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

State of New Mexico
Energy Minerals and Natural Resources

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

RECEIVED
JUL 22 2010
HOBBSOCD

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 FINAL

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company: Samson Resources Company	Contact: Autumn Long
Address: Two West Second Street, Tulsa, OK 74103-3103	Telephone No.: (918) 591-1364
Facility Name: C.S. Caylor	Facility Type: CTB Produced Water Line

Surface Owner: State of New Mexico	Mineral Owner	Lease No. API #30-025-05430

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County:
D	6	17S	37E	660	FNL	665	FWL	Lea

Latitude: 32.86899 N Longitude: -103.29661 W

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: Unknown	Volume Recovered: 2 BBL
Source of Release: Weld in Poly Line	Date and Hour of Occurrence: 06/09/2010; Unknown	Date and Hour of Discovery: 06/09/2010; Unknown
Was Immediate Notice Given? ☐ Yes ☒ No ☐ Not Required	If YES, To Whom: Larry Johnson contacted Autumn Long on 06/09/10, regarding release	
By Whom?	Date and Hour: 06/09/2010; Unknown	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*
N/A

Describe Cause of Problem and Remedial Action Taken.* The release occurred due to a 2" SDR-7 poly line that was welded with SDR-11 poly line, which was incompatible and came apart at the weld, causing a release of an unknown quantity of produced water. Well was shut-in and poly line repaired; two barrels of produced water was vacuumed u-up. Further corrective actions are being identified.

Describe Area Affected and Cleanup Action Taken.* Soil boring BH-1 was drilled in release area, as requested by OCD, and samples collected at 0, 3, 5, 7, 10 and 15 feet. Chloride decreased below 250 mg/Kg between 3 and 5 feet and soil was excavated to 6 feet and disposed at Sundance Services, located east of Eunice, New Mexico. Confirmation (5-spot composite) sample from bottom of excavation with chloride at 352 mg/Kg. On June 24, 2010, OCD in Hobbs, New Mexico, granted verbal approved to fill excavation with clean soil. Excavation filling completed on June 28, 2010.

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:	OIL CONSERVATION DIVISION
Printed Name: Mark J. Larson	Approved by District Supervisor: ENVIRONMENTAL ENGINEER
Title: Sr. Project Manager, Larson & Associates, Inc. (Consultant)	Approval Date: 7.22.10 Expiration Date: —
E-mail Address: mark@laenvironmental.com	Conditions of Approval: Attached ☐ IRP# 2557 (SECOND LEAK)
Date: 06/28//2010 Phone: (432) 687-0901 (Office) (432) 556-8656 (Cell)	

* Attach Additional Sheets If Necessary

1ST LEAK WAS IRP# 2553

FLOYD STEED 575.513.1687
FSTEED@SAMSON.COM
918.591.7701
FAX 918.591.7727

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-14
Revised October 10, 200

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

Release Notification and Corrective Action

OPERATOR

[X] Initial Report [ ] Final Report

Name of Company: Samson Resources Company	Contact: Autumn Long
Address: Two West Second Street	Telephone No.: (918) 591-1364
Facility Name: C. S. Caylor	Facility Type: CTB Produced Water Line

Surface Owner: State of New Mexico	Mineral Owner: Samson Resources Company	Lease No.: API #30-025-05130

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
D	6	17S	37E	660	FNL	665	FWL	Lea

Latitude: 32.86899 N Longitude: -103.29661 W

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: Unknown Barrels	Volume Recovered: 2 Barrels
Source of Release: Weld in Polyline	Date and Hour of Occurrence: 06/09/2010; Unknown	Date and Hour of Discovery: 06/09/2010; Unknown
Was Immediate Notice Given? [ ] Yes [X] No [ ] Not Required	~~If YES, To Whom?~~ Larry Johnson contacted Autumn Long on 6/9/10, regarding release	
By Whom?	Date and Hour: 06/09/2010; Unknown	
Was a Watercourse Reached? [ ] Yes [X] No	If YES, Volume Impacting the Watercourse: N/A	

If a Watercourse was Impacted, Describe Fully.*
N/A

Describe Cause of Problem and Remedial Action Taken.*

The release occurred due to a 2" SDR-7 poly line was welded with a SDR-11 poly line, which was incompatible and came apart at the weld, causing a release of an unknown quantity of produced water. Well was shut-in and poly line repaired; two barrels of produced water was vacuumed-up. Further corrective actions are being identified.

NOTE: SECOND LEAK @ SAME LOCAL - SEE RP 2553

Describe Area Affected and Cleanup Action Taken.*
Area affected is approximately 4' x 6'. Two (2) barrels of produced water were vacuumed-up.

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: Autumn M. Long	OIL CONSERVATION DIVISION
Printed Name: Autumn Long	Approved by District Supervisor: Johnson ENVIRONMENTAL ENGINEER
Title: Environmental Specialist	Approval Date: 6.10.10 Expiration Date: 8.10.10
E-mail Address: autumnl@samson.com	Conditions of Approval: SUBMIT FINAL C-141 w/Doc B4 IRP# 10.6.2557 Attached [ ]
Date: June 9, 2010 Phone: (918) 591-1364	

* Attach Additional Sheets If Necessary

NLWJ 2531
PLWJ 3519

RECEIVED
JUL 22 2010
HOBBSOCD

REMEDIATION REPORT
Produced Water Flow Line Leak
C.S. Caylor Lease
1RP-2557
Lea County, New Mexico

Project No. 10-0112

June 28, 2010

Prepared for:
Samson Resources Company
Two West Second Street
Tulsa, Oklahoma 74103-3103

Prepared by:
Mark J. Larson
Project Manager

Larson & Associates, Inc.
507 North Marienfeld, Suite 200
Midland, Texas 79701

Table of Content

List of Tables

List of Figures

List of Appendices

1.0 Executive Summary

This report is submitted to the New Mexico Oil Conservation Division (OCD) on behalf of Samson Resources Company (Samson) by Larson & Associates, Inc. (LAI), its consultant, to report the investigation and remediation of a produced water leak that occurred on a flow line at the C.S. Caylor Lease. The leak is located within the City of Lovington well field in Unit D (NW/4, NW/4), Section 6, Township 17 South and Range 37 East in Lea County, New Mexico. The leak occurred about 200 feet south of the Lovington Paddock Unit Well #118, API #30-025-31275. The geodetic position is 32.86899° north and -103.29661° west.

The leak occurred on June 6, 2010, when a fusion weld failed on the 2 inch poly flow line. Samson attributed the failure to incompatibility of material (SDR-7 v SDR-11) that was used to repair the line after being struck by heavy equipment. The volume of the leak was unknown and the OCD required Samson to install a boring to determine the vertical extent of chloride in soil.

On June 14, 2010, boring BH-1 was drilled using an air rotary rig near the source of the leak and soil samples were collected using a jam tube sampler at ground surface. Samples were collected at 3, 5, 7, 10 and 15 feet below ground surface (bgs). Headspace samples from 0 and 3 feet bgs reported 2.0 parts per million (ppm) and the laboratory reported total petroleum hydrocarbons (TPH) by method SW-8015, including gasoline range organics (GRO) and diesel range organics (GRO), below the method detection limit. The samples were not analyzed for BTEX since the PID readings were less than 100 ppm. The samples were analyzed for chloride and reported 3,080 milligrams per kilogram (mg/Kg) at the surface, 517 mg/Kg (3 feet), 90.6 mg/Kg (5 feet), 85.6 mg/Kg (7 feet), 44.1 mg/Kg (10 feet) and 15.4 mg/Kg (15 feet). Samples collected from a background boring (BH-2), approximately 175 feet east, reported chloride at 4.81 mg/Kg in the surface sample and below the method detection limit in samples from 5 and 10 feet bgs.

On June 14, 2010, Samson contracted Banta Oilfield Services, Inc. (Banta) to excavate soil from the leak area which measured about 15 x 15 feet. Soil was excavated to about 1 foot bgs where caliche prevented further excavating using a backhoe. Banta mobilized a track and hammer hoe, on June 15, 2010, to further excavate soil to about 6 feet bgs.

On June 14, 16, and 23, 2010, LAI personnel collected 5-spot composite soil samples from the bottom of the excavation at 1, 5 and 6 feet bgs, respectively. The laboratory analyzed the samples for chloride and reported concentrations of 3,090 mg/Kg (1 foot), 413 mg/Kg (5 foot) and 352 mg/Kg (6 foot).

On June 24, 2010, the OCD District 1 in Hobbs, New Mexico, granted verbal approval to fill the excavation. The excavation was filled on June 25 and 28, 2010, with soil from a borrow area that was tested and reported chloride at 122 mg/Kg.

2.0 Introduction

This report is submitted to the New Mexico Oil Conservation Division (OCD) on behalf of Samson Resources Company (Samson) by Larson & Associates, Inc. (LAI), its consultant, to present the investigation and remediation of produced water leak that occurred on June 9, 2010. The leak occurred at a fusion weld on a 2-inch poly produced water flow line in Unit D (NW/4, NW/4), Section 6, Township 17 South and Range 37 East in Lea County, New Mexico. The geodetic position is 32.86899° north and -103.29661° west. A topographic map showing the approximate depth to groundwater is presented in Figure 1. An aerial map is presented in Figure 2.

3.0 Chronology

On June 9, 2010, while inspecting the location, OCD personnel witnessed a produced water leak in the vicinity where Samson had repaired a leak on May 22, 2010. Upon investigating, Samson concluded that the leak was caused by incompatible material (SDR-7 v SDR-11) that was used to repair the line after being struck earlier by heavy equipment. Samson repaired the leak and reported the loss as unknown. The C-141 was submitted to the OCD on June 9, 2010.

4.0 Setting

The setting is as follows:

- Groundwater occurs at about 75 feet below ground surface based on records from the New Mexico State Engineer (NMSE);
- The release is within the City of Lovington well field;
- No continuously flowing watercourse is within 1,000 horizontal feet of the release;
- No surface water features, including lakes, rivers, ponds, arroyos, lakebed, sinkhole, or playa lake, are located within 1,000 horizontal feet of the release; and
- No private, domestic fresh-water well or spring are within 500 horizontal feet of release.

