13 OR BEFORE I WANT A PLAN THAT WILL SUFFICIENTLY DELINEATE THE RELEASE

3/6/13 - SPOKE W/ THOMAS JONES - CONSULTANT FROM FT WORTH — RECS HIRED - WILL BE IN CONTACT - WANT TO DO IT RIGHT - 817-731-4141 — HE CALLED DUE TO MY CALL TO MIKE WILSON EARLIER IN MORNING — DID NOT NEED TO PROVIDE DIRECTIVE UNDERLINED ABOVE @ THIS TIME

RECS
RICE ENVIRONMENTAL
CONSULTING & SAFETY
PO Box 2948 | Hobbs, NM 88241 | Phone 575.393.2967

June 10th, 2014

HOBBS OCD
JUN 10 2014
RECEIVED

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

approved w/ conditions addressing distressed veg adjacent to northwest flow (Prior RPs) also admin changes
Geoffrey Leking
Environmental Specialist
NMOCD-DIST 1
6/23/14

RE: **Corrective Action Plan (CAP)**
Aspen Gainer Unit #1 (1RP-2-13-2903)
UL/D sec. 22 T10S R36E

Mr. Leking:

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

Background and Previous Work

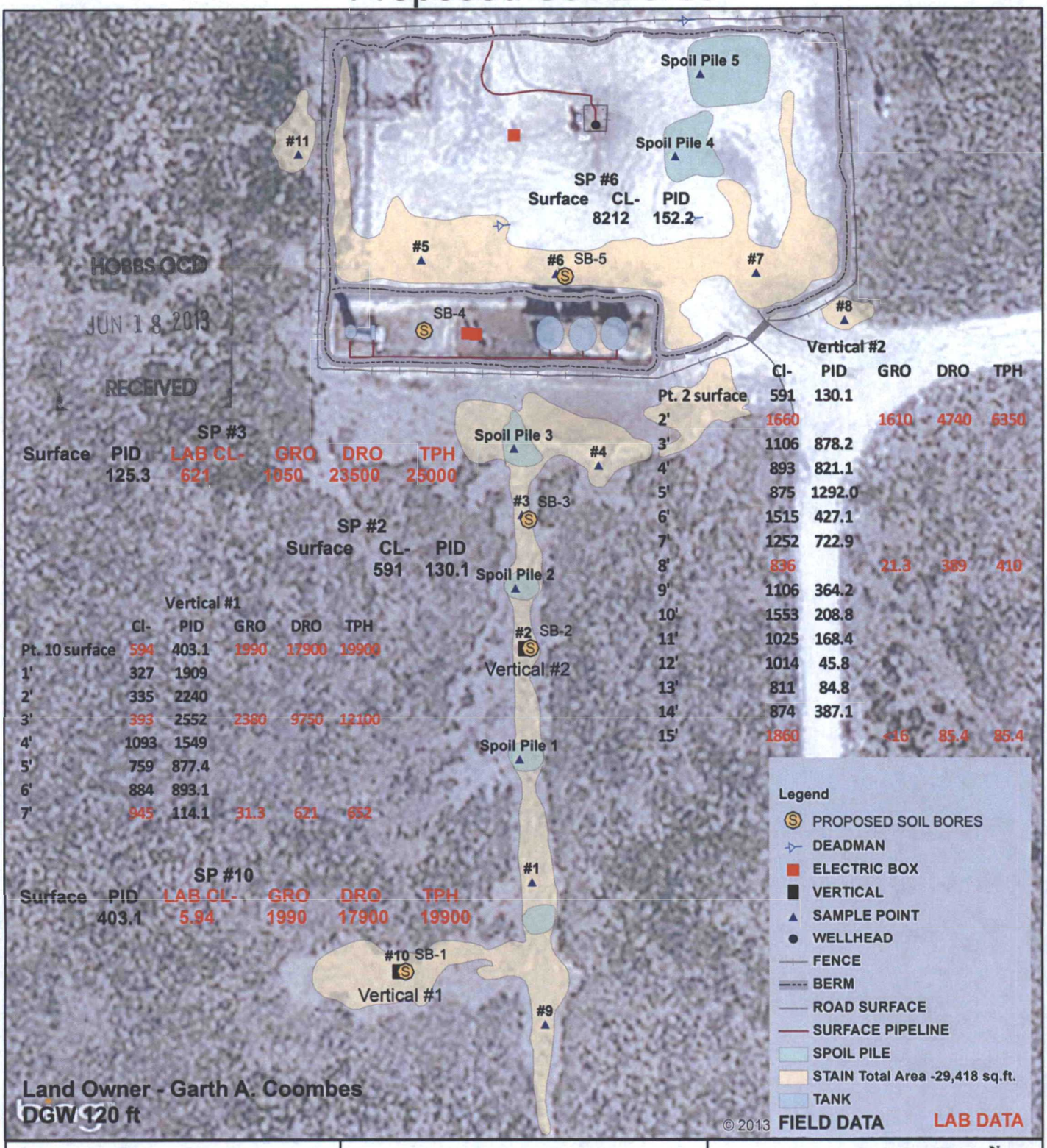
The site is located approximately 12.5 miles northeast of Tatum, New Mexico at UL/D sec. 22, T10S R36E. NM OSE and BLM records indicate that groundwater will likely be encountered at a depth of approximately 120 +/- feet.

On January 17th, 2013, Aspen noticed that the tank at the battery overflowed due to a mechanical failure releasing an unknown quantity of produced water and oil. The release affected 29,418 sq ft of battery, lease pad and pasture area. NMOCD was notified of the release on January 19th, 2013 and an initial C-141 was sent to NMOCD on January 22nd, 2013 (Appendix A).

RECS personnel were on site beginning on May 11th, 2013, to sample the release. Fifteen samples points were taken throughout the release and spoil piles and field tested for chlorides and organic vapors (Figure 1). Representative samples were taken to a commercial laboratory for analysis (Appendix B). Field and laboratory data showed evidence of elevated chlorides, Gasoline Range Organics (GRO) and Diesel Range Organics (DRO). To further delineate the site, two verticals were installed at Points 2 and 10 (Figure 2). The vertical at Pt. 2 was installed to a depth of 15 ft bgs and the vertical at Pt. 10 was installed to a depth of 7 ft bgs. As the verticals were installed, samples were taken every foot and field tested for chlorides and organic vapors. Representative samples from each vertical were taken to a commercial laboratory for analysis (Appendix C). The verticals indicated no decline in chloride levels as the bores were advanced; however, TPH values did declined with depth.

Given that the chloride levels in the verticals did not decline with depth, soil bores were installed at the site on June 20th, 2013 and September 26th, 2013 to determine the vertical extent of the release. A total of five soil bores were installed at the site over the two days (Figure 3). As the

Proposed Soil Bores



RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

ASPEN GAINER UNIT #1

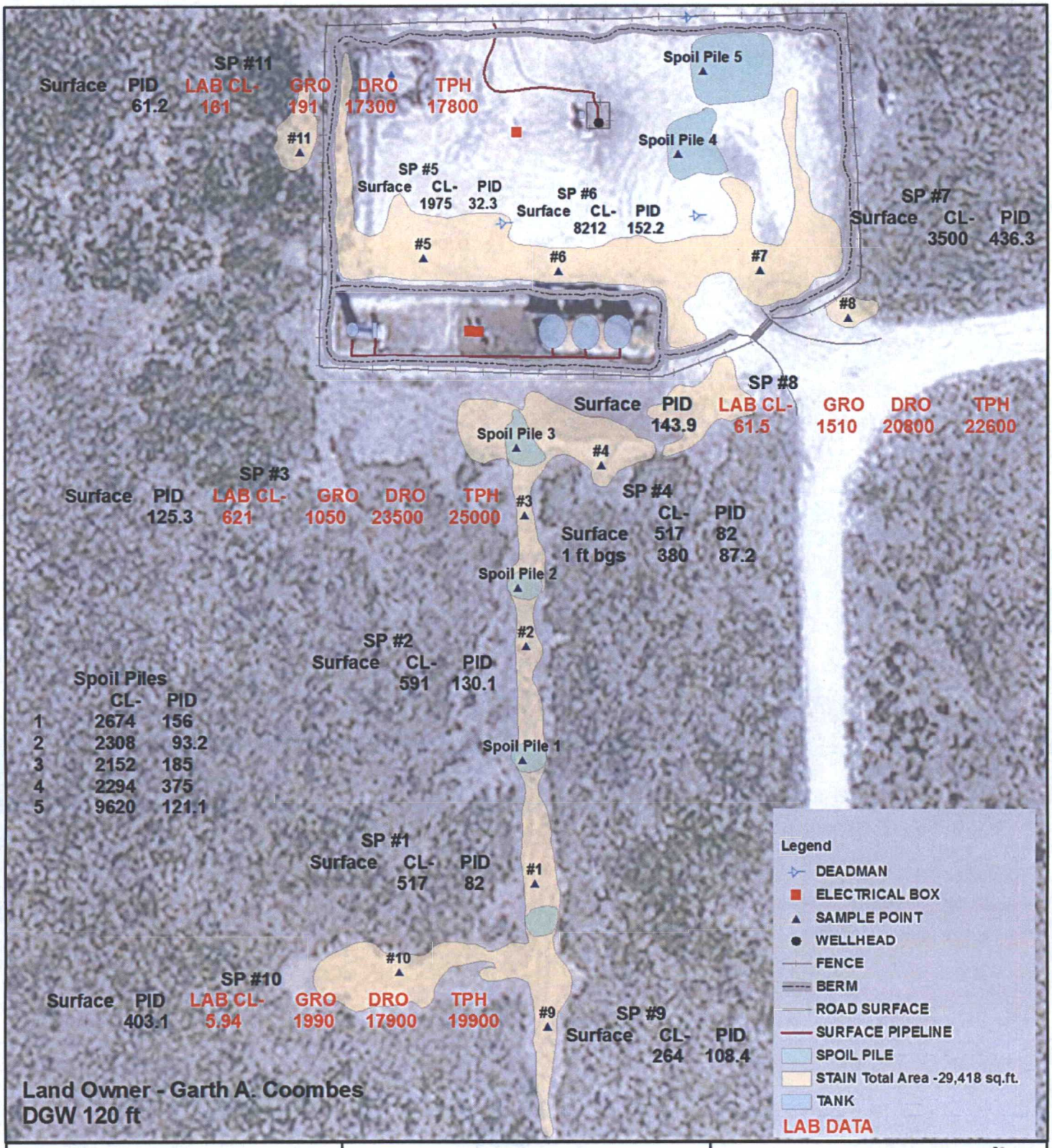
LEGALS: UL/A,D,H,G - SEC 22
T10S R36E
LEA COUNTY, NM

