HOBBS OCD

State of New Mexico **Energy Minerals and Natural Resources** 

AUG 0 5 2015

Form C-141 Revised August 8, 2011

1000 Rio Brazos Road, Aztec, NM 8/410			ervation Division Submit 1 Copy to appropri accordance w th St. Francis Dr. RECEIVED			ate Dis th 19.1	trict Office in 5.29 NMAC.					
	C. St. Francis Dr. Conto Fo. NIM 97505					Fe, NM 87505				39-		
	Release Notification and Corrective Action											
	<b>OPERATOR</b> Initial Report Sinal Report											
		ains Pipeline					mille Bryant					
		wy 214, Der	ver City	, TX 79323			No.: (575) 441-1	099				
Facility Nar	ne: Tract	19.4				Facility Typ	e: Pipeline					
Surface Ow	ner: Apacl	he Corporatio	on	Mineral O	wner				API No	.30-025-12	803	
						N OF REJ						
Unit Letter	Section	Township	Range	Feet from the	North/	South Line	Feet from the	East/W	Vest Line	County		
I	29	21S	37E							Lea		
	1		Ĩ	titude N 32.44	185170	Longitud	le W 103.1766	5030		I		
			1.6			0		505				
Type of Rele	ase: Crude	Oil		NAT	URE	OF REL	EASE Release: >5 bbls	1	Volume R	Recovered: (	) 5 bbls	
Source of Re							Iour of Occurrence			Hour of Dis		
	-					7/9/2014 @			7/9/2014			
Was Immedi	ate Notice (		Yes 🗌	No 🔲 Not Re	quired	If YES, To Verbal not	Whom? ification to Toma	s Oberdi	ing	,		
By Whom?							te and Hour 7/10/2014 @ 08:00					
Was a Water	course Read		¥ N	L N		If YES, Volume Impacting the Watercourse.						
			Yes 🛛									
If a Watercourse was Impacted, Describe Fully.*           APPROVED           By OCD District 1 at 12:18 pm, Aug 13, 2015												
		em and Reme he pipeline to		n Taken.* Externa ne release.	l corros	sion of 4" stee	el pipeline resulte	d in a rel	lease of cru	ide oil. A te	mporar	y pipeline
Describe Area Affected and Cleanup Action Taken.* The released crude oil impacted a surface area measuring approximately 65' X 20'. The impacted area was excavated to approximately 19' below ground surface as approved by the NMOCD. Soil samples were collected and submitted to the laboratory and a 20 mil poly liner was installed on the floor of the excavation as approved by the NMOCD. Please reference the "Remediation Summary and Risk-Based Site Closure Risk" dated August 2015 for additional details.												
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 mille Fut					Approved by Environmental Specialist:							
Printed Name: Camille Bryant Approved by Environmental Specialist:					t: /	/						
Title: Remed	liation Coor	dinator				Approval Da	te: 08/13/2015	• • ]	Expiration	Date: ///		
E-mail Addr	ess: cjbryan	t@paalp.com				Conditions o				Attached		4 2100
Date: 8/5/15			I	Phone: (575) 441-			in open until site ng contaminatior		at which	IKP	/-14	4-3189

addressed..

Date: 8/5/15 \* Attach Additional Sheets If Necessary

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

HOBBS OCD State of New Mexico

Energy Minerals and Natural Resources AUG 1 2 2015

**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	Plains Pipeline, LP	Contact Camille Bryant		
Address	2530 State Hwy. 214, Denver City, TX 79323	Telephone No. (575) 441-1099		
Facility Name	Tract 19 4"	Facility Type Pipeline		

Mineral Owner

Surface Owner Apache Corporation

Unit Letter

I

Lease No.

RECEIVED

LOCA	TION OF REI	LEASE AP	工# 30.	025-12803
East from the	North / Couth Line	East from the	East AVast Ling	Country

Section Township Range Feet from the County North/South Line Feet from the East/West Line 29 21S 37E Lea

Latitude N 32.448517° Longitude W 103.176603°

#### NATURE OF RELEASE

Type of Release Crude Oil	Volume of Release >5 bbls		ered 0.5 bbls
Source of Release Pipeline	Date and Hour of Occurrence	Date and Hour	of Discovery
	7/9/2014 @ 11:00	7/9/2014 @ 11	:20
Was Immediate Notice Given?	If YES, To Whom?		
🛛 Yes 🗌 No 🔲 Not Required	Verbal notification to Tomas Ob	erding	
By Whom? Camille Bryant	Date and Hour 7/10/2014 @ 0	8:00	
Was a Watercourse Reached?	If YES, Volume Impacting the V	Vatercourse.	
🗌 Yes 🖾 No			
If a Watercourse was Impacted, Describe Fully.*		······································	
Describe Cause of Problem and Remedial Action Taken.* External corre	osion of A" steel nineline resulted in	a release of crude o	il A temporary nipeline
clamp was installed on the pipeline to mitigate the release.	usion of 4 steer piperine resulted in	a release of crude o	n Atemporary pipenne
clamp was instance on the pipeline to initigate the telease.			
Describe Area Affected and Cleanup Action Taken. The released crude	oil impacted a surface area measurin	g approximately 65	' X 20'. The impacted area
will be remediated as per applicable NMOCD guidelines.	•		
			to NIMOCD rules and
I hereby certify that the information given above is true and complete to	the best of my knowledge and unde	rstand that pursuant	to NMOCD rules and
regulations all operators are required to report and/or file certain release public health or the environment. The acceptance of a C-141 report by	notifications and perform corrective	t" does not relieve	the operator of liability
should their operations have failed to adequately investigate and remedi	ate contamination that pose a threat I	o ground water, su	face water, human health
or the environment. In addition, NMOCD acceptance of a C-141 report	does not relieve the operator of resp	onsibility for comp	liance with any other
federal, state, or local laws and/or regulations.			
	OIL CONSE	<b>RVATION DI</b>	VISION
CONDIA KA			
Signature: UVY ULL Chan			
Printed Name: Camille Bryant	Approved by District Supervisor:	4	
Title: Remediation Coordinator	Approval Date: 7-17-19	Expiration Date	: 9-20-14
	Cardiniana of American		
E-mail Address: cjbryant@paalp.com	Conditions of Approval:	A	Attached
Date: 71714 Phone: (575) 441-1099	Site Suples rayand		7-14-3189
Attach Additional Sheets If Necessary	De lisive Randont	aspe	62114 34053
Allacii Additional Sheets II Necessary	Nnoce guide		1 100
	Submit Fail C-141	HOBBS OCI	D 170 1419 850
	by 1-20-12		P701419850
	7	JUL 17 201	•
		JUL I V ZU	
	E		JUL 1 7 2014
		RECEIVED	



# REMEDIATION SUMMARY AND RISK-BASED SITE CLOSURE REQUEST

## TRACT 19-4 INCH UNIT LETTER "I", SECTION 29, TOWNSHIP 21 SOUTH, RANGE 37 EAST NORTHWEST OF EUNICE LEA COUNTY, NEW MEXICO SRS #: 2014-178 NMOCD Reference: 1RP 7-14-3189

Prepared for:

Plains Pipeline, L.P. 333 Clay Street, Suite 1600 Houston, Texas 77002

Prepared by:

TRC Solutions, Inc. 2057 Commerce Drive Midland, Texas 79703

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AUG 0 5 2015

RECEIVED

August 2015

Curt D. Stanley\_\_\_\_\_\_ Senior Project Manager

Brittan K. Byerly, P.G. Managing Principal

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Figure 2:	Site and Sample Location Map

## TABLES

 Table 1:
 Benzene, BTEX, TPH, and Chloride Concentrations in Soil

## APPENDICES

Appendix A:	Site Photographs
Appendix B:	Laboratory Analytical Data
Appendix C:	Release Notification and Corrective Action (Form C-141)

On Disk: Sundance Disposal Manifests

## **1.0 INTRODUCTION AND BACKGROUND**

On behalf of Plains Pipeline, L.P. (Plains), TRC Solutions, Inc. (TRC), formerly NOVA Safety and Environmental (NOVA), has prepared this Remediation Summary and Risk-Based Closure Request for the crude oil release site known as Tract 19-4 Inch (SRS# 2014-178). The Release Site is located northwest of Eunice, New Mexico, in Unit Letter "I", Section 29, Township 21 South, Range 37 East. A topographic location map and site map depicting the soil sample locations are provided as Figures 1 and 2, respectively. The Release Site is located on property owned by the Apache Corporation. On July 9, 2014, a crude oil release greater than five (5) barrels (bbls) occurred on a four-inch (4") steel pipeline. Approximately one half (0.5) bbl of crude oil was recovered during initial response activities, resulting in a net loss of greater than four and one half (4.5) bbls of crude oil. The release was attributed to external corrosion of the four (4) inch pipeline. An area of impacted soil measuring approximately twenty (20) feet in width and sixty-five (65) feet in length was observed on the ground surface. Site photographs are provided as Appendix A. The Release Notification and Corrective Action (Form C-141) is included as Appendix C.

## 2.0 NMOCD SITE CLASSIFICATION

A groundwater database maintained by The New Mexico Office of the State Engineer (NMOSE) did not identify any registered water wells in Section 29, Township 21 South, Range 37 East. An inferred depth of groundwater reference map utilized by The New Mexico Oil Conservation Division (NMOCD) indicates groundwater should be encountered at approximately ninety (90) feet below ground surface (bgs). Based on the NMOCD site classification system, 10 points will be assigned to the Release Site ranking as a result of this criterion.

There are no registered water wells located within 1,000 feet of the Release Site. The nearest residence is located approximately eight hundred (800) feet south of the Release Site and a water well is likely located on the property. Based on the NMOCD Site Classification System, 20 points will be assigned to the Release Site ranking as a result of this criterion.

There are no surface-water features located within a 1,000 radius of the site. Based on the NMOCD Site Classification System, no points would be assigned to the site as a result of this criterion. The NMOCD guidelines indicate the Site has a Ranking Score of thirty (30) points. The regulatory guidelines for a Release Site with a Ranking Score of thirty (30) points are as follows:

- Benzene 10 mg/Kg
- BTEX 50 mg/Kg
- TPH 100 mg/Kg

## 3.0 SUMMARY OF FIELD ACTIVITIES

On July 14, 2014, remediation activities commenced at the Release Site. Impacted soil excavated from the Release Site was stockpiled on plastic west of the excavation. An investigation trench

(Trench-1) was advanced to a depth of approximately twenty-four (24) feet below ground surface (bgs) to determine the vertical extent of impact at the Release Site.

On July 17, 2014, one (1) delineation soil sample (Trench 1 @ 24') was collected from the floor of Trench-1 and submitted to the laboratory for analysis of concentrations of benzene, toluene, ethylbenzene and xylene (BTEX) using Method SW-846 8021B and total petroleum hydrocarbon (TPH) using Method SW 846-8015M. The analytical results indicated the benzene concentration was 4.68 mg/Kg and BTEX concentration was 168.58 mg/Kg. The TPH concentration for soil sample Trench-1 @ 24' was 14,844 mg/Kg. Based on field observations and the analytical results, additional vertical delineation was warranted at the Release Site. Please reference Figure 2 for the locations of trenches and soil samples. A table summarizing Benzene, BTEX, TPH and Chloride Concentrations in Soil is provided as Table 1. Laboratory Analytical Reports are provided as Appendix B.

On July 18, 2014, non-impacted soil was excavated from the south side of the excavation to allow a track hoe to excavate to depths greater than twenty-four (24) feet bgs. The resulting non-impacted soil was segregated from the impacted soil stockpile and the non-impacted soil was stockpiled to the southwest of the excavation for use as future backfill material. Following the preparation of the track hoe work platform, an investigation trench (Trench-2) was advanced to a depth of approximately thirty (30) feet bgs.

Following the advancement of investigation Trench-2 to a depth of approximately thirty (30) feet bgs, one (1) soil sample (Trench-2 @ 30') was collected and submitted for analysis. The analytical results indicated the benzene concentration was less than the laboratory method detection limit (MDL) of 0.00109 mg/Kg and the BTEX concentration was 0.13876 mg/Kg. The TPH concentration for soil sample Trench-2 @ 30' was 515.3 mg/Kg. Based on field observations and the analytical results, additional vertical delineation was warranted. Please reference Figure 2 for the locations of trenches and soil samples. A table summarizing Benzene, BTEX, TPH and Chloride Concentrations in Soil is provided as Table 1.

On July 29, 2014, one (1) composite stockpile soil sample (SP Baseline) was collected from the impacted soil stockpile. The analytical results indicated the TPH concentration of the soil sample was 13,640 mg/Kg and blending and mixing of the impacted soil stockpile was not feasible. Based on the analytical results of soil sample SP Baseline excavated soil was transported and disposed of at the Sundance Services facility in Eunice, New Mexico.

On receipt of the analytical results for soil sample Trench-2 @ 30', additional non-impacted soil was excavated from the north side of the excavation and stockpiled with the previously excavated non-impacted soil. The excavation of the non-impacted soil to a depth of approximately ten (10) feet bgs allowed the track hoe to excavate the "Release Point Trench" to a total depth of approximately thirty-seven (37) feet bgs.

On August 14, 2014, following the advancement of the Release Point Trench to a total depth of approximately thirty-seven (37) feet bgs, two (2) soil samples (RP @ 35' and RP @ 37') were collected from the Release Point Trench and submitted for analysis. The analytical results indicated the TPH concentration ranged from 39.2 mg/Kg for soil sample RP @ 37' to 1,045.8

mg/Kg for soil sample RP @ 35'. In addition, soil sample RP @ 37' was analyzed for concentrations of BTEX and chloride. The analytical results indicated the benzene and BTEX concentrations were less the applicable laboratory MDL and chloride analysis indicated the soil sample exhibited a chloride concentration of 72.7 mg/Kg. Based on field observations and the analytical results additional vertical delineation was not required.

On August 25, 2015, representatives of Plains and NOVA met on-site with a representative of the NMOCD to discuss a path forward for the Release Site. Based on field observations and the analytical results, Plains requested NMOCD approval to utilize a risk-based closure strategy (Workplan) at the Tract 19-4 Inch Release Site.

The NMOCD approved risk-based closure strategy required a two (2) stage implementation due to safety concerns with regard to the support of the four (4) inch pipeline. In summary, Stage 1 of the Workplan included the excavation of the west half of the Release Site to approximately nineteen (19) feet bgs. Following the excavation of the west half of the excavation; north, south, and west sidewall soil samples would be collected at approximately eighteen (18) feet bgs and submitted to the laboratory for analysis. On receipt of favorable analytical results, a twenty (20) mil poly liner would be installed and the west half of the excavation would be backfilled with locally purchased caliche.

Following the completion of activities on the west half of the excavation, the east half of the Release Site would be excavated, sampled (north, south, and east sidewall soil samples) and a poly liner would be installed at approximately nineteen (19) feet bgs.

On August 26, 2014, Plains received NMOCD approval to proceed with the risk-based closure strategy at the Tract 19-4 Inch Release Site.

On August 27, 2014, Plains requested approval to proceed with a risk-based closure strategy from the landowner (Apache Corporation) and on September 2, 2014, Apache Corporation approved of the Workplan as written and approved by the NMOCD.

On October 22, 2014, three (3) sidewall soil samples (NSW-1 @ 18', SSW-1 @ 18', and WSW-1 @ 18') were collected and submitted to the laboratory for analysis. The analytical results indicated all concentrations of benzene, BTEX, and TPH were less than the applicable laboratory MDL. Chloride analysis indicated chloride concentrations ranged from 191 mg/Kg for soil sample WSW-1 @ 18' to 287 mg/Kg for soil samples NSW-1 @ 18' and SSW-1 @ 18'. Please reference Figure 2 for soil sample locations. A table summarizing Benzene, BTEX, TPH and Chloride Concentrations in Soil is provided as Table 1.

On November 4, 2014, Plains requested and received approval from the NMOCD to leave in place concentrations of elevated chloride represented by soil samples NSW-1 @ 18' and SSW-1 @ 18'.

On November 18, 2014, a composite soil sample (Top Soil SP) was collected from the segregated overburden soil stockpile and submitted for laboratory analysis. The soil stockpile was generated from the non-impacted "Equipment Access Area", which was excavated to allow

the track hoe to delineate the vertical extent of impact at depths greater than approximately twenty-four (24) feet bgs. The analytical results indicated concentrations of benzene, BTEX and TPH were less than the applicable laboratory MDL. Based on the analytical results, the soil represented by soil sample Top Soil SP was deemed suitable for use a backfill material.

On November 19, 2014, a twenty (20) mil poly liner was installed in the west half of the excavation and sufficient liner material was included to cover the eastern half of the excavation. Prior to and following the installation of the twenty (20) mil poly liner, a six (6) inch layer of locally purchased non-impacted sand was placed above and below the liner to protect the liner from sharp objects. This engineering control was designed to shed moisture to the edge of the liner beyond the area of deeper vertical impact. The excess poly liner material was rolled up pending the completion of excavation and sampling activities in the east half of the excavation.

On November 23, 2014, three (3) sidewall soil samples (SSW-2 @ 18', ESW-1 @ 18', and NSW-2 @ 18') were collected and submitted to the laboratory for analysis. The analytical results indicated all concentrations of benzene, BTEX, and TPH were less than the applicable laboratory MDL, with the exception soil sample ESW-1 @ 18', which exhibited benzene, BTEX, and TPH concentrations of 0.165 mg/Kg, 1.533 mg/Kg, and 2,868 mg/Kg, respectively. Please reference Figure 2 for soil sample locations. A table summarizing Benzene, BTEX, TPH and Chloride Concentrations in Soil is provided as Table 1.

On December 16, 2014, Plains requested and received NMOCD approval to backfill the east half of the excavation, with the exception of the east sidewall which was represented by soil sample ESW-1 @ 18'. Plains requested NMOCD approval to backfill the east half of the excavation based on the proximity of vehicle traffic on Turner Road.