5.0 Investigation

On June 14, 2010, Scarborough Drilling Company, under LAI direct supervision, used an air rotary rig to drill boring BH-1 near the source of the leak. A jam tube sampler was used to collect soil samples at ground surface, 3, 5, 7, 10 and 15 feet bgs. A background boring (BH-2) was drilled approximately 175 feet east of BH-1. Soil samples were collected from the surface, 5 and 10 feet bgs. The sampler was cleaned between uses with a solution of Alkonox® detergent and water and rinsed with distilled water. Drill cutting were placed on the ground adjacent to the borings and the borings were filled with bentonite chips. A drawing depicting the leak and boring locations is presented in Figure 3.

Soil samples were collected in laboratory provided containers. The samples were labeled, chilled in an ice filled chest and hand delivered under chain of custody control to Xenco Laboratory (formerly Environmental Lab of Texas) located in Odessa, Texas. Field samples were collected in 8-ounce glass jars for the following analyses: headspace using a calibrated photoionization detector (PID) and electrical conductivity (EC) using a Myron L Model AG 5 EC meter. Samples from BH-1, surface and 3 feet bgs,

reported headspace readings of 2.0 parts per million (ppm) and were analyzed for TPH by method 8015. The TPH for these samples was below the method detection limit. BTEX was not analyzed since the PID readings were less than 100 ppm. BH-1 samples were analyzed for chloride by method 300 and reported 3,080 mg/Kg (surface), 517 mg/Kg (3 feet), 90.6 mg/Kg (5 feet), 85.6 mg/Kg (7 feet), 44.1 mg/Kg (10 feet) and 15.4 mg/Kg (15 feet). Chloride was 4.81 mg/Kg in the surface sample and less than the method detection limit BH-2 samples from 5 and 10 feet. A summary of the analytical results is presented in Table1. Appendix A presents the borehole logs. The laboratory analytical report is presented in Appendix B.

The following OCD ranking criteria were used to calculate remediation action levels (RRAL):

Ranking Criteria	Result	Ranking Score:
Depth to Groundwater (vertical feet):	50 – 99	10
Wellhead Protection Area:	Yes	20
Distance to Surface Water Body:	>1000 horizontal feet	0
Total Score		**30**

The following RRALs were assigned to the Site based on the ranking score:

Recommended Remediation Action Levels

Constituent	Action Level (ppm)
TPH	100

TPH was below the RRAL. The OCD has established 250 mg/Kg as the action level for chloride. Chloride decreased below 250 mg/Kg in samples from BH-1 between 4 and 5 feet bgs.

6.0 Remediation

On June 14, 2010, Samson contracted Banta Oilfield Services, Inc. (Banta) to excavate soil from the release area. Soil was excavated to approximately 1 foot bgs where caliche was encountered and prohibited further excavating using the backhoe. Banta mobilized a track and hammer hoe, on June 15, 2010, to excavate soil to approximately 6 feet bgs. The soil was disposed at Sundance Services located east of Eunice, New Mexico.

On June 14, 16 and 23, 2010, LAI personnel collected 5-spot composite samples from the bottom of the excavation at approximately 3, 5 and 6 feet bgs, respectively. The samples were analyzed by the laboratory for chloride which reported chloride at 3,090 mg/Kg (1 foot), 413 mg/Kg (5 foot) and 352 mg/Kg (6 foot).

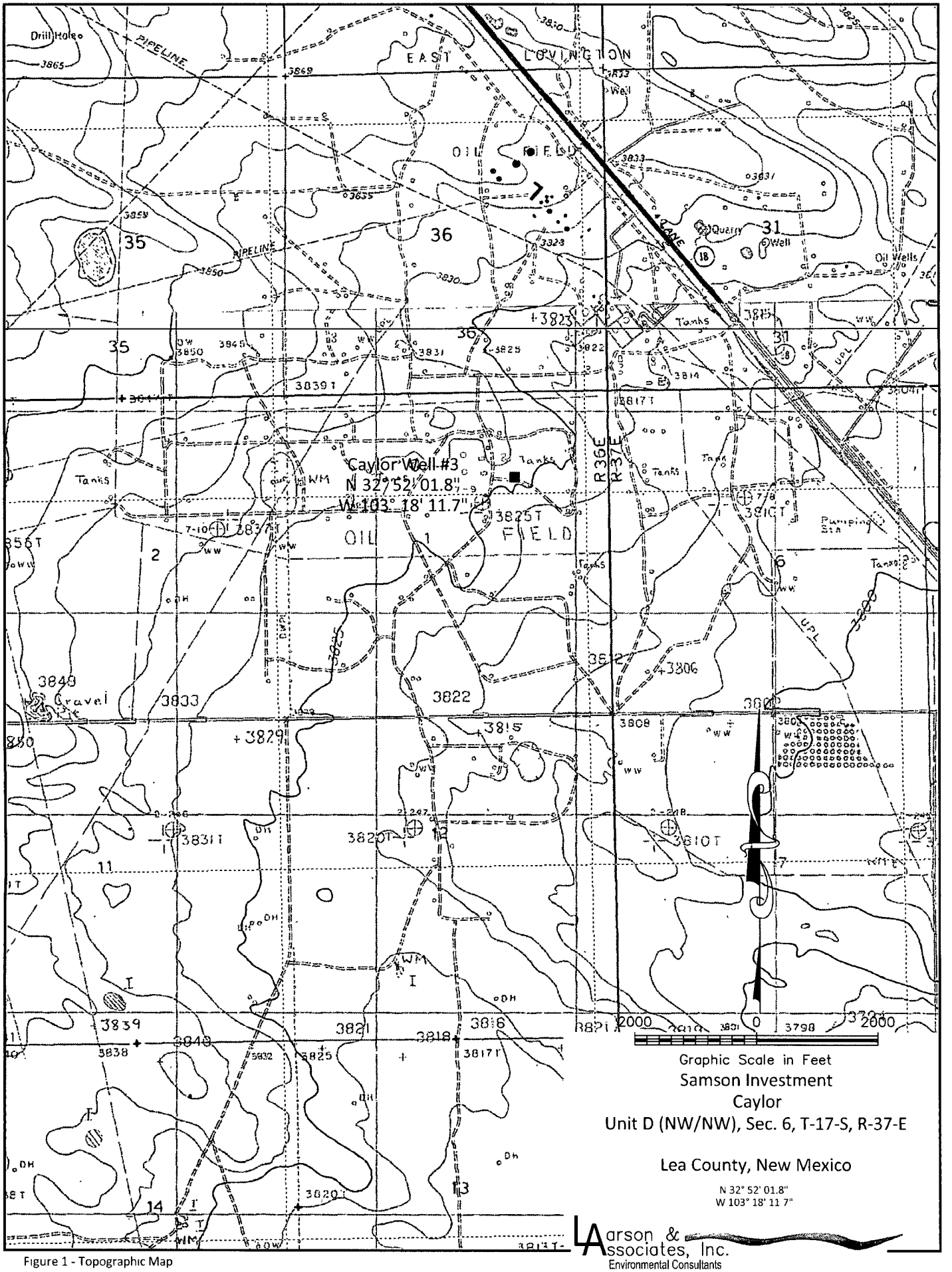
7.0 Closure

On June 24, 2010, Mr. Larry Johnson with the OCD District 1, granted verbal approval to fill the excavation. The excavation was filled with soil obtained from a nearby borrow area that was tested and reported chloride at 122 mg/Kg. The excavation was filled on June 25 and 28, 2010. Photographic documentation is presented in Appendix C. Appendix D presents the initial and final C 141.

Table 1
Summary of Soil Laboratory Analyses
Samson Resources - C.S. Caylor Lease
Lea County, New Mexico
1RP-2557

Location	Depth	Date	Status	Chloride
RRAL:				**250**
Boring Samples				
BH-1	0	6/14/2010	Excavated	**3,080**
	3	6/14/2010	Excavated	517
	5	6/14/2010	Insitu	90.6
	7	6/14/2010	Insitu	85.6
	10	6/14/2010	Insitu	44.1
	15	6/14/2010	Insitu	15.4
***BH-2**	0	6/14/2010	Insitu	4.81
	5	6/14/2010	Insitu	<4.45
	10	6/14/2010	Insitu	<4.40
Bottom Samples				
SS-13	1	6/14/2010	Excavated	**3,090**
	5	6/16/2010	Excavated	**413**
	6	6/23/2010	Insitu	**352**
Backfill				
Backfill	--	6/15/2010	Insitu	122

Notes
Depth measurements are in feet.
All concentrations are in milligrams per kilogram (mg/Kg, parts per million).
* Background