N W E S

0 50 100 Feet

GPS date: 3/11/2013
Drawing date: 5/1/13
Drafted by: L. Weinheimer

6/18



RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

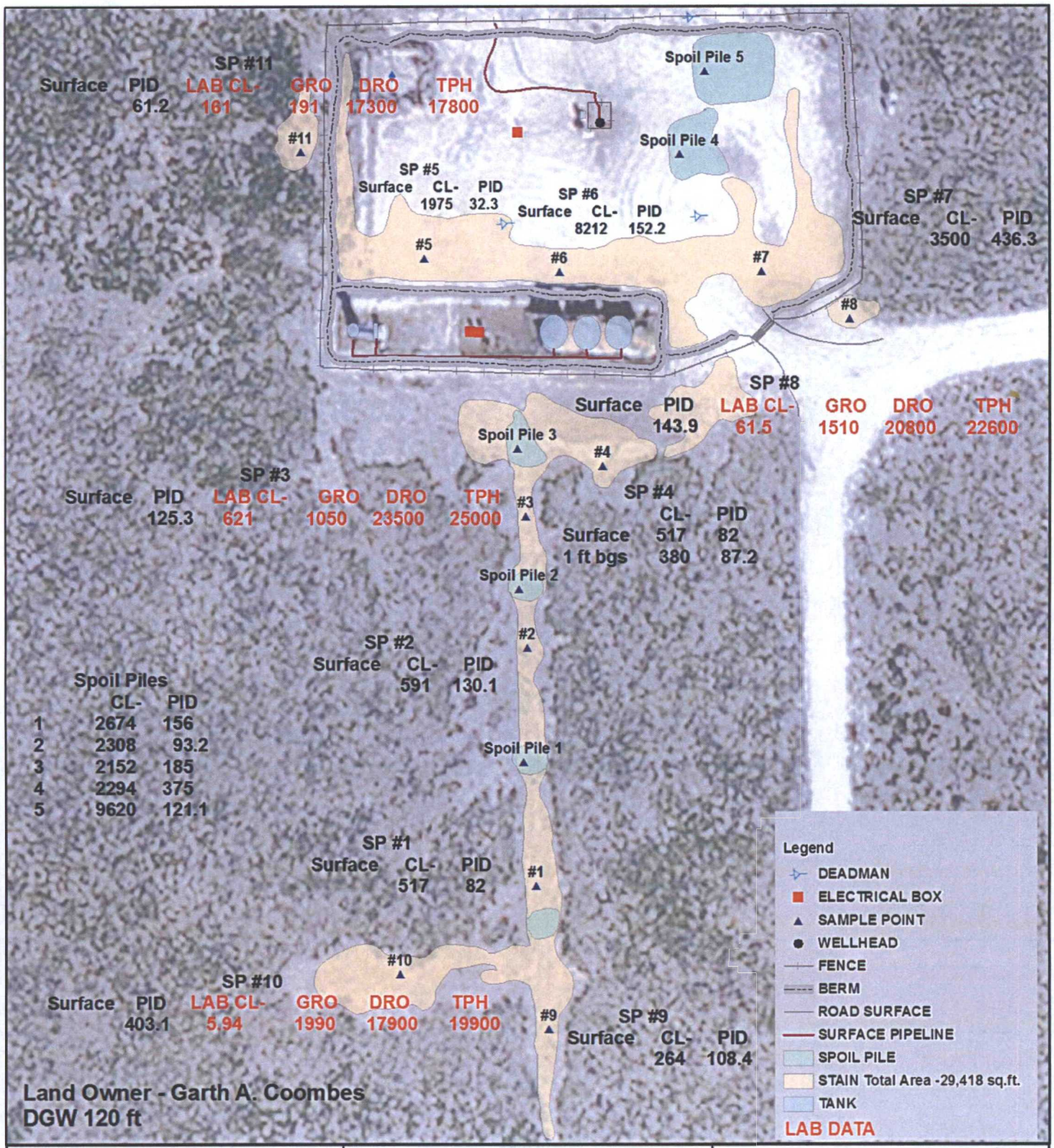
ASPEN GAINER UNIT # 1

LEGALS: UL/A,D,H,G - SEC 22
T10S R36E
LEA COUNTY, NM

N W E S

0 50 100 Feet

GPS date: 3/11/2013
Drawing date: 3/12/2013
Drafted by: LS



RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

RECS

ASPEN GAINER UNIT # 1

LEGALS: UL/A,D,H,G - SEC 22
T10S R36E
LEA COUNTY, NM

N W E S

0 50 100 Feet

GPS date: 3/11/2013
Drawing date: 3/12/2013
Drafted by: LS

Aspen Gainer Unit #1

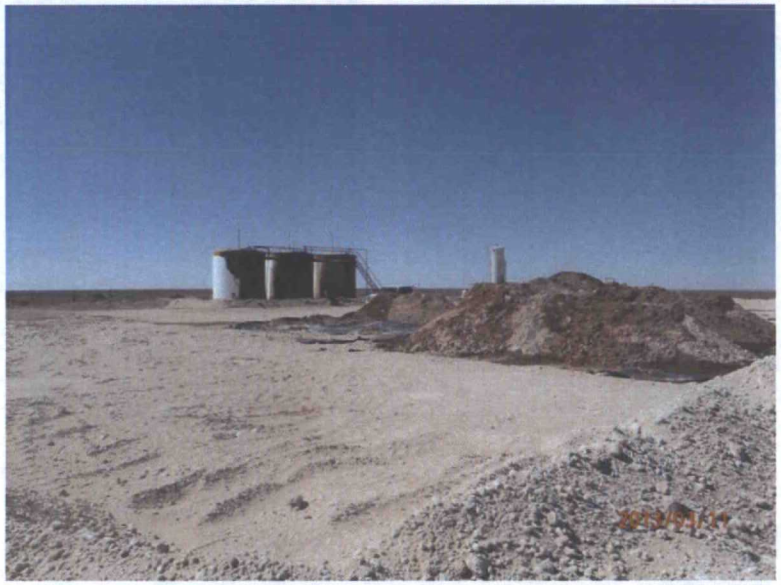
Unit Letter A, D, H, G, Section 22, T10S, R36E

Initial release south area, facing west 3/11/13

Initial release east area, facing west 3/11/12

Initial release south area, facing south 3/11/13

Initial release south area, facing north 3/11/13



Northeast spoil piles, facing southwest 3/11/13

Initial release west area, facing east 3/11/13


ASPEN GAINER 1
APPROX. LEAK
AREA
Aspen Gainer 1
N
Google earth
Imagery Date: 10/20/2012 lat 33.435619° lon -103.252784° elev 4019 ft eye alt 5085 ft

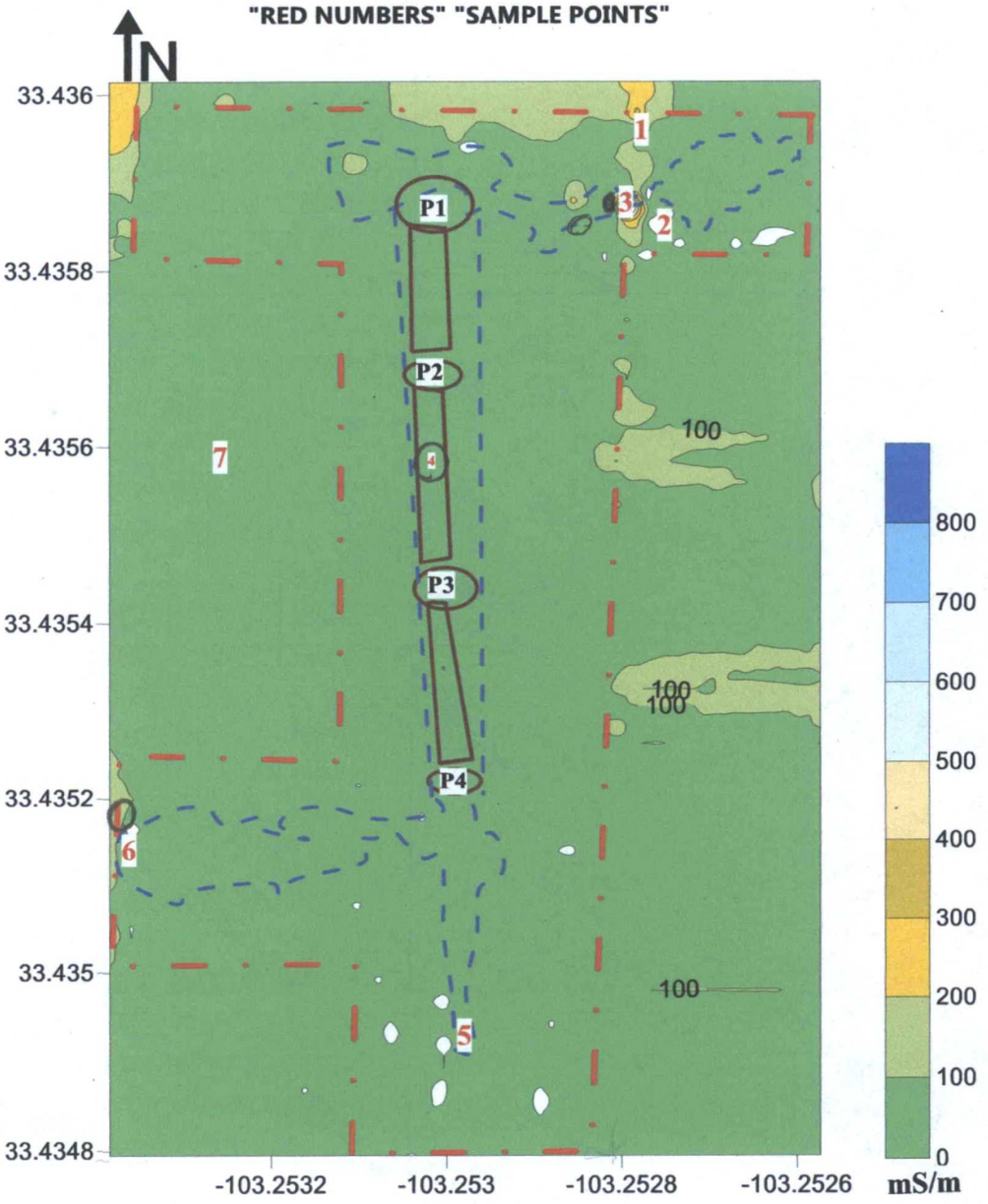
ETNM INC.
CL- FIELD TITRATION, PID, SOIL CLASSIFICATION RESULTS

LOCATION: Aspen Gainer #1

DATE: 1-21-13										LAB RESULTS 1-21-13 H300190 01-03							
Sample pt.	Time	Depth	Soil	Water	CF	$AGNO_3$	CL-	PID	SOIL LITHOLOGY	B	T	E	X	Total BTEX	CL-	GRO	DRO
Leak Spill water puddle	1030	puddle		1ml		3.42	34189	N/A	water sample pulled from standing water remaing from leak approx. 8gals.								
SP1 200mS/m	1230	0'>1'	12.0	31.3	2.61	0.12	626	0.6	sandy sand damp hard caliche below								
SP2 500mS/m	1245	0'>1'	10.6	34.0	3.21	0.25	1603	958.0	sandy sand damp hard caliche below oil in vial thin film								
SP3 800mS/m	1257	0'>1'	12.1	31.7	2.62	0.43	2252	1073.0	sandy sand damp hard caliche below oil in vial thin film	**3.41**	**74.8**	**19.8**	**218**	**315**	**720**	**8790**	**7360**
SP4	110	6">1'	12.5	29.7	2.38	0.14	665	1125.0	sandy clayey sand damp hard caliche below oil in vial thin film	**2.79**	**94.5**	**34.6**	**411**	**543**	**560**	**12000**	**9910**
SP5	121	0'>1'	9.1	34.4	3.78	0.06	453	1125.0	sandy clayey sand damp hard caliche below oil in vial thin film								

Sample pt.	Time	Depth	Soil	Water	CF	$AGNO_3$	CL-	PID	SOIL LITHOLOGY	B	T	E	X	Total BTEX	CL-	GRO	DRO
SP4	132	0'>1'	14.4	27.3	1.90	0.05	190	1204.0	sandy sand damp hard caliche below oil in vial thin film								
	137	1'>2'	9.1	30.8	3.38	0.05	338	1185.0	sandy clayey sand damp hard caliche below oil in vial thin film								
	142	2'>3'	14.0	28.4	2.03	0.2	811	546.0	sandy sand damp								
	149	3'>4'	12.1	30.9	2.55	0.23	1174	366.0	sandy sand w/caliche rocky mix damp	**<0.050**	**0.142**	**0.076**	**1.24**	**1.46**	**1200**	**24.8**	**265**
BCKGRD	156	0'>1'	12.5	30.2	2.42	0.03	145	80.4	sandy sand damp								

ASPEN GAINER #1
API #30-025-34201
UL/D - SEC 22 - T10S - R36E
1-21-13 EM38 Survey (0'>5')
Depth to GW: 75'>100'
"RED OUTLINE" "SURVEY AREA"
"BLUE OUTLINE " "LEAK AREA"
"BROWN OUTLINE" "TRENCHES/DIRT PILES"
"RED NUMBERS" "SAMPLE POINTS"



bores were advanced, samples were taken every three feet and field tested for chlorides and hydrocarbons. Representative samples from each bore were taken to a commercial laboratory for analysis (Appendix D). Based on the laboratory data, the chloride levels dropped below 250 mg/kg and the GRO and DRO dropped to non-detectable limits between 12 and 18 ft bgs in each bore, except in SB-2, where the DRO at the bottom of the bore at 12 ft bgs was 87.8 mg/kg.

To determine if the residual chlorides in the vadose zone pose a threat to groundwater quality, RECS ran the U.S. Environmental Protection Agency Exposure Assessment Multimedia Model (MULTIMED Version 1.5, 2005). Model outputs and the graph are included in Appendix E. With the impact area of 29,419 sq ft, the model output concludes that the peak concentration of chlorides in groundwater contributed by the vadose zone soils would be approximately 214.4 mg/L in 275 years. Since the estimated increase in chloride concentrations in groundwater from residual chloride migration is below the WQCC standard of 250 mg/L, no action is warranted for groundwater at this site.

Corrective Action Plan

The Corrective Actions will begin in March and be concluded by November 27th, 2014. Based on the sampling data, RECS plans to remediate the site in 4 phases:

Phase 1: The south berm of the battery will be removed and an area 274 ft x 60 ft south of the battery will be scraped down 2-4 ft to remove the contaminated soil (Figure 4). The soils 5 ft into the southern part of the battery will be scraped by hand and hydrovac to removed the majority of the contamination. The soil in the southwest corner of proposed excavation will be excavated to approximately 4 ft bgs and the excavated soil will be evaluated for use as backfill. And any soils requiring disposal will be properly disposed of at a NMOCD approved facility. The soil from the southwest corner that pass regulatory standards will be used as backfill to bring the 4 ft excavation to 2 ft bgs. The excavation will then be properly prepared, and a 30-mil poly liner will be installed and properly seated at the base of the excavations. The liner will be installed approximately 5 feet into the battery pad and anchored by clean, imported caliche.

A minimum of two foot high berms will be installed along the edge of the liner of the western, southern and eastern part of the liner. The liner will be placed over the 2 ft high berms and then key set at the exterior of the berms. Clean, imported caliche will be used to anchor the liner over the berms.

This area will be a secondary containment for the battery. In the event of future releases, the fluid will flow to the containment and held for disposal. This secondary containment will prevent future releases from the battery affecting the surrounding pasture area.

Phase 2: Inside the bermed battery, the area will be scraped by hand and by hydrovac to remove the highest contaminated soil. The battery pad, the lease road and the area to west of the pad will be scraped down to 1 ft bgs. The scrape in the west pasture area will be sampled after the scrape to determine that the scrape eliminated all constituents above regulatory standards. All excavated soils will be disposed of at a NMOCD approved facility. The scrapes on the pad and lease road will be backfilled with clean, imported caliche. The scrape to the west will be

backfilled with clean, imported top soil. Soil amendments will be added to the west scrape as necessary and the area will be seeded with a blend of native vegetation.

Phase 3: In Phase 3, the northern portion of the pasture will be addressed. To mitigate any future impact to groundwater by the residual constituents in the vadose zone of the pasture area, the pasture will be excavated to 4 ft bgs. The base of the excavation will be padded with 6 inches of sand to protect the liner from punctures, and a 20-mil reinforced poly liner will be installed and properly seated at the base of the excavation. All excavated soils will be disposed of at a NMOCD approved facility. The 4 ft excavation will be backfilled with clean, imported soil to ground surface and then contoured to the surrounding area. Soil amendments will be added to the soil as necessary and the area will be seeded with a blend of native vegetation.

Phase 4: In Phase 4, the southern portion of the pasture will be addressed. The pasture will be excavated to 4 ft bgs. The base of the excavations will be padded with 6 inches of sand to protect the liner from punctures, and a 20-mil reinforced poly liner will be installed and properly seated at the base of the excavations. All excavated soils will be disposed of at a NMOCD approved facility. The 4 ft excavations will be backfilled with clean, imported soil to ground surface and then contoured to the surrounding area. Soil amendments will be added to the soil as necessary and the area will be seeded with a blend of native vegetation. All disturbed areas in the pasture will have soil amendments added as necessary and then seeded with a blend of native vegetation.