On March 9, 2015, a hand auger was utilized to collect soil samples (A-1 @ 8' and A-2 @ 5') at two locations along the property fence line. The soil samples were submitted to the laboratory for analysis and the analytical results indicated all concentrations of benzene, BTEX and TPH were less than the NMOCD regulatory guidelines. Soil sample A-1 @ 8' was collected from the floor of the Plains pipeline chase, approximately two (2) feet east of the north – south barbed wire fence. The analytical results indicate hydrocarbon impact was not present on the floor of the pipeline chase at approximately two (2) feet east of the fence line and migration of hydrocarbons to east appears to be limited to areas beneath the fence line. Soil sample A-2 @ 5' was collected approximately six (6) feet north of soil sample A-1 @ 8' and approximately two (2) feet east of the fence line. The soil sample was collected from the top of the caliche layer and analytical results indicate the soil sample exhibited no hydrocarbon impact.

On March 13, 2015, NOVA on behalf of Plains excavated the east sidewall of the excavation an additional approximately five (5) feet to the east beneath the pipeline. Following the excavation activities, one (1) sidewall soil sample (ESW-1A @ 18') were collected and submitted to the laboratory for analysis. The analytical results indicated the benzene concentration was less than the laboratory MDL of 0.100 mg/Kg. The BTEX concentration was 2.168 mg/Kg and the TPH concentration was 2,721 mg/Kg.

On March 18, 2005, Plains requested NMOCD approval to leave in place the limited stained soil observed on the east sidewall of the excavation. On March 19, 2015, the NMOCD approved leaving the limited stained soil on the east sidewall in place, completing the liner installation and completing the backfilling of the excavation with locally purchased caliche. The vegetative zone was reestablished using non-impacted topsoil segregated during the excavation activities and locally purchased topsoil.

Following backfilling activities, the Release Site and disturbed area were contoured to fit the original topography of the area. On July 21, 2015, the disturbed area was reseeded with vegetation acceptable to the landowner.

A total of, approximately 3,648 cubic yards of impacted soil was transported and disposed of at Sundance Services in Eunice, New Mexico. Sundance Services disposal manifests are provided on the enclosed disk.

# 4.0 SITE CLOSURE REQUEST

TRC recommends, Plains provide the NMOCD a copy of this Remediation Summary and Risk-Based Closure Request and request the NMOCD grant site closure status to the Tract 19-4 Inch release of July 9, 2014.

## 5.0 LIMITATIONS

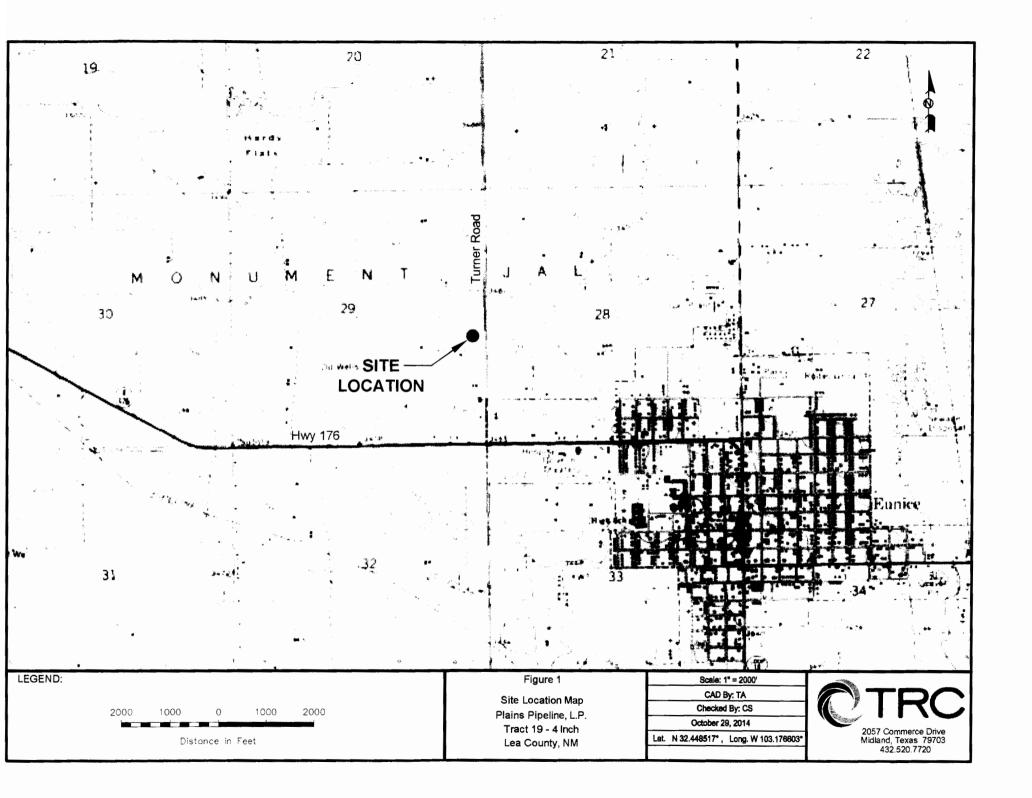
TRC Solutions, Inc. has prepared this Remediation Summary and Risk-Based Closure Request to the best of its ability. No other warranty, expressed or implied, is made or intended.

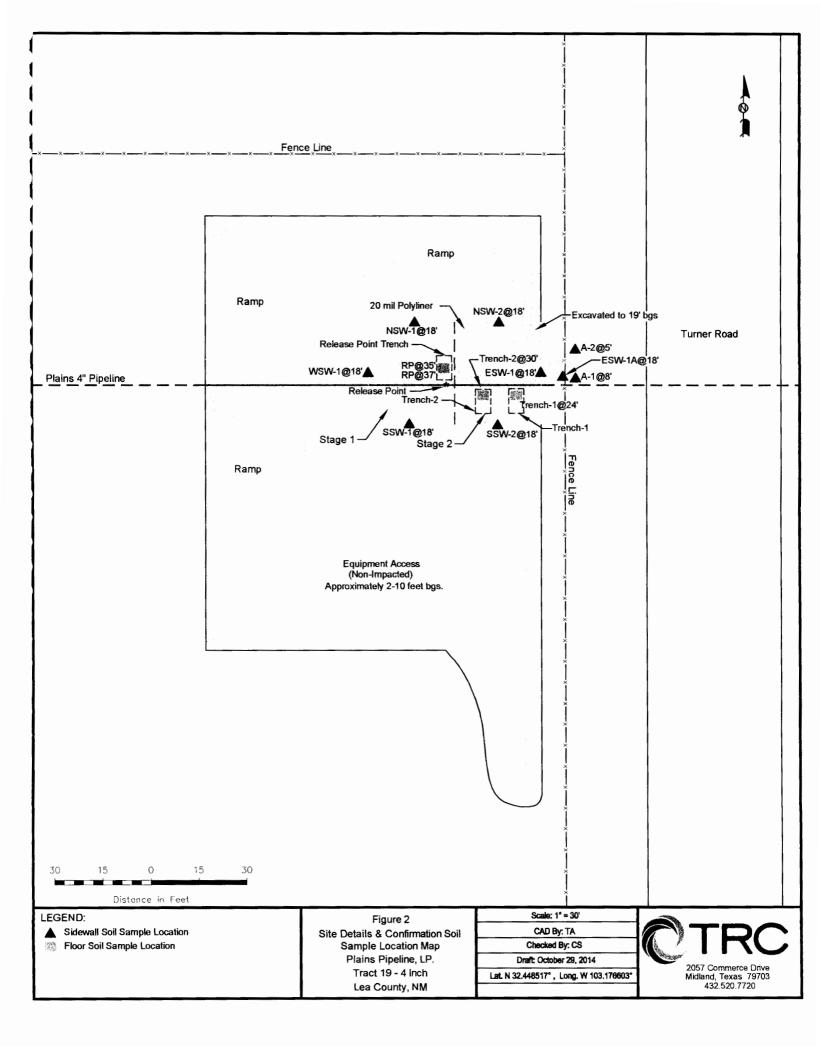
TRC Solutions, Inc. has examined and relied upon documents referenced in the report and has relied on oral statements made by certain individuals. TRC Solutions, Inc. has not conducted an independent examination of the facts contained in referenced materials and statements. We have presumed the genuineness of the documents and that the information provided in documents or statements is true and accurate. TRC Solutions, Inc. has prepared this report in a professional manner, using the degree of skill and care exercised by similar environmental consultants. TRC Solutions, Inc. also notes that the facts and conditions referenced in this report may change over time and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time of this report.

This report has been prepared for the benefit of Plains Pipeline, L.P. The information contained in this report, including all exhibits and attachments, may not be used by any other party without the express consent of TRC Solutions, Inc. and/or Plains Pipeline L.P.

# 6.0 **DISTRIBUTION**

Copy 1:	Dr. Tomas Oberding New Mexico Oil Conservation Division (District 1) 1625 French Drive Hobbs, NM 88240
Copy 2:	Camille Bryant Plains Pipeline, L.P. P.O. Box 3119 Midland, Texas 79702
Copy 3:	Jeff Dann Plains Pipeline, L.P. 333 Clay Street, Suite 1600 Houston, TX 77002 jpdann@paalp.com
Copy 4:	Bruce Baker Apache Corporation larry.baker@apachecorp.com
Copy 5:	TRC Solutions, Inc. 2057 Commerce Drive Midland, TX 79703 cdstanley@trcsolutions.com





#### TABLE 1

#### BENZENE, BTEX, TPH AND CHLORIDE CONCENTRATIONS IN SOIL

#### PLAINS PIPELINE, L.P. TRACT 19 - 4 INCH LEA COUNTY, NEW MEXICO SRS # 2014-178

						concentrations are	e reported in mg/Kg						
				EPA SW	846-8015M		EPA SW 846-8021B, 5030					E 300.1	
SAMPLE DATE	SAMPLE LOCACTION	SAMPLE DEPTH	GRO C6-C12 mg/Kg	DRO C12-C28 mg/Kg	ORO C28-C35 mg/Kg	ТРН С <sub>6</sub> -С <sub>35</sub>	BENZENE	TOLUENE	ETHYL- BENZENE	m, p - XYLENES	o- Xylenes	BTEX	CHLORIDE
	REGULATORY UIDELINE	-	-	-	-	100	10	-	-	-	-	50	250
	and a subble source and					and the second second	E de la court						
07/17/14	Trench-1 @ 24'	24'	4,470	9,520	854	14,844	4.68	31.9	27.2	74.6	30.2	168.58	-
07/18/14	Trench-2 @ 30'	30'	74.3	441	<1 <u>6.3</u>	515.3	<0.00109	0.00626	0.0211	0.0756	0.0358	0.13876	-
07/29/14	SP Baseline	-	2,040	11,600	<76.3	13,640	-	-	-		- -	-	-
08/14/14	RP @ 35'	35'	178	849	18.8	1,045.8	-	-	-			-	-
08/19/14	RP @ 37'	37'	<15.5	39.2	<15.5	39.2	<0.000996	<0.00199	<0.000996	<0.00199	<0.000996	<0.00199	72.7
10/22/14	NSW-1 @18'	18'	<4.00	<50.0	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.(	)200	<0.0200	287
10/22/14	SSW-1 @18'	18'	<4.00	<50.0	<50.0	<50.0	< 0.0200	< 0.0200	< 0.0200	<0.(	0200	< 0.0200	287
10/22/14	WSW-1 @18'	18'	<4.00	<50.0	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0	0200	<0.0200	191
11/18/14	Top Soil SP	-	<4.00	<50.0	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0	0200	<0.0200	-
11/23/15	SSW-2 @ 18'	18'	<4.00	<50.0	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0	)200	<0.0200	-
11/23/15	ESW-1 @ 18'	18'	548	2,320	<100	2,868	0.165	0.228	0.473	0.6	667	1.533	-
11/23/15	NSW-2 @ 18'	18'	<4.00	<50.0	<50.0	<50.0	< 0.0200	< 0.0200	< 0.0200	<0.(	0200	< 0.0200	-
			<1.00	-50.0	-50.0	-50.0	<0.0200	<0.0200	-0.0200		200	-0.0000	
03/09/15	A-1 @ 8'	8'	<4.00	<50.0	<50.0	<50.0	<0.0200	<0.0200	<0.0200		0200	<0.0200	
03/09/15	<u>A-2 @ 5'</u>	5'	<8.00	<50.0	<50.0	<50.0	<0.0400	<0.0400	<0.0400	<0.(	)400	<0.0400	
03/13/15	ESW-1A @ 18'	18'	281	2,440	<250	2,721	<0.100	0.204	0.574	1.	39	2.168	<u>eente in 1875 note</u> -
a far the state of		an di andre 31			아이는 아이는 것이 같아?	的问题的意思							



# Photographic Documentation

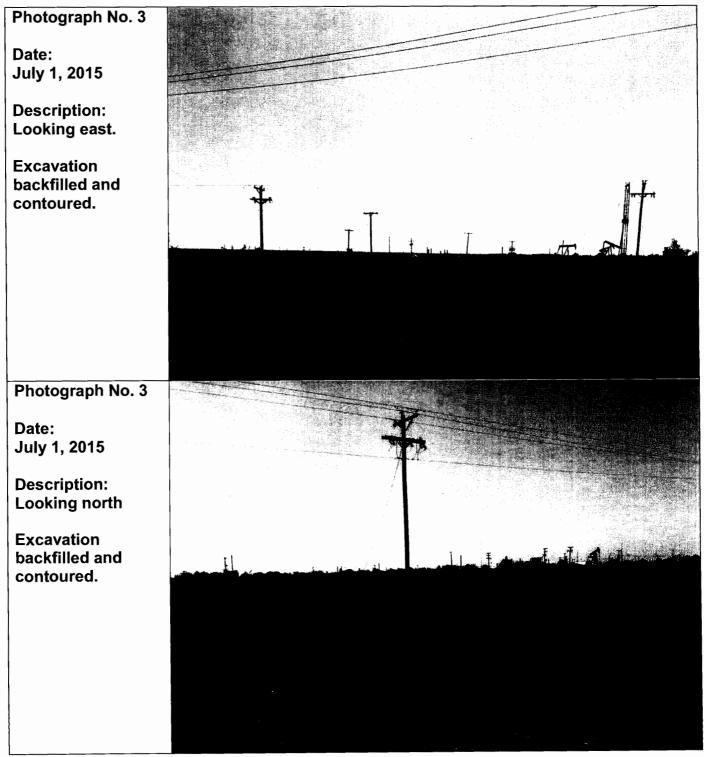
Client: Plains Pipeline L.P. Prepared by: TRC Solutions Project Name: Tract 19 – 4 Inch Location: Lea County, NM STA N Photograph No. 1 Date: November 23, 2014 **Description:** Looking southeast. West floor of excavation lined and partially backfilled Photograph No. 2 Date: March 23, 2015 **Description:** Looking northeast. East floor of excavation lined and awaiting backfill.



# Photographic Documentation

Client: Plains Pipeline L.P. Project Name: Tract 19 – 4 Inch

# **Prepared by:** TRC Solutions **Location:** Lea County, NM



# Analytical Report 489544

# for PLAINS ALL AMERICAN EH&S

**Project Manager: Curt Stanley** 

Plains Tract 19-4 In

## 21-JUL-14

Collected By: Client





## 12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215-14-16-TX), Arizona (AZ0765), Florida (E871002), Louisiana (03054) New Jersey (TX007), North Carolina(681), Oklahoma (9218), Pennsylvania (68-03610)

Xenco-Atlanta (EPA Lab Code: GA00046): Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD ( L10-135) Texas (T104704477), Louisiana (04176), USDA (P330-07-00105)

> 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)





21-JUL-14

Project Manager: Curt Stanley PLAINS ALL AMERICAN EH&S 1301 S. COUNTY ROAD 1150 Midland, TX 79706

Reference: XENCO Report No(s): 489544 Plains Tract 19-4 In Project Address: Lea County, New Mexico

#### **Curt Stanley**:

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) 489544. 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. 489544 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.

msboah

Kelsey Brooks Project Manager

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Houston - Dallas - Odessa - San Antonio - Tampa - Lakeland - Atlanta - Phoenix - Oklahoma - Latin America



# Sample Cross Reference 489544



# PLAINS ALL AMERICAN EH&S, Midland, TX

Plains Tract 19-4 In

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Trench -1 @24'	S	07-17-14 16:00		489544-001



## CASE NARRATIVE



Client Name: PLAINS ALL AMERICAN EH&S Project Name: Plains Tract 19-4 In

Project ID: Work Order Number(s): 489544 Report Date: 21-JUL-14 Date Received: 07/18/2014

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None



**Project Id:** 

Contact: Curt Stanley

Project Location: Lea County, New Mexico

UCTUINALC OF FAILLY JS Shifthita, y 40/374 PLAINS ALL AMERICAN EH&S, Midland, TX Project Name: Plains Tract 19-4 In