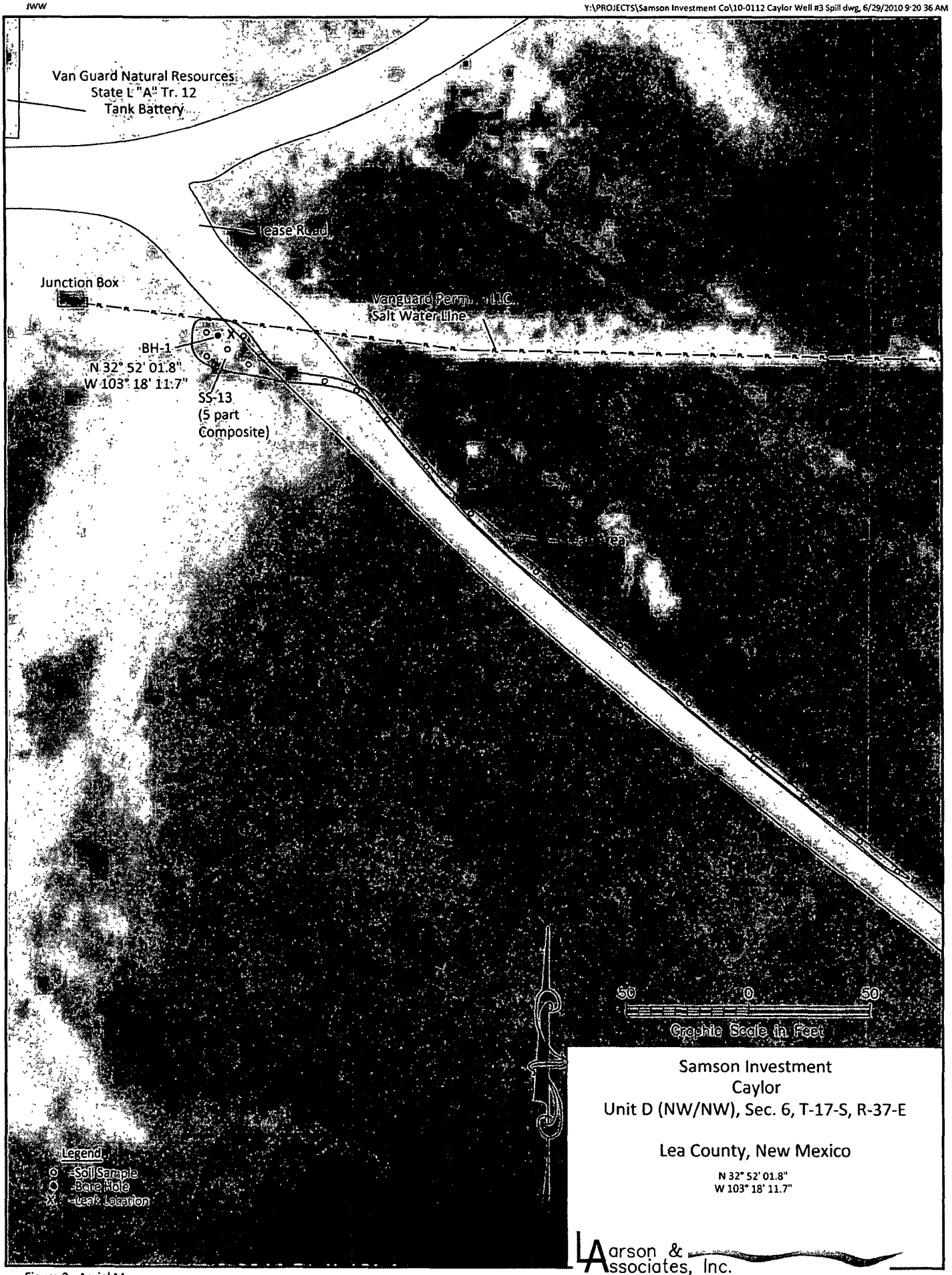
Samson Investment
Caylor
Unit D (NW/NW), Sec. 6, T-17-S, R-37-E

Lea County, New Mexico

N 32° 52' 01.8"
W 103° 18' 11 7"

Larson & Associates, Inc.
Environmental Consultants

Figure 1 - Topographic Map



Samson Investment
Caylor
Unit D (NW/NW), Sec. 6, T-17-S, R-37-E

Lea County, New Mexico

N 32° 52' 01.8"
W 103° 18' 11.7"

Larson & Associates, Inc.
Environmental Consultants

Figure 2 - Aerial Map

JWW

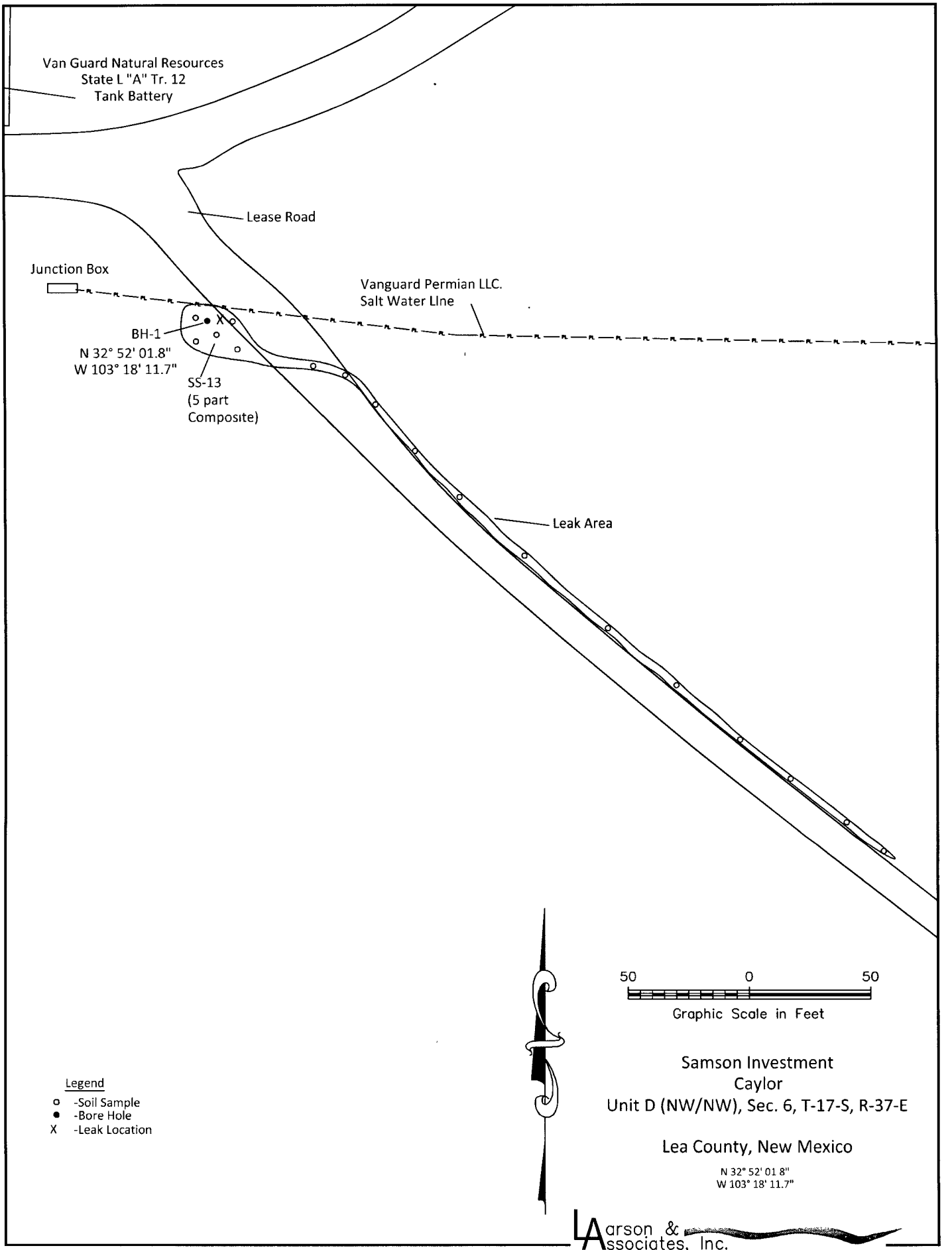


Figure 3 - Site Drawing

Latitude N 32° 52' 02.1"
Longitude W 103° 18' 13.1"

PID Response Log Plot
(parts per million)

<1 2 3 4 5 6 7 8 10 20 30 40 50 70 100 200 300 500 700 >1,000

2.0
2.0
1.0
1.0
1.0
1.0
1.0
1.0
1 0

10' bgs
20' bgs
30' bgs
40' bgs
50' bgs
60' bgs
70' bgs
80' bgs

Lithologic Well Log

Drilling started 6/14/2010, completed 6/14/2010.
Drilled with Air Rotary by Scarborough

SW - Brown (7 5YR 4/3) silty clayey sand, very fine grained quartz sand, poorly sorted, moist
Caliche - Pale Brown (10YR 7/3 to 7/4) sandy with very fine grained quartz sand, indurated

SW - Pale Brown (7.5YR 7/3 to 7/4) silty sand, very fine grained quartz sand, poorly sorted, loose, moist, slightly compacted by 10', moist, interbedded with indurated layers of caliche about 1' thick between 20' and 30', dry below 30'

Total Depth at 40'

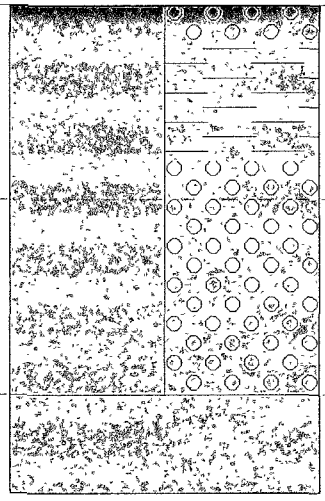
Samson Investment Co.

Caylor Well #3
NE/4, Sec. 1, T-17-S, R-36-E
Lea County, New Mexico

Larson & Associates, Inc.
Environmental Consultants

BH-1 Boring Log

Latitude N 32° 52' 01.8"
Longitude W 103° 18' 11.7"



10' bgs

20' bgs

30' bgs

40' bgs

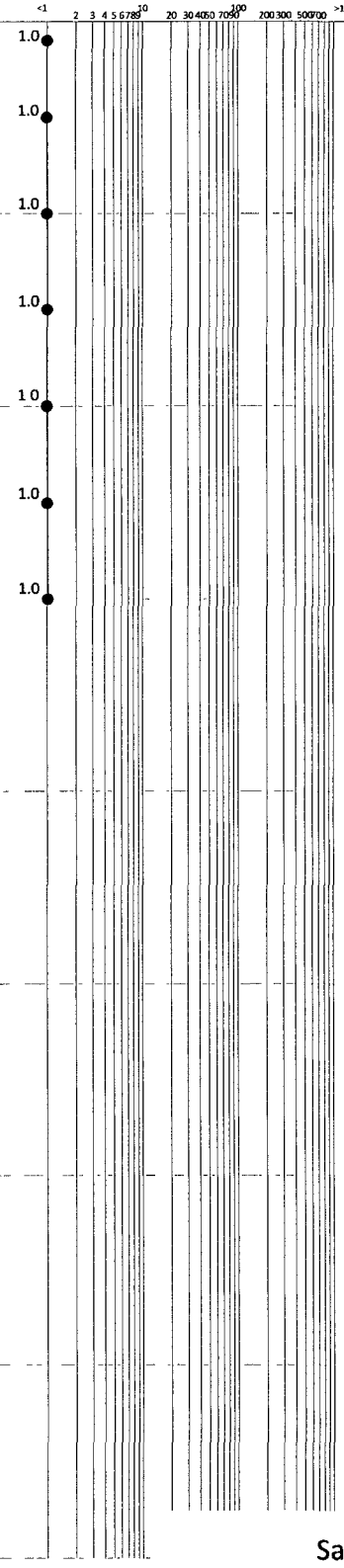
50' bgs

60' bgs

70' bgs

80' bgs

PID Response Log Plot (parts per million)



Lithologic Well Log

Drilling started 6/14/2010, completed 6/14/2010.
Drilled with Air Rotary by Scarborough

SW - Brown (7 5YR 4/3) silty clayey sand, very fine grained quartz sand, dry

Caliche - Pink (7.5YR 7/3 to 7/4) sandy with very fine grained quartz sand, indurated

SW - Pink (7.5YR 7/3 to 7/4) silty sand, very fine grained quartz sand

Total Depth at 20'

Samson Investment Co.