Once the CAP activities have been completed, Aspen will submit a 'remediation termination' request for site closure.

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.

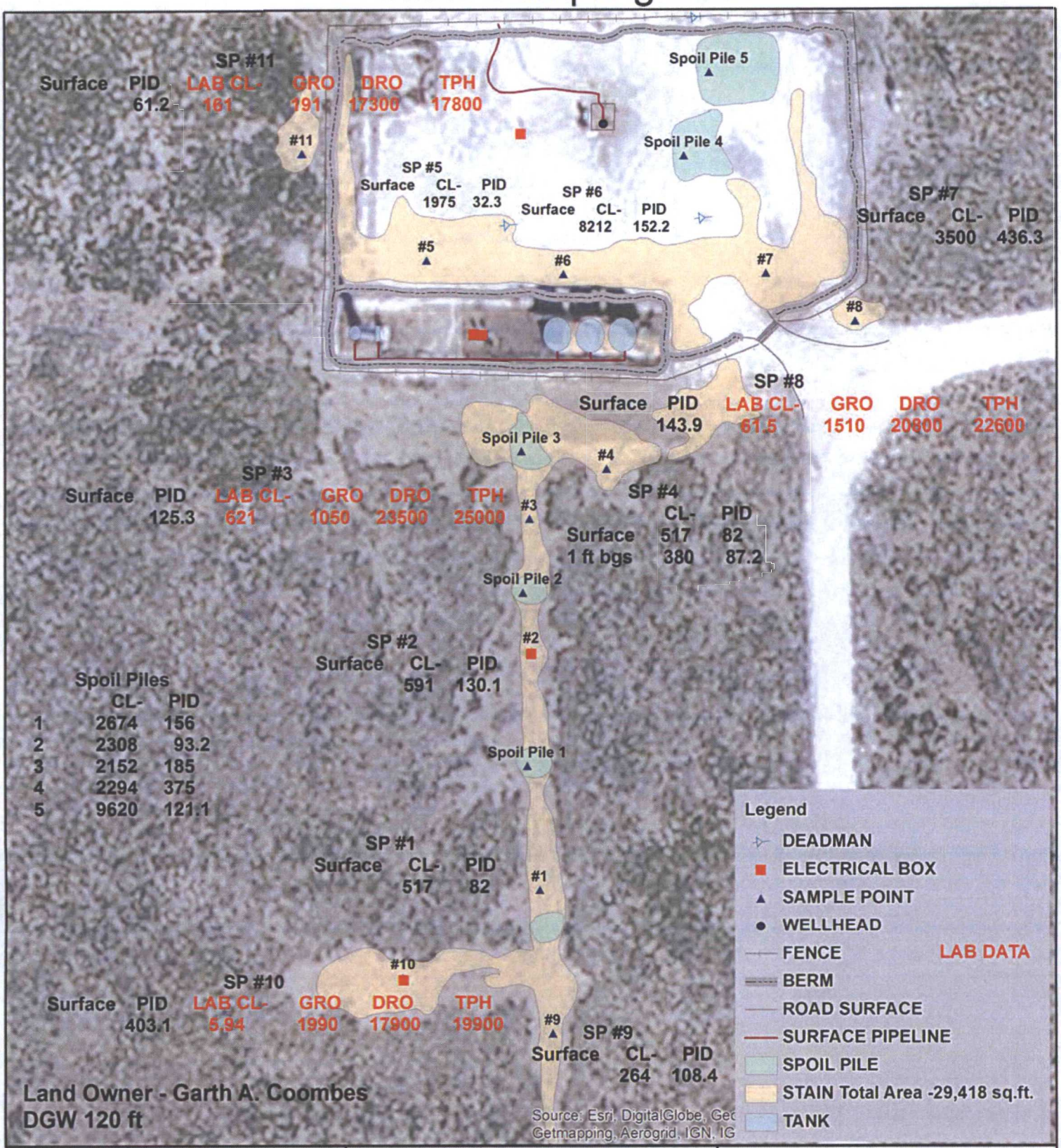
Sincerely,

Lara Weinheimer
Project Scientist
RECS
(575) 441-0431

Attachments:

- Figure 1 – Initial Sampling Data
- Figure 2 – Vertical Installation Data
- Figure 3 – Soil Bore Installation Data
- Figure 4 – Proposed Scrapes and Liner Installation
- Appendix A – Initial C-141
- Appendix B – Initial Sampling Lab Data
- Appendix C – Vertical Sampling Lab Data
- Appendix D – Soil Bore Installation Documentation
- Appendix E – Multimed Documentation

Initial Sampling Data



RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

ASPEN GAINER UNIT #1 1RP-2-13-2903

LEGALS: UL/A,D,H,G - SEC 22
T10S R36E
LEA COUNTY, NM

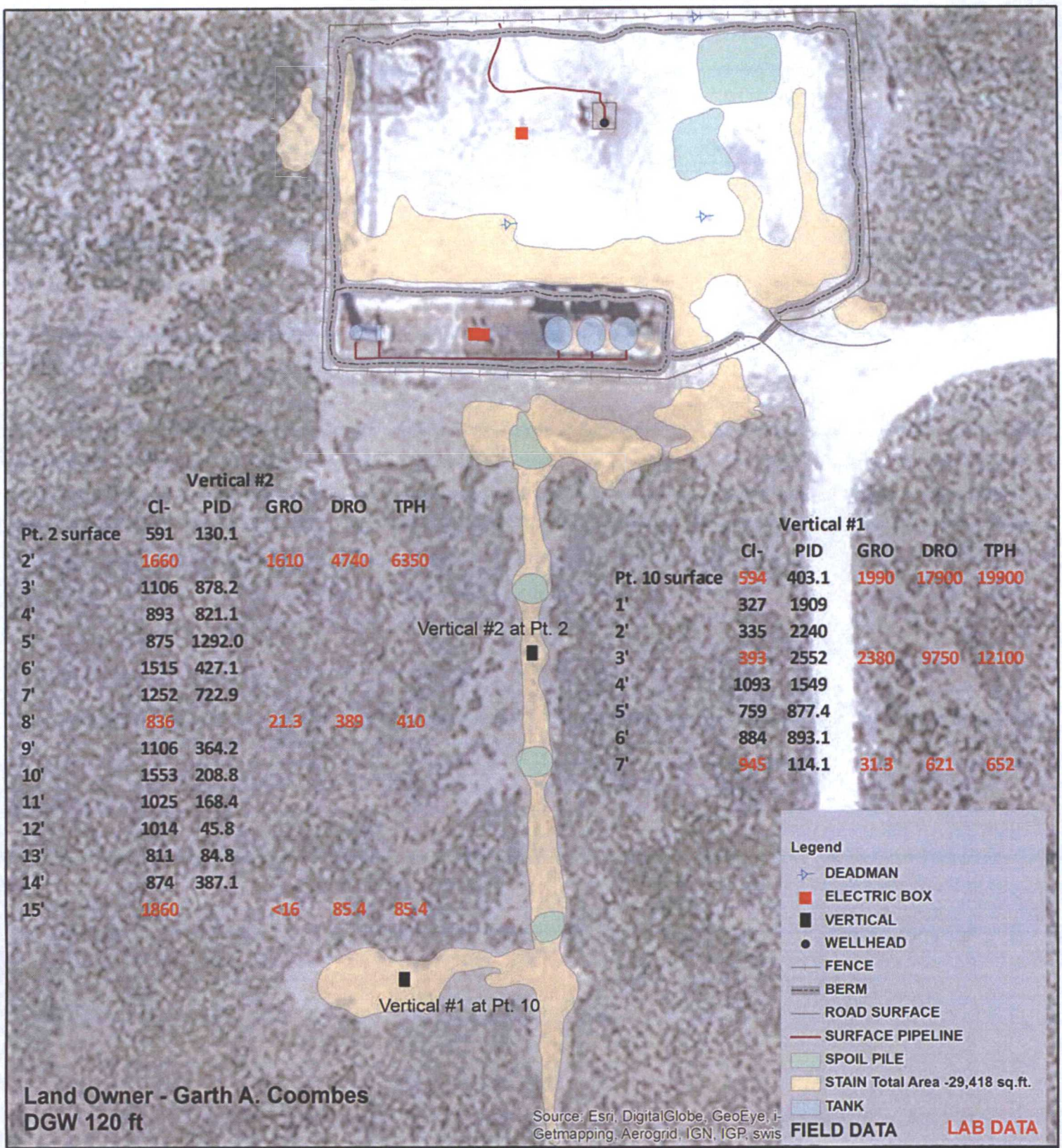
Figure 1

N W E S

0 50 100 Feet

GPS date: 3/11/2013
Drawing date: 3/12/2013
Drafted by: LS

Vertical Installation Data



RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

ASPEN GAINER UNIT #1 1RP-2-13-2903

LEGALS: UL/A,D,H,G - SEC 22
T10S R36E
LEA COUNTY, NM

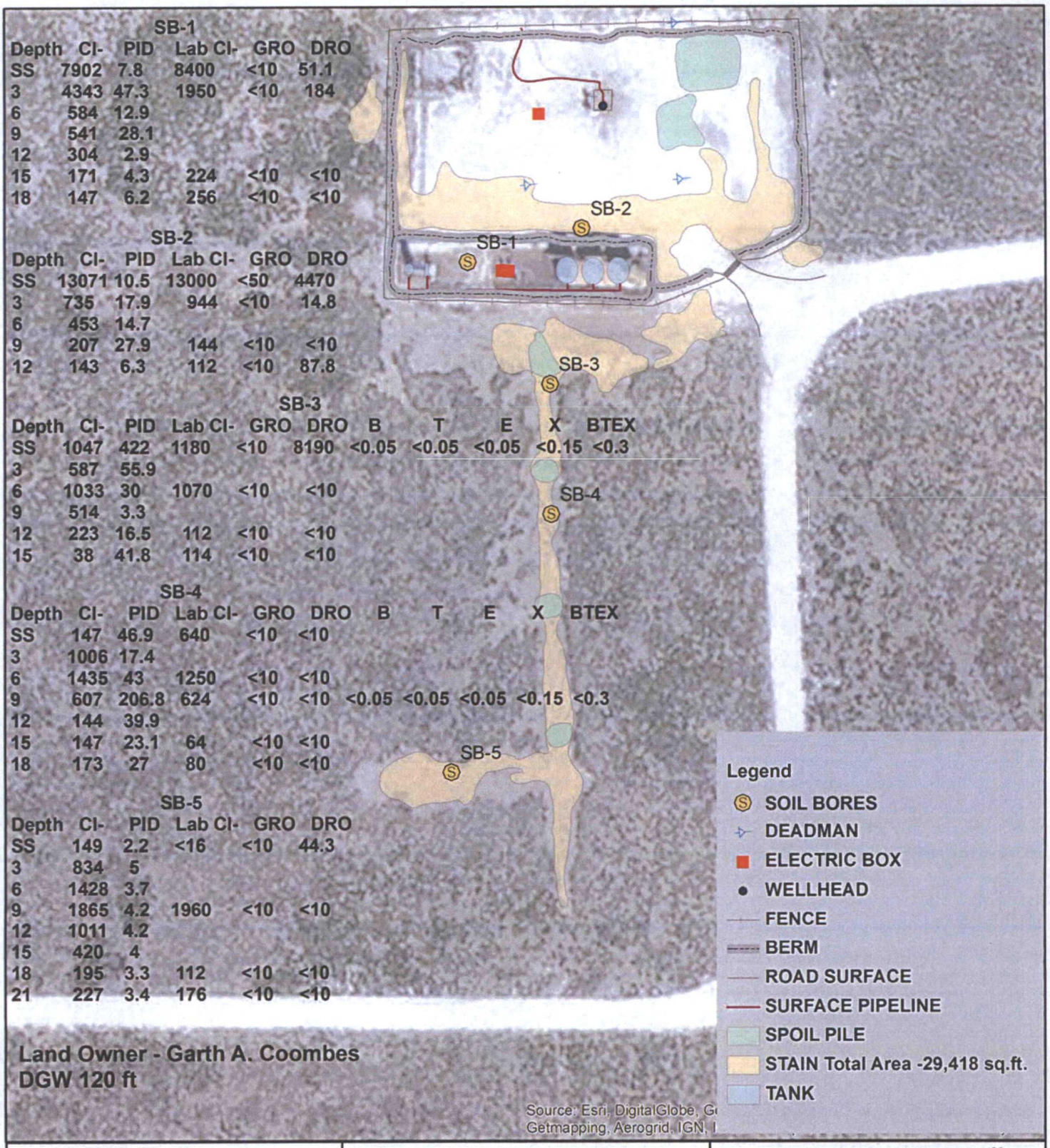
Figure 2

N W E S

0 50 100 Feet

GPS date: 3/11/2013
Drawing date: 4/22/13
Drafted by: L. Weinheimer

Soil Bore Installation



SB-1

Depth	Cl-	PID	Lab Cl-	GRO	DRO
SS	7902	7.8	8400	<10	51.1
3	4343	47.3	1950	<10	184
6	584	12.9			
9	541	28.1			
12	304	2.9			
15	171	4.3	224	<10	<10
18	147	6.2	256	<10	<10

SB-2

Depth	Cl-	PID	Lab Cl-	GRO	DRO
SS	13071	10.5	13000	<50	4470
3	735	17.9	944	<10	14.8
6	453	14.7			
9	207	27.9	144	<10	<10
12	143	6.3	112	<10	87.8

SB-3

Depth	Cl-	PID	Lab Cl-	GRO	DRO	B	T	E	X	BTEX
SS	1047	422	1180	<10	8190	<0.05	<0.05	<0.05	<0.15	<0.3
3	587	55.9								
6	1033	30	1070	<10	<10					
9	514	3.3								
12	223	16.5	112	<10	<10					
15	38	41.8	114	<10	<10					

SB-4

Depth	Cl-	PID	Lab Cl-	GRO	DRO	B	T	E	X	BTEX
SS	147	46.9	640	<10	<10					
3	1006	17.4								
6	1435	43	1250	<10	<10					
9	607	206.8	624	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
12	144	39.9								
15	147	23.1	64	<10	<10					
18	173	27	80	<10	<10					

SB-5

Depth	Cl-	PID	Lab Cl-	GRO	DRO
SS	149	2.2	<16	<10	44.3
3	834	5			
6	1428	3.7			
9	1865	4.2	1960	<10	<10
12	1011	4.2			
15	420	4			
18	195	3.3	112	<10	<10
21	227	3.4	176	<10	<10

RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

ASPEN GAINER UNIT #1 1RP-2-13-2903

LEGALS: UL/A,D,H,G - SEC 22
T10S R36E
LEA COUNTY, NM

Figure 3

N W E S

0 60 120 Feet

GPS date: 9/26/13
Drawing date: 10/7/13
Drafted by: L. Weinheimer

Proposed Scrapes and Liner Installation

RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

RECS

ASPEN GAINER UNIT #1 1RP-2-13-2903

LEGALS: UL/A,D,H,G - SEC 22
T10S R36E
LEA COUNTY, NM

Figure 4

N W E S

0 60 120
Feet

GPS date: 9/26/13
Drawing date: 2/11/14
Drafted by: L. Weinheimer

Analytical Report 459438

for

Aspen Operating Co., LLC.