Date Received in Lab: Fri Jul-18-14 09:10 am Report Date: 21-JUL-14

Project Manager: Kelsey Brooks

Lab Id:	489544-001					
Field Id:	Trench -1 @24'					
Depth:						
Matrix:	SOIL					
Sampled:	Jul-17-14 16:00					
Extracted:	Jul-18-14 17:00					
Analyzed:	Jul-19-14 08:20					
Units/RL:	mg/kg RL					
	4.68 0.547					
	31.9 1.09					
	27.2 0.547					
	74.6 1.09					
	30.2 0.547					
	105 0.547					
	169 0.547					
Extracted:						
Analyzed:	Jul-21-14 10:00					
Units/RL:	% RL					
	8.97 1.00					
Extracted:	Jul-18-14 11:00					
Analyzed:	Jul-18-14 14:00					
Units/RL:	mg/kg RL					
	4470 165					
	9520 165					
	854 165					
	14800 165					
	Field Id: Depth: Matrix: Sampled: Extracted: Analyzed: Units/RL: Extracted: Analyzed: Units/RL: Extracted: Analyzed:	Field Id:       Trench -1 @24'         Depth:       SOIL         Matrix:       SOIL         Sampled:       Jul-17-14 16:00         Extracted:       Jul-18-14 17:00         Analyzed:       Jul-19-14 08:20         Units/RL:       mg/kg       RL         4.68       0.547         31.9       1.09         27.2       0.547         74.6       1.09         30.2       0.547         105       0.547         105       0.547         105       0.547         105       0.547         105       0.547         105       0.547         105       0.547         105       0.547         105       0.547         105       0.547         105       0.547         105       0.547         1069       0.547         105       0.547         1069       0.547         105       0.547         1069       0.547         107       169         108       9.547         1000       Units/RL:         Malyzed:       Ju	Field Id:       Trench -1 @24'         Depth:	Field Id:       Trench -1 @24'         Depth:	Lab Id:       489544-001         Field Id:       Trench -1 @24'         Depth:	Field Id:       Trench - 1 @24'         Depth:

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Huns Roah

Kelsey Brooks Project Manager

Final 1.000



# 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 quantitation 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
- 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

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LOD Limit of Detection

4143 Greenbriar Dr, Stafford, TX 77477
9701 Harry Hines Blvd, Dallas, TX 75220
5332 Blackberry Drive, San Antonio TX 78238
2505 North Falkenburg Rd, Tampa, FL 33619
12600 West I-20 East, Odessa, TX 79765
6017 Financial Drive, Norcross, GA 30071
3725 E. Atlanta Ave, Phoenix, AZ 85040

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(432) 563-1800	(432) 563-1713
(770) 449-8800	(770) 449-5477
(602) 437-0330	



Project Name: Plains Tract 19-4 In

Work Or Lab Batch	<b>ders :</b> 48954 #: 946099	4, Sample: 489544-001 / SMP	Batc	Project ID h: 1 Matrix					
Units:	mg/kg	Date Analyzed: 07/18/14 14:00	SURROGATE RECOVERY STUDY						
	TPH J	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
1-Chlorooct	ane		129	100	129	70-135			
o-Terphenyl			49.0	50.0	98	70-135			
Lab Batch	<b>#: 946</b> 117	Sample: 489544-001 / SMP	Batc	h: 1 Matrix	: Soil				
Units:	mg/kg	Date Analyzed: 07/19/14 08:20	SU	RROGATE R	ECOVERY S	STUDY			
	втех	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluoro	benzene		0.0241	0.0300	80	80-120			
4-Bromoflue			0.0314	0.0300	105	80-120			
Lab Batch	#: 946099	Sample: 658648-1-BLK / B	LK Batc	h: 1 Matrix	: Solid				
Units:	mg/kg	Date Analyzed: 07/18/14 12:20	SU	RROGATE R	ECOVERY	STUDY			
	TPH	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flage		
		Analytes			[D]				
1-Chlorooct	ane		97.9	100	98	70-135			
o-Terphenyl			55.5	50.0	111	70-135			
Lab Batch	#: 946117	Sample: 658657-1-BLK / B	LK Batc	h: 1 Matrix	: Solid				
Units:	mg/kg	Date Analyzed: 07/19/14 02:21	SU	RROGATE R	ECOVERY	STUDY			
	BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluoro	obenzene		0.0268	0.0300	89	80-120			
4-Bromoflu	orobenzene		0.0289	0.0300	96	80-120			
Lab Batch	#: 946099	<b>Sample:</b> 658648-1-BKS / B	KS Batc	h: 1 Matrix	: Solid	·			
Units:	mg/kg	Date Analyzed: 07/18/14 13:11	st	RROGATE R	ECOVERY	STUDY			
	TPH	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flag		
		Analytes	[A]		[D]				
1-Chlorooct	tane	Analytes	105	100	[ <b>D</b> ] 105	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.



Project Name: Plains Tract 19-4 In

	r <b>ders :</b> 48954 #: 946117	14, Sample: 658657-1-BKS / B	KS Bate	Project ID: h: 1 Matrix			
Units:	mg/kg	Date Analyzed: 07/19/14 02:37	SU	RROGATE R	ECOVERY S	STUDY	
	BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluor	obenzene		0.0286	0.0300	95	80-120	
4-Bromoflu	orobenzene		0.0338	0.0300	113	80-120	
Lab Batch	#: 946099	Sample: 658648-1-BSD / B	SD Bate	h: 1 Matrix	: Solid	<u> </u>	
U <b>nits:</b>	mg/kg	Date Analyzed: 07/18/14 13:36	SU	RROGATE R	ECOVERY	STUDY	
	TPH	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		106	100	106	70-135	
o-Terpheny	1		44.3	50.0	89	70-135	
Lab Batch	#: 946117	Sample: 658657-1-BSD / B	SD Bate	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 07/19/14 02:54		RROGATE R	ECOVERY S	STUDY	
	BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R  D	Control Limits %R	Flags
1,4-Difluoro	abanzana	Analytes	0.0299	0.0200		80.120	
4-Bromoflu			0.0288	0.0300	96	80-120	
	#: 946099	Sample: 489518-011 S / M	0.0343 S Batc	0.0300 h: 1 Matrix	114 • Soil	80-120	
		-					
Units:	mg/kg	Date Analyzed: 07/18/14 14:49	su	RROGATE R	ECOVERYS	STUDY	
	TPH	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		119	99.7	119	70-135	
o-Terpheny	1		63.6	49.9	127	70-135	
Lab Batch	#: 946117	Sample: 489518-011 S / M	S Bate	h: 1 Matrix	: Soil		
Jnits:	mg/kg	Date Analyzed: 07/19/14 03:10	SU	RROGATE R	ECOVERY	STUDY	
	BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
			1				
1,4-Difluoro	obenzene		0.0280	0.0300	93	80-120	

\* 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.



# Project Name: Plains Tract 19-4 In

Work Orders : 489544,           Lab Batch #: 946099         Sample: 489518-011 SD / 1	MSD Bate	Project ID: h: 1 Matrix:			
Units:         mg/kg         Date Analyzed: 07/18/14 15:14	SU	RROGATE R	ECOVERY S	STUDY	
TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	114	99.8	114	70-135	
o-Terphenyl	60.0	49.9	120	70-135	
Lab Batch #: 946117 Sample: 489518-011 SD /	MSD Batc	h: 1 Matrix	Soil		
Units: mg/kg Date Analyzed: 07/19/14 03:26	SU	JRROGATE R	ECOVERY	STUDY	
BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0284	0.0300	95	80-120	
4-Bromofluorobenzene	0.0355	0.0300	118	80-120	

\* 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 / BAll results are based on MDL and validated for QC purposes.



# BS / BSD Recoveries



## Project Name: Plains Tract 19-4 In

Work Order #: 489544							Pro	ject ID:			
Analyst: ARM	D	<b>Date Prepared:</b> 07/18/2014 <b>Date Analyzed:</b> 07/19/2014									
Lab Batch ID: 946117 Sample: 658657-1-E	BKS	Bate	<b>h #:</b> 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE / 1	BLANKS	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
BTEX by EPA 8021B	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
Analytes	.0.00100								50.100		ļ
Benzene	<0.00100	0.100	0.103	103	0.100	0.105	105	2	70-130	35	
Toluene	<0.00200	0.100	0.101	101	0.100	0.102	102	1	70-130	35	
Ethylbenzene	< 0.00100	0.100	0.107	107	0.100	0.107	107	0	71-129	35	
m_p-Xylenes	<0.00200	0.200	0.219	110	0.200	0.219	110	0	70-135	35	
o-Xylene	<0.00100	0.100	0.110	110	0.100	0.111	111	1	71-133	35	
Analyst: ARM	D	ate Prepai	red: 07/18/201	4			Date A	nalyzed: (	07/18/2014		
Lab Batch ID: 946099 Sample: 658648-1-E	BKS	Bate	<b>h #:</b> 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K/BLANK	SPIKE / I	BLANK S	SPIKE DUP	LICATE	RECOVI	ERY STUL	<b>DY</b>	
TPH By SW8015 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-C12 Gasoline Range Hydrocarbons	<15.0	1000	862	86	1000	889	89	3	70-135	35	
C12-C28 Diesel Range Hydrocarbons	<15.0	1000	1110	111	1000	1130	113	2	70-135	35	

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





# Project Name: Plains Tract 19-4 In

Work Order #: 489544

	oared: 07/21/2014 tch #: 1	Anal	Project I yst: WRU rix: Soil	D:	
Reporting Units: %		SAMPLE		ATE REC	OVERY
Percent Moisture	Parent Sample Result [A]	Duplicate Result	RPD	Control Limits %RPD	Flag
Analyte		[B]			
Percent Moisture	8.97	9.11	2	20	
Lab Batch #: 946109					
Date Analyzed: 07/21/2014 10:00 Date Prep	oared: 07/21/2014	4 Anal	lyst: WRU		
QC- Sample ID: 489607-010 D Ba	tch #: 1	Mat	rix: Soil		
Reporting Units: %	SAMPLE	/ SAMPLE	DUPLIC	ATE REC	OVERY
Percent Moisture Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture	7.65	8.17	7	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**

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

12600 West I-20 East Phone: 432-563-1800 The Environmental Lab of Texas Fax: 432-563-1713 Odessa, Texas 79765 Plains Tract 19 - 4 Inch Project Name: Project Manager: Curt Stanley Project #: Company Name Nova Safety and Environmental Project Loc: Lea County, NM Company Address: 2057 Commerce PO #: City/State/Zip: Midland, TX 79703 Report Format: Standard NPDES **П** TRRP Telephone No: Fax No: 432.520.7701 432 520.7720 Sampler Signature: e-mail: cjbryant@paalp.com cstanley@novatraining.cc Analyze For: (lab use only) TCLP: TOTAL 72 ORDER #: Preservation & # of Containers Matrix **8** Cd Cr Pb Hg Se 8021B/5030 or BTEX 8260 24, (ejn Anions (Ci, SO4, Alkalinity) Ĕ Ŷ use only) RUSH TAT (Pre-Sche **Beginning Depth** ĝ fotal #. of Containers Sampled Date Sampled Metais: As Ag Ba E300 Ending Depth Cations (Ca, Mg, SAR / ESP / CEC DW≐Drinking Water Standard TAT 1005 418.1 (lab L Semivolatiles Field Filtered ŝ ř Chloride Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> N.O.R.M. GW = Grou Other ( Time : H<sub>2</sub>SO4 NaOH # FNO3 None BTRE ΡH ş Ë AB <u>8</u> /ola Š FIELD CODE х 7/17/2014 Х х Trench-1 @ 24' 1600 1 x Soil **Special Instructions:** Laboratory Comments: Bill to Plains Sample Containers Intact? Υ Ν VOCs Free of Headspace? Y Ν Y Time Labels on container(s) Ν hauished by Date Time Received Ý Ν 011 Custody seals on container(s) L Custody seals on cooler(s) Y Ν Y Sample Hand Delivered Ν Date Time Received by Date lime Relinguished by Sampler/Client Rep. ? Y Ν UPS DHL FedEx Lone Star by Courier? Date Date Relinguished by: Time Received by ELOT: Time ∖°c Temperature Upon Receipt:



# XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: Nova Safety & Environmental Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient Date/ Time Received: 07/18/2014 09:10:00 AM **Temperature Measuring device used :** Work Order #: 489544 Sample Receipt Checklist Comments #1 \*Tomporature of cooler/o)2 25

#1 *Temperature of cooler(s)?	2.5	
#2 *Shipping container in good condition?	Yes	
#3 *Samples received on ice?	Yes	
#4 *Custody Seals intact on shipping container/ cooler?	No	
#5 Custody Seals intact on sample bottles?	No	
#6 *Custody Seals Signed and dated?	No	
#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)?	No	
#20 VOC samples have zero headspace (less than 1/4 inch bubble)?	N/A	
#21 <2 for all samples preserved with HNO3,HCL, H2SO4?	N/A	
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	N/A	

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

Analyst:

PH Device/Lot#:

Checklist completed by: Mms Moah Kelsey Brooks Checklist reviewed by: Mms Moah Kelsey Brooks

Date: 07/18/2014

Date: 07/18/2014

# Analytical Report 489666

# for PLAINS ALL AMERICAN EH&S

**Project Manager: Curt Stanley** 

Plains Tract 19-4 In

## 22-JUL-14

Collected By: Client





### 12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215-14-16-TX), Arizona (AZ0765), Florida (E871002), Louisiana (03054) New Jersey (TX007), North Carolina(681), Oklahoma (9218), Pennsylvania (68-03610)

Xenco-Atlanta (EPA Lab Code: GA00046): Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD ( L10-135) Texas (T104704477), Louisiana (04176), USDA (P330-07-00105)

> 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)





22-JUL-14

Project Manager: Curt Stanley PLAINS ALL AMERICAN EH&S 1301 S. COUNTY ROAD 1150 Midland, TX 79706

Reference: XENCO Report No(s): 489666 Plains Tract 19-4 In Project Address: Lea County, New Mexico

#### **Curt Stanley**:

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) 489666. 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. 489666 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.

Ams Joah

Kelsey Brooks Project Manager

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Houston - Dallas - Odessa - San Antonio - Tampa - Lakeland - Atlanta - Phoenix - Oklahoma - Latin America



# Sample Cross Reference 489666



# PLAINS ALL AMERICAN EH&S, Midland, TX

Plains Tract 19-4 In

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Trench -2 @ 30'	S	07-18-14 15:15		489666-001



## CASE NARRATIVE



Client Name: PLAINS ALL AMERICAN EH&S Project Name: Plains Tract 19-4 In

Project ID: Work Order Number(s): 489666 Report Date: 22-JUL-14 Date Received: 07/21/2014

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None



### Project Id:

Contact: Curt Stanley Project Location: Lea County, New Mexico

# UCTUINARU UI FAllary 318 Shallarda y 407030 PLAINS ALL AMERICAN EH&S, Midland, TX



Project Name: Plains Tract 19-4 In

Date Received in Lab:Mon Jul-21-14 01:30 pmReport Date:22-JUL-14Project Manager:Kelsey Brooks

	Lab Id:	489666-001			
Analysis Requested	Field Id:	Trench -2 @ 30'			
Anuiysis Kequesieu	Depth:				
	Matrix:	SOIL			
	Sampled:	Jul-18-14 15:15			
BTEX by EPA 8021B	Extracted:	Jul-21-14 16:00			
	Analyzed:	Jul-21-14 19:34			
	Units/RL:	mg/kg RL		 	
Benzene		ND 0.00109			
Toluene		0.00626 0.00217			
Ethylbenzene		0.0211 0.00109			
m_p-Xylenes		0.0756 0.00217			
o-Xylene		0.0358 0.00109			
Total Xylenes		0.111 0.00109			
Total BTEX		0.139 0.00109			
Percent Moisture	Extracted:				
	Analyzed:	Jul-21-14 17:00			
	Units/RL:	% RL			
Percent Moisture		7.90 1.00			
TPH By SW8015 Mod	Extracted:	Jul-21-14 15:00			
	Analyzed:	Jul-21-14 19:56			
	Units/RL:	mg/kg RL			
C6-C12 Gasoline Range Hydrocarbons		74.3 16.3			
C12-C28 Diesel Range Hydrocarbons		441 16.3			
C28-C35 Oil Range Hydrocarbons		ND 16.3			
Total TPH		515 16.3			

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Kelsey Brooks Project Manager

Final 1.000



# **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 quantitation 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

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one	Fax
1) 240-4200	(281) 240-4280
4) 902 0300	(214) 351-9139
0) 509-3334	(210) 509-3335
3) 620-2000	(813) 620-2033
2) 563-1800	(432) 563-1713
0) 449-8800	(770) 449-5477
2) 437-0330	

(28

(21

(21 (81

(43 (77

(60



Project Name: Plains Tract 19-4 In

Work Orde Lab Batch #:		66, Sample: 489666-001 / SMP	Batch:	Project ID					
Units:	mg/kg	Date Analyzed: 07/21/14 19:34	SURROGATE RECOVERY STUDY						
	BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
	=-	Analytes			[D]				
1,4-Difluorobe			0.0245	0.0300	82	80-120			
4-Bromofluoro			0.0352	0.0300	117	80-120			
Lab Batch #:	946177	Sample: 489666-001 / SMP	Batch:	1 Matrix	: Soil				
Units:	mg/kg	Date Analyzed: 07/21/14 19:56	SUR	ROGATE R	RECOVERY	STUDY			
	TPH	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
		Analytes							
1-Chlorooctane	<b>;</b>		108	99.8	108	70-135			
o-Terphenyl	04(177		62.1	49.9	124	70-135			
Lab Batch #:		Sample: 658687-1-BLK / BL			c: Solid				
Units:	mg/kg	Date Analyzed: 07/21/14 17:11	SURROGATE RECOVERY STUDY						
	ТРН	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
		Analytes			[D]				
1-Chlorooctane	•		117	100	117	70-135			
o-Terphenyl			63.8	50.0	128	70-135			
Lab Batch #:	946200	Sample: 658707-1-BLK / BL	K Batch:	1 Matrix	: Solid				
Units:	mg/kg	Date Analyzed: 07/21/14 17:25	SUR	ROGATE F	RECOVERY	STUDY			
	BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1.4-Difluorobe	nzene		0.0274	0.0300	91	80-120			
4-Bromofluoro	benzene		0.0303	0.0300	101	80-120			
Lab Batch #:	946177	Sample: 658687-1-BKS / BK			x: Solid	l			
Units:	mg/kg	Date Analyzed: 07/21/14 17:39	SUR	ROGATE F	RECOVERY	STUDY			
	ТРН	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flag		
		Analytes							
1-Chlorooctane			129	100	129	70-135			
o-Terphenyl			61.1	50.0	122	70-135			

\* Surrogate outside of Laboratory QC limits

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

\*\*\* Poor recoveries due to dilution

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

Surrogate Recovery [D] = 100 \* A / B



Project Name: Plains Tract 19-4 In

Work Or Lab Batch	• <b>ders :</b> 48966 #• 946200	66, Sample: 658707-1-BKS / B	KS Batch	Project ID: 1 Matrix:					
Units:	mg/kg	Date Analyzed: 07/21/14 17:40		RROGATE RI		STUDY			
		X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluoro	obenzene		0.0286	0.0300	95	80-120			
4-Bromoflu	orobenzene		0.0344	0.0300	115	80-120			
Lab Batch	#: 946200	Sample: 658707-1-BSD / B	SD Batch	n: 1 Matrix:	Solid				
Units:	mg/kg	Date Analyzed: 07/21/14 17:56	SU	RROGATE R	ECOVERY	STUDY			
	BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluoro	obenzene		0.0287	0.0300	96	80-120			
4-Bromoflu	orobenzene		0.0354	0.0300	118	80-120			
Lab Batch	#: 946177	Sample: 658687-1-BSD / B			Solid				
Units:	mg/kg	Date Analyzed: 07/21/14 18:07	SU	RROGATE R	ECOVERY	STUDY			
	ТРН	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorooct	ane	•	97.9	100	98	70-135			
o-Terphenyl	1		64.7	50.0	129	70-135			
Lab Batch	#: 946200	Sample: 489648-001 S / MS	Batch	n: 1 Matrix:	Soil				
Units:	mg/kg	Date Analyzed: 07/21/14 18:13	SURROGATE RECOVERY STUDY						
	BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Difluoro	obenzene	······································	0.0255	0.0300	85	80-120			
4-Bromoflu	orobenzene		0.0300	0.0300	100	80-120			
Lab Batch	#: 946177	Sample: 489648-001 S / M	S Batcl	h: 1 Matrix	Soil				
Units:	mg/kg	Date Analyzed: 07/21/14 19:02	SU	RROGATE R	ECOVERY	STUDY			
	ТРН	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1-Chlorooct	tane		120	99.8	120	70-135			
o-Terphenyl			64.8	49.9	130	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.