Caylor Well #3
NE/4, Sec. 1, T-17-S, R-36-E
Lea County, New Mexico

Larson & Associates, Inc.
Environmental Consultants

BH-2 Boring Log

Analytical Report 377064

for

Larson & Associates

Project Manager: Michelle Green

Caylor

10-0112

16-JUN-10

12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-TX), Arizona (AZ0738), 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)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)
Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)
Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)
Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370)
Xenco-Boca Raton (EPA Lab Code: FL00449):
Florida(E86240),South Carolina(96031001), Louisiana(04154), Georgia(917)
North Carolina(444), Texas(T104704468-TX), Illinois(002295)

XENCO Laboratories

16-JUN-10

Project Manager: **Michelle Green**
Larson & Associates
P.O. Box 50685
Midland, TX 79710

Reference: XENCO Report No: **377064**
Caylor
Project Address: Lea Co., NM

Michelle Green:

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 377064. 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. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. 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. 377064 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,

Brent Barron, II
Odessa Laboratory Manager

Sample Cross Reference 377064

Larson & Associates, Midland, TX

Caylor

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
BH-1 0'	S	Jun-14-10 09:47		377064-001
BH-1 3'	S	Jun-14-10 09:53		377064-002
BH-1 5'	S	Jun-14-10 10:07		377064-003
BH-1 7'	S	Jun-14-10 10:13		377064-004
BH-1 10'	S	Jun-14-10 10:15		377064-005
BH-1 15'	S	Jun-14-10 10:20		377064-006
BH-1 20'	S	Jun-14-10 10:25		377064-007
BH-1 25'	S	Jun-14-10 10:33		377064-008
BH-2 0'	S	Jun-14-10 11:35		377064-011
BH-2 5'	S	Jun-14-10 11:45		377064-012
BH-2 10'	S	Jun-14-10 11:50		377064-013
BH-2 15'	S	Jun-14-10 11:53		377064-014
BH-2 20'	S	Jun-14-10 12:00		377064-015

CASE NARRATIVE

Client Name: Larson & Associates
Project Name: Caylor

Project ID:	*10-0112*	*Report Date:*	*16-JUN-10*
Work Order Number:	*377064*	*Date Received:*	*06/14/2010*

Sample receipt non conformances and Comments:

None

Sample receipt Non Conformances and Comments per Sample:

None

Analytical Non Conformances and Comments:

Batch: LBA-810621 Percent Moisture
None

Batch: LBA-810693 TPH By SW8015 Mod
None

Batch: LBA-810864 Inorganic Anions by EPA 300
None

Certificate of Analysis Summary 377064

Larson & Associates, Midland, TX

Project Name: Caylor

Project Id: 10-0112
Contact: Michelle Green
Project Location: Lea Co., NM

Date Received in Lab: Mon Jun-14-10 04:10 pm
Report Date: 16-JUN-10
Project Manager: Brent Barron, II

Analysis Requested													
	Lab Id:	377064-001		377064-002		377064-003		377064-004		377064-005		377064-006	
	Field Id:	BH-1 0'		BH-1 3'		BH-1 5'		BH-1 7'		BH-1 10'		BH-1 15'	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-14-10 09 47		Jun-14-10 09 53		Jun-14-10 10 07		Jun-14-10 10 13		Jun-14-10 10 15		Jun-14-10 10 20	
Anions by E300	*Extracted:*												
	Analyzed:	Jun-15-10 10 22		Jun-15-10 10 22		Jun-15-10 10 22		Jun-15-10 10 22		Jun-15-10 10 22		Jun-15-10 10 22	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		3080	47 8	517	9 03	90 6	9 39	85 6	4 48	44 1	4 52	15 4	4 47
Percent Moisture	*Extracted:*												
	Analyzed:	Jun-15-10 11 40		Jun-15-10 11 40		Jun-15-10 11 40		Jun-15-10 11 40		Jun-15-10 11 40		Jun-15-10 11 40	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		12 2	1 00	7 02	1 00	10 5	1 00	6 17	1 00	7 03	1 00	5 99	1 00
TPH By SW8015 Mod	*Extracted:*	Jun-15-10 08 30		Jun-15-10 08 30									
	Analyzed:	Jun-15-10 10 57		Jun-15-10 11 24									
	Units/RL:	mg/kg	RL	mg/kg	RL								
C6-C12 Gasoline Range Hydrocarbons		ND	17 0	ND	16 2								
C12-C28 Diesel Range Hydrocarbons		ND	17 0	ND	16 2								
C28-C35 Oil Range Hydrocarbons		ND	17 0	ND	16 2								
Total TPH		ND	17 0	ND	16 2								

Brent Barron, II
Odessa Laboratory Manager

Certificate of Analysis Summary 377064

Larson & Associates, Midland, TX

Project Name: Caylor

Project Id: 10-0112
Contact: Michelle Green
Project Location: Lea Co., NM

Date Received in Lab: Mon Jun-14-10 04:10 pm
Report Date: 16-JUN-10
Project Manager: Brent Barron, II

Analysis Requested	*Lab Id:*	377064-007		377064-008		377064-011		377064-012		377064-013		377064-014	
	Field Id.	BH-1 20'		BH-1 25'		BH-2 0'		BH-2 5'		BH-2 10'		BH-2 15'	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-14-10 10 25		Jun-14-10 10 33		Jun-14-10 11 35		Jun-14-10 11 45		Jun-14-10 11 50		Jun-14-10 11 53	
Anions by E300	*Extracted:*												
	Analyzed:					Jun-15-10 10 22		Jun-15-10 10 22		Jun-15-10 10 22			
	Units/RL:					mg/kg	RL	mg/kg	RL	mg/kg	RL		
Chloride						4 81	4 33	ND	4 45	ND	4 40		
Percent Moisture	*Extracted:*												
	Analyzed:	Jun-15-10 11 40		Jun-15-10 11 40		Jun-15-10 11 40		Jun-15-10 11 40		Jun-15-10 11 40		Jun-15-10 11 40	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		5 73	1 00	4 09	1 00	3 07	1 00	5 59	1 00	4 44	1 00	5 76	1 00

Brent Barron, II
Odessa Laboratory Manager

Certificate of Analysis Summary 377064

Larson & Associates, Midland, TX

Project Name: Caylor

Project Id: 10-0112
Contact: Michelle Green
Project Location: Lea Co., NM

Date Received in Lab: Mon Jun-14-10 04:10 pm
Report Date: 16-JUN-10
Project Manager: Brent Barron, II

Analysis Requested							
	Lab Id:	377064-015					
	Field Id:	BH-2 20'					
	Depth:						
	Matrix:	SOIL					
	Sampled:	Jun-14-10 12 00					
Percent Moisture	*Extracted:*						
	Analyzed:	Jun-15-10 11 40					
	Units/RL:	%	RL				
Percent Moisture		4 96	1 00				

Brent Barron, II
Odessa Laboratory Manager

Final Ver 1.000

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 effect the recovery of the spike concentration. This condition could also effect 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 MQL and above the SQL.

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.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit

PQL Practical Quantitation Limit

* Outside XENCO's scope of NELAC Accreditation.

XENCO Laboratories

Form 2 - Surrogate Recoveries

Project Name: Caylor

Work Orders : 377064,

Project ID: 10-0112

Lab Batch #: 810693 **Sample:** 565772-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 06/15/10 10:03

TPH By SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	123	100	123	70-135	
o-Terphenyl	52 0	50 0	104	70-135	

Lab Batch #: 810693 **Sample:** 565772-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 06/15/10 10:30

TPH By SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	111	100	111	70-135	
o-Terphenyl	54 2	50 0	108	70-135	

Lab Batch #: 810693 **Sample:** 377064-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/15/10 10:57

TPH By SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	121	99 5	122	70-135	
o-Terphenyl	58 5	49 8	117	70-135	

Lab Batch #: 810693 **Sample:** 377064-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/15/10 11:24

TPH By SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	118	100	118	70-135	
o-Terphenyl	55 3	50 2	110	70-135	

Lab Batch #: 810693 **Sample:** 377064-002 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/15/10 11:51

TPH By SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	128	99 5	129	70-135	
o-Terphenyl	50 6	49 8	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: Caylor

Work Orders : 377064,

Project ID: 10-0112

Lab Batch #: 810693 **Sample:** 377064-002 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 06/15/10 12:18

TPH By SW8015 Mod Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	130	99 9	130	70-135	
o-Terphenyl	51 9	50 0	104	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

Blank Spike Recovery

Project Name: Caylor

Work Order #: 377064 **Project ID:** 10-0112

Lab Batch #: 810693 **Sample:** 565772-1-BKS **Matrix:** Solid

Date Analyzed: 06/15/2010 **Date Prepared:** 06/15/2010 **Analyst:** ASA

Reporting Units: mg/kg **Batch #:** 1

	BLANK /BLANK SPIKE RECOVERY STUDY					
TPH By SW8015 Mod **Analytes**	**Blank Result [A]**	**Spike Added [B]**	**Blank Spike Result [C]**	**Blank Spike %R [D]**	**Control Limits %R**	**Flags**
C6-C12 Gasoline Range Hydrocarbons	ND	1000	1170	117	70-135	
C12-C28 Diesel Range Hydrocarbons	ND	1000	818	82	70-135	

Blank Spike Recovery [D] = 100*[C]/[B]
All results are based on MDL and validated for QC purposes
BRL - Below Reporting Limit

XENCO Laboratories

BS / BSD Recoveries

Project Name: Caylor

Work Order #: 377064
Analyst: LATCOR
Lab Batch ID: 810864
Sample: 810864-1-BKS
Batch #: 1
Units: mg/kg

Date Prepared: 06/15/2010
Project ID: 10-0112
Date Analyzed: 06/15/2010
Matrix: Solid

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Anions by E300 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	ND	10 0	9 14	91	10	9 40	94	3	75-125	20	