Project Manager: Bruce Baker

Gainer Unit #1

25-MAR-13

Collected By: Client

12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-10-6-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102), DoD (L11-54)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD (L10-135)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
Xenco-Lakeland: Florida (E84098)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)
Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)
Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)

XENCO Laboratories

25-MAR-13

Project Manager: **Bruce Baker**
Aspen Operating Co., LLC.
210 W. 6th St., Suite 301
Ft. Worth, TX 76102

Reference: XENCO Report No(s): **459438**
Gainer Unit #1
Project Address: Fort Worth

Bruce Baker:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 459438. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 459438 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Nicholas Straccione
Project Manager

Sample Cross Reference 459438

Aspen Operating Co., LLC., Ft. Worth, TX

Gainer Unit #1

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Sample PT 3 Surface	S	03-11-13 10:15		459438-001
Sample PT 8 Surface	S	03-11-13 10:43		459438-002
Sample PT 10 Surface	S	03-11-13 11:07		459438-003
Sample PT 11 Surface	S	03-11-13 11:15		459438-004

CASE NARRATIVE

Client Name: Aspen Operating Co., LLC.
Project Name: Gainer Unit #1

Project ID:
Work Order Number(s): *459438*

Report Date: *25-MAR-13*
Date Received: *03/15/2013*

Sample receipt non conformances and comments:
None

Sample receipt non conformances and comments per sample:

None

Certificate of Analysis Summary 459438

Aspen Operating Co., LLC., Ft. Worth, TX

Project Name: Gainer Unit #1

Project Id:
Contact: Bruce Baker
Project Location: Fort Worth

Date Received in Lab: Fri Mar-15-13 11:20 am
Report Date: 25-MAR-13
Project Manager: Nicholas Straccione

Analysis Requested													
	Lab Id:	459438-001		459438-002		459438-003		459438-004					
	Field Id:	Sample PT 3 Surface		Sample PT 8 Surface		Sample PT 10 Surface		Sample PT 11 Surface					
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL					
	Sampled:	Mar-11-13 10:15		Mar-11-13 10:43		Mar-11-13 11:07		Mar-11-13 11:15					
Inorganic Anions by EPA 300/300.1	***Extracted:***	Mar-22-13 10:00		Mar-22-13 10:00		Mar-22-13 10:00		Mar-22-13 10:00					
	Analyzed:	Mar-22-13 15:04		Mar-22-13 15:47		Mar-22-13 16:09		Mar-22-13 16:31					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		621	10.3	61.5	2.85	5.94	2.84	161	2.70				
Percent Moisture	***Extracted:***												
	Analyzed:	Mar-20-13 17:00		Mar-20-13 17:00		Mar-20-13 17:00		Mar-20-13 17:00					
	Units/RL:	%	RL	%	RL	%	RL	%	RL				
Percent Moisture		3.32	1.00	6.62	1.00	6.25	1.00	1.56	1.00				
TPH By SW8015B Mod	***Extracted:***	Mar-20-13 09:00		Mar-20-13 09:00		Mar-20-13 09:00		Mar-20-13 09:00					
	Analyzed:	Mar-20-13 15:07		Mar-20-13 15:57		Mar-20-13 13:01		Mar-20-13 13:26					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
C6-C10 Gasoline Range Hydrocarbons		1050	77.3	1510	80.5	1990	79.9	191	75.9				
C10-C28 Diesel Range Hydrocarbons		23500	77.3	20800	80.5	17900	79.9	17300	75.9				
Total TPH		25000	77.3	22600	80.5	19900	79.9	17800	75.9				

Nicholas Straccione
Project Manager

XENCO Laboratories

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantiation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

* Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

\+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

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	Phone	Fax
4143 Greenbriar Dr, Stafford, TX 77477	(281) 240-4200	(281) 240-4280
9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
2505 North Falkenburg Rd, Tampa, FL 33619	(813) 620-2000	(813) 620-2033
12600 West I-20 East, Odessa, TX 79765	(432) 563-1800	(432) 563-1713
6017 Financial Drive, Norcross, GA 30071	(770) 449-8800	(770) 449-5477
3725 E. Atlanta Ave, Phoenix, AZ 85040	(602) 437-0330	

XENCO Laboratories

Form 2 - Surrogate Recoveries

Project Name: Gainer Unit #1

Work Orders : 459438,

Project ID:

Lab Batch #: 909487 **Sample:** 459438-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/20/13 13:01

TPH By SW8015B Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	109	99.9	109	70-135	
o-Terphenyl	43.9	50.0	88	70-135	

Lab Batch #: 909487 **Sample:** 459438-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/20/13 13:26

TPH By SW8015B Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	105	99.6	105	70-135	
o-Terphenyl	40.9	49.8	82	70-135	

Lab Batch #: 909487 **Sample:** 459438-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/20/13 15:07

TPH By SW8015B Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	108	99.6	108	70-135	
o-Terphenyl	54.1	49.8	109	70-135	

Lab Batch #: 909487 **Sample:** 459438-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/20/13 15:57

TPH By SW8015B Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	110	100	110	70-135	
o-Terphenyl	43.9	50.1	88	70-135	

Lab Batch #: 909487 **Sample:** 635423-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/20/13 10:56

TPH By SW8015B Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	102	100	102	70-135	
o-Terphenyl	51.3	50.1	102	70-135	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

XENCO Laboratories

Form 2 - Surrogate Recoveries

Project Name: Gainer Unit #1

Work Orders : 459438,

Project ID:

Lab Batch #: 909487 **Sample:** 635423-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/20/13 10:04

TPH By SW8015B Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	102	100	102	70-135	
o-Terphenyl	58.7	50.1	117	70-135	

Lab Batch #: 909487 **Sample:** 635423-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/20/13 10:30

TPH By SW8015B Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	98.7	100	99	70-135	
o-Terphenyl	54.1	50.2	108	70-135	

Lab Batch #: 909487 **Sample:** 459439-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/20/13 19:00

TPH By SW8015B Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	98.1	99.9	98	70-135	
o-Terphenyl	57.5	50.0	115	70-135	

Lab Batch #: 909487 **Sample:** 459439-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/20/13 19:28

TPH By SW8015B Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	100	99.9	100	70-135	
o-Terphenyl	59.0	50.0	118	70-135	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

XENCO Laboratories

BS / BSD Recoveries

Project Name: Gainer Unit #1

Work Order #: 459438 **Project ID:**

Analyst: AMB **Date Prepared:** 03/22/2013 **Date Analyzed:** 03/22/2013

Lab Batch ID: 909765 **Sample:** 635609-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

Inorganic Anions by EPA 300/300.1	BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY										
Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<2.00	50.0	51.4	103	50.0	51.4	103	0	80-120	20	

Analyst: KEB **Date Prepared:** 03/20/2013 **Date Analyzed:** 03/20/2013

Lab Batch ID: 909487 **Sample:** 635423-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

TPH By SW8015B Mod	BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY										
Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C10 Gasoline Range Hydrocarbons	<15.0	1000	985	99	1000	959	96	3	70-135	35	
C10-C28 Diesel Range Hydrocarbons	<15.0	1000	1030	103	1000	1010	101	2	70-135	35	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

XENCO Laboratories

Form 3 - MS Recoveries

Project Name: Gainer Unit #1

Work Order #: 459438
Lab Batch #: 909765
Project ID:
Date Analyzed: 03/22/2013
Date Prepared: 03/22/2013
Analyst: AMB
QC- Sample ID: 459738-005 S
Batch #: 1
Matrix: Soil
Reporting Units: mg/kg

MATRIX / MATRIX SPIKE RECOVERY STUDY						
Inorganic Anions by EPA 300 **Analytes**	**Parent Sample Result [A]**	**Spike Added [B]**	**Spiked Sample Result [C]**	**%R [D]**	**Control Limits %R**	**Flag**
Chloride	5.07	107	116	104	80-120	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference [E] = 200*(C-A)/(C+B)
All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit

XENCO Laboratories

Form 3 - MS / MSD Recoveries

Project Name: Gainer Unit #1

Work Order # : 459438 **Project ID:**

Lab Batch ID: 909487 **QC- Sample ID:** 459439-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 03/20/2013 **Date Prepared:** 03/20/2013 **Analyst:** KEB

Reporting Units: mg/kg

TPH By SW8015B Mod Analytes	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C10 Gasoline Range Hydrocarbons	<16.5	1100	1040	95	1100	1080	98	4	70-135	35	
C10-C28 Diesel Range Hydrocarbons	<16.5	1100	1100	100	1100	1140	104	4	70-135	35	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not ApplicableN = See Narrative, EQL = Estimated Quantitation Limit

XENCO Laboratories

Sample Duplicate Recovery

Project Name: Gainer Unit #1

Work Order #: 459438

Lab Batch #: 909467 **Project ID:**

Date Analyzed: 03/20/2013 17:00 **Date Prepared:** 03/20/2013 **Analyst:** WRU

QC- Sample ID: 459439-001 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: %

Percent Moisture Analyte	SAMPLE / SAMPLE DUPLICATE RECOVERY				
	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture	8.98	9.20	2	20	

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |
All Results are based on MDL and validated for QC purposes.
BRL - Below Reporting Limit

XENCO Laboratories
Environmental · Asbestos · Radiochemistry

CHAIN OF CUSTODY RECORD

Houston: 4143 Greenbriar Dr. Stafford, TX 77477 (281)240-4200 Odessa: 12600 West I-20 East Odessa, TX 79765 (432)563-1800
Hobbs: 4008 N Grimes Hobbs, NM 88240 (575)392-7550

Page 1 of 1
LAB W.O #: 459438
Field billable Hrs :

Company: Aspen Operating Co LLC
Phone: 575(631)5157
Address: 801 Cherry Street Suite #10 Unit 23
Fax:
City: Fort worth
State: TX
Zip: 76102
PM/Attn:
Email: toj@theliongroup llc.com hcowder@rice-ecs.com
Project ID: Gainer Unit #1
PO#: bbaker@rice-ecs
Invoice To:
Quote #:
Sampler Signature: Bruce Baker
Circle One Event: (Daily) Weekly Monthly Quarterly Semi-Annual Annual N/A

TAT Work Days = D Need results by: Std 5-7 Time:
Std (5-7D) 5Hrs 1D 2D 3D 4D 5D 7D 10D 14D Other

ANALYSES REQUESTED

Sample #	Sample ID	Collect Date	Collect Time	Matrix Code ^	Field filtered	Integrity ok (Y/N)	Total # of containers	Chloride by EPA300.0	TPH by SW8015B	BTEX by SW8021B
Example	MW-1	6/16/04	11:35	GW	X	Y	2			
1	Sample Pt 3 surface	3-11-13	10:15Am				1	X	X	
2	Sample Pt. 8 surface	3-11-13	10:43Am				1	✓	✓	
3	Sample Pt. 10 surface	3-11-13	11:07Am				1	✓	✓	
4	Sample Pt. 11 surface	3-11-13	11:15Am				1	✓	✓	
5										
6										
7										
8										
9										
0										

Cont. Type VC: Pres. Type E,I: Example Volatiles by 8260
Hold Sample (CALL) - Run PAH on Highest TPH Only
Lab Only:

Reg. Program / Clean-up Std: CTLs TRRP DW NPDES LPST DryCln Other:
STATE for Certs & Regs: FL TX GA NC SC NJ PA OK LA AL NM Other:
QA/QC Level & Certification: 1 2 3 4 CLP AFCEE QAPP NELAC DoD-ELAP Other:
EDDs: ADaPT SEDD ERPIMS XLS Other:
COC & Labels: Match Incomplete Absent Unclear
Coolers Temp °C: 19.5c 2 3 6.0

	Relinquished by	Affiliation	Date	Time	Received by	Affiliation	Date	Time
1	Bruce Baker	RECS	3-15-13	11:20AM	[signature]		3-15-13	1120
2					[signature]	Xenco	3/18/13	10:00
3								
4								

Container Type Codes
VA Vial Amber; VC Vial Clear; VP Vial Pre-preserved; GA Glass Amber; GC Glass Clear; PA Plastic Amber; PC Plastic Clear; Other
ES Encore Sampler; TS TerraCore Sampler; AC Air Canister; TB Tedlar Bag; ZB Zip Lock Bag; PC Plastic Clear
Size(s): 2oz, 4oz, 8oz, 16oz, 32oz, 1Gal

** Preservative Type Codes
A. None; B. HNO_3; C. H_2SO_4; D. NaOH; O.
E. HCL; F. MeOH; G. $Na_2S_2O_3$; H. $NaHSO_4$
I. Ice; J. MCAA; K. ZnAc&NaOH; L. Asbc Acid&NaOH

^ Matrix Type Codes
GW Ground Water; WW Waste Water; DW Drinking Water; SW Surface Water; OW Ocean/Sea Water; PL Product-Liquid; PS Product-Solid; SL Sludge; Other
S Soil/Sediment/Solid; W Wipe; A Air; O Oil; T Tissue; U Urine; B Blood

REMARKS

Lab Use Only	YES	NO	N/A
Non-Conformances found?			✓
Samples intact upon arrival?	✓		
Received on Wet Ice?	✓		
Labeled with proper preservatives?	✓		
Received within holding time?	✓		
Custody seals intact?		✓	
VOCs rec'd w/o headspace?			✓
Proper containers used?	✓		
pH verified-acceptable, excl VOCs?			✓
Received on time to meet HTs?	✓		

C.O.C. Serial #

B&A Laboratories: Hobbs 575-392-7550 Dallas 214-902-0300 Houston 281-242-4200 Odessa 432-563-1800 San Antonio 210-509-3334 Phoenix 602-437-0330
FTS Service Centers: Atlanta 770-449-8800 Lakeland 863-646-8526 Tampa 803-543-8099 Philadelphia 610-955-5649 South Carolina 803-543-8099

 Revision Date: Nov 12, 2009

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Aspen Operating Co., LLC.