# Form 2 - Surrogate Recoveries

Project Name: Plains Tract 19-4 In

	rders: 48966 h#: 946200	6, Sample: 489648-001 SD / 1	MSD Batcl	Project ID: h: 1 Matrix:			
Units:	mg/kg	Date Analyzed: 07/21/14 18:29	SU	RROGATE R	ECOVERY S	STUDY	
	BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluor	robenzene		0.0278	0.0300	93	80-120	
4-Bromoflu	uorobenzene		0.0343	0.0300	114	80-120	

\* 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.



# **BS / BSD Recoveries**



### Project Name: Plains Tract 19-4 In

						Proj	ject ID:					
D	ate Prepar	red: 07/21/201	14			Date A	nalyzed: (	07/21/2014				
BKS	Bate	<b>h #:</b> 1			Matrix: Solid							
	BLANK /BLANK SPIKE /			BLANK S	NK SPIKE DUPLICATE RECOVERY STUDY							
Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag		
<0.00100							0	70-130	35			
							1					
							1					
< 0.00200					0.223	112	1	70-135	35			
<0.00100	0.100	0.112	112	0.100	0.112	112	0	71-133	35			
D	ate Prenar	ed: 07/21/201	  4			Date A	nalvzed: (	L				
	-			Matrix: Solid								
	BLAN	K /BLANK	SPIKE / I	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STUI	DY			
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		
<15.0	1000	1030	103	1000	939	94	9	70-135	35			
<15.0	1000	1060	106	1000	1090	109	3	70-135	35			
	BKS  Blank Sample Result [A] <ul> <li>&lt;0.00100</li> <li>&lt;0.00200</li> <li>&lt;0.00100</li> <li>&lt;0.00200</li> <li>&lt;0.00100</li> </ul> <li>BKS  <ul> <li>Blank</li> <li>Sample Result [A] <ul> <li>&lt;15.0</li> </ul> </li> </ul></li>	BKS         Bate           Blank         Spike           Sample Result         Added           [A]         [B]           <0.00100	BKS         Batch #: 1           Blank         Spike         Blank           Sample Result         Added         Spike           [A]         [B]         [C]           <0.00100	Blank Sample Result [A]         Spike Added         Blank Spike Result [C]         Blank Spike %R [D]           <0.00100	BKS         Batch #: 1           Blank         Spike         Blank         Blank         Spike         Added         Spike         Spike         Added         Spike         Spike         Added         Spike         Spike         Added         Spike         Spike         Spike         Added         Spike         Spike         Spike         Added         Added         Spike         Spike         Spike         Added         Added         Spike         Spike         Added         Added         Spike         Spike         Spike         Added         Spike         Spike         Added         Spike         Spike         Added         Spike         Spike         Added         Spike         Spike         Spike         Added         Spike         Spike	BKS         Batch #: 1           Blank         Spike         Blank         Blank         Spike         Blank         Spike         Added         Spike         Blank         Spike         Added         Spike         Blank         Spike         Added         Spike         Blank         Spike         Duplicate         Result [F]         Outplicate         Spike         Duplicate         Spike         Duplicate         Spike         Duplicate         Spike         Duplicate         Spike         Duplicate         Spike         Duplicate         Spike         Spike <td>Date Prepared:         07/21/2014         Date A           BKS         Batch #:         1           BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE         Blank         Blank         Blank         Blank         Blank         Spike         Added         Spike         Blank         Spike         Added         Spike         Spike         Blank         Spike         Added         Spike         Blank         Spike         Added         Spike         Spike         Blank         Spike         Added         Spike         Blank         Spike         Added         Spike         Spike         Spike         Blank         Spike         Spike         Blank         Spike         Blank         Spike         Spike         Blank         Spike         Blank         Spike         Spik</td> <td>BKS         Batch #: 1         Matrix: 5           BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE         RECOVI           Sample Result         Spike Added         Blank Spike Result         Spike %R         Blank Spike %R         Spike Mdded         Blank Spike %R         Spike Added         Blank Spike %R         Spike Mdded         Blank Spike %R         RPD %R         RPD %R           &lt;0.00100</td> 0.100         0.104         104         0.100         0.104         104         0           <0.00200	Date Prepared:         07/21/2014         Date A           BKS         Batch #:         1           BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE         Blank         Blank         Blank         Blank         Blank         Spike         Added         Spike         Blank         Spike         Added         Spike         Spike         Blank         Spike         Added         Spike         Blank         Spike         Added         Spike         Spike         Blank         Spike         Added         Spike         Blank         Spike         Added         Spike         Spike         Spike         Blank         Spike         Spike         Blank         Spike         Blank         Spike         Spike         Blank         Spike         Blank         Spike         Spik	BKS         Batch #: 1         Matrix: 5           BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE         RECOVI           Sample Result         Spike Added         Blank Spike Result         Spike %R         Blank Spike %R         Spike Mdded         Blank Spike %R         Spike Added         Blank Spike %R         Spike Mdded         Blank Spike %R         RPD %R         RPD %R           <0.00100	Date Prepared:         07/21/2014         Date Analyzed:         07/21/2014           BKS         Batch #:         1         Matrix:         Solid           BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE         RECOVERY STUI           Blank         Spike Added         Blank Spike Result [A]         Spike Added         Blank Spike %R         Spike Added         Blank Spike %R         Blank Added         Blank Spike %R         Blank Added         Blank Spike %R         Blank Added         Blank Spike Mesult [F]         Blank [G]         Blank %R         Blank Spike MR         Blank Spike Matrix         Blank Spike Matrix         Blank Spike Matrix         Blank Spike Matrix         Blank Spike Matrix         Blank Spike Matrix         Blank Spike Matrix         Blank Solid           <0.00100	Date Prepared: 07/21/2014         Date Analyzed: 07/21/2014           BKS         Batch #: 1         Matrix: Solid           BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY           Blank sample Result [A]         Spike Added         Blank Spike %R         Spike %R         Blank Added         Blank Spike %R         Blank Added         Blank Spike (GI         RPD %%         Control Limits %RPD         Control Limits %RPD           <0.00100		

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



# Form 3 - MS Recoveries



### **Project Name: Plains Tract 19-4 In**

Work Order #: 489666 946177 Lab Batch #: Date Analyzed: 07/21/2014 QC- Sample ID: 489648-001 S

Reporting Units: mg/kg

Date Prepared: 07/21/2014

**Project ID:** Analyst: ARM

Matrix: Soil

#### **Batch #:** 1 MATRIX / MATRIX SPIKE RECOVERY STUDY

	MATRIX / MATRIX STIKE RECOVERT STOPT												
TPH by SW8015 Mod	Parent Sample Result	Spike Added	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag							
Analytes	[A]	[B]											
C6-C12 Gasoline Range Hydrocarbons	<23.9	1590	1640	103	70-135								
C12-C28 Diesel Range Hydrocarbons	5360	1590	7050	106	70-135								

Г

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



#### 10110 J - MIS / MISL Recuttiles

### Project Name: Plains Tract 19-4 In



Work Order # :	489666						Project II	):				
Lab Batch ID:	946200	QC- Sample ID:	489648	-001 S	Ba	tch #:	1 Matrix	c: Soil				
Date Analyzed:	07/21/2014	Date Prepared:	07/21/2	014	An	alyst: A	ARM					
<b>Reporting Units:</b>	mg/kg		M	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
]	BTEX by EPA 8021B	Parent Sample	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample	-	RPD	Control Limits	Control Limits	Flag
	Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Benzene		<0.00160	0.160	0.138	86	0.160	0.139	87	1	70-130	35	
Toluene		<0.00320	0.160	0.127	79	0.160	0.129	81	2	70-130	35	
Ethylbenzene		<0.00160	0.160	0.119	74	0,160	0.119	74	0	71-129	35	
m_p-Xylenes		<0.00320	0.320	0.242	76	0.320	0.241	75	0	70-135	35	
o-Xylene		<0.00160	0.160	0.121	76	0.160	0.122	76	1	71-133	35	

Matrix Spike Percent Recovery  $[D] = 100^{\circ}(C-A)/B$ Relative Percent Difference RPD =  $200^{\circ}(C-F)/(C+F)$  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 Applicable N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.





## Project Name: Plains Tract 19-4 In

Work Order #: 489666

Lab Batch #: 946179 Date Analyzed: 07/21/2014 17:00 QC- Sample ID: 489666-001 D	Date Prepar Batch	ed:07/21/2014	Anal	Project I yst: WRU rix: Soil	D:	
Reporting Units: %		SAMPLE /	SAMPLE	DUPLIC	ATE REC	OVERY
Percent Moisture		Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte			[2]			
Percent Moisture		7.90	7.81	1	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**

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

The Env	rironmental Lab of Tex	as							126 Ode																	2-56 2-56						
	Project Manager:	Curt Stanley														_	ł	Proj	ject	Nan	1e: _		F	Plai	ns	Tra	<u>ct 1</u>	19 -	4 Ir	ich		
	Company Name	Nova Safety and Environr	nental													_			Pro	oject	#:											
	Company Address:	2057 Commerce														_		P	roje	ct Lo					Le	ea C	ount	y, NN	<u> </u>			
	City/State/Zip:	Midland, TX 79703								-u- 1 <u></u>										РО	#:										Z	_
	Telephone No:	432.520.7720				Fax No:		432	.520	.770	)1					_	Rep	ort	For	mat:	[	s	tanda	ard			TRR	₹P		NPT	zte	1
	Sampler Signature:	(ution	<u> </u>	4		e-mail:		cibi							ning.			1						nah	ze F	OF:				، 	7	,
lab use	only) R#: 4896	a a	2	l					03	lan	iey(	win	ova	<u>li an</u>	<u>mg.</u>							TCL	P:						Т	T	72 hrs	
ORDEF	<u>e#: 10 10</u>	UV	T	T	TT				P	rese	vatio	on & #	≇ of C	Contai	ners	Ŧ	Matri	×	015B	。			g Se			3260					48,	5
LAB # (lab use only)	FIEL	-D CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total #. of Containers	lce	HNO <sub>3</sub>	HCI	H <sub>2</sub> SO4	NaOH	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	None Other ( Specify)	DW=Drinking Water SL=Skudge	GW ≃ Groundwater S=Soil/Solid	NP=Non-Potable Specify Other	TPH: 418.1 8015M 8	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Alians (4, 304, Andruny)	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTE 80210/5030 or BTEX 8260	RCI	N.O.R.M.	Chioride EJUU		RUSH TAT (Pre-Schedule) 24/48,	Standard TAT
		:h-2 @ 30'			7/18/2014	1515		1	x							Τ	Soil		X							x					х	T
										_		-	$\downarrow$	_	_			_			$\downarrow$	_			<b>_</b>			-	_		$\square$	L
										-	+	-	-+	+		╋			-	+	_	+	+	+	+	$\vdash$	$\dashv$	+	+	┼┨	$\vdash$	$\vdash$
									$\vdash$	-+	-+	-	+	-+		╉		┥		-+	╉	+	┿	┼─	┼─	$\left  - \right $	+	-+-	+	┼╉	$ \dashv$	F
										+		-+		-†	+	╋				1		╈	╈	1	1				+			-
																														$\Box$		
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## XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



 Client: Nova Safety & Environmental
 Acceptable Temperature Range: 0 - 6 degC

 Date/ Time Received: 07/21/2014 01:30:00 PM
 Air and Metal samples Acceptable Range: Ambient

 Work Order #: 489666
 Temperature Measuring device used :

 Sample Receipt Checklist
 Comments

	• •
#1 *Temperature of cooler(s)?	2.5
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	No
#5 Custody Seals intact on sample bottles?	No
#6 *Custody Seals Signed and dated?	No
#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)?	No
#20 VOC samples have zero headspace (less than 1/4 inch bubble)?	N/A
#21 <2 for all samples preserved with HNO3,HCL, H2SO4?	N/A
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	N/A

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

Analyst:

PH Device/Lot#:

Checklist completed by: Morah Kelsey Brooks

Date: 07/21/2014

Checklist reviewed by:

Date: \_\_\_\_\_

# Analytical Report 490303

# for PLAINS ALL AMERICAN EH&S

**Project Manager: Curt Stanley** 

Tract 19-4 Inch

SRS 2014-178

31-JUL-14

Collected By: Client





#### 12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215-14-16-TX), Arizona (AZ0765), Florida (E871002), Louisiana (03054) New Jersey (TX007), North Carolina(681), Oklahoma (9218), Pennsylvania (68-03610)

Xenco-Atlanta (EPA Lab Code: GA00046): Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD ( L10-135) Texas (T104704477), Louisiana (04176), USDA (P330-07-00105)

> 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)





31-JUL-14

Project Manager: **Curt Stanley PLAINS ALL AMERICAN EH&S** 1301 S. COUNTY ROAD 1150 Midland, TX 79706

Reference: XENCO Report No(s): 490303 Tract 19-4 Inch Project Address: Lea County, NM

#### **Curt Stanley:**

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) 490303. 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. 490303 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.

Ams Joah

Kelsey Brooks Project Manager

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Houston - Dallas - Odessa - San Antonio - Tampa - Lakeland - Atlanta - Phoenix - Oklahoma - Latin America



## Sample Cross Reference 490303



## PLAINS ALL AMERICAN EH&S, Midland, TX

Tract 19-4 Inch

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SP Baseline	S	07-29-14 13:30		490303-001

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## CASE NARRATIVE



Client Name: PLAINS ALL AMERICAN EH&S

Project Name: Tract 19-4 Inch

Project ID: SRS 2014-178 Work Order Number(s): 490303 Report Date: *31-JUL-14* Date Received: *07/29/2014* 

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None



## Hits Summary 490303



### PLAINS ALL AMERICAN EH&S, Midland, TX

Tract 19-4 Inch

Sample Id : SP Baseline	Matrix :	Soil	% Moisture :	2.05
Lab Sample Id : 490303-001	Date Collected	: 07.29.14 13.30	Basis :	Dry Weight
	Date Received :	07.29.14 16.37		

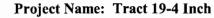
Analytical Method : TPH by SW8015 Mod Seq Number 947022 Prep Method: TX1005P Date Prep: 07.30.14 12.00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
C6-C12 Gasoline Range Hydrocarbons	PHC612	2040	mg/kg	07.30.14 22.27		5
C12-C28 Diesel Range Hydrocarbons	PHCG1028	11600	mg/kg	07.30.14 22.27		5
Total TPH	PHC635	13600	mg/kg	07.30.14 22.27		5



Project Id: SRS 2014-178 Contact: Curt Stanley Project Location: Lea County, NM

## Ceremeane or reliary 38 Shifting y 4> JOJO PLAINS ALL AMERICAN EH&S, Midland, TX



 Date Received in Lab:
 Tue Jul-29-14 04:37 pm

 Report Date:
 31-JUL-14

 Project Manager:
 Kelsey Brooks

				110jeet Managert	
	Lab Id:	490303-001			
Anghain Pagnastad	Field Id:	SP Baseline			
Analysis Requested	Depth:				
	Matrix:	SOIL			
	Sampled:	Jul-29-14 13:30			
Percent Moisture	Extracted:				
	Analyzed:	Jul-30-14 17:10			
	Units/RL:	% RL			
Percent Moisture		2.05 1.00			
TPH by SW8015 Mod	Extracted:	Jul-30-14 12:00			
	Analyzed:	Jul-30-14 22:27			
	Units/RL:	mg/kg RL			
C6-C12 Gasoline Range Hydrocarbons		2040 76.3			
C12-C28 Diesel Range Hydrocarbons		11600 76.3			
C28-C35 Oil Range Hydrocarbons		ND 76.3			
Total TPH		13600 76.3			

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Huns Roah

Kelsey Brooks Project Manager



Final 1.000



# Flagging Criteria



- X In our quality control review of the data a OC 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 quantitation 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
- PQL Practical Quantitation Limit MQL Method Quantitation Limit
- **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

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LOD Limit of Detection

LOO Limit of Quantitation

4143 Greenbriar Dr, Stafford, TX 77477 9701 Harry Hines Blvd , Dallas, TX 75220 5332 Blackberry Drive, San Antonio TX 78238 2505 North Falkenburg Rd, Tampa, FL 33619 12600 West I-20 East, Odessa, TX 79765 6017 Financial Drive, Norcross, GA 30071 3725 E. Atlanta Ave, Phoenix, AZ 85040

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(432) 563-1800	(432) 563-1713
(770) 449-8800	(770) 449-5477
(602) 437-0330	



# Form 2 - Surrogate Recoveries

## Project Name: Tract 19-4 Inch

Work Or Lab Batch	ders: 49030	)3, Sample: 490303-001 / SMP	Batch	-	SRS 2014-1 Soil	78	
Units:	mg/kg	Date Analyzed: 07/30/14 22:27		RROGATE RE		STUDY	
	ТРН	by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		128	99.7	128	70-135	
o-Terphenyl	1		64.8	49.9	130	70-135	
Lab Batch	#: 947022	Sample: 659234-1-BLK / Bl	LK Batch	n: 1 Matrix:	Solid		
Units:	mg/kg	Date Analyzed: 07/30/14 15:07	SU	RROGATE RE	ECOVERY S	STUDY	
	ТРН	by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		99.8	100	100	70-135	
o-Terphenyl	1		52.9	50.0	106	70-135	
Lab Batch	#: 947022	Sample: 659234-1-BKS / BI	KS Batch	n: 1 Matrix:	Solid		
Units:	mg/kg	Date Analyzed: 07/30/14 15:32	SU	RROGATE RI	ECOVERY	STUDY	
	ТРН	by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		122	100	122	70-135	
o-Terphenyl	1		64.8	50.0	130	70-135	
Lab Batch	#: 947022	Sample: 659234-1-BSD / BS					
Units:	mg/kg	Date Analyzed: 07/30/14 15:57	SU	RROGATE RI	ECOVERY	STUDY	
	ТРН	by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		125	100	125	70-135	
o-Terpheny	1		65.0	50.0	130	70-135	
Lab Batch	#: 947022	Sample: 490270-007 S / MS	Batcl	h: 1 Matrix:	Soil	L	
Units:	mg/kg	Date Analyzed: 07/30/14 19:13	SU	RROGATE RI	ECOVERY	STUDY	
	ТРН	by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane		111	99.9	111	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.