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: Caylor

Work Order #: 377064
Lab Batch #: 810864
Project ID: 10-0112
Date Analyzed: 06/15/2010
Date Prepared: 06/15/2010
Analyst: LATCOR
QC- Sample ID: 377064-001 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	3080	1140	4380	114	75-125	

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

ACCREDITED IN ACCORDANCE WITH nelac

Project Name: Caylor

Work Order # : 377064 **Project ID:** 10-0112

Lab Batch ID: 810693 **QC- Sample ID:** 377064-002 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 06/15/2010 **Date Prepared:** 06/15/2010 **Analyst:** ASA

Reporting Units: mg/kg

	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
TPH By SW8015 Mod **Analytes**	**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-C12 Gasoline Range Hydrocarbons	ND	1070	1230	115	1070	1290	121	5	70-135	35	
C12-C28 Diesel Range Hydrocarbons	ND	1070	849	79	1070	881	82	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

Sample Duplicate Recovery

Project Name: Caylor

Work Order #: 377064

Lab Batch #: 810864 **Project ID:** 10-0112
Date Analyzed: 06/15/2010 **Date Prepared:** 06/15/2010 **Analyst:** LATCOR
QC- Sample ID: 377064-001 D **Batch #:** 1 **Matrix:** Soil
Reporting Units: mg/kg

Anions by E300 Analyte	SAMPLE / SAMPLE DUPLICATE RECOVERY				
	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	3080	3200	4	20	

Lab Batch #: 810621
Date Analyzed: 06/15/2010 **Date Prepared:** 06/15/2010 **Analyst:** JLG
QC- Sample ID: 377064-001 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	12 2	11 7	4	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

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 6-14-2010 PAGE 1 OF 1
PO #: LAB WORK ORDER #:
PROJECT LOCATION OR NAME: Lea Co, NM / Caylor
LAI PROJECT #: 10-0112 COLLECTOR: MK / DM

TRRP report? ☐ Yes ☑ No
TIME ZONE: Time zone/State: MN/NM

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

377064

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES: BTEX ☐ MTBE ☐	TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐	GASOLINE MOD 8015 ☐	DIESEL - MOD 8015 ☐	VOC 8260 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐	8081 PESTICIDES ☐ 8151 HERBICIDES ☐	8082 PCBS ☐	TCLP - METALS (RCRA) ☐ TCLP VOC ☐	TCLP - PEST ☐ HERB ☐ Semi-VOC ☐	TOTAL METALS (RCRA) ☐ OTHER LIST ☐	LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐	RCI ☐ TOX ☐ FLASHPOINT ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	pH ☐ HEXAVALENT CHROMIUM ☐	EXPLOSIVES ☐ PECHLORATE ☐	CHLORIDES ☐ ANIONS ☐ ALKALINITY ☐	Hold	FIELD NOTES
BH-1 0'	01	6/14/10	0947	S	2				✓			✓	✓												✓					
3'	02		0953									✓	✓												✓					
5'	03		1007																						✓					
7'	04		1013																						✓					
10'	05		1015																						✓					
15'	06		1020																						✓					
20'	07		1025																						✓					
25'	09		1033																						✓					
30'	09		1040																							✓				
40'	10		1050		↓																					✓				
BH-2 0'	11		1135		1																				✓					
5'	12		1145		1																				✓					
10'	13		1150		1																				✓					
15'	14		1153		1																				✓					
20'	15	↓	1200	↓	1																				✓					
TOTAL																														

RELINQUISHED BY: (Signature) DATE/TIME 6/14/10 16:10 RECEIVED BY: (Signature) Andrea Lam 6-14-10 16:10
RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)
RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

TURN AROUND TIME
NORMAL ☐
1 DAY ☑
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP. 2.1 THERM #: A7
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☑ NOT USED
☐ CARRIER BILL #
☑ HAND DELIVERED 9 oz glass / 4oz glass

XENCO Laboratories	XENCO Laboratories Atlanta, Boca Raton, Corpus Christi, Dallas Houston, Miami, Odessa, Philadelphia Phoenix, San Antonio, Tampa	Document Title: Sample Receipt Checklist Document No.: SYS-SRC Revision/Date: No. 01, 5/27/2010 Effective Date: 6/1/2010 Page 1 of 1

Prelogin / Nonconformance Report - Sample Log-In

Client: Larson & Assoc.

Date/Time: 6.14.10 16:10

Lab ID # : 377064

Initials: AL

Sample Receipt Checklist

1. Samples on ice?	Blue	(Water)	No	
2. Shipping container in good condition?	(Yes)	No	None	
3. Custody seals intact on shipping container (cooler) and bottles?	Yes	No	(N/A)	
4. Chain of Custody present?	(Yes)	No		
5. Sample instructions complete on chain of custody?	(Yes)	No		
6. Any missing / extra samples?	Yes	(No)		
7. Chain of custody signed when relinquished / received?	(Yes)	No		
8. Chain of custody agrees with sample label(s)?	(Yes)	No		
9. Container labels legible and intact?	(Yes)	No		
10. Sample matrix / properties agree with chain of custody?	(Yes)	No		
11. Samples in proper container / bottle?	(Yes)	No		
12. Samples properly preserved?	(Yes)	No	N/A	
13. Sample container intact?	(Yes)	No		
14. Sufficient sample amount for indicated test(s)?	(Yes)	No		
15. All samples received within sufficient hold time?	(Yes)	No		
16. Subcontract of sample(s)?	Yes	No	(N/A)	
17. VOC sample have zero head space?	(Yes)	No	N/A	

18. Cooler 1 No.		Cooler 2 No.		Cooler 3 No.		Cooler 4 No.		Cooler 5 No.	
lbs	7.1 °C	lbs	°C	lbs	°C	lbs	°C	lbs	°C

Nonconformance Documentation

Contact:_____ Contacted by:_____ Date/Time:_____

Regarding: _____

Corrective Action Taken: _____

Check all that apply:
- ☐ Cooling process has begun shortly after sampling event and out of temperature condition acceptable by NELAC 5.5.8.3.1.a.1.
- ☐ Initial and Backup Temperature confirm out of temperature conditions
- ☐ Client understands and would like to proceed with analysis

Analytical Report 377224

for

Larson & Associates

Project Manager: Michelle Green

Midland Odessa Standard List of prices

10-0112

16-JUN-10

12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-TX), Arizona (AZ0738), 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)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)
Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)
Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)
Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370)
Xenco-Boca Raton (EPA Lab Code: FL00449):
Florida(E86240),South Carolina(96031001), Louisiana(04154), Georgia(917)
North Carolina(444), Texas(T104704468-TX), Illinois(002295)

XENCO Laboratories

16-JUN-10

Project Manager: **Michelle Green**
Larson & Associates
P.O. Box 50685
Midland, TX 79710

Reference: XENCO Report No: **377224**
Midland Odessa Standard List of prices
Project Address:

Michelle Green:

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 377224. 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. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. 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. 377224 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,

Brent Barron, II
Odessa Laboratory Manager

XENCO Laboratories

Sample Cross Reference 377224

ACCREDITED IN ACCORDANCE WITH nelac

Larson & Associates, Midland, TX

Midland Odessa Standard List of prices

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SS-12 (1')	S	Jun-15-10 08:50		377224-001
SS-13 (1')	S	Jun-15-10 11:10		377224-002

CASE NARRATIVE

Client Name: Larson & Associates
Project Name: Midland Odessa Standard List of prices

Project ID:	*10-0112*	*Report Date:*	*16-JUN-10*
Work Order Number:	*377224*	*Date Received:*	*06/15/2010*

Sample receipt non conformances and Comments:

None

Sample receipt Non Conformances and Comments per Sample:

None

Analytical Non Conformances and Comments:

Batch: LBA-810866 Percent Moisture
None

Batch: LBA-810903 Inorganic Anions by EPA 300
None

Certificate of Analysis Summary 377224

Larson & Associates, Midland, TX

Project Name: Midland Odessa Standard List of prices

Project Id: 10-0112
Contact: Michelle Green
Project Location:

Date Received in Lab: Tue Jun-15-10 04:50 pm
Report Date: 16-JUN-10
Project Manager: Brent Barron, II

Analysis Requested													
	Lab Id:	377224-001				377224-002							
	Field Id:	SS-12 (1')				SS-13 (1')							
	Depth:												
	Matrix:	SOIL				SOIL							
	Sampled:	Jun-15-10 08 50				Jun-15-10 11 10							
Anions by E300	***Extracted:***												
	Analyzed:	Jun-16-10 08 46				Jun-16-10 08 46							
	Units/RL:	mg/kg	RL			mg/kg	RL						
Chloride		2220	46 4			3090	46 8						
Percent Moisture	***Extracted:***												
	Analyzed:	Jun-16-10 12 22				Jun-16-10 12 22							
	Units/RL:	%	RL			%	RL						
Percent Moisture		9 53	1 00			10 3	1 00						

Brent Barron, II
Odessa Laboratory 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 effect the recovery of the spike concentration. This condition could also effect 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 MQL and above the SQL.

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.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit

PQL Practical Quantitation Limit

* Outside XENCO's scope of NELAC Accreditation.