Date/ Time Received: 03/15/2013 11:20:00 AM

Work Order #: 459438

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used :

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	6
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	Yes
#6 *Custody Seals Signed and dated?	Yes
#7 *Chain of Custody present?	Yes
#8 Sample instructions complete on Chain of Custody?	Yes
#9 Any missing/extra samples?	No
#10 Chain of Custody signed when relinquished/ received?	Yes
#11 Chain of Custody agrees with sample label(s)?	Yes
#12 Container label(s) legible and intact?	Yes
#13 Sample matrix/ properties agree with Chain of Custody?	Yes
#14 Samples in proper container/ bottle?	Yes
#15 Samples properly preserved?	Yes
#16 Sample container(s) intact?	Yes
#17 Sufficient sample amount for indicated test(s)?	Yes
#18 All samples received within hold time?	Yes
#19 Subcontract of sample(s)?	Yes
#20 VOC samples have zero headspace (less than 1/4 inch bubble)?	Yes
#21 <2 for all samples preserved with HNO3,HCL, H2SO4?	Yes
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	Yes

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst:	PH Device/Lot#:

Checklist completed by: Date: 03/18/2013

Checklist reviewed by: Date: 03/18/2013

Analytical Report 461177

for

Aspen Operating Co., LLC.

Project Manager: Bruce Baker

Gainer Unit #1

19-APR-13

Collected By: Client

12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-10-6-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102), DoD (L11-54)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD (L10-135)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
Xenco-Lakeland: Florida (E84098)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)
Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)
Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)

XENCO Laboratories

19-APR-13

Project Manager: **Bruce Baker**
Aspen Operating Co., LLC.
210 W. 6th St., Suite 301
Ft. Worth, TX 76102

Reference: XENCO Report No(s): **461177**
Gainer Unit #1
Project Address: Fort Worth

Bruce Baker:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 461177. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 461177 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Keith Anding
Project Manager

Sample Cross Reference 461177

Aspen Operating Co., LLC., Ft. Worth, TX

Gainer Unit #1

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Vertical 1 @ 3'	S	04-08-13 10:15		461177-001
Vertical 1 @ 7'	S	04-08-13 10:40		461177-002
Vertical 2 @ 2'	S	04-08-13 10:50		461177-003
Vertical 2 @ 8'	S	04-08-13 11:20		461177-004
Vertical 2 @ 15'	S	04-08-13 12:00		461177-005

CASE NARRATIVE

Client Name: Aspen Operating Co., LLC.
Project Name: Gainer Unit #1

Project ID:
Work Order Number(s): *461177*

Report Date: *19-APR-13*
Date Received: *04/11/2013*

Sample receipt non conformances and comments:
None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:
Batch: LBA-911642 TPH By SW8015B Mod
SW8015B_NM

Batch 911642, 1-Chlorooctane recovered above QC limits . Matrix interferences is suspected; data confirmed by re-analysis
Samples affected are: 461177-005 S.

SW8015B_NM

Batch 911642, C10-C28 Diesel Range Hydrocarbons recovered above QC limits in the Matrix Spike.
Samples affected are: 461177-003, -001, -004, -002, -005.
The Laboratory Control Sample for C10-C28 Diesel Range Hydrocarbons is within laboratory Control Limits

Certificate of Analysis Summary 461177

Aspen Operating Co., LLC., Ft. Worth, TX

Project Name: Gainer Unit #1

Project Id:
Contact: Bruce Baker
Project Location: Fort Worth

Date Received in Lab: Thu Apr-11-13 09:20 am
Report Date: 19-APR-13
Project Manager: Nicholas Straccione

Analysis Requested											
	Lab Id:	461177-001		461177-002		461177-003		461177-004		461177-005	
	Field Id:	Vertical 1 @ 3'		Vertical 1 @ 7'		Vertical 2 @ 2'		Vertical 2 @ 8'		Vertical 2 @ 15'	
	Depth:										
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Apr-08-13 10:15		Apr-08-13 10:40		Apr-08-13 10:50		Apr-08-13 11:20		Apr-08-13 12:00	
Inorganic Anions by EPA 300/300.1	*Extracted:*	Apr-17-13 10:00		Apr-17-13 10:00		Apr-17-13 10:00		Apr-17-13 10:00		Apr-17-13 10:00	
	Analyzed:	Apr-18-13 03:16		Apr-18-13 03:59		Apr-18-13 04:21		Apr-18-13 04:42		Apr-18-13 05:04	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		393	21.7	945	42.0	1660	43.9	836	21.8	1860	43.6
Percent Moisture	*Extracted:*										
	Analyzed:	Apr-15-13 17:00		Apr-15-13 17:00		Apr-15-13 17:00		Apr-15-13 17:00		Apr-15-13 17:00	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		7.97	1.00	4.82	1.00	8.81	1.00	8.14	1.00	8.28	1.00
TPH By SW8015B Mod	*Extracted:*	Apr-17-13 14:45		Apr-17-13 14:45		Apr-17-13 14:45		Apr-17-13 14:45		Apr-17-13 14:45	
	Analyzed:	Apr-18-13 10:01		Apr-18-13 00:12		Apr-18-13 00:44		Apr-18-13 01:15		Apr-18-13 01:44	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
C6-C10 Gasoline Range Hydrocarbons		2380	81.4	31.3	15.7	1610	16.4	21.3	16.3	ND	16.3
C10-C28 Diesel Range Hydrocarbons		9750	81.4	621	15.7	4740	16.4	389	16.3	85.4	16.3
Total TPH		12100	81.4	652	15.7	6350	16.4	410	16.3	85.4	16.3

Keith Anding
Project Manager

XENCO Laboratories

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantiation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

* Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

\+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

XENCO Laboratories

Form 2 - Surrogate Recoveries

Project Name: Gainer Unit #1

Work Orders : 461177,

Project ID:

Lab Batch #: 911642 **Sample:** 461177-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/18/13 00:12

TPH By SW8015B Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	97.1	99.7	97	70-135	
o-Terphenyl	49.4	49.9	99	70-135	

Lab Batch #: 911642 **Sample:** 461177-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/18/13 00:44

TPH By SW8015B Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	124	99.6	124	70-135	
o-Terphenyl	52.2	49.8	105	70-135	

Lab Batch #: 911642 **Sample:** 461177-004 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/18/13 01:15

TPH By SW8015B Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	96.0	99.7	96	70-135	
o-Terphenyl	49.1	49.9	98	70-135	

Lab Batch #: 911642 **Sample:** 461177-005 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/18/13 01:44

TPH By SW8015B Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	99.9	99.6	100	70-135	
o-Terphenyl	51.8	49.8	104	70-135	

Lab Batch #: 911642 **Sample:** 461177-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/18/13 10:01

TPH By SW8015B Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	128	99.9	128	70-135	
o-Terphenyl	49.7	50.0	99	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

XENCO Laboratories

Form 2 - Surrogate Recoveries

Project Name: Gainer Unit #1

Work Orders : 461177,

Project ID:

Lab Batch #: 911642 **Sample:** 636783-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 04/17/13 23:10

TPH By SW8015B Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	91.2	99.6	92	70-135	
o-Terphenyl	47.7	49.8	96	70-135	

Lab Batch #: 911642 **Sample:** 636783-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 04/17/13 22:08

TPH By SW8015B Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	122	100	122	70-135	
o-Terphenyl	54.3	50.1	108	70-135	

Lab Batch #: 911642 **Sample:** 636783-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 04/17/13 22:38

TPH By SW8015B Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	117	99.6	117	70-135	
o-Terphenyl	51.9	49.8	104	70-135	

Lab Batch #: 911642 **Sample:** 461177-005 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/18/13 09:00

TPH By SW8015B Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	161	99.6	162	70-135	**
o-Terphenyl	58.8	49.8	118	70-135	

Lab Batch #: 911642 **Sample:** 461177-005 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/18/13 09:31

TPH By SW8015B Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	111	99.9	111	70-135	
o-Terphenyl	49.1	50.0	98	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

XENCO Laboratories

BS / BSD Recoveries

Project Name: Gainer Unit #1

Work Order #: 461177 **Project ID:**

Analyst: AMB **Date Prepared:** 04/17/2013 **Date Analyzed:** 04/18/2013

Lab Batch ID: 911725 **Sample:** 636828-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300/300.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<2.00	50.0	49.9	100	50.0	50.1	100	0	80-120	20	

Analyst: KEB **Date Prepared:** 04/17/2013 **Date Analyzed:** 04/17/2013

Lab Batch ID: 911642 **Sample:** 636783-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015B Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C10 Gasoline Range Hydrocarbons	<15.0	1000	993	99	996	955	96	4	70-135	35	
C10-C28 Diesel Range Hydrocarbons	<15.0	1000	1090	109	996	1060	106	3	70-135	35	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

XENCO Laboratories

Form 3 - MS Recoveries

Project Name: Gainer Unit #1

Work Order #: 461177
Lab Batch #: 911725
Project ID:
Date Analyzed: 04/18/2013 **Date Prepared:** 04/17/2013 **Analyst:** AMB
QC- Sample ID: 461177-001 S **Batch #:** 1 **Matrix:** Soil
Reporting Units: mg/kg

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	393	543	980	108	80-120	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference [E] = 200*(C-A)/(C+B)
All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit

XENCO Laboratories

Form 3 - MS / MSD Recoveries

Project Name: Gainer Unit #1

Work Order # : 461177 **Project ID:**

Lab Batch ID: 911642 **QC- Sample ID:** 461177-005 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 04/18/2013 **Date Prepared:** 04/17/2013 **Analyst:** KEB

Reporting Units: mg/kg

TPH By SW8015B Mod Analytes	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C10 Gasoline Range Hydrocarbons	<16.3	1090	1420	130	1090	1020	94	33	70-135	35	
C10-C28 Diesel Range Hydrocarbons	85.4	1090	1610	140	1090	1140	97	34	70-135	35	X

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not ApplicableN = See Narrative, EQL = Estimated Quantitation Limit

XENCO Laboratories

Sample Duplicate Recovery

Project Name: Gainer Unit #1

Work Order #: 461177

Lab Batch #: 911378 **Project ID:**

Date Analyzed: 04/15/2013 17:00 **Date Prepared:** 04/15/2013 **Analyst:** WRU

QC- Sample ID: 461058-001 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: %

Percent Moisture Analyte	SAMPLE / SAMPLE DUPLICATE RECOVERY				
	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture	<1.00	<1.00	0	20	U

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |
All Results are based on MDL and validated for QC purposes.
BRL - Below Reporting Limit

XENCO Laboratories
Environmental · Asbestos · Radiochemistry

CHAIN OF CUSTODY RECORD

Houston: 4143 Greenbriar Dr. Stafford, TX 77477 (281)240-4200 Odessa: 12600 West I-20 East Odessa, TX 79765 (432)563-1800
Hobbs: 4008 N Grimes Hobbs, NM 88240 (575)392-7550

Page____of____
LAB W.O #: 461177
Field billable Hrs :

Company: Aspen Operating Co LLC | Phone: (575)631-5157
Address: 801 Cherry Street Suite #10 unit 23 | Fax:
City: Fort Worth | State: TX | Zip: 76102
PM/Attn: | Email: ~~toj@theliongroup~~
Project ID: GAiner Unit #1 | PO#:
Invoice To: Aspen Operating Co LLC | Quote #:
Sampler Signature: Bruce Baker | Circle One Event: (Daily) Weekly Monthly Quartely Semi-Annual Annual N/A

TAT Work Days = D Need results by:________ Time:________
(Std (5-7D)) 5Hrs 1D 2D 3D 4D 5D 7D 10D 14D Other

ANALYSES REQUESTED

Sample #	Sample ID	Collect Date	Collect Time	Matrix Code	Field filtered	Integrity OK (Y/N)	Total # of containers	Chloride by EPA300.0	TPH by SW8015B	BTEX by SW8021B	REMARKS
Example	MW-1	6/16/04	1135	GW	X	Y	2				
1	Vertical 1 @ 3'	4/8/13	10:15am	Soil			1	X	X		email Results
2	Vertical 1 @ 7'	4/8/13	10:40Am	Soil			1	X	X		to Thomas O Jones
3	Vertical 2 @ 2'	4/8/13	10:50am	Soil			1	X	X		toj@theliongroupllc.com
4	Vertical 2 @ 8'	4/8/13	11:20Am	Soil			1	X	X		hconder@rice-ecs.com
5	Vertical 2 @ 15'	4/8/13	12:00pm	Soil			1	X	X		bbaker@rice-ecs.com
6											
7											
8											
9											
0											

Hold Sample (CALL for Run/All on Highest TPH only)