# Form 2 - Surrogate Recoveries

Project Name: Tract 19-4 Inch

	rders: 49030 #: 947022 mg/kg	3, Sample: 490270-007 SD / 1 Date Analyzed: 07/30/14 19:38		-			
	ТРН	by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooc	tane		113	99.9	113	70-135	
o-Terpheny	/l		59.7	50.0	119	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 / BAll results are based on MDL and validated for QC purposes.



## **BS / BSD Recoveries**



#### Project Name: Tract 19-4 Inch

Work Order	#: 490303							Proj	ject ID:	SRS 2014-1	.78	
Analyst:	ARM	D	ate Prepar	red: 07/30/201	4			Date A	nalyzed: (	07/30/2014		
Lab Batch ID:	947022 Sample: 659234-1-1	BKS	Batc	<b>h #:</b> 1					Matrix: S	Solid		
Units:	mg/kg		BLAN	K/BLANK S	SPIKE / I	BLANK S	SPIKE DUPI	LICATE	RECOVI	ERY STUI	γ	
Analy	TPH by SW8015 Mod	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
	asoline Range Hydrocarbons	<15.0	1000	988	99	1000	1040	104	5	70-135	35	
C12-C28 I	Diesel Range Hydrocarbons	<15.0	1000	1190	119	1000	1240	124	4	70-135	35	

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



#### botin J - Mo / Mob Recuteites

### Project Name: Tract 19-4 Inch



Work Order # :	490303						Project II	D: SRS 20	014-178			
Lab Batch ID:	947022	QC- Sample ID:	490270	-007 S	Ba	tch #:	1 Matri	x: Soil				
Date Analyzed:	07/30/2014	Date Prepared:	07/30/2	014	An	alyst: /	ARM					
<b>Reporting Units:</b>	mg/kg		N	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
,	TPH by SW8015 Mod	Parent Sample	Spike	Spiked Sample Result	Sample	Spike	Duplicate Spiked Sample	•	RPD	Control Limits	Control Limits	Flag
	Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
C6-C12 Gasolin	ne Range Hydrocarbons	31.9	1020	997	95	1020	931	88	7	70-135	35	
C12-C28 Diesel	l Range Hydrocarbons	<15.3	1020	1070	105	1020	1070	105	0	70-135	35	

Matrix Spike Percent Recovery  $[D] = 100^{\circ}(C-A)/B$ Relative Percent Difference RPD =  $200^{\circ}(C-F)/(C+F)$  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 Applicable N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.





## Project Name: Tract 19-4 Inch

Work Order #: 490303

Lab Batch #: 946983				Project I	D: SRS 201	4-178
Date Analyzed: 07/30/2014 17:10	Date Prepar	ed: 07/30/2014	Ana	lyst: WRU		
QC- Sample ID: 490303-001 D	Batcl	n#: 1	Mat	rix: Soil		
Reporting Units: %		SAMPLE /	SAMPLE	DUPLIC	ATE REC	OVERY
Percent Moisture		Parent Sample Result [A]	Sample Duplicate Result	RPD	Control Limits %RPD	Flag
Analyte		(**)	[B]			
Percent Moisture		2.05	1.89	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



## **XENCO Laboratories** Prelogin/Nonconformance Report- Sample Log-In

Comments



**Client: PLAINS ALL AMERICAN EH&S** Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient Date/ Time Received: 07/29/2014 04:37:00 PM **Temperature Measuring device used :** Work Order #: 490303

Sample Receipt Checklis	t
1 *Temperature of cooler(s)?	4
2 *Shipping container in good condition?	Yes
3 *Samples received on ice?	Yes
4 *Custody Seals intact on shipping container/ cooler?	No
5 Custody Seals intact on sample bottles?	No
6 *Custody Seals Signed and dated?	No
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)?	No
20 VOC samples have zero headspace (less than 1/4 inch bubble)?	N/A
21 <2 for all samples preserved with HNO3,HCL, H2SO4?	N/A
22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	N/A

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

Analyst:

PH Device/Lot#:

Checklist completed by: Murg Aroah Kelsey Brooks Checklist reviewed by: Murg Aroah Kelsey Brooks

Date: 07/30/2014

Date: 07/30/2014

# Xenco Laboratories

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

The Env	vironmental Lab of Tex	as								ioo V essa														ax:	433	2-56 2-56	53-17	713				
	Project Manager:	Curt Stanley					_											Pro	ject	Nan	ne:_				Tra	<u>ct 1</u>	9 -	- 4	nch			
	Company Name	Nova Safety and Environm	ental																Pro	ject	t#:_				S	RS :	201	4-17	78			
	Company Address:	2057 Commerce											-			_		Ρ	roje	ct Lo	oc: _				L	ea C	oun	ty, N	M			
	City/State/Zip:	Midland, TX 79703																		PO	;#:_											
	Telephone No: Sampler Signature	433.520.7720		4		Fax No: e-mail:				0.770 nt@j		lp.c	om				Rej	oort	For	nat	:	G∕ s	tand	ard			TRF	₹P	1		DES	3
			1	1 -		-				stan				rair	ing.	CC				_			_	nal	/ze F	or:			—			1
(lab use	4914	12																				TCL TOTA		$\pm$	$\vdash$	×					72 hrs	
ORDE	₹#:     OO		<u> </u>	1	1		ľ	<b></b>		Preser	vatio	n & #	of C	ontail	ners	+	Matr		80158				lg Se	,		9260					24, 48,	┝
LAB # (lab use only)	FIEI	LD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total #. of Containers	lce	HNO <sub>3</sub>	HCI	H <sub>2</sub> SO4	NaOH	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	None Other ( Snacify)	Outer ( specing)		NP=Non-Potable Specify Other	418.1 (8015M)	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Anions (CI, SO4, Alkalinity)	Metals: As Ag Ba Cd Cr Pb Hg	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	Paint Filter Test	Chloride E300		RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Ctandard TAT
		Baseline			7/29/2014	1330	<u> </u>	1	x								So	_	х													5
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## **XENCO** Laboratories Prelogin/Nonconformance Report- Sample Log-In



**Client: PLAINS ALL AMERICAN EH&S** Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient Date/ Time Received: 07/29/2014 04:37:00 PM Temperature Measuring device used : Work Order #: 490303

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	4	
#2 *Shipping container in good condition?	Yes	
#3 *Samples received on ice?	Yes	
#4 *Custody Seals intact on shipping container/ cooler?	No	
#5 Custody Seals intact on sample bottles?	No	
#6 *Custody Seals Signed and dated?	No	
#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)?	No	
#20 VOC samples have zero headspace (less than 1/4 inch bubble)?	N/A	
#21 <2 for all samples preserved with HNO3,HCL, H2SO4?	N/A	
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	N/A	

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

Analyst:

PH Device/Lot#:

 Checklist completed by:
 Mms Moah

 Kelsey Brooks

 Checklist reviewed by:
 Mms Moah

 Kelsey Brooks

Date: 07/30/2014

Date: 07/30/2014

# Analytical Report 491536

# for PLAINS ALL AMERICAN EH&S

**Project Manager: Curt Stanley** 

### Tract 19-4 Inch

### SRS 2014-178

#### 18-AUG-14

Collected By: Client





### 12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215-14-16-TX), Arizona (AZ0765), Florida (E871002), Louisiana (03054) New Jersey (TX007), North Carolina(681), Oklahoma (9218), Pennsylvania (68-03610)

Xenco-Atlanta (EPA Lab Code: GA00046): Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD ( L10-135) Texas (T104704477), Louisiana (04176), USDA (P330-07-00105)

> 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)





18-AUG-14

Project Manager: Curt Stanley PLAINS ALL AMERICAN EH&S 1301 S. COUNTY ROAD 1150 Midland, TX 79706

Reference: XENCO Report No(s): 491536 Tract 19-4 Inch Project Address: Lea County, NM

#### **Curt Stanley:**

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) 491536. 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. 491536 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.

Ams Joah

Kelsey Brooks Project Manager

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# Sample Cross Reference 491536



## PLAINS ALL AMERICAN EH&S, Midland, TX

Tract 19-4 Inch

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
RP @ 35' bgs	S	08-14-14 15:00		491536-001



## CASE NARRATIVE



Client Name: PLAINS ALL AMERICAN EH&S

Project Name: Tract 19-4 Inch

Project ID: SRS 2014-178 Work Order Number(s): 491536 Report Date: 18-AUG-14 Date Received: 08/15/2014

Sample receipt non conformances and comments:

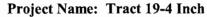
Sample receipt non conformances and comments per sample:

None



Project Id: SRS 2014-178 Contact: Curt Stanley Project Location: Lea County, NM

# UST MARKE UN FAILARY 318 Stallarda y 45 1330 PLAINS ALL AMERICAN EH&S, Midland, TX





Date Received in Lab: Fri Aug-15-14 10:00 am Report Date: 18-AUG-14 Project Manager: Kelsey Brooks

	Lab Id:	491536-001			
Analysis Requested	Field Id:	RP @ 35' bgs			
Anulysis Requested	Depth:				
	Matrix:	SOIL			
	Sampled:	Aug-14-14 15:00			
Percent Moisture	Extracted:				
	Analyzed:	Aug-18-14 09:45			
	Units/RL:	% RL			
Percent Moisture		4.19 1.00			
TPH by SW8015 Mod	Extracted:	Aug-15-14 16:00			
	Analyzed:	Aug-16-14 02:01			
	Units/RL:	mg/kg RL			
C6-C12 Gasoline Range Hydrocarbons		178 15.6			
C12-C28 Diesel Range Hydrocarbons		849 15.6			
C28-C35 Oil Range Hydrocarbons		18.8 15.6			
Total TPH		1050 15.6			

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Huns Roah

Kelsey Brooks Project Manager

Final 1.000



# **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 quantitation 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
- PQL Practical Quantitation Limit MQL Method Quantitation Limit

LOD Limit of Detection

LOQ Limit of Quantitation

(2

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- - -
- **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

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one	Fax
81) 240-4200	(281) 240-4280
14) 902 0300	(214) 351-9139
10) 509-3334	(210) 509-3335
13) 620-2000	(813) 620-2033
32) 563-1800	(432) 563-1713
70) 449-8800	(770) 449-5477
02) 437-0330	



# Form 2 - Surrogate Recoveries

Project Name: Tract 19-4 Inch

Work Or Lab Batch	<b>ders :</b> 49153 #: 948406	6, Sample: 491536-001 / SMP	Batch	•	SRS 2014-1 Soil	78	
Units:	mg/kg	Date Analyzed: 08/16/14 02:01	SU	RROGATE R	ECOVERY S	STUDY	
	TPH	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
I-Chlorooct	ane		126	99.7	126	70-135	
o-Terphenyl			61.8	49.9	124	70-135	
Lab Batch	#: 948406	Sample: 660148-1-BLK / BI	LK Batch	n: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 08/15/14 15:17	SU	RROGATE R	ECOVERY S	STUDY	
	ТРН	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
		Analytes					
1-Chlorooct			110	100	110	70-135	
o-Terphenyl			55.5	50.0	111	70-135	
Lab Batch	#: 948406	Sample: 660148-1-BKS / BB	KS Batel	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 08/15/14 15:46	SU	RROGATE R	ECOVERY S	STUDY	
	TPH	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooct	ane		113	100	113	70-135	
o-Terpheny			64.2	50.0	128	70-135	
Lab Batch	#: 948406	Sample: 660148-1-BSD / BS	SD Batcl	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 08/15/14 16:14	SU	<b>RROGATE</b> R	ECOVERY	STUDY	
	ТРН	by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	tane	•	129	100	129	70-135	
o-Terpheny			55.5	50.0	111	70-135	
	#: 948406	Sample: 491472-001 S / MS		h: 1 Matrix			
Units:	mg/kg	Date Analyzed: 08/15/14 17:11	SU	RROGATE R	ECOVERY	STUDY	
	ТРН	by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooc	tane		115	99.8	115	70-135	
o-Terpheny			64.6	49.9	129	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.



# Form 2 - Surrogate Recoveries

Project Name: Tract 19-4 Inch

	rders: 49153 #: 948406 mg/kg	6, Sample: 491472-001 SD / 1 Date Analyzed: 08/15/14 17:39		-			
	TPH	by SW8015 Mod Analytes	Amount Found [A]	True Amount {B}	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooc	1-Chiorooctane		108	99.8	108	70-135	
o-Terpheny	yl		64.6	49.9	129	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.



## **BS / BSD Recoveries**



### Project Name: Tract 19-4 Inch

Work Order #: 491536 Project									ject ID:	SRS 2014-1	78								
Analyst:	ARM	D	ate Prepa	red: 08/15/201	14	Date Analyzed: 08/15/2014													
Lab Batch ID: 948406         Sample: 660148-1-BKS         Batch #: 1								Matrix: Solid											
Units:	mg/kg	BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY																	
TPH by SW8015 Mod		Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag							
Analy	vtes		[B]	[C]	[D]	[E]	Result [F]	[G]											
C6-C12 G	asoline Range Hydrocarbons	<15.0	1000	944	94	1000	1050	105	11	70-135	35								
C12-C28	Diesel Range Hydrocarbons	<15.0	1000	1110	111	1000	1170	117	5	70-135	35								

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



#### horia - Mis / Misb Recuvertes

### Project Name: Tract 19-4 Inch



Work Order # :	<b>Project ID:</b> SRS 2014-178															
Lab Batch ID:	948406	QC- Sample ID:	491472	-001 S												
Date Analyzed:	08/15/2014	Date Prepared:	014	An	Analyst: ARM											
<b>Reporting Units:</b>	mg/kg	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY														
TPH by SW8015 Mod		Parent Sample	Spike	Spiked Sample Result	Sample	•	Duplicate Spiked Sample	-	RPD	Control Limits	Control Limits	Flag				
	Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD					
C6-C12 Gasolin	e Range Hydrocarbons	<17.4	1160	1120	97	1160	1120	97	0	70-135	35					
C12-C28 Diesel	Range Hydrocarbons	<17.4	1160	1380	119	1160	1360	117	1	70-135	35					

Matrix Spike Percent Recovery  $[D] = 100^{\circ}(C-A)/B$ Relative Percent Difference RPD =  $200^{\circ}(C-F)/(C+F)$ 

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 Applicable N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.