XENCO Laboratories

BS / BSD Recoveries

Project Name: Midland Odessa Standard List of prices

Work Order #: 377224
Analyst: LATCOR
Lab Batch ID: 810903
Sample: 810903-1-BKS
Units: mg/kg

Date Prepared: 06/16/2010
Batch #: 1

Project ID: 10-0112
Date Analyzed: 06/16/2010
Matrix: Solid

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Anions by E300 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	ND	10 0	10 2	102	10	10 1	101	1	75-125	20	

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: Midland Odessa Standard List of prices

Work Order #: 377224
Lab Batch #: 810903
Project ID: 10-0112
Date Analyzed: 06/16/2010
Date Prepared: 06/16/2010
Analyst: LATCOR
QC- Sample ID: 376805-001 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	229	236	508	118	75-125	

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

Sample Duplicate Recovery

ACCREDITED IN ACCORDANCE WITH nelac

Project Name: Midland Odessa Standard List of prices

Work Order #: 377224

Lab Batch #: 810903 **Project ID:** 10-0112

Date Analyzed: 06/16/2010 **Date Prepared:** 06/16/2010 **Analyst:** LATCOR

QC- Sample ID: 376805-001 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Anions by E300	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	229	200	14	20	

Lab Batch #: 810866

Date Analyzed: 06/16/2010 **Date Prepared:** 06/16/2010 **Analyst:** JLG

QC- Sample ID: 377317-001 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: %

Percent Moisture	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture	7 23	6.68	8	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

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants

507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to: M Green

DATE: 6-15-2010 PAGE 1 OF 1
PO #: _____ LAB WORK ORDER #: _____
PROJECT LOCATION OR NAME: _____
LAI PROJECT #: 10-0112 COLLECTOR: D. McGinnis

TRRP report? ☐ Yes ☐ No

TIME ZONE: Time zone/State: MST

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

377224

Field Sample I.D.	Lab #	Date	Time (MST)	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
SS-12 (1')	01	6-15	0850	S	1				✓		✓	
SS-13 (1')	02	6-15	1110	S	1				✓		✓	5pt composite
TOTAL												

ANALYSES: BTEX ☐ MTBE ☐ | TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☐ | DIESEL - MOD 8015 ☐ | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ O.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☐ ANIONS ☐ ALKALINITY ☐

RELINQUISHED BY:(Signature)	DATE/TIME	RECEIVED BY: (Signature)
	6-15-10/1650	Jeanne Fitch
RELINQUISHED BY:(Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY:(Signature)	DATE/TIME	RECEIVED BY: (Signature)

TURN AROUND TIME
NORMAL ☐
1 DAY ☒
2 DAY ☐
OTHER ☐ _____

LABORATORY USE ONLY: 2-9oz glass w/labels no seals
RECEIVING TEMP: 2.6°C THERM #: _____
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL # _____
☐ HAND DELIVERED

XENCO Laboratories	Document Title: Sample Receipt Checklist
XENCO Laboratories Atlanta, Boca Raton, Corpus Christi, Dallas Houston, Miami, Odessa, Philadelphia Phoenix, San Antonio, Tampa	Document No.: SYS-SRC Revision/Date: No. 01, 5/27/2010 Effective Date: 6/1/2010 Page 1 of 1

Prelogin / Nonconformance Report - Sample Log-In

Client: Larson's Associates

Date/Time: 06-15-10 @ 1650

Lab ID #: 377224

Initials: JMC

Sample Receipt Checklist

1. Samples on ice?	Blue	(Water)	No	
2. Shipping container in good condition?	(Yes)	No	None	
3. Custody seals intact on shipping container (cooler) and bottles?	Yes	No	(N/A)	
4. Chain of Custody present?	(Yes)	No		
5. Sample instructions complete on chain of custody?	(Yes)	No		
6. Any missing / extra samples?	Yes	(No)		
7. Chain of custody signed when relinquished / received?	(Yes)	No		
8. Chain of custody agrees with sample label(s)?	(Yes)	No		
9. Container labels legible and intact?	(Yes)	No		
10. Sample matrix / properties agree with chain of custody?	(Yes)	No		
11. Samples in proper container / bottle?	(Yes)	No		
12. Samples properly preserved?	(Yes)	No	N/A	
13. Sample container intact?	(Yes)	No		
14. Sufficient sample amount for indicated test(s)?	(Yes)	No		
15. All samples received within sufficient hold time?	(Yes)	No		
16. Subcontract of sample(s)?	Yes	(No)	N/A	
17. VOC sample have zero head space?	Yes	No	(N/A)	

18. Cooler 1 No.		Cooler 2 No.		Cooler 3 No.		Cooler 4 No.		Cooler 5 No.	
lbs	2.6 °C	lbs	°C	lbs	°C	lbs	°C	lbs	°C

Nonconformance Documentation

Contact:_____ Contacted by:_____ Date/Time:_____

Regarding: _____

Corrective Action Taken: _____

Check all that apply:
- ☐ Cooling process has begun shortly after sampling event and out of temperature condition acceptable by NELAC 5.5.8.3.1.a.1.
- ☐ Initial and Backup Temperature confirm out of temperature conditions
- ☐ Client understands and would like to proceed with analysis

Analytical Report 377603

for

Larson & Associates

Project Manager: Michelle Green

Midland Odessa Standard List of prices

10-0112

21-JUN-10

12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-TX), Arizona (AZ0738), 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)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)
Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)
Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)
Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370)
Xenco-Boca Raton (EPA Lab Code: FL00449):
Florida(E86240),South Carolina(96031001), Louisiana(04154), Georgia(917)
North Carolina(444), Texas(T104704468-TX), Illinois(002295), Florida(E86349)

XENCO Laboratories

21-JUN-10

Project Manager: **Michelle Green**
Larson & Associates
P.O. Box 50685
Midland, TX 79710

Reference: XENCO Report No: **377603**
Midland Odessa Standard List of prices
Project Address:

Michelle Green:

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 377603. 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. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. 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. 377603 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,

Brent Barron, II
Odessa Laboratory Manager

Sample Cross Reference 377603

Larson & Associates, Midland, TX

Midland Odessa Standard List of prices

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SS-13 (5')	S	Jun-16-10 12:30		377603-001

CASE NARRATIVE

Client Name: Larson & Associates
Project Name: Midland Odessa Standard List of prices

Project ID:	*10-0112*	*Report Date:*	*21-JUN-10*
Work Order Number:	*377603*	*Date Received:*	*06/17/2010*

Sample receipt non conformances and Comments:

None

Sample receipt Non Conformances and Comments per Sample:

None

Analytical Non Conformances and Comments:

Batch: LBA-811074 Percent Moisture
None

Batch: LBA-811425 Inorganic Anions by EPA 300
None

Certificate of Analysis Summary 377603

Larson & Associates, Midland, TX

Project Name: Midland Odessa Standard List of prices

Project Id: 10-0112
Contact: Michelle Green
Project Location:

Date Received in Lab: Thu Jun-17-10 10:55 am
Report Date: 21-JUN-10
Project Manager: Brent Barron, II

Analysis Requested							
	Lab Id:	377603-001					
	Field Id:	SS-13 (5')					
	Depth:						
	Matrix:	SOIL					
	Sampled:	Jun-16-10 12 30					
Anions by E300	***Extracted:***						
	Analyzed:	Jun-18-10 10 48					
	Units/RL:	mg/kg	RL				
Chloride		413	9 52				
Percent Moisture	***Extracted:***						
	Analyzed:	Jun-17-10 15 05					
	Units/RL:	%	RL				
Percent Moisture		11 8	1 00				

Brent Barron, II
Odessa Laboratory Manager

Final Ver 1 000

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 effect the recovery of the spike concentration. This condition could also effect 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 MQL and above the SQL.

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.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit

PQL Practical Quantitation Limit

* Outside XENCO's scope of NELAC Accreditation.

XENCO Laboratories

BS / BSD Recoveries

Project Name: Midland Odessa Standard List of prices

Work Order #: 377603 **Project ID:** 10-0112

Analyst: LATCOR **Date Prepared:** 06/18/2010 **Date Analyzed:** 06/18/2010

Lab Batch ID: 811425 **Sample:** 811425-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Anions by E300 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	ND	10 0	9 96	100	10	9 96	100	0	75-125	20	

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: Midland Odessa Standard List of prices

Work Order #: 377603
Lab Batch #: 811425
Project ID: 10-0112
Date Analyzed: 06/18/2010
Date Prepared: 06/18/2010
Analyst: LATCOR
QC- Sample ID: 377603-001 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	413	227	648	104	75-125	

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

Sample Duplicate Recovery

ACCREDITED IN ACCORDANCE WITH nelac

Project Name: Midland Odessa Standard List of prices

Work Order #: 377603

Lab Batch #: 811425 **Project ID:** 10-0112

Date Analyzed: 06/18/2010 **Date Prepared:** 06/18/2010 **Analyst:** LATCOR

QC- Sample ID: 377603-001 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Anions by E300	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	413	439	6	20	

Lab Batch #: 811074

Date Analyzed: 06/17/2010 **Date Prepared:** 06/17/2010 **Analyst:** JLG

QC- Sample ID: 377573-001 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: %

Percent Moisture	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture	19 0	19 0	0	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

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to: M. Green

DATE: 6-16-2010 PAGE 1 OF 1

PO #: _____ LAB WORK ORDER #: _____

PROJECT LOCATION OR NAME: _____

LAI PROJECT #: 10-0112 COLLECTOR: D McGinnis

TRRP report? ☐ Yes ☐ No

TIME ZONE: Time zone/State: MST

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

377603

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES: BTEX ☐ MTBE ☐	TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐	GASOLINE MOD 8015 ☐	DIESEL - MOD 8015 ☐	VOC 8260 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐	8081 PESTICIDES ☐ 8151 HERBICIDES ☐	8082 PCBS ☐	TCLP - METALS (RCRA) ☐ TCLP VOC ☐	TCLP - PEST ☐ HERB ☐ Semi-VOC ☐	TOTAL METALS (RCRA) ☐ D.W. 200.8 ☐ OTHER LIST ☐	LEAD - TOTAL ☐ TCLP ☐	RCI ☐ TOX ☐ FLASHPOINT ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	pH ☐ HEXAVALENT CHROMIUM ☐	EXPLOSIVES ☐ PECHLORATE ☐	CHLORIDE ☑ ANIONS ☐ ALKALINITY ☐	FIELD NOTES
SS-13 (5')	01	6-16	1230	S	1				✓																		✓		5pt composite
TOTAL																												

RELINQUISHED BY:(Signature) DATE/TIME 6-17-10/1055 RECEIVED BY: (Signature) Andrea Sum 6.17.10 10:55

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

TURN AROUND TIME
NORMAL ☐
1 DAY ☑
2 DAY ☐
OTHER ☐
_____

LABORATORY USE ONLY:
RECEIVING TEMP: 18.1 THERM #: _____
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☒ NOT USED
☐ CARRIER BILL # _____
☒ HAND DELIVERED 902 glass

XENCO Laboratories	XENCO Laboratories Atlanta, Boca Raton, Corpus Christi, Dallas Houston, Miami, Odessa, Philadelphia Phoenix, San Antonio, Tampa	Document Title: Sample Receipt Checklist Document No.: SYS-SRC Revision/Date: No. 01, 5/27/2010 Effective Date: 6/1/2010 Page 1 of 1

Prelogin / Nonconformance Report - Sample Log-In

Client: Larson & Assoc.