Container Type Codes
VA Vial Amber, VC Vial Clear, VP Vial Pre-preserved, GA Glass Amber, GC Glass Clear, PA Plastic Amber, PC Plastic Clear, Other____
ES Encore Sampler, TS TerraCore Sampler, AC Air Canister, TB Tedlar Bag, ZB Zip Lock Bag, PC Plastic Clear
Size(s): 2oz, 4oz, 8oz, 16oz, 32oz, 1Gal

Preservative Type Codes
A. None, B. HNO_3, C. H_2SO_4, D. NaOH, O.____
E. HCL, F. MeOH, G. $Na_2S_2O_3$, H. $NaHSO_4$
I. Ice, J. MCAA, K. ZnAc&NaOH, L. Asbc Acid&NaOH

Matrix Type Codes
GW Ground Water, WW Waste Water, DW Drinking Water, SW Surface Water, OW Ocean/Sea Water, PL Product-Liquid, PS Product-Solid, SL Sludge, Other
S Soil/Sediment/Solid, W Wipe, A Air, O Oil, T Tissue, U Urine, B Blood

Reg. Program / Clean-up Std: TTLs TRRP DW NPDES LPST DryCln Other:
STATE for Certs & Regs: FL TX GA NC SC NJ PA OK LA AL NM Other:
QA/QC Level & Certification: *1 2 3 4 CLP AFCEE QAPP NELAC DoD-ELAP Other:
EDDs: ADaPT SEDD ERPIMS XLS Other:
COC & Labels: Match Incomplete Absent Unclear
Coolers / Temp °C: 15.2 2 | 3.0

	Relinquished by	Affiliation	Date	Time	Received by	Affiliation	Date	Time
1	Bruce Baker	RECS	4-11-13	8:48AM	[signature]	~~RECS~~	4-11-13	8:50
2	[signature]	RECS	4-11-13	9:20am	K Butler	MS	4-11-13	9:20
3					[signature]	Xenco	4-12-13	14:30
4								

Lab Use Only	YES	NO	N/A
Non-Conformances found?			✓
Samples intact upon arrival?	✓		
Received on Wet Ice?	✓		
Labeled with proper preservatives?	✓		
Received within holding time?	✓		
Custody seals intact?	✓		
VOCs rec'd w/o headspace?			✓
Proper containers used?	✓		
pH verified-acceptable, excl VOCs?			✓
Received on time to meet HTs?	✓		

C.O.C. Serial #

Final 1.000

A&A Laboratories: Hobbs 575-392-7550 Dallas 214-902-0300 Houston 281-242-4200 Odessa 432-563-1800 San Antonio 210-509-3334 Phoenix 602-437-0330
STS Service Centers: Atlanta 770-449-8800 Lakeland 863-646-8526 Tampa 803-543-8099 Philadelphia 610-955-5649 South Carolina 803-543-8099

Execution of this document by client creates a legal and binding agreement between client and Xenco for analytical and testing services provided by Xenco to client under Xenco's standard terms and conditions unless previously agreed in writing. Terms of payment are Net 30 days, and all past due amounts shall accrue interest at 1.5% per month until paid in full. All laboratory analytical data and reports generated by Xenco remain the exclusive property of Xenco until invoices for such data are paid in full. Revision Date: Nov 12, 2009

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Aspen Operating Co., LLC.

Date/ Time Received: 04/11/2013 09:20:00 AM

Work Order #: 461177

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used :

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	1
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	Yes
#6 *Custody Seals Signed and dated?	Yes
#7 *Chain of Custody present?	Yes
#8 Sample instructions complete on Chain of Custody?	Yes
#9 Any missing/extra samples?	No
#10 Chain of Custody signed when relinquished/ received?	Yes
#11 Chain of Custody agrees with sample label(s)?	Yes
#12 Container label(s) legible and intact?	Yes
#13 Sample matrix/ properties agree with Chain of Custody?	Yes
#14 Samples in proper container/ bottle?	Yes
#15 Samples properly preserved?	Yes
#16 Sample container(s) intact?	Yes
#17 Sufficient sample amount for indicated test(s)?	Yes
#18 All samples received within hold time?	Yes
#19 Subcontract of sample(s)?	Yes
#20 VOC samples have zero headspace (less than 1/4 inch bubble)?	Yes
#21 <2 for all samples preserved with HNO3,HCL, H2SO4?	Yes
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	Yes

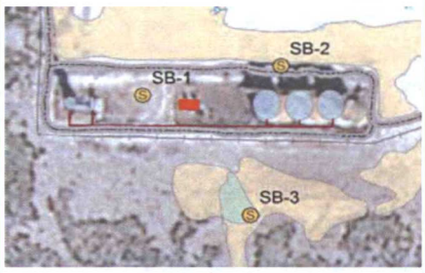
*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst:	PH Device/Lot#:

Checklist completed by: _____ Date: _____

Checklist reviewed by: _____ Date: _____

Logger:	Kyle Norman
Driller:	Harrison & Cooper, Inc.
Drilling Method:	Air rotary
Start Date:	6/20/2013
End Date:	6/20/2013



RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC — RECS

Aspen **Well ID:**
Gainer Unit #1 SB-1

Project Consultant: RECS

Comments: All samples were from cuttings.

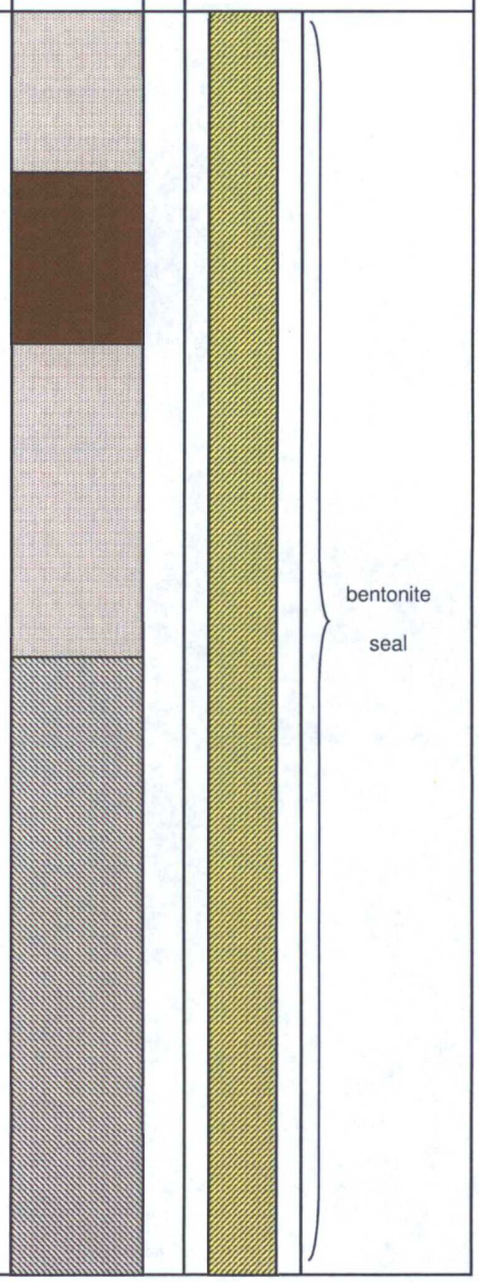
Location: UL/H sec. 22 T-10-S R-36-E

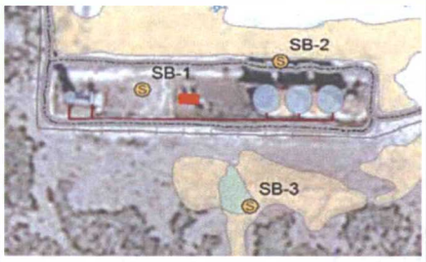
DRAFTED BY: L. Weinheimer

TD = 18 ft GW = 120 ft

Lat: 33°26'9.789"N **County**: Lea
Long: 103°15'11.456"W **State**: NM

Depth (feet)	Chloride field tests	LAB	PID	Description
				Caliche
SS	7902	Cl- 8400	7.8	
		GRO <10		Brown Sand With Hydrocarbon Smell
		DRO 51.5		
3 ft	4343	Cl- 1950	47.3	
		GRO <10		Caliche/Sandstone Mix
		DRO 184		
6 ft	584		12.9	
9 ft	541		28.1	
				Medium Sandstone With Caliche
12 ft	304		2.9	
15 ft	171	Cl- 224	4.3	
		GRO <10		
		DRO <10		
18 ft	147	Cl- 256	6.2	
		GRO <10		
		DRO <10		



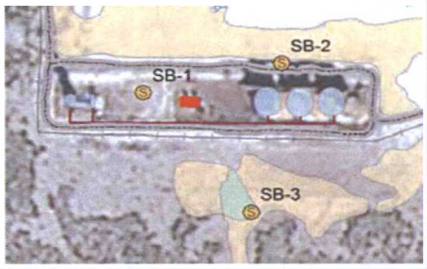
Logger:	Kyle Norman		
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air rotary		**Aspen** **Well ID:**
Start Date:	6/20/2013		**Gainer Unit #1** SB-2
End Date:	6/20/2013		**Project Consultant:** RECS
Comments: All samples were from cuttings.			**Location:** UL/E sec. 22 T-10-S R-36-E
DRAFTED BY: L. Weinheimer			**Lat:** 33°26'9.961"N **County**: Lea
TD = 12 ft	GW = 120 ft		**Long:** 103°15'10.607"W **State**: NM

Depth (feet)	Chloride field tests	LAB	PID	Description
				Caliche
SS	13071	Cl- 13000	10.5	
		GRO <50		Sandstone With Some Brown Sand
		DRO 4470		
3 ft	735	Cl- 944	17.9	
		GRO <10		Caliche Sandstone Mix
		DRO 14.8		
6 ft	453		14.7	
				Sandstone With Some Caliche
9 ft	207	Cl- 144	27.9	
		GRO <10		
		DRO <10		
12 ft	143	Cl- 112	6.3	
		GRO <10		
		DRO 87.8		

Lithology

Well Construction

bentonite seal

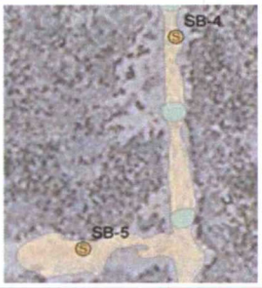
Logger:	Kyle Norman		RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air rotary		**Aspen** **Well ID:**
Start Date:	6/20/2013		**Gainer Unit #1** SB-3
End Date:	6/20/2013		**Project Consultant:** RECS
Comments: All samples were from cuttings.			**Location:** UL/E sec. 22 T-10-S R-36-E
DRAFTED BY: L. Weinheimer			**Lat:** 33°26'9.124"N **County**: Lea
TD = 15 ft	GW = 120 ft		**Long:** 103°15'10.8"W **State**: NM

Depth (feet)	Chloride field tests	LAB	PID	Description
				Brown Sand
SS	1,047	Cl- 1180	422	
B <0.05 T <0.05		GRO <10	DRO 8190	Caliche
E <0.05 X <0.15		BTEX <0.3		
3 ft	587		55.9	
6 ft	1,033	Cl- 1070	30.0	
		GRO <10		
		DRO <10		
9 ft	514		3.3	
12 ft	223	Cl- 112	16.5	
		GRO <10		
		DRO <10		
25 ft	138	Cl- 144	41.8	
		GRO <10		
		DRO <10		

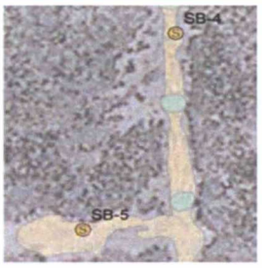
Lithology

Well Construction

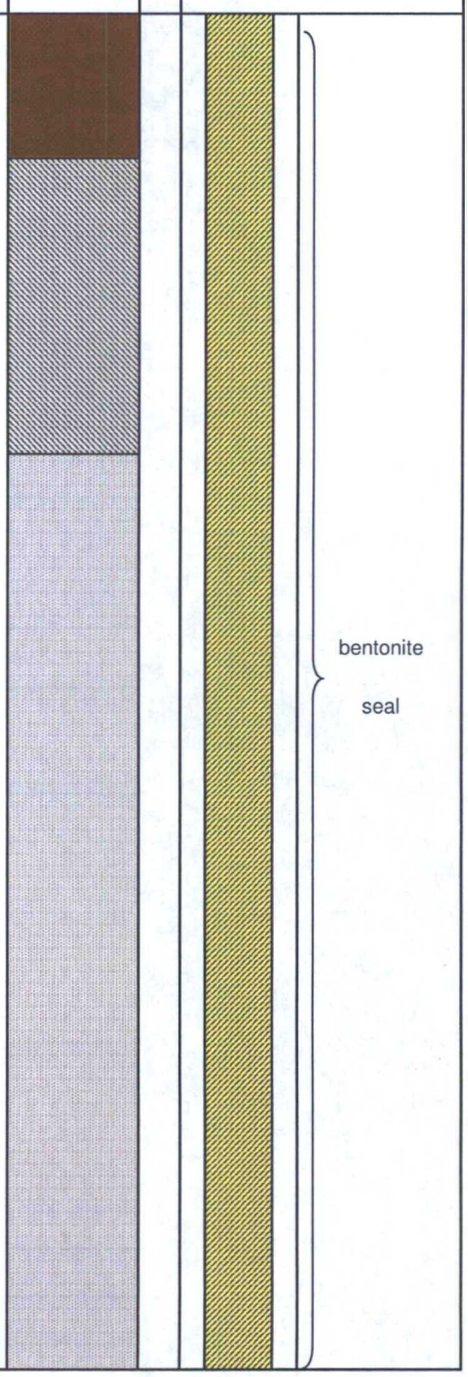
bentonite seal

Logger:	Edward Cesareo		RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC
Driller:	Harrison & Cooper, Inc.		**Project Name:** Aspen Gainer Unit #1 **Well ID:** SB-4
Drilling Method:	Air rotary		
Start Date:	9/26/2013		
End Date:	9/26/2013		
Comments: All samples were from cuttings. **DRAFTED BY: L. Weinheimer** TD = 18 ft GW = 120 ft			**Location:** UL/E sec. 22 T10S R36E **Lat:** 33°26'8.198"N **Long:** 103°15'10.791"W **County**: Lea **State**: NM