Sample Duplicate Recovery



## Project Name: Tract 19-4 Inch

Work Order #: 491536

Lab Batch #: 948460				Project I	D: SRS 201	4-178								
Date Analyzed: 08/18/2014 09:45	Date Prepar	ed: 08/18/2014	Anal	yst: WRU										
QC- Sample ID: 491474-002 D	Batc	n#: 1	Mat	rix: Soil										
Reporting Units: %		SAMPLE / SAMPLE DUPLICATE RECOVERY												
Percent Moisture		Parent Sample Result [A]	Duplicate Result	RPD	Control Limits %RPD	Flag								
Analyte			[B]											
Percent Moisture		14.5	14.8	2	20									
Lab Batch #: 948460														
Date Analyzed: 08/18/2014 09:45	Date Prepar	ed: 08/18/2014	Anal	lyst: WRU										
QC- Sample ID: 491502-001 D	Batc	<b>h #:</b> 1	Mat	rix: Soil										
<b>Reporting Units: %</b>		SAMPLE	SAMPLE	DUPLIC	ATE REC	OVERY								
Percent Moisture	Parent Sample Result [A]	Duplicate Result	RPD	Control Limits %RPD	Flag									
Analyte			[B]											
	Percent Moisture													

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** Prelogin/Nonconformance Report- Sample Log-In



**Client: PLAINS ALL AMERICAN EH&S** Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient Date/ Time Received: 08/15/2014 10:00:00 AM **Temperature Measuring device used :** Work Order #: 491536 Sample Receipt Checklist Comments

#1 *Temperature of cooler(s)?	2.5	
#2 *Shipping container in good condition?	Yes	
#3 *Samples received on ice?	Yes	
#4 *Custody Seals intact on shipping container/ cooler?	N/A	
#5 Custody Seals intact on sample bottles?	N/A	
#6 *Custody Seals Signed and dated?	N/A	
#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)?	N/A	
#21 <2 for all samples preserved with HNO3,HCL, H2SO4?	N/A	
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	N/A	

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

Analyst:

PH Device/Lot#:

Checklist completed by: Kelsey Brooks Checklist reviewed by: Kelsey Brooks Kelsey Brooks

Date: 08/15/2014

Date: 08/15/2014

# Xenco Laboratories

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

The Env	ironmental Lab of Texas										Wes a, Te													ax:	43	2-56 2-56	53-17	713				
	Project Manager: Curt Stanley													-				Pro	ject	Nan	ne:				Tra	ct 1	9 -	41	nch			
	Company Name Nova Safety	and Environm	ental																Pro	oject	t#:_	#: SRS 2014-178										
	Company Address: 2057 Comm	erce																P	roje	ct Lo	oc: Lea County, NM								M	NPORT		
	City/State/Zip: Midland, TX	79703														_				PO	D #:										2	-
	Telephone No:432.520.772	0				Fax No:		43	2.52	0.77	01						Re	port	For	mat	:	G∤ s	tand	ard			TR	RP			ROC	6
	Sampler Signature:	uliza	5	de-t	und Kel	Võc e-mail:		cji	brya	nt@	lpaa	alp.c	om																		~	7
(lab use		<u> </u>							<u>c</u>	sta	nley	<u>@n</u> (	ova	trair	ing	. <u>cc</u>						TCL	_	T	yze F	or:			-	$\top$	-	
ORDER										Pres	ervatio	on & #	of C	ontai	ners		Mat	rix	8	T	- 1	TOTA		Ŧ	F	F					24, 48, 72 hrs	
LAB # (lab use only)	FIELD CODE RP @ 35' bgs		Beginning Depth	Ending Depth	Date Sampled Date Sampled	Time Sampled	Field Filtered	L Total #. of Containers	-	3		H <sub>2</sub> SO4						NP=Non-Potable Specify Other	418.1 801	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl. SO4, Alkalinity)	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 80218/5030 or BTEX 8260	RCI	Paint Filter Test	Chloride E300		X RUSH TAT (Pre-Schedule 24,	Ctandard TAT
																																$\bot$
								-	┢			-	+		+	╉				-	_		+	╇	┿	-		$\vdash$	+	+	╀	╀
Special I Reinquish Berinquish	1- Jenly	Date 8/15/14 Date	10	me රධ me	Received by:	Ŵ	8	7		I	II				· L_	Date 5/	11		Time O(	20	San VOC Lab Cus Cus San	orato opie C S Free ody s tody s tody s tody s tody s tody s tody s	conta con con cals cals cals cals and nple	iner Hea tain on on Deli r/Clie	s Inti adspa er(s) conta coole ivere	act? ace? ainer er(s) ed ep. ?	r(s)		Y Y Y Y Y EedE		N N N N N N N N	ter
Relinquish	ed by:	Date	Ti	me	Received by EL	OT:										Date	)		Time			perat							eac ,	$\sim$	°C	



## XENCO Laboratories Prelogin/Nonconformance Report- Sample Log-In



Client: PLAINS ALL AMERICAN EH&S Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient Date/ Time Received: 08/15/2014 10:00:00 AM **Temperature Measuring device used :** Work Order #: 491536 Sample Receipt Checklist Comments 2.5 #1 \*Temperature of cooler(s)? #2 \*Shipping container in good condition? Yes #3 \*Samples received on ice? Yes #4 \*Custody Seals intact on shipping container/ cooler? N/A #5 Custody Seals intact on sample bottles? N/A #6 \*Custody Seals Signed and dated? N/A #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 relinguished/ 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)? N/A #21 <2 for all samples preserved with HNO3,HCL, H2SO4? N/A

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

Analyst:

PH Device/Lot#:

#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?

Checklist completed by: Mms Hoah Kelsey Brooks Checklist reviewed by: Mms Hoah

Date: 08/15/2014

N/A

Date: 08/15/2014

# Analytical Report 491766

## for PLAINS ALL AMERICAN EH&S

**Project Manager: Curt Stanley** 

Tract 19-4 Inch

SRS 2014-178

22-AUG-14

Collected By: Client





#### 12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122): Texas (T104704215-14-16-TX), Arizona (AZ0765), Florida (E871002), Louisiana (03054) New Jersey (TX007), North Carolina(681), Oklahoma (9218), Pennsylvania (68-03610)

Xenco-Atlanta (EPA Lab Code: GA00046): Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD ( L10-135) Texas (T104704477), Louisiana (04176), USDA (P330-07-00105)

> 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)





22-AUG-14

Project Manager: **Curt Stanley PLAINS ALL AMERICAN EH&S** 1301 S. COUNTY ROAD 1150 Midland, TX 79706

Reference: XENCO Report No(s): 491766 Tract 19-4 Inch Project Address: Lea County, NM

#### **Curt Stanley:**

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) 491766. 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. 491766 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.

Ams Roah

Kelsey Brooks Project Manager

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# Sample Cross Reference 491766



### PLAINS ALL AMERICAN EH&S, Midland, TX

Tract 19-4 Inch

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
RP @ 37'	S	08-19-14 14:00		491766-001



### CASE NARRATIVE



Client Name: PLAINS ALL AMERICAN EH&S Project Name: Tract 19-4 Inch

Project ID: SRS 2014-178 Work Order Number(s): 491766 Report Date:22-AUG-14Date Received:08/20/2014

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None



# Hits Summary 491766



### PLAINS ALL AMERICAN EH&S, Midland, TX

Tract 19-4 Inch

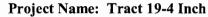
Sample Id : Lab Sample Id :	<b>RP @ 37'</b> 491766-001		: Soil ollected : 08.19.14 eccived : 08.20.14		% Moisture : Basis :	: 3.56 Dry Weigh	nt
Analytical Meth	od : Inorganic Anior	ns by EPA 300/300.1			Prep Method	l: E300P	
Seq Number	948895				Date Prep:	08.21.14	12.30
Parameter		Cas Number	Result	Units	Analysis Date	Flag	Dil
Chloride		16887-00-6	72.7	mg/kg	08.21.14 14.32		5
Analytical Meth	od : TPH by SW801	5 Mod			Prep Method	l: TX1005P	
Seq Number	948777				Date Prep:	08.20.14	16.00

Parameter	Cas Number	Result	Units	Analysis Date	Flag	Dil
C12-C28 Diesel Range Hydrocarbons	PHCG1028	39.2	mg/kg	08.20.14 19.48		1
Total TPH	PHC635	39.2	mg/kg	08.20.14 19.48		1



Project Id: SRS 2014-178 Contact: Curt Stanley Project Location: Lea County, NM

# USI MARICAN EH&S, Midland, TX





Date Received in Lab:Wed Aug-20-14 09:50 amReport Date:22-AUG-14Project Manager:Kelsey Brooks

			 	Troject Manager.	
	Lab Id:	491766-001			
Anglusia Demosted	Field Id:	RP @ 37'			
Analysis Requested	Depth:				
	Matrix:	SOIL			
	Sampled:	Aug-19-14 14:00			
BTEX by EPA 8021	Extracted:	Aug-21-14 14:00		· · · · · · · · · · · · · · · · · · ·	
	Analyzed:	Aug-22-14 04:35			
		-			
Penzene	Units/RL:	mg/kg RL ND 0.000996	 		 
Benzene		ND 0.000990	 		 
Toluene			 		 
Ethylbenzene		ND 0.000996	 		 
m_p-Xylenes		ND 0.00199	 		 
o-Xylene		ND 0.000996			 
Xylenes, Total		ND 0.000996	 		 
Total BTEX		ND 0.000996			
Inorganic Anions by EPA 300/300.1	Extracted:	Aug-21-14 12:30			
	Analyzed:	Aug-21-14 14:32			
	Units/RL:	mg/kg RL			
Chloride		72.7 10.4			
Percent Moisture	Extracted:				
	Analyzed:	Aug-20-14 16:20			
	Units/RL:	% RL			
Percent Moisture		3.56 1.00	 		
TPH by SW8015 Mod	Extracted:	Aug-20-14 16:00			
	Analyzed:	Aug-20-14 19:48			
	Units/RL:	mg/kg RL			
C6-C12 Gasoline Range Hydrocarbons		ND 15.5			
C12-C28 Diesel Range Hydrocarbons		39.2 15.5			
C28-C35 Oil Range Hydrocarbons		ND 15.5			 
Total TPH		39.2 15.5			

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Huns Roah

Kelsey Brooks Project Manager

Final 1.000



# 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 quantitation 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
- 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. A Small Business and Minority Status Company that delivers SERVICE and QUALITY Houston - Dallas - San Antonio - Atlanta - Midland/Odessa - Tampa/Lakeland - Phoenix - Latin America

LOD Limit of Detection

4143 Greenbriar Dr, Stafford, TX 77477 9701 Harry Hines Blvd, Dallas, TX 75220 5332 Blackberry Drive, San Antonio TX 78238 2505 North Falkenburg Rd, Tampa, FL 33619 12600 West I-20 East, Odessa, TX 79765 6017 Financial Drive, Norcross, GA 30071 3725 E. Atlanta Ave, Phoenix, AZ 85040

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(432) 563-1800	(432) 563-1713
(770) 449-8800	(770) 449-5477
(602) 437-0330	



# Form 2 - Surrogate Recoveries

### Project Name: Tract 19-4 Inch

Work Or Lab Batch	<b>ders :</b> 49176 #: 948777	6, Sample: 491766-001 / SMP	Batch	-	: SRS 2014-1 : Soil	78	
Units:	mg/kg	Date Analyzed: 08/20/14 19:48	SU	RROGATE R	ECOVERY S	STUDY	
	TPH	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes	- •		[D]		
1-Chlorooct	ane		91.1	99.8	91	70-135	
o-Terphenyl			49.7	49.9	100	70-135	
Lab Batch	#: 948908	Sample: 491766-001 / SMP	Batch	n: 1 Matrix	: Soil		
Units:	mg/kg	Date Analyzed: 08/22/14 04:35	SU	RROGATE R	ECOVERY S	STUDY	
	BTE	X by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro	benzene		0.0305	0.0300	102	80-120	
4-Bromoflue			0.0277	0.0300	92	80-120	
Lab Batch	#: 948777	Sample: 660360-1-BLK / B					
Units:	mg/kg	Date Analyzed: 08/20/14 18:25		RROGATE R	ECOVERY S	STUDY	
	TPH	by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1-Chlorooct	ane		82.2	100	82	70-135	
o-Terphenyl			44.5	50.0	89	70-135	
Lab Batch	#: 948908	Sample: 660435-1-BLK / B	LK Batch	n: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 08/21/14 23:23	SU	RROGATE R	ECOVERY	STUDY	
	BTE	X by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro	obenzene		0.0308	0.0300	103	80-120	
4-Bromoflu	orobenzene		0.0261	0.0300	87	80-120	
Lab Batch	#: 948777	Sample: 660360-1-BKS / B	KS Batch	h: 1 Matrix	: Solid		
Units:	mg/kg	Date Analyzed: 08/20/14 18:51	SU	RROGATE R	ECOVERY	STUDY	
	TPH	by SW8015 Mod	Amount Found	True Amount	Recovery	Control Limits	Flags
		Analytes	[A]	<b>[B]</b>	%R [D]	%R	
1-Chlorooct		Analytes	[ <b>A</b> ]	[ <b>B</b> ]		70 <b>-</b> 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.



# Form 2 - Surrogate Recoveries

### Project Name: Tract 19-4 Inch

Work Or Lab Batch	<b>ders</b> : 49170	56, Sample: 660435-1-BKS / B	KS Batch	•	SRS 2014-1	78	
		Date Analyzed: 08/21/14 23:39					
Units:	mg/kg	Date Analyzed: 08/21/14 25:59	SU	RROGATE RE	ECOVERY S	STUDY	
	BTI	EX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro	benzene		0.0304	0.0300	101	80-120	
4-Bromofluc	orobenzene		0.0294	0.0300	98	80-120	
Lab Batch	#: 948777	Sample: 660360-1-BSD / B	SD Batch	n: 1 Matrix:	Solid		
Units:	mg/kg	Date Analyzed: 08/20/14 19:18	SU	RROGATE RE	ECOVERY S	STUDY	
	ТРН	by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chloroocta	ane		107	100	107	70-135	
o-Terphenyl			58.9	50.0	118	70-135	
Lab Batch	#: 948908	Sample: 660435-1-BSD / B	SD Batch	n: 1 Matrix:	Solid		
Units:	mg/kg	Date Analyzed: 08/21/14 23:56	SU	RROGATE RI	ECOVERY	STUDY	
	BTI	EX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		Analytes			[D]		
1,4-Difluoro			0.0300	0.0300	100	80-120	
4-Bromofluc			0.0290	0.0300	97	80-120	
Lab Batch		Sample: 491766-001 S / MS	S Batcl	h: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 08/20/14 20:14	SU	RROGATE RI	ECOVERY	STUDY	
	ТРН	by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooct	ane		107	99.8	107	70-135	
o-Terphenyl			59.4	49.9	119	70-135	
Lab Batch	#: 948908	Sample: 491557-020 S / MS	S Batcl	h: 1 Matrix:	Soil		
Units:	mg/kg	Date Analyzed: 08/22/14 00:12	SU	RROGATE RI	ECOVERY	STUDY	
	BTI	EX by EPA 8021 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluoro	obenzene		0.0315	0.0300	105	80-120	
4-Bromoflue	orobenzene		0.0307	0.0300	102	80-120	

\* 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.



# Form 2 - Surrogate Recoveries

### Project Name: Tract 19-4 Inch

Work Orders : 4 Lab Batch #: 94877		MSD Bate	-	SRS 2014-1 Soil	78	
Units: mg/kg	<b>Date Analyzed:</b> 08/20/14 20:40	SU	RROGATE R	ECOVERY S	STUDY	
]]	TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	Analytes	104	100	104	70-135	
o-Terphenyl		58.2	50.0	116	70-135	
Lab Batch #: 94890	08 Sample: 491557-020 SD / 1	MSD Batc	h: 1 Matrix:	Soil	·	
Units: mg/kg	<b>Date Analyzed:</b> 08/22/14 00:29	SU	RROGATE R	ECOVERY	STUDY	
	BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
1,4-Difluorobenzene		0.0314	0.0300	105	80-120	
4-Bromofluorobenzen	e	0.0311	0.0300	104	80-120	

\* 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.



### **BS / BSD Recoveries**



### Project Name: Tract 19-4 Inch

Work Order #: 491766							Pro	ject ID:	SRS 2014-1	78	
Analyst: ARM	D	ate Prepa	red: 08/21/201	14			Date A	nalyzed: (	08/21/2014		
Lab Batch ID: 948908 Sample: 660435-1-E	KS	Bate	<b>h #:</b> 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K /BLANK	SPIKE / ]	BLANK S	SPIKE DUP	LICATE	RECOV	ERY STUI	DY	
	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
Benzene	< 0.00100	0.100	0.106	106	0.100	0.105	105	1	70-130	35	
Toluene	< 0.00200	0.100	0.104	104	0.100	0.103	103	1	70-130	35	
Ethylbenzene	< 0.00100	0.100	0.109	109	0.100	0.108	108	1	71-129	35	
m_p-Xylenes	< 0.00200	0.200	0.213	107	0.200	0.211	106	1	70-135	35	
o-Xylene	< 0.00100	0.100	0.104	104	0.100	0.103	103	1	71-133	35	
Analyst: JUM	D	ate Prepar	red: 08/20/201	4			Date A	nalyzed: (	8/21/2014		
Lab Batch ID: 948895 Sample: 660337-1-E	KS	Bate	<b>h #:</b> 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K/BLANK S	SPIKE / I	BLANK S	SPIKE DUP	LICATE	RECOVI	ERY STUD	Ŷ	
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	54.3	109	50.0	53.2	106	2	90-110	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



### **BS / BSD Recoveries**



### Project Name: Tract 19-4 Inch

Work Order	#: 491766							Proj	ject ID:	SRS 2014-1	78	
Analyst:	ARM	D	ate Prepai	red: 08/20/201	4	Date Analyzed: 08/20/2014						
Lab Batch ID:	948777 Sample: 660360-1-E	SKS	Bate	<b>h #:</b> 1					Matrix: S	Solid		
Units:	mg/kg		BLAN	K /BLANK S	SPIKE / I	BLANK S	SPIKE DUPI	LICATE	RECOV	ERY STUD	ŊΥ	
		Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analy	tes		լոյ			[E]	Kesult [F]	[U]				
C6-C12 Ga	asoline Range Hydrocarbons	<15.0	1000	887	89	1000	817	82	8	70-135	35	
C12-C28 E	Diesel Range Hydrocarbons	<15.0	1000	1040	104	1000	1110	111	7	70-135	35	