Date/Time: 6.17.10 10:55

Lab ID #: 377603

Initials: AL

Sample Receipt Checklist

1. Samples on ice?	Blue	Water	(No)
2. Shipping container in good condition?	Yes	No	(None)
3. Custody seals intact on shipping container (cooler) and bottles?	Yes	No	(N/A)
4. Chain of Custody present?	(Yes)	No	
5. Sample instructions complete on chain of custody?	(Yes)	No	
6. Any missing / extra samples?	Yes	(No)	
7. Chain of custody signed when relinquished / received?	(Yes)	No	
8. Chain of custody agrees with sample label(s)?	(Yes)	No	
9. Container labels legible and intact?	(Yes)	No	
10. Sample matrix / properties agree with chain of custody?	(Yes)	No	
11. Samples in proper container / bottle?	(Yes)	No	
12. Samples properly preserved?	(Yes)	No	N/A
13. Sample container intact?	(Yes)	No	
14. Sufficient sample amount for indicated test(s)?	(Yes)	No	
15. All samples received within sufficient hold time?	(Yes)	No	
16. Subcontract of sample(s)?	Yes	No	(N/A)
17. VOC sample have zero head space?	Yes	No	(N/A)

18. Cooler 1 No.		Cooler 2 No.		Cooler 3 No.		Cooler 4 No.		Cooler 5 No.	
lbs	18. °C	lbs	°C	lbs	°C	lbs	°C	lbs	°C

Nonconformance Documentation

Contact:_____ Contacted by:_____ Date/Time:_____

Regarding: _____

Corrective Action Taken: _____

Check all that apply:
- ☐ Cooling process has begun shortly after sampling event and out of temperature condition acceptable by NELAC 5.5.8.3.1.a.1.
- ☐ Initial and Backup Temperature confirm out of temperature conditions
- ☐ Client understands and would like to proceed with analysis

Analytical Report 377208

for

Larson & Associates

Project Manager: Mark Larson

Samson - Caylor

10-0112

16-JUN-10

12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-TX), Arizona (AZ0738), 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)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)
Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)
Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)
Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370)
Xenco-Boca Raton (EPA Lab Code: FL00449):
Florida(E86240),South Carolina(96031001), Louisiana(04154), Georgia(917)
North Carolina(444), Texas(T104704468-TX), Illinois(002295)

XENCO Laboratories

16-JUN-10

Project Manager: **Mark Larson**
Larson & Associates
P.O. Box 50685
Midland, TX 79710

Reference: XENCO Report No: **377208**
Samson - Caylor
Project Address: Lea Co., MN

Mark Larson:

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 377208. 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. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. 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. 377208 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,

Brent Barron, II
Odessa Laboratory Manager

XENCO Laboratories

Sample Cross Reference 377208

Larson & Associates, Midland, TX

Samson - Caylor

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Backfill	S	Jun-15-10 10:20		377208-001

CASE NARRATIVE

XENCO Laboratories

Client Name: Larson & Associates
Project Name: Samson - Caylor

ACCREDITED IN ACCORDANCE WITH nelac

Project ID: *10-0112*
Work Order Number: *377208*

Report Date: *16-JUN-10*
Date Received: *06/15/2010*

Sample receipt non conformances and Comments:

None

Sample receipt Non Conformances and Comments per Sample:

None

Analytical Non Conformances and Comments:

Batch: LBA-810806 Percent Moisture
None

Batch: LBA-810903 Inorganic Anions by EPA 300
None

Certificate of Analysis Summary 377208

Larson & Associates, Midland, TX

Project Name: Samson - Caylor

Project Id: 10-0112
Contact: Mark Larson
Project Location: Lea Co., MN

Date Received in Lab: Tue Jun-15-10 03:15 pm
Report Date: 16-JUN-10
Project Manager: Brent Barron, II

Analysis Requested							
	Lab Id:	377208-001					
	Field Id:	Backfill					
	Depth:						
	Matrix:	SOIL					
	Sampled:	Jun-15-10 10 20					
Anions by E300	***Extracted:***						
	Analyzed:	Jun-16-10 08 46					
	Units/RL:	mg/kg	RL				
Chloride		122	4 37				
Percent Moisture	***Extracted:***						
	Analyzed:	Jun-16-10 08 19					
	Units/RL:	%	RL				
Percent Moisture		3 82	1 00				

Brent Barron, II
Odessa Laboratory 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 effect the recovery of the spike concentration. This condition could also effect 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 MQL and above the SQL.

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.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit

PQL Practical Quantitation Limit

* Outside XENCO's scope of NELAC Accreditation.

XENCO Laboratories

BS / BSD Recoveries

Project Name: Samson - Caylor

Work Order #: 377208
Analyst: LATCOR
Lab Batch ID: 810903
Sample: 810903-1-BKS
Units: mg/kg

Date Prepared: 06/16/2010
Batch #: 1

Project ID: 10-0112
Date Analyzed: 06/16/2010
Matrix: Solid

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Anions by E300 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	ND	10 0	10 2	102	10	10 1	101	1	75-125	20	

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: Samson - Caylor

Work Order #: 377208
Lab Batch #: 810903
Project ID: 10-0112
Date Analyzed: 06/16/2010
Date Prepared: 06/16/2010
Analyst: LATCOR
QC- Sample ID: 376805-001 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	229	236	508	118	75-125	

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

Sample Duplicate Recovery

ACCREDITED IN ACCORDANCE WITH nelac

Project Name: Samson - Caylor

Work Order #: 377208

Lab Batch #: 810903 **Project ID:** 10-0112

Date Analyzed: 06/16/2010 **Date Prepared:** 06/16/2010 **Analyst:** LATCOR

QC- Sample ID: 376805-001 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Anions by E300	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	229	200	14	20	

Lab Batch #: 810806

Date Analyzed: 06/16/2010 **Date Prepared:** 06/16/2010 **Analyst:** JLG

QC- Sample ID: 377167-001 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: %

Percent Moisture	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture	3.58	3 48	3	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
The Environmental Lab of Texas

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

12600 West I-20 East
Odessa, Texas 79765

Phone: 432-563-1800
Fax: 432-563-1713

Project Manager: Mark Larson
Company Name: Larson & Associates, Inc.
Company Address: 507 N. Marienfeld St, Ste 200
City/State/Zip: Midland, TX 79701
Telephone No: (432) 687-0901
Fax No: (432) 687-0456
Sampler Signature: [signature]
e-mail: mark@laenvironmental.com

Project Name: Samson-Caylor
Project #: 10-0112
Project Loc: Lea Co., NM
PO #:
Report Format: ☑ Standard ☐ TRRP ☐ NPDES

(lab use only)
ORDER #: 377208

Analyze For: TCLP: / TOTAL:

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total #. of Containers	Ice	HNO_3	HCl	H_2SO_4	NaOH	$Na_2S_2O_3$	None	Other (Specify)	Matrix (DW=Drinking Water SL=Sludge GW=Groundwater S=Soil/Solid NP=Non-Potable Specify Other)	TPH: 418.1 8015M 8015B	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, Alkalinity)	SAR / ESP / CEC	Metals As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chloride		RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
01	Backfill	-	-	6/15/10	10:20		1	✓								S												✓			✓

Preservation & # of Containers

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	6/15/10	15:15			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Andrea Lam[illegible]	6-15-10	15:15

Laboratory Comments:
Sample Containers Intact? (Y) N
VOCs Free of Headspace? Y N (NA)
Labels on container(s)? (Y) N
Custody seals on container(s) Y (N)
Custody seals on cooler(s) Y (N)
Sample Hand Delivered (Y) N
by Sampler/Client Rep ? (Y) N
by Courier? UPS DHL FedEx Lone Star
902 glass
Temperature Upon Receipt: 11.6 °C

Page 10 of 11

Final Ver. 1.000

XENCO Laboratories	XENCO Laboratories Atlanta, Boca Raton, Corpus Christi, Dallas Houston, Miami, Odessa, Philadelphia Phoenix, San Antonio, Tampa	Document Title: Sample Receipt Checklist Document No.: SYS-SRC Revision/Date: No. 01, 5/27/2010 Effective Date: 6/1/2010 Page 1 of 1

Prelogin / Nonconformance Report - Sample Log-In

Client: Larson & Assoc.

Date/Time: 6.15.10 15:15

Lab ID # : 377208

Initials: AL

Sample Receipt Checklist

1. Samples on ice?	Blue	(Water)	No	
2. Shipping container in good condition?	(Yes)	No	None	
3. Custody seals intact on shipping container (cooler) and bottles?	Yes	No	(N/A)	
4. Chain of Custody present?	(Yes)	No		
5. Sample instructions complete on chain of custody?	(Yes)	No		
6. Any missing / extra samples?	Yes	(No)		
7. Chain of custody signed when relinquished / received?	(Yes)	No		
8. Chain of custody agrees with sample label(s)?	(Yes)	No		
9. Container labels legible and intact?	(Yes)	No		
10. Sample matrix / properties agree with chain of custody?	(Yes)	No		
11. Samples in proper container / bottle?	(Yes)	No		
12. Samples properly preserved?	(Yes)	No	N/A	
13. Sample container intact?	(Yes)	No		
14. Sufficient sample amount for indicated test(s)?	(Yes)	No		
15. All samples received within sufficient hold time?	(Yes)	No		
16. Subcontract of sample(s)?	Yes	No	(N/A)	
17. VOC sample have zero head space?	Yes	No	(N/A)	