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				BROWN SAND		
SS	147	Cl- 640	46.9			
		GRO <10		CALICHE/SANDSTONE		
		DRO <10				
3 ft	1006		17.4			
6 ft	1435	Cl- 1250	43			
		GRO <10		CALICHE		
		DRO <10				
9 ft	607	Cl- 624	206.8			bentonite seal
B <0.05 T <0.05			GRO <10			
E <0.05 X <0.15 BTEX <0.3			DRO <10			
12 ft	144		39.9			
15 ft	147	Cl- 64	23.1			
		GRO <10				
		DRO <10				
18 ft	173	Cl- 80	27			
		GRO <10				
		DRO <10				

Logger:	Edward Cesareo		RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC
Driller:	Harrison & Cooper, Inc.		**Project Name:** Aspen Gainer Unit #1 **Well ID:** SB-5
Drilling Method:	Air rotary		
Start Date:	9/26/2013		
End Date:	9/26/2013		
Comments: All samples were from cuttings. **DRAFTED BY: L. Weinheimer** TD = 21 ft GW = 120 ft			**Location:** UL/H sec. 22 T10S R36E **Lat:** 33°26'6.573"N **Long:** 103°15'11.567"W **County:** Lea **State:** NM

Depth (feet)	Chloride field tests	LAB	PID	Description
				BROWN SAND
SS	149	Cl- <16	2.2	
		GRO <10		CALICHE/SANDSTONE
		DRO 44.3		
3 ft	834		5.0	
6 ft	1428		3.7	
				CALICHE
9 ft	1865	Cl- 1960	4.2	
		GRO <10		
		DRO <10		
12 ft	1011		4.2	
15 ft	420		4.0	
18 ft	195	Cl- 112	3.3	
		GRO <10		
		DRO <10		
21 ft	227	Cl- 176	3.4	
		GRO <10		
		DRO <10		



CARDINAL Laboratories

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

June 27, 2013

BRUCE BAKER

RICE ENVIRONMENTAL CONSULTING & SAFETY LLC

419 W. CAIN

HOBBS, NM 88240

RE: GAINER UNIT #1

Enclosed are the results of analyses for samples received by the laboratory on 06/21/13 9:40.

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:

RICE ENVIRONMENTAL CONSULTING & SAFETY
BRUCE BAKER
419 W. CAIN
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	06/21/2013	Sampling Date:	06/20/2013
Reported:	06/27/2013	Sampling Type:	Soil
Project Name:	GAINER UNIT #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 1 @ SURFACE (H301438-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**8400**	16.0	06/24/2013	ND	416	104	400	3.77	

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	06/22/2013	ND	213	107	200	5.16	
DRO >C10-C28	**51.1**	10.0	06/22/2013	ND	218	109	200	9.40	

Surrogate: 1-Chlorooctane	*93.8 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*100 %*	*63.6-154*

Sample ID: SB 1 @ 3' (H301438-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1950**	16.0	06/24/2013	ND	416	104	400	3.77	

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	06/22/2013	ND	213	107	200	5.16	
DRO >C10-C28	**184**	10.0	06/22/2013	ND	218	109	200	9.40	

Surrogate: 1-Chlorooctane	*93.5 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*98.1 %*	*63.6-154*

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY
BRUCE BAKER
419 W. CAIN
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	06/21/2013	Sampling Date:	06/20/2013
Reported:	06/27/2013	Sampling Type:	Soil
Project Name:	GAINER UNIT #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 1 @ 15' (H301438-03)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**224**	16.0	06/24/2013	ND	416	104	400	3.77	

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	06/24/2013	ND	204	102	200	1.58	
DRO >C10-C28	<10.0	10.0	06/24/2013	ND	205	102	200	2.73	

Surrogate: 1-Chlorooctane	*88.6 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*85.2 %*	*63.6-154*

Sample ID: SB 1 @ 18' (H301438-04)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**256**	16.0	06/24/2013	ND	416	104	400	3.77	

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	06/24/2013	ND	204	102	200	1.58	
DRO >C10-C28	<10.0	10.0	06/24/2013	ND	205	102	200	2.73	

Surrogate: 1-Chlorooctane	*96.5 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*93.7 %*	*63.6-154*

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY
BRUCE BAKER
419 W. CAIN
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	06/21/2013	Sampling Date:	06/20/2013
Reported:	06/27/2013	Sampling Type:	Soil
Project Name:	GAINER UNIT #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 2 @ SURFACE (H301438-05)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**13000**	16.0	06/24/2013	ND	416	104	400	3.77	

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	06/24/2013	ND	204	102	200	1.58	
DRO >C10-C28	**4470**	50.0	06/24/2013	ND	205	102	200	2.73	

Surrogate: 1-Chlorooctane	*97.7 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*198 %*	*63.6-154*

Sample ID: SB 2 @ 3' (H301438-06)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**944**	16.0	06/24/2013	ND	416	104	400	3.77	

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	06/24/2013	ND	204	102	200	1.58	
DRO >C10-C28	**14.8**	10.0	06/24/2013	ND	205	102	200	2.73	

Surrogate: 1-Chlorooctane	*92.8 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*91.6 %*	*63.6-154*

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Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY
BRUCE BAKER
419 W. CAIN
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	06/21/2013	Sampling Date:	06/20/2013
Reported:	06/27/2013	Sampling Type:	Soil
Project Name:	GAINER UNIT #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 2 @ 9' (H301438-07)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**144**	16.0	06/24/2013	ND	416	104	400	3.77	

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	06/24/2013	ND	204	102	200	1.58	
DRO >C10-C28	<10.0	10.0	06/24/2013	ND	205	102	200	2.73	

Surrogate: 1-Chlorooctane	*99.7 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*98.6 %*	*63.6-154*

Sample ID: SB 2 @ 12' (H301438-08)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**112**	16.0	06/24/2013	ND	416	104	400	3.77	

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	06/24/2013	ND	204	102	200	1.58	
DRO >C10-C28	**87.8**	10.0	06/24/2013	ND	205	102	200	2.73	

Surrogate: 1-Chlorooctane	*97.5 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*102 %*	*63.6-154*

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Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY
BRUCE BAKER
419 W. CAIN
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	06/21/2013	Sampling Date:	06/20/2013
Reported:	06/27/2013	Sampling Type:	Soil
Project Name:	GAINER UNIT #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 3 @ SURFACE (H301438-09)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/25/2013	ND	1.87	93.7	2.00	6.85	
Toluene*	<0.050	0.050	06/25/2013	ND	2.01	101	2.00	6.48	
Ethylbenzene*	<0.050	0.050	06/25/2013	ND	2.17	108	2.00	6.77	
Total Xylenes*	<0.150	0.150	06/25/2013	ND	6.57	109	6.00	6.16	
Total BTEX	<0.300	0.300	06/25/2013	ND					

Surrogate: 4-Bromofluorobenzene (PIL *114 %* *89.4-126*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1180**	16.0	06/24/2013	ND	416	104	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS** **S-04**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/24/2013	ND	204	102	200	1.58	
DRO >C10-C28	**8190**	10.0	06/24/2013	ND	205	102	200	2.73	

Surrogate: 1-Chlorooctane *102 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *293 %* *63.6-154*

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY
BRUCE BAKER
419 W. CAIN
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	06/21/2013	Sampling Date:	06/20/2013
Reported:	06/27/2013	Sampling Type:	Soil
Project Name:	GAINER UNIT #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 3 @ 6' (H301438-10)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1070**	16.0	06/24/2013	ND	416	104	400	3.77	

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	06/24/2013	ND	204	102	200	1.58	
DRO >C10-C28	<10.0	10.0	06/24/2013	ND	205	102	200	2.73	

Surrogate: 1-Chlorooctane	*92.9 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*95.8 %*	*63.6-154*

Sample ID: SB 3 @ 12' (H301438-11)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**112**	16.0	06/24/2013	ND	432	108	400	3.77	

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	06/24/2013	ND	204	102	200	1.58	
DRO >C10-C28	<10.0	10.0	06/24/2013	ND	205	102	200	2.73	

Surrogate: 1-Chlorooctane	*94.7 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*97.9 %*	*63.6-154*

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*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY
BRUCE BAKER
419 W. CAIN
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	06/21/2013	Sampling Date:	06/20/2013
Reported:	06/27/2013	Sampling Type:	Soil
Project Name:	GAINER UNIT #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 3 @ 15' (H301438-12)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**144**	16.0	06/24/2013	ND	432	108	400	3.77	

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	06/24/2013	ND	204	102	200	1.58	
DRO >C10-C28	<10.0	10.0	06/24/2013	ND	205	102	200	2.73	

Surrogate: 1-Chlorooctane	*103 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*102 %*	*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

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.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
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

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

1 of 2

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

CARDINAL LABORATORIES
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: Aspen		**BILL TO**	
Project Manager: Bruce Baker		**P.O. #:**	
Address:		**Company:** RECS	
City:	**State:** NM **Zip:** 88240	**Attn:**	
Phone #:	**Fax #:**	**Address:**	
Project #:	**Project Owner:**	**City:**	
Project Name:		**State:** **Zip:**	
Project Location: Gainer Unit #1		**Phone #:**	
Sampler Name: Kyle Norman		**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
H3D1438																				
1	SB1@ Surface	G	1			✓					✓		6-20-13	8:50	✓	✓				
2	SB1@ 3'	G	1			✓					✓		"	9:00	✓	✓				
3	SB1@ 15'	G	1			✓					✓		"	9:15	✓	✓				
4	SB1@ 18'	G	1			✓					✓		"	9:20	✓	✓				
5	SB2@ Surface	G	1			✓					✓		"	9:40	✓	✓				
6	SB2@ 3'	G	1			✓					✓		"	9:45	✓	✓				
7	SB2@ 9'	G	1			✓					✓		"	9:50	✓	✓				
8	SB2@ 12'	G	1			✓					✓		"	10:00	✓	✓				

Relinquished By: Kyle Na	**Date:** 6-21-13 **Time:** 9:40	**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: -80°C	**Sample Condition** Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	**CHECKED BY: (Initials)**	**REMARKS:** email results ecesareo@rice-ecs.com knorman@rice-ecs.com; Bbaker@rice-ecs.com; hconder@rice-ecs.com; Lweinheimer@rice-ecs.com	

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

#54

2 of 2

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

CARDINAL LABORATORIES
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: Aspen		**BILL TO**	
Project Manager: Bruce Baker		**P.O. #:**	
Address:		**Company:**	
City:	**State:** NM **Zip:** 88240	**Attn:**	
Phone #:	**Fax #:**	**Address:**	
Project #:	**Project Owner:**	**City:**	
Project Name:		**State:** **Zip:**	
Project Location: Gainer Unit #1		**Phone #:**	
Sampler Name: Kyle Norman		**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
H301438																				
9	SB3@ Surface	G	1			✓					✓		6-20-13	11:30	✓	✓	✓			
10	SB3@ 6'	G	1			✓					✓		6-2013	11:35	✓	✓				
11	SB3@ 12'	G	1			✓					✓		6-2013	11:40	✓	✓				
12	SB3@ 15'	G	1			✓					✓		6-2013	11:45	✓	✓				

Relinquished By: Kyle Nor	**Date:** 6-2H3 **Time:** 9:40	**Received By:** Jodi Henson	
Relinquished By:	**Date:** **Time:**	**Received By:**	
Delivered By: (Circle One) Sampler - UPS - Bus - Other: -8°C	**Sample Condition** Cool ☐ Yes ☐ No Intact ☐ Yes ☐ No	**CHECKED BY:** (Initials)	

Phone Result: ☐ Yes ☑ No **Add'l Phone #:**
Fax Result: ☐ Yes ☑ No **Add'l Fax #:**
REMARKS:
email results
ecesareo@rice-ecs.com
knorman@rice-ecs.com; Bbaker@rice-ecs.com;
hconder@rice-ecs.com; Lweinheimer@rice-ecs.com

† 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

October 04, 2013

KYLE NORMAN

RICE ENVIRONMENTAL CONSULTING & SAFETY LLC

419 W. CAIN

HOBBS, NM 88240

RE: ASPEN GAINER UNIT #1

Enclosed are the results of analyses for samples received by the laboratory on 09/30/13 10:15.