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

	Form 3 - MS Name: Tract 19		veries		6	
Work Order #:       491766         Lab Batch #:       948895         Date Analyzed:       08/21/2014         QC- Sample ID:       491565-011 S	Date Prepared: 08 Batch #:	3/20/2014 1	A	ect ID: <sup>S</sup> Analyst: J Matrix: S		
Reporting Units: mg/kg Inorganic Anions by EPA 300	A 300 Parent Sample Spike Spike Recovery ST Parent Spike Sample Control Limits				Control	DY Flag
Analytes	Result [A]	Added [B]	[C]	[D]	%R	riag
Chloride           Lab Batch #:         948895           Date Analyzed:         08/21/2014	Date Prepared: 0	665	1390 A	99 Analyst: J	80-120	ļ
QC- Sample ID: 491568-007 S Reporting Units: mg/kg	Batch #:					
Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	268	251	515	98	80-120	

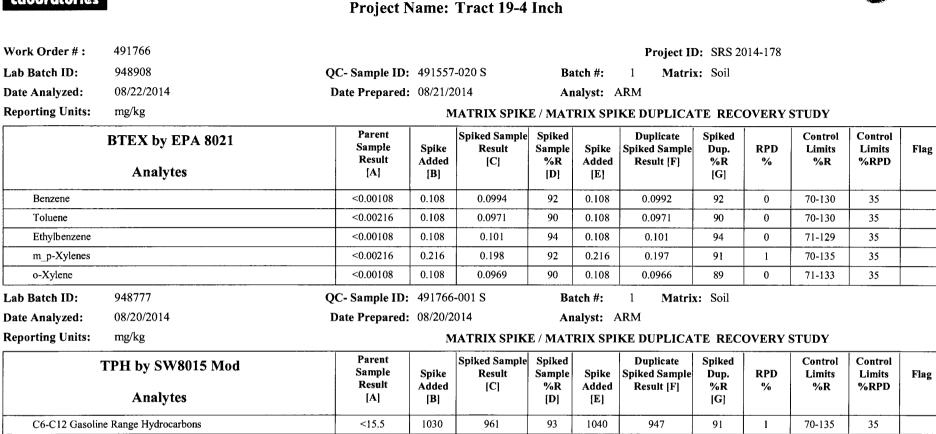
Matrix Spike Percent Recovery  $[D] = 100^{\circ}(C-A)/B$ Relative Percent Difference  $[E] = 200^{\circ}(C-A)/(C+B)$ All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit



#### キのエロ ラー (れら / からた KeCuVもれも

#### **Project Name: Tract 19-4 Inch**



1150

108

1040

1130

105

2

70-135

35

39.2

1030

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

C12-C28 Diesel Range Hydrocarbons

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



Sample Duplicate Recovery



### Project Name: Tract 19-4 Inch

Work Order #: 491766

Lab Batch #: 948785			Project I	D: SRS 2014	4-178
Date Analyzed: 08/20/2014 16:20 Date Prepar	red: 08/20/2014	Anal	yst: WRU		
QC- Sample ID: 491766-001 D Batc	<b>h #:</b> 1	Mat	rix: Soil		
Reporting Units: %	SAMPLE	SAMPLE	DUPLIC	ATE REC	OVERY
Percent Moisture	Parent Sample Result [A]	Duplicate Result	RPD	Control Limits %RPD	Flag
Analyte		<b>{B</b> }			
Percent Moisture	3.56	3.56	0	20	
Lab Batch #: 948785					
	red: 08/20/2014	4 Anal	yst: WRU		
QC- Sample ID: 491779-001 D Bate	<b>h #:</b> 1	Mat	rix: Soil		
Reporting Units: %	SAMPLE	/ SAMPLE	DUPLIC	ATE REC	OVERY
Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte		[4]			
Percent Moisture	7.84	7.81	0	20	



### **XENCO** Laboratories Prelogin/Nonconformance Report- Sample Log-In



**Client: PLAINS ALL AMERICAN EH&S** Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient Date/ Time Received: 08/20/2014 09:50:00 AM **Temperature Measuring device used :** Work Order #: 491766 Sample Receipt Checklist Comments #1 \*Temperature of cooler(s)? 2.5 #2 \*Shipping container in good condition? Yes #3 \*Samples received on ice? Yes #4 \*Custody Seals intact on shipping container/ cooler? No #5 Custody Seals intact on sample bottles? No #6 \*Custody Seals Signed and dated? No #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 relinguished/ 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)? No #20 VOC samples have zero headspace (less than 1/4 inch bubble)? N/A

#21 <2 for all samples preserved with HNO3,HCL, H2SO4? #22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?

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

Analyst:

PH Device/Lot#:

Checklist completed by: Mmg Koah Kelsey Brooks Checklist reviewed by: Mmg Koah Kelsey Brooks

Date: 08/20/2014

N/A

N/A

Date: 08/20/2014

# Xenco Laboratories

#### CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

The Env	ironmental Lab of Te	xas									Wes a, Te														2-56 2-56						
	Project Manager:	Curt Stanley														_	P	rojec	t Na	me:				Tra	ct 1	19	- 4	Incl	<u>n</u>		
	Company Name	Nova Safety and Environr	nental													_		P	rojec	ct #:				S	RS	201	14-1	78			
	Company Address	2057 Commerce														_		Proj	ect l	_oc:				L	ea C	Coun	rty, N				
	City/State/Zip:	Midland, TX 79703														_			P	0 #:									<u>Г</u> и	Ŋ	
	Telephone No:	432.520.7720			-	Fax No:		43	2.52	0.77	01						Repo	rt Fo	rma	t:	۶	itand	ard			TR	RP		<u>Г</u> N	PDE	6
	Sampler Signature	Cat June 1	on	ZΔ	HARD B	ELLOmail		<u>cit</u>	οrya	nt@	)paa nley(	lp.co	m	aini	00.0	<u> </u>							Inal	yze F	or:					4	7
(lab use	only) LOII	7/1/2							<u> </u>	Stal	incy.	<u>wno</u>	vau	ann	<u>119.0</u>	<u>,                                    </u>		F			TCI TOT/	P:				Γ	Π			2 hrs	
ORDEF	₹#: []	100		<del></del>	1	ſ	·	r		Prese	ervatio	n & #	of Co	ntaine	ers	N	latrix	8015B	<u> </u>					+	260 X					4. /48. 7	Ł
LAB # (lab use only)	FIE	LD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total #. of Containers	Ice	HNO <sub>3</sub>	HCI	H <sub>2</sub> SO <sub>4</sub>		None	Other ( Specify)	DW≊Drinking Water SL≂Słudge	GW = Groundwater S=Soil/Solid NP=Non-Potable Snerity Other	TPH: 418.1 8015M 8	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Anions (CI, SO4, Alkalinity)	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	Paint Filter Test	Chloride E300		RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Clandard TAT
		P @ 37'			8/19/2014	1400		1								-	Soil	X					Ĺ	Ē						X	-
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Relinquish	ed by:	Date	Ti	me	Received by ELC	DT:									Da	ate		Tim	e		npera							_ '	3	°C	_



### **XENCO** Laboratories Prelogin/Nonconformance Report- Sample Log-In



**Client: PLAINS ALL AMERICAN EH&S** Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient Date/ Time Received: 08/20/2014 09:50:00 AM **Temperature Measuring device used :** Work Order #: 491766 Sample Receipt Checklist Comments #1 \*Temperature of cooler(s)? 2.5 #2 \*Shipping container in good condition? Yes #3 \*Samples received on ice? Yes #4 \*Custody Seals intact on shipping container/ cooler? No

#5 Custody Seals intact on sample bottles?	No
#6 *Custody Seals Signed and dated?	No
#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)?	No
#20 VOC samples have zero headspace (less than 1/4 inch bubble)?	N/A
#21 <2 for all samples preserved with HNO3,HCL, H2SO4?	N/A
#22 >10 for all samples preserved with NaAsO2+NaOH, ZnAc+NaOH?	N/A

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

Analyst:

PH Device/Lot#:

Checklist completed by: Mmg Koah Kelsey Brooks Checklist reviewed by: Mmg Koah Kelsey Brooks

Date: 08/20/2014

Date: 08/20/2014



5701 Aberdeen Avenue, Suite 9 200 East Sunset Road, Suite E 5002 Basin Street, Suite A1 (BioAquatic) 2501 Mayes Rd., Suite 100

Lubbock, Texas 79424 El Paso, Texas 79922 Midland, Texas 79703 Carroliton, Texas 75006 E-Mail lab@traceanalysis.com WEB www.traceanalysis.com

Certifications

NELAP DoD LELAP WBE HUB NCTRCA DBE Kansas Oklahoma ISO 17025

# **Analytical and Quality Control Report**

(Corrected Report)

Curt Stanley Nova Safety & Environmental 2057 Commerce St. Midland, TX, 79703

Report Date: October 29, 2014

FAX 806 • 794 • 1298

FAX 915-585-4944

FAX 432-689-6313

Work Order: 14102321

805-794-1295

915-585-3443

432-689-6301

972-242 -7750

Project Location: Eunice, NM **Project Name:** Tract 19-4" **Project Number:** 2014-178 SRS #: 2014-178

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

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
377781	NSW-1 @ 18'	soil	2014-10-22	14:40	2014-10-23
377782	SSW-1 @ 18'	soil	2014-10-22	14:45	2014-10-23
377783	WSW-1 @ 18'	soil	2014-10-22	14:50	2014-10-23

#### **Report Corrections** (Work Order 14102321)

• 10/28/2014–Client requested Cl be re-run/reported for all samples.

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

This report consists of a total of 23 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Blain for in

Dr. Blair Leftwich, Director James Taylor, Assistant Director Brian Pellam, Operations Manager

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# **Case Narrative**

Samples for project Tract 19-4" were received by TraceAnalysis, Inc. on 2014-10-23 and assigned to work order 14102321. Samples for work order 14102321 were received intact at a temperature of 3.5 C.

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

		$\operatorname{Prep}$	Prep	$\mathbf{QC}$	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	98602	2014-10-23 at 13:58	116629	2014-10-24 at 10:04
Chloride (Titration)	SM 4500-Cl B	98706	2014-10-28 at 11:20	116737	2014-10-29 at 09:30
TPH DRO - NEW	S 8015 D	98619	2014-10-23 at 12:00	116624	2014-10-24 at 09:17
TPH GRO	S 8015 D	98602	2014-10-23 at $13:58$	116631	2014-10-24 at 10:13
TPH ORO	S 8015 D	98619	2014-10-23 at $12:00$	116625	2014-10-24 at $09:43$

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

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 14102321 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

# **Analytical Report**

#### Sample: 377781 - NSW-1 @ 18'

Analysis: B QC Batch: 11	idland TEX 16629 3602	Date Ana	al Method: alyzed: Preparation:	S 8021 2014-1 2014-1	0-24		Prep Method Analyzed By Prepared By:	: AK
				$\mathbf{RL}$				
Parameter	Flag	Cert	I	Result	Units		Dilution	RL
Benzene	U	5	<(	0.0200	mg/Kg		1	0.0200
Toluene	U	5	<(	0.0200	m mg/Kg		1	0.0200
Ethylbenzene	U	5	<(	0.0200	mg/Kg		1	0.0200
Xylene	U	5	<(	0.0200	mg/Kg		1	0.0200
Surrogate Trifluorotoluene 4-Bromofluorobe		Flag Cert	Result 1.95 2.06	Units mg/Kg mg/Kg	Dilution 1 1	Spike Amount 2.00 2.00	Percent Recovery 98 103	Recovery Limits 70 - 130 70 - 130
Sample: 37778	81 - NSW-1 @ 18'							
Laboratory: M	lidland							
v	hloride (Titration)	Ana	lytical Metl	hod: S	M 4500-Cl B		Prep Meth	od: N/A
	16737	Dat	e Analyzed:	20	014-10-29		Analyzed I	By: MM
Prep Batch: 98	3706	$\operatorname{San}$	nple Prepara	ation: 20	014-10-28		Prepared E	By: MM
				$\mathbf{RL}$				
Parameter	$\mathbf{Flag}$	Cert	R	lesult	Units		Dilution	RL

#### Sample: 377781 - NSW-1 @ 18'

Chloride

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - NEW 116624 98619	D	nalytical Method: ate Analyzed: ample Preparation:	S 8015 D 2014-10-24 2014-10-23	Prep Method: Analyzed By: Prepared By:	$\dot{SC}$
			$\operatorname{RL}$			
Parameter	${f Fla}$	.g Cei	rt Result	Units	Dilution	$\mathbf{RL}$
DRO	Qr,Q	s,U 5	$<\!50.0$	mg/Kg	1	50.0

 $\mathbf{287}$ 

mg/Kg

5

4.00

Report Date: O 2014-178	ctober 2	9, 2014				Order: 1 Fract 19	14102321 -4"	1			Page Nu		6 of 23 ce, NM
Surrogate	]	Flag	Cert	Result	Un		Dilutio	n	Spike Amount		Percent Recovery	L	covery imits
n-Tricosane				100	mg/	Kg	1		100		100	70	- 130
0	81 - NS idland PH GRC		18'	Analvt	ical Met	hod: S	5 8015 D	)			Prep Met	hod:	S 5035
	6631				nalyzed:		2014-10-2	24			Analyzed	0	AK
Prep Batch: 98	8602			Sample	Prepara	ation: 2	2014-10-2	23			Prepared	By:	AK
						R	L						
Parameter			Flag	Cert	i	Resu			Units		Dilution		$\mathbf{RL}$
GRO			U	5		<4.0	0	m	ng/Kg		1		4.00
									SI	oike	Percent	Re	covery
Surrogate			$\mathbf{F}$	lag Cert	Resu	-		Diluti		ount	Recovery		imits
Trifluorotoluene					1.9		g/Kg	1		.00	96		- 130
4-Bromofluorobe	enzene (4	4-BFB)			1.6	51 mg	g/Kg	1	2	.00	80	70	- 130
Analysis: T QC Batch: 11	3 <b>1 - NS</b> idland PH ORC 16625 3619		18'	Date	tical Me Analyzec le Prepa	d:	S 8015 2014-10 2014-10	)-24			Prep M Analyz Prepare	ed By:	N/A SC SC
Description	Ele -	Gent	MDL Descript	MQL	PQL	RL	Uni	ita I	Dilution	MDL	, MQL	PQL	$\mathbf{RL}$
Parameter ORO	Flag	Cert	Result	Result <50.0	$\frac{\text{Result}}{< 50.0}$	Result <50.0	mg/k		1	0.00	•	50.0	50.0
0110			0.00	<u></u>	200.0	<00.0		*8		0.00			
G			a i	D. I		•	Dilati		Spike		Percent		covery
Surrogate	-	Flag	Cert	Result	-	nits	Dilutio	on	Amoun 100	ι	Recovery 72		imits - 130
n-Tricosane n-Triacontane				72.4 $62.7$		g/Kg g/Kg	1 1		$100 \\ 100$		63		1 - 162
				02.1	mg	s/ 115	1		100		00	01.	1 102

### Sample: 377782 - SSW-1 @ 18'

2014-178	: October 29, 2014	1			Work Ore Tra	der: 1410 ct 19-4"	2321			Page Numi		of 23 e, NM
						$\mathbf{RL}$						
Parameter		Flag		Cert		Result		Units		Dilution		RL
Benzene		U		5		(0.0200)		mg/Kg		1		0.0200
Toluene		U		5		(0.0200)		mg/Kg		1		0.0200
Ethylbenzene	e	U		5	<	(0.0200		mg/Kg		1	(	0.0200
Xylene		U		5	<	(0.0200		mg/Kg		1	(	0.0200
									Spike	Percent	Bor	overy
Surrogate			Flag	Cert	Result	Units	Dili	ition	Amount			mits
Trifluorotolue	ma (TET)		Flag	Cert	1.95	mg/Kg		1	2.00	<u>98</u>		- 130
		<b>`</b>			$1.93 \\ 2.00$			1	$2.00 \\ 2.00$	100		- 130
4-Bromonuor	obenzene (4-BFB)	l			2.00	mg/Kg	s	1	2.00	100	10	- 130
Sample: 37	7782 - SSW-1 @	18'										
Laboratory: Analysis:	Midland Chloride (Titrati	ion)			ytical Me		SM 4500			Prep Met		N/A MM
QC Batch:	116737				Analyzec		2014-10-			Analyzed Prepared		MM
Prep Batch:	98706			Samj	ple Prepa	ration:	2014-10-	-20		r repared	Бу:	IVIIVI
						$\mathbf{RL}$						
Parameter		Flag		Cert		Result		Units	3	Dilution		$\mathbf{RL}$
Chloride		0				287		mg/Kg	5	5		4.00
Sample: 37 Laboratory: Analysis: QC Batch: Prep Batch:	7782 - SSW-1 @ Midland TPH DRO - NE 116624 98619			Dat	alytical M se Analyze aple Prepa	ed:	S 8015 2014-10 2014-1	0-24		Prep Met Analyzed Prepared	By:	N/A SC SC
Laboratory: Analysis: QC Batch:	Midland TPH DRO - NE 116624			Dat	e Analyze	ed: aration:	2014-10	0-24		Analyzed	By:	$\dot{SC}$
Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - NE 116624	W		Dat	e Analyze	ed:	2014-10	0-24	s	Analyzed	By:	$\dot{SC}$
Laboratory: Analysis: QC Batch:	Midland TPH DRO - NE 116624			Dat San	e Analyze	ed: aration: RL	2014-10	0-24 0-23		Analyzed Prepared	By:	SĆ SC
Laboratory: Analysis: QC Batch: Prep Batch: Parameter	Midland TPH DRO - NE 116624	W Flag		Dat San Cert	e Analyze	ed: aration: RL Result <50.0	2014-10	0-24 0-23 Unit mg/K		Analyzed Prepared Dilution	By: By: Ree	SC SC RL

### Sample: 377782 - SSW-1 @ 18'

Laboratory: Analysis:		Analytical Method:	S 8015 D	Prep Method:	S 5035
v	116631	Date Analyzed:	2014-10-24	Analyzed By:	
Prep Batch:		Sample Preparation:		Prepared By:	