18. Cooler 1 No.		Cooler 2 No.		Cooler 3 No.		Cooler 4 No.		Cooler 5 No.	
lbs	11.6°C	lbs	°C	lbs	°C	lbs	°C	lbs	°C

Nonconformance Documentation

Contact:_____ Contacted by:_____ Date/Time:_____

Regarding: _____

_____

Corrective Action Taken: _____

_____

_____

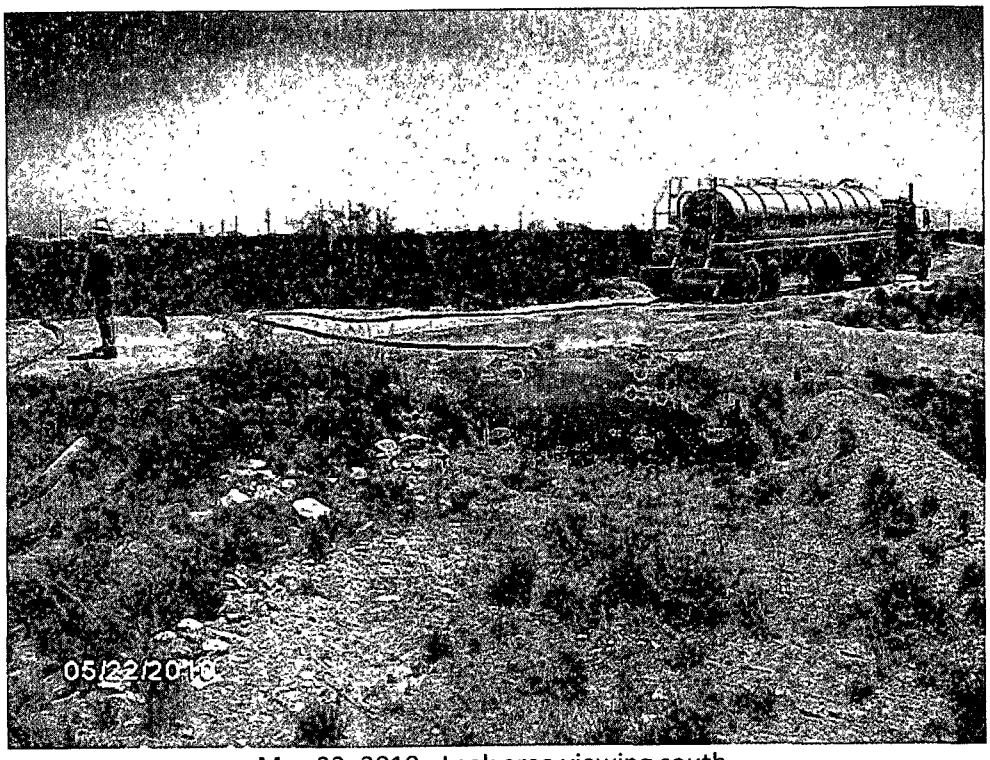
_____

Check all that apply: ☐ Cooling process has begun shortly after sampling event and out of temperature condition acceptable by NELAC 5.5.8.3.1.a.1.

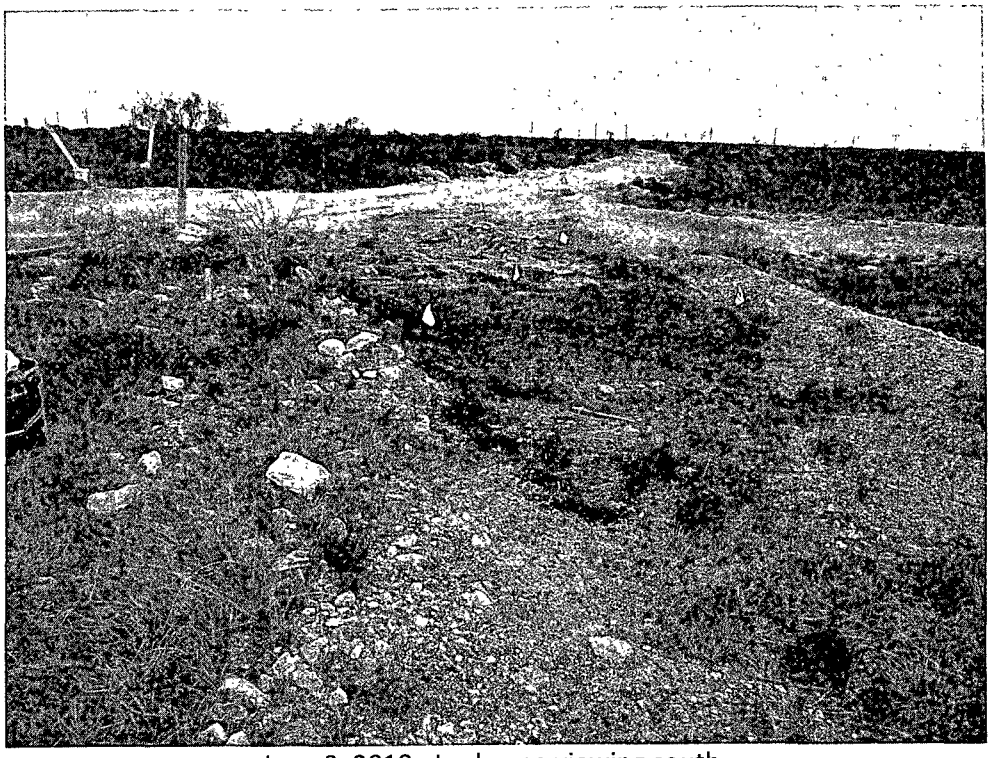
☐ Initial and Backup Temperature confirm out of temperature conditions

☐ Client understands and would like to proceed with analysis

Photo Documentation



May 22, 2010 - Leak area viewing south.



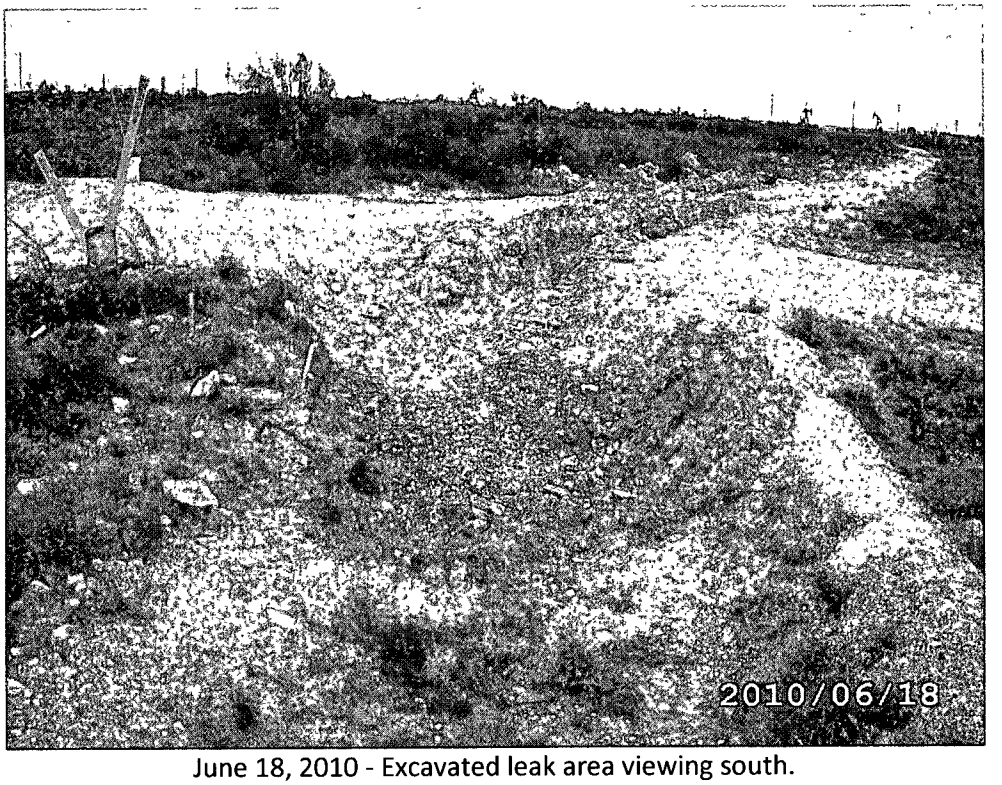
June 3, 2010 - Leak area viewing south.

Photo Documentation

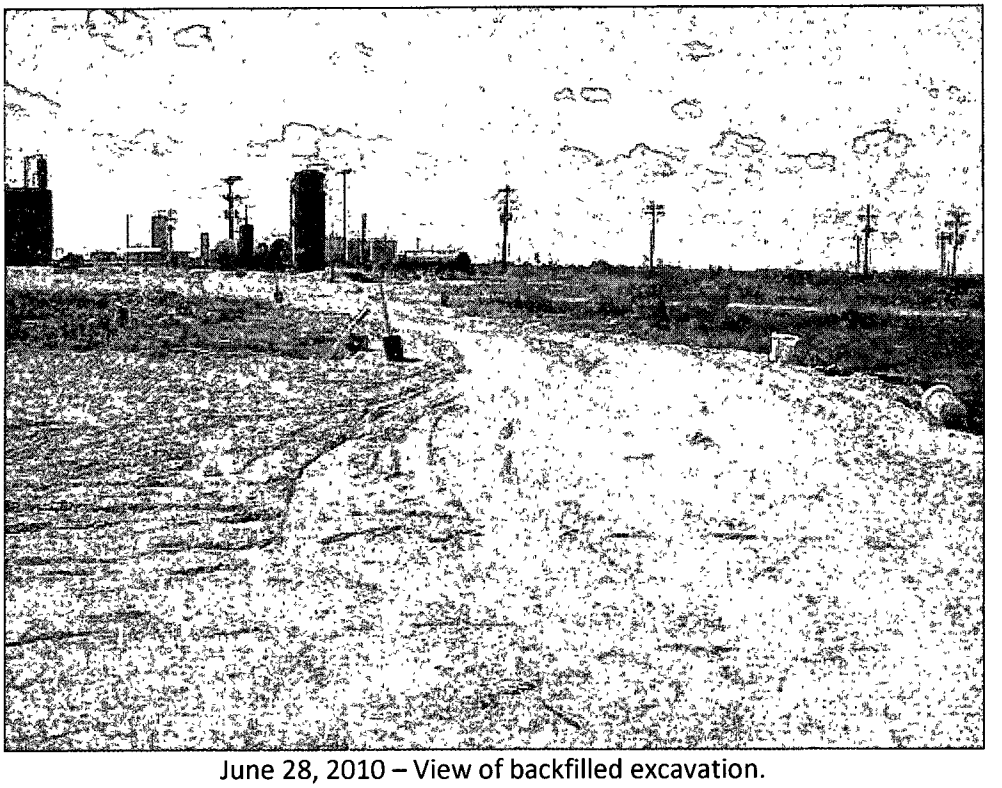
June 14, 2010 - BH-1 location viewing east.

June 15, 2010 - Excavated leak location viewing south.

Photo Documentation



June 18, 2010 - Excavated leak area viewing south.



June 28, 2010 – View of backfilled excavation.