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:

RICE ENVIRONMENTAL CONSULTING & SAFETY
KYLE NORMAN
419 W. CAIN
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	09/30/2013	Sampling Date:	09/27/2013
Reported:	10/04/2013	Sampling Type:	Soil
Project Name:	ASPEN GAINER UNIT #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB #4 SURFACE (H302364-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**640**	16.0	10/02/2013	ND	432	108	400	7.69	

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	10/01/2013	ND	186	93.2	200	4.28	
DRO >C10-C28	<10.0	10.0	10/01/2013	ND	185	92.5	200	0.113	

Surrogate: 1-Chlorooctane	*116 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*119 %*	*63.6-154*

Sample ID: SB #4 6' (H302364-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1250**	16.0	10/02/2013	ND	432	108	400	7.69	

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	10/01/2013	ND	186	93.2	200	4.28	
DRO >C10-C28	<10.0	10.0	10/01/2013	ND	185	92.5	200	0.113	

Surrogate: 1-Chlorooctane	*85.6 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*90.9 %*	*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:

RICE ENVIRONMENTAL CONSULTING & SAFETY
KYLE NORMAN
419 W. CAIN
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	09/30/2013	Sampling Date:	09/27/2013
Reported:	10/04/2013	Sampling Type:	Soil
Project Name:	ASPEN GAINER UNIT #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB #4 9' (H302364-03)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/01/2013	ND	1.99	99.3	2.00	0.254	
Toluene*	<0.050	0.050	10/01/2013	ND	2.02	101	2.00	0.364	
Ethylbenzene*	<0.050	0.050	10/01/2013	ND	2.04	102	2.00	0.293	
Total Xylenes*	<0.150	0.150	10/01/2013	ND	6.27	105	6.00	0.651	
Total BTEX	<0.300	0.300	10/01/2013	ND					

Surrogate: 4-Bromofluorobenzene (PID *113 %* *89.4-126*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**624**	16.0	10/02/2013	ND	432	108	400	7.69	

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	10/01/2013	ND	186	93.2	200	4.28	
DRO >C10-C28	<10.0	10.0	10/01/2013	ND	185	92.5	200	0.113	

Surrogate: 1-Chlorooctane *84.2 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *92.4 %* *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:

RICE ENVIRONMENTAL CONSULTING & SAFETY
KYLE NORMAN
419 W. CAIN
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	09/30/2013	Sampling Date:	09/27/2013
Reported:	10/04/2013	Sampling Type:	Soil
Project Name:	ASPEN GAINER UNIT #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB #4 15' (H302364-04)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**64.0**	16.0	10/02/2013	ND	432	108	400	7.69	

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	10/02/2013	ND	206	103	200	0.565	
DRO >C10-C28	<10.0	10.0	10/02/2013	ND	203	102	200	4.45	

Surrogate: 1-Chlorooctane	*106 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*109 %*	*63.6-154*

Sample ID: SB #4 18' (H302364-05)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**80.0**	16.0	10/02/2013	ND	432	108	400	7.69	

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	10/02/2013	ND	206	103	200	0.565	
DRO >C10-C28	<10.0	10.0	10/02/2013	ND	203	102	200	4.45	

Surrogate: 1-Chlorooctane	*97.9 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*98.7 %*	*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:

RICE ENVIRONMENTAL CONSULTING & SAFETY
KYLE NORMAN
419 W. CAIN
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	09/30/2013	Sampling Date:	09/27/2013
Reported:	10/04/2013	Sampling Type:	Soil
Project Name:	ASPEN GAINER UNIT #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB #5 SURFACE (H302364-06)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	10/02/2013	ND	432	108	400	7.69	

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	10/02/2013	ND	206	103	200	0.565	
DRO >C10-C28	**44.3**	10.0	10/02/2013	ND	203	102	200	4.45	

Surrogate: 1-Chlorooctane	*102 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*105 %*	*63.6-154*

Sample ID: SB #5 9' (H302364-07)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1960**	16.0	10/02/2013	ND	432	108	400	7.69	

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	10/02/2013	ND	206	103	200	0.565	
DRO >C10-C28	<10.0	10.0	10/02/2013	ND	203	102	200	4.45	

Surrogate: 1-Chlorooctane	*102 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*99.2 %*	*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:

RICE ENVIRONMENTAL CONSULTING & SAFETY
KYLE NORMAN
419 W. CAIN
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	09/30/2013	Sampling Date:	09/27/2013
Reported:	10/04/2013	Sampling Type:	Soil
Project Name:	ASPEN GAINER UNIT #1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB #5 18' (H302364-08)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**112**	16.0	10/02/2013	ND	432	108	400	7.69	

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	10/02/2013	ND	206	103	200	0.565	
DRO >C10-C28	<10.0	10.0	10/02/2013	ND	203	102	200	4.45	

Surrogate: 1-Chlorooctane	*105 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*106 %*	*63.6-154*

Sample ID: SB #5 21' (H302364-09)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**176**	16.0	10/02/2013	ND	432	108	400	7.69	

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	10/02/2013	ND	206	103	200	0.565	
DRO >C10-C28	<10.0	10.0	10/02/2013	ND	203	102	200	4.45	

Surrogate: 1-Chlorooctane	*112 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*113 %*	*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

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

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

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:	ASPEN OPERATING CO.	BILL TO	
Project Manager:	Kyle Norman	P.O. #:	
Address:		Company:	
City:	State: Zip:	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:		State: Zip:	
Project Location:	ASPEN COMPANY UNIT #1	Phone #:	
Sampler Name:	EDWARD CESARIO	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	ANALYSIS REQUEST: CHLORIDES	TPH	BTEX
H302364																	
1	SB#4 Surface	G	1			✓					✓		9-27-13	9:30	✓	✓	
2	SB#4 6'	G	1			✓					✓			9:40	✓	✓	
3	SB#4 9'	G	1			✓					✓			9:45	✓	✓	✓
4	SB#4 15'	G	1			✓					✓			9:55	✓	✓	
5	SB#4 18'	G	1			✓					✓			10:00	✓	✓	
6	SB#5 Surface	G	1			✓					✓			10:30	✓	✓	
7	SB#5 9'	G	1			✓					✓			10:45	✓	✓	
8	SB#5 18'	G	1			✓					✓			11:00	✓	✓	
9	SB#5 21'	G	1			✓					✓			11:05	✓	✓	

Relinquished By: Steve Cesario	Date: 9-27-13 Time: 10:15	Received By: Jodi Henson	
Relinquished By:	Date: Time:	Received By:	

Delivered By: (Circle One) Sampler - UPS - Bus - Other: -11.8°C

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

CHECKED BY: (Initials) JH

Phone Result:	☐ Yes	☐ No	Add'l Phone #:
Fax Result:	☐ Yes	☐ No	Add'l Fax #:

REMARKS:

hconder @ riceswd.com
Knorman @ rice-ecs.com
lweinheimer @ rice-ecs.com
ecesareo @ rice-ecs.com

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

#54

U. S. ENVIRONMENTAL PROTECTION AGENCY

EXPOSURE ASSESSMENT

MULTIMEDIA MODEL

MULTIMED (Version 1.50, 2005)

un options
-- -------

spen Gainer Unit #1

RP-2-13-2903
hemical simulated is Chloride

ption Chosen Saturated and unsaturated zone models
un was DETERMIN
nfiltration Specified By User: 3.048E-02 m/yr
un was transient
ell Times: Entered Explicitly
eject runs if Y coordinate outside plume
eject runs if Z coordinate outside plume
aussian source used in saturated zone model

NSATURATED ZONE FLOW MODEL PARAMETERS
input parameter description and value)

P	- Total number of nodal points	240
MAT	- Number of different porous materials	1
PROP	- Van Genuchten or Brooks and Corey	1
MSHGN	- Spatial discretization option	1
VFLAYR	- Number of layers in flow model	1

PTIONS CHOSEN
------ ------
an Genuchten functional coefficients
ser defined coordinate system

ayer information

AYER NO.	LAYER THICKNESS	MATERIAL PROPERTY
1	32.00	1

DATA FOR MATERIAL 1

VADOSE ZONE MATERIAL VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS MEAN	PARAMETERS STD DEV	LIMITS MIN	LIMITS MAX
Saturated hydraulic conductivity	cm/hr	CONSTANT	3.60	-999.	-999.	-999.
Unsaturated zone porosity	--	CONSTANT	0.250	-999.	-999.	-999.
Air entry pressure head	m	CONSTANT	0.700	-999.	-999.	-999.
Depth of the unsaturated zone	m	CONSTANT	32.0	0.000	0.000	0.000

DATA FOR MATERIAL 1

VADOSE ZONE FUNCTION VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS MEAN	PARAMETERS STD DEV	LIMITS MIN	LIMITS MAX
Residual water content	--	CONSTANT	0.116	-999.	-999.	-999.
Brook and Corey exponent,EN	--	CONSTANT	-999.	-999.	-999.	-999.
ALFA coefficient	1/cm	CONSTANT	0.500E-02	-999.	-999.	-999.
Van Genuchten exponent, ENN	--	CONSTANT	1.09	-999.	-999.	-999.

NSATURATED ZONE TRANSPORT MODEL PARAMETERS

LAY	- Number of different layers used		1
TSTPS	- Number of time values concentration calc		40
UMMY	- Not presently used		1
SOL	- Type of scheme used in unsaturated zone		2
	- Stehfest terms or number of increments		18
TEL	- Points in Lagrangian interpolation		3
GPTS	- Number of Gauss points		104
IT	- Convolution integral segments		2
BOUND	- Type of boundary condition		3
TSGEN	- Time values generated or input		1
MAX	- Max simulation time	--	0.0
TFUN	- Weighting factor	--	1.2

PTIONS CHOSEN

onvolution integral approach
xponentially decaying continuous source
omputer generated times for computing concentrations

DATA FOR LAYER 1

VADOSE TRANSPORT VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Thickness of layer	m	CONSTANT	32.0	-999.	-999.	-999.
Longitudinal dispersivity of layer	m	DERIVED	-999.	-999.	-999.	-999.
Percent organic matter	--	CONSTANT	0.000	-999.	-999.	-999.
Bulk density of soil for layer	g/cc	CONSTANT	1.99	-999.	-999.	-999.
Biological decay coefficient	1/yr	CONSTANT	0.000	-999.	-999.	-999.

CHEMICAL SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Solid phase decay coefficient	1/yr	DERIVED	-999.	-999.	-999.	-999.
Dissolved phase decay coefficient	1/yr	DERIVED	-999.	-999.	-999.	-999.
Overall chemical decay coefficient	1/yr	DERIVED	-999.	-999.	-999.	-999.
Acid catalyzed hydrolysis rate	l/M-yr	CONSTANT	0.000	-999.	-999.	-999.
Neutral hydrolysis rate constant	1/yr	CONSTANT	0.000	-999.	-999.	-999.
Base catalyzed hydrolysis rate	l/M-yr	CONSTANT	0.000	-999.	-999.	-999.
Reference temperature	C	CONSTANT	25.0	-999.	-999.	-999.
Normalized distribution coefficient	ml/g	CONSTANT	0.000	-999.	-999.	-999.
Distribution coefficient	--	DERIVED	-999.	-999.	-999.	-999.
Biodegradation coefficient (sat. zone)	1/yr	CONSTANT	0.000	-999.	-999.	-999.
Air diffusion coefficient	cm2/s	CONSTANT	-999.	-999.	-999.	-999.
Reference temperature for air diffusion	C	CONSTANT	-999.	-999.	-999.	-999.
Molecular weight	g/M	CONSTANT	-999.	-999.	-999.	-999.
Mole fraction of solute	--	CONSTANT	-999.	-999.	-999.	-999.
Vapor pressure of solute	mm Hg	CONSTANT	-999.	-999.	-999.	-999.
Henry`s law constant	atm-m^3/M	CONSTANT	-999.	-999.	-999.	-999.
Overall 1st order decay sat. zone	1/yr	DERIVED	0.000	0.000	0.000	1.00
Not currently used		CONSTANT	0.000	0.000	0.000	0.000
Not currently used		CONSTANT	0.000	0.000	0.000	0.000

SOURCE SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Infiltration rate	m/yr	CONSTANT	0.305E-01	-999.	-999.	-999.
Area of waste disposal unit	m^2	CONSTANT	0.273E+04	-999.	-999.	-999.
Duration of pulse	yr	DERIVED	50.0	-999.	-999.	-999.
Spread of contaminant source	m	DERIVED	-999.	-999.	-999.	-999.
Recharge rate	m/yr	CONSTANT	0.000	-999.	-999.	-999.
Source decay constant	1/yr	CONSTANT	0.250E-01	0.000	0.000	0.000
Initial concentration at landfill	mg/l	CONSTANT	0.127E+04	-999.	-999.	-999.
Length scale of facility	m	DERIVED	52.3	-999.	-999.	-999.
Width scale of facility	m	DERIVED	52.3	-999.	-999.	-999.
Near field dilution		DERIVED	1.00	0.000	0.000	1.00

AQUIFER SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Particle diameter	cm	CONSTANT	-999.	-999.	-999.	-999.
Aquifer porosity	--	CONSTANT	0.300	-999.	-999.	-999.
Bulk density	g/cc	CONSTANT	1.86	-999.	-999.	-999.
Aquifer thickness	m	CONSTANT	6.10	-999.	-999.	-999.
Source thickness (mixing zone depth)	m	DERIVED	-999.	-999.	-999.	-999.
Conductivity (hydraulic)	m/yr	CONSTANT	315.	-999.	-999.	-999.
Gradient (hydraulic)		CONSTANT	0.300E-02	-999.	-999.	-999.
Groundwater seepage velocity	m/yr	DERIVED	-999.	-999.	-999.	-999.
Retardation coefficient	--	DERIVED	-999.	-999.	-999.	-999.
Longitudinal dispersivity	m	FUNCTION OF X	-999.	-999.	-999.	-999.
Transverse dispersivity	m	FUNCTION OF X	-999.	-999.	-999.	-999.
Vertical dispersivity	m	FUNCTION OF X	-999.	-999.	-999.	-999.
Temperature of aquifer	C	CONSTANT	20.0	-999.	-999.	-999.
pH	--	CONSTANT	7.00	-999.	-999.	-999.
Organic carbon content (fraction)		CONSTANT	0.000	-999.	-999.	-999.
Well distance from site	m	CONSTANT	1.00	-999.	-999.	-999.
Angle off center	degree	CONSTANT	0.000	-999.	-999.	-999.
Well vertical distance	m	CONSTANT	0.000	-999.	-999.	-999.

TIME	CONCENTRATION
0.000E+00	0.00000E+00
0.250E+02	0.00000E+00
0.500E+02	0.00000E+00
0.750E+02	0.00000E+00
0.100E+03	0.18632E-01
0.125E+03	0.87473E+00
0.150E+03	0.98003E+01
0.175E+03	0.43380E+02
0.200E+03	0.10634E+03
0.225E+03	0.17470E+03
0.250E+03	0.21388E+03
0.275E+03	0.21440E+03
0.300E+03	0.18303E+03
0.325E+03	0.13960E+03
0.350E+03	0.97736E+02
0.375E+03	0.63525E+02
0.400E+03	0.39751E+02
0.425E+03	0.23482E+02
0.450E+03	0.13645E+02
0.475E+03	0.77360E+01

Chloride Concentration At The Receptor Well

Aspen Gainer Unit #1