2014-178	October 29	, 2014				Work	Order: Tract 19		321			Page N	umber: Eunio	8 of 23 æ, NM
Parameter			Flag		Cer	rt	R Resu		τ	Jnits		Dilution		RL
GRO			U		5		<4.0	0	mg	g/Kg		1		4.00
Surrogate				Flag	Cer	t Resi	ilt U	nits	Dilutio	$\mathbf{S}_{\mathbf{I}}$	pike 10unt	Percent Recover		covery imits
Trifluorotolue	ne (TFT)					1.	93 mg	/Kg	1	2	.00	96	70	- 130
4-Bromofluoro	obenzene (4-	BFB)				1.	56 mg	/Kg	1	2	.00	78	70	- 130
	Midland	7 <b>-</b> 1 @	18'		Anal	vtical M	ethod:	S 801	5 D			Prep 1	lethod:	N / A
Laboratory: Analysis: QC Batch:		/-1 @	18'		Date	lytical Me e Analyze ple Prepa	d:	S 801 2014- 2014-	10-24			Prep M Analyz Prepar	•	N/A SC SC
Laboratory: Analysis: QC Batch:	Midland TPH ORO 116625 98619	7-1 @	18' MDL Result		Date Samj QL	e Analyze	d:	2014- 2014-	10-24 10-23	ilution	MDL	Analyz Prepar	ed By: ed By:	SC
Laboratory: Analysis: QC Batch: Prep Batch: Parameter	Midland TPH ORO 116625 98619		MDL	M	Date Samj QL ult	Analyze ple Prepa PQL	d: tration: RL	2014- 2014- U	10-24 10-23	ilution	MDL 0.00	Analyz Prepar MQL	ed By:	$\dot{SC}$
Laboratory: Analysis: QC Batch: Prep Batch: Parameter ORO	Midland TPH ORO 116625 98619 Flag	Cert	MDL Result 0.00	MC Res <50	Date Samj QL ult 0.0	Analyze ple Prepa PQL Result <50.0	d: wration: RL Result <50.0	2014- 2014- U mg,	10-24 10-23 nits D /Kg	1 Spike	0.00	Analyz Prepar MQL 50.0 Percent	ed By: ed By: PQL 50.0 Rec	SC SC RL 50.0
Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH ORO 116625 98619 Flag		MDL Result	MC Res <50	Date Samj QL ult	e Analyze ple Prepa PQL Result <50.0 t U	d: aration: RL Result	2014- 2014- U	10-24 10-23 nits D /Kg tion	1	0.00	Analyz Prepar MQL 50.0	red By: red By: PQL 50.0 Red Li	SC SC RL 50.0

### Sample: 377783 - WSW-1 @ 18'

Laboratory:MidlandAnalysis:BTEXQC Batch:116629Prep Batch:98602		Analytica Date Ana Sample P		S 8021E 2014-10 2014-10	-24		Prep Method Analyzed By: Prepared By:	AK
				$\mathbf{RL}$				
Parameter	$\mathbf{Flag}$	$\operatorname{Cert}$	]	$\operatorname{Result}$	Units	5	Dilution	$\operatorname{RL}$
Benzene	U	5	<	0.0200	mg/Kg	5	1	0.0200
Toluene	U	5	<(	0.0200	mg/Kg	5	1	0.0200
Ethylbenzene	U	5	<(	0.0200	mg/Kg	5	1	0.0200
Xylene	U	5	<	0.0200	mg/Kg	5	1	0.0200
						Spike	Percent	Recovery
Surrogate	Flag	g Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.92	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			2.03	mg/Kg	1	2.00	102	70 - 130

Report Date: 2014-178	: October 29, 2014			Work Order: 14 Tract 19-4		Page Number: 9 of 23 Eunice, NM		
Sample: 37'	7783 - WSW-1 @	∮ <b>18'</b>						
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titratic 116737 98706	n)	Date	vtical Method: Analyzed: le Preparation:	SM 450 2014-10 2014-10	-29	Prep Method Analyzed By Prepared By	: MM
Demomentor		Flor	$\operatorname{Cert}$	${ m RL}$		Units	Dilution	$\operatorname{RL}$
Parameter Chloride		Flag	Cert	191		mg/Kg	5	4.00
-	7783 - WSW-1 @	) 18'						
Laboratory:	Midland	<b>1</b> 7	٨	Intion Mathe	0 001	D	Dues Mathe	d. NT/A
Analysis: QC Batch:	TPH DRO - NEV 116624	V		lytical Method: e Analyzed:	S 8015 2014-1		Prep Metho Analyzed By	,
Prep Batch:	98619			ple Preparation			Prepared By	
i iep baten.	36013		Jain	pic i reparation	1. 2014-1	0-20	I tepared by	. 50
				RI				
Parameter		Flag	Cert	Resul		Units	Dilution	RL
DRO		Qr,Qs,U	5	<50.0	)	mg/Kg	1	50.0
						$\mathbf{Spike}$	Percent	Recovery
Surrogate	$\operatorname{Flag}$	$\operatorname{Cert}$	$\operatorname{Result}$	Units	Dilution	Amount	Recovery	Limits
n-Tricosane			99.0	mg/Kg	1	100	99	70 - 130
			00.0			100		10 100
	7783 - WSW-1 © Midland TPH GRO 116631 98602	D 18'	Analytica Date Ana	al Method: S	8015 D 014-10-24	100	Prep Method: Analyzed By: Prepared By:	S 5035 AK
Sample: 37 Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 116631		Analytica Date Ana Sample P	al Method: S alyzed: 24 Preparation: 24 RL	8015 D 014-10-24 014-10-23		Prep Method: Analyzed By: Prepared By:	S 5035 AK AK
Sample: 37 Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 116631	18' Flag	Analytica Date Ana	al Method: S alyzed: 24 Preparation: 24	8015 D 014-10-24 014-10-23	Units mg/Kg	Prep Method: Analyzed By:	S 5035 AK
Sample: 37 Laboratory: Analysis: QC Batch: Prep Batch: Parameter GRO	Midland TPH GRO 116631	Flag U	Analytica Date Ana Sample F Cert 5	al Method: S alyzed: 24 Preparation: 24 RI Result <4.00	8015 D 014-10-24 014-10-23	Units mg/Kg Spike	Prep Method: Analyzed By: Prepared By: Dilution 1 Percent	S 5035 AK AK RL 4.00 Recovery
Sample: 37 Laboratory: Analysis: QC Batch: Prep Batch: Parameter	Midland TPH GRO 116631 98602	Flag U	Analytica Date Ana Sample F Cert	al Method: S alyzed: 24 Preparation: 24 RL Result	8015 D 014-10-24 014-10-23	Units mg/Kg	Prep Method: Analyzed By: Prepared By: Dilution 1 Percent	S 5035 AK AK RL 4.00

Report Date: 2014-178	Report Date: October 29, 2014 2014-178					Work Order: 14102321 Tract 19-4"						
Sample: 377	7783 - W	SW-1 (	<b>@ 18'</b>									
Laboratory: Midland Analysis: TPH ORO QC Batch: 116625 Prep Batch: 98619				Date	Analytical Method: Date Analyzed: Sample Preparation:					Prep M Analyz Prepar	e e	N/A SC SC
Parameter	Flag	$\operatorname{Cert}$	MDL Result	$egin{array}{c} \mathrm{MQL} \ \mathrm{Result} \end{array}$	PQL Result	${ m RL} { m Result}$		Dilution	MDL	MQL	$\mathbf{PQL}$	$\mathbf{RL}$
ORO			0.00	<50.0	$<\!50.0$	$<\!50.0$	mg/Kg	1	0.00	50.0	50.0	50.0
Surrogate		Flag	Cert	Resul	Result Units		Dilution	Spike Amount	_	Percent ecovery		covery mits
n-Tricosane n-Triacontane	e				72.3mg/Kg62.3mg/Kg			100 100		72 62	-	- 130 - 162

Report Date: October 29, 2014	Work Order: 14102321	Page Number: 11 of 23
2014-178	Tract 19-4"	Eunice, NM

# Method Blanks

Method Blank (1)	QC B	atch: 11662	4					
QC Batch: 116624			Date A	nalyzed:	2014-10-24		Analyz	ed By: SC
Prep Batch: 98619			QC Pre	eparation:	2014 - 10 - 23		Prepar	ed By: SC
					М	DL		
Parameter		Flag		Cert		sult	Units	$\mathbf{RL}$
DRO				5	<7	7.41	mg/Kg	50
						Spike	Percent	Recovery
Surrogate	Flag	Cert	$\mathbf{Result}$	Units	Dilution	Amount	Recovery	Limits
n-Tricosane			98.6	mg/Kg	1	100	99	70 - 130
<b>Method Blank (1)</b> QC Batch: 116625 Prep Batch: 98619	QC B	atch: 11662	Date A	nalyzed: eparation:	2014-10-24 2014-10-23		Analyz Prepar	
						DL		
Parameter		Flag		Cert		sult	Units	RL
ORO					(	).00	mg/Kg	50
						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane n-Triacontane			71.2 $62.0$	mg/Kg mg/Kg		$\frac{100}{100}$	$\frac{71}{62}$	70 - 130 37.1 - 162
			02.0	ing/ing	±	100		
Method Blank (1)	QC B	atch: 11662	9					
QC Batch: 116629			Date A	.nalyzed:	2014-10-24		Analyz	ed By: AK
Prep Batch: 98602				eparation:	2014-10-24		Prepare	•

			MDL		
Parameter	Flag	Cert	Result	Units	RL
Benzene		5	< 0.00533	mg/Kg	0.02
Toluene		5	< 0.00645	m mg/Kg	0.02
Ethylbenzene		5	< 0.0116	m mg/Kg	0.02
			a section of a		

continued ...

Report Date: October 29, 2014           2014-178			Work Ord Trac	er: 141023 t 19-4"	Page Number: 12 of 2 Eunice, N			
method blank continued								
Parameter	Flag		Cert		$egin{array}{c} { m MDL} \\ { m Result} \end{array}$		Units	$\mathbf{RL}$
Xylene	Tag		5		<0.00874		mg/Kg	0.02
······						<b>S</b> miles	Domoont	Decessor
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	0		1.92	mg/Kg	1	2.00	96	70 - 130
· /					-		00	
4-Bromofluorobenzene (4-BFB) Method Blank (1) QC Batch	n: 116631		1.86	mg/Kg	1	2.00	93	70 - 130
	n: 116631		1.86 Inalyzed: eparation:	mg/Kg 2014-10-2 2014-10-2	24	2.00	93 Analyzed Prepared	l By: AK
Method Blank (1) QC Batch QC Batch: 116631	n: 116631		nalyzed:	2014-10-2	24 23	2.00	Analyzed	l By: AK
Method Blank (1) QC Batch QC Batch: 116631 Prep Batch: 98602			nalyzed: eparation:	2014-10-2	24 23 MDL	2.00	Analyzed Prepared	l By: AK By: AK
Method Blank (1) QC Batch QC Batch: 116631	n: 116631 Flag		nalyzed:	2014-10-2	24 23		Analyzed	l By: AK By: AK RI
Method Blank (1) QC Batch QC Batch: 116631 Prep Batch: 98602 Parameter			nalyzed: eparation: Cert	2014-10-2	24 23 MDL Result		Analyzed Prepared Units mg/Kg	l By: AK By: AK RI 4
Method Blank (1) QC Batch QC Batch: 116631 Prep Batch: 98602 Parameter GRO	Flag	QC Pr	analyzed: eparation: Cert 5	2014-10-2 2014-10-2	24 23 MDL Result <2.32	Spike	Analyzed Prepared Units mg/Kg Percent	l By: AK By: AK RI 4 Recovery
Method Blank (1) QC Batch QC Batch: 116631 Prep Batch: 98602 Parameter			nalyzed: eparation: Cert	2014-10-2	24 23 MDL Result		Analyzed Prepared Units mg/Kg	l By: AK By: AK RI 4

Method Blank (1)	QC Batch: 116737
------------------	------------------

QC Batch: 1	116737		Date Analyzed:	2014-10-29	Analyzed By	': MM
Prep Batch: 9	98706		QC Preparation:	2014-10-28	Prepared By	: MM
				MDL		
Parameter		$\operatorname{Flag}$	Cert	Result	Units	$\mathbf{RL}$
Chloride			Lage	< 3.85	mg/Kg	4

# Laboratory Control Spikes

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

QC Batch:	116624	Date Analyzed:	2014-10-24	Analyzed By:	$\mathbf{SC}$
Prep Batch:	98619	QC Preparation:	2014-10-23	Prepared By:	$\mathbf{SC}$

			LCS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	С	Result	Units	Dil.	Amount	$\mathbf{Result}$	Rec.	$\operatorname{Limit}$
DRO		5	249	mg/Kg	1	250	<7.41	100	70 - 130

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

			LCSD			$\mathbf{Spike}$	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	$\operatorname{Result}$	Units	Dil.	Amount	Result	Rec.	$\operatorname{Limit}$	RPD	$\operatorname{Limit}$
DRO		5	252	mg/Kg	1	250	<7.41	101	70 - 130	1	20

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

	LCS	LCSD			$\mathbf{Spike}$	LCS	LCSD	$\operatorname{Rec.}$
Surrogate	Result	$\operatorname{Result}$	Units	Dil.	Amount	Rec.	Rec.	$\operatorname{Limit}$
n-Tricosane	101	99.7	mg/Kg	1	100	101	100	70 - 130

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

QC Batch: Prep Batch:		Date Analyzed: QC Preparation:			Analyzed E Prepared B	v
	T CR	LCSD	<b>C</b> miles	TOR	I CRD	Dee

	LOS	LCSD			эріке	LUS	LCSD	nec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	73.5	72.7	mg/Kg	1	100	74	73	70 - 130
n-Triacontane	62.0	61.1	m mg/Kg	1	100	62	61	54.8 - 164

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

QC Batch:	116629	Date Analyzed:	2014-10-24	Analyzed By:	AK
Prep Batch:	98602	QC Preparation:	2014-10-23	Prepared By:	$\mathbf{A}\mathbf{K}$

Report Date: October 29, 2014 2014-178			Wor	k Order: 14 Tract 19-4	Pag	Page Number: 14 of 23 Eunice, NM			
Param	F	С	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		5	2.05	mg/Kg	1	2.00	< 0.00533	102	70 - 130
Toluene		5	2.05	mg/Kg	1	2.00	$<\!0.00645$	102	70 - 130
Ethylbenzene		5	2.02	mg/Kg	1	2.00	< 0.0116	101	70 - 130
Xylene		5	6.11	mg/Kg	1	6.00	< 0.00874	102	70 - 130

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	$\operatorname{Result}$	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene		5	1.96	mg/Kg	1	2.00	< 0.00533	98	70 - 130	4	20
Toluene		5	1.97	mg/Kg	1	2.00	$<\!0.00645$	98	70 - 130	4	20
Ethylbenzene		5	1.98	mg/Kg	1	2.00	< 0.0116	99	70 - 130	2	20
Xylene		5	5.97	mg/Kg	1	6.00	< 0.00874	100	70 - 130	2	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	$\operatorname{Result}$	$\mathbf{Result}$	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.89	1.84	mg/Kg	1	2.00	94	92	70 - 130
4-Bromofluorobenzene (4-BFB)	1.91	1.84	m mg/Kg	1	2.00	96	92	70 - 130

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

QC Batch: Prep Batch:	116631 98602			ate Analyz C Preparat	ed: 2014- tion: 2014-				v	By: AK By: AK
r fep Daten.	90002		પ		Jon. 2014	10-25			пераге	by. mix
				LCS			Spike	Matrix		Rec.
Param		$\mathbf{F}$	$\mathbf{C}$	$\mathbf{Result}$	Units	Dil.	Amount	Result	Rec.	Limit
GRO			5	18.7	mg/Kg	1	20.0	$<\!2.32$	94	70 - 130

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

Param	F	С	$\begin{array}{c} \mathrm{LCSD} \\ \mathrm{Result} \end{array}$	Units	Dil.	Spike Amoun		latrix esult	Rec.	Re Lin	-	RPD	RPD Limit
GRO		5	21.7	mg/Kg	1	20.0	<	(2.32)	108	70 -	130	15	20
Percent recovery is based on the s	spike	resul	t. RPD is	based or	n the s	pike and	spike	duplicat	e res	ult.			
			LCS	LCS	D			$\operatorname{Spik}$	e	LCS	LC	$^{\mathrm{SD}}$	$\operatorname{Rec.}$
Surrogate			Resul	t Resu	ılt	Units	Dil.	Amou	$\mathbf{nt}$	Rec.	$\mathbf{R}\epsilon$	ec.	Limit
Trifluorotoluene (TFT)			1.99	1.9	9 r	ng/Kg	1	2.00	)	100	10	00	70 - 130
4-Bromofluorobenzene (4-BFB)			1.44	1.4	3 r	ng/Kg	1	2.00	)	72	7	2	70 - 130

Report Date 2014-178	e: October 29, 20	)14				Order: 1 Tract 19-				Page	Number: Eur	15 of 23 nice, NM
Laboratory	Control Spike	e (LCS-1	.)									
QC Batch:	116737			Dat	e Analyze	d: 201	4-10-29			Ana	alyzed By	: MM
Prep Batch:	98706			QC	Preparati	on: 201	4-10-28			Pre	pared By	: MM
					LCS			Spike	Ma	atrix		Rec.
Param			$\mathbf{F}$	$\mathbf{C}$	$\mathbf{Result}$	Units	Dil.	Amount	Re	$\operatorname{sult}$	Rec.	$\operatorname{Limit}$
Chloride					2780	mg/Kg	5	2500	<1	19.2	111	85 - 115
Percent reco	very is based on	the spike	resu	lt. RPI	) is based	on the s	oike and sp	ike duplic	ate resu	ılt.		
				LCSI	)		Spike	Matrix		Rec.		RPD
Param		$\mathbf{F}$	$\mathbf{C}$	Resul	t Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit

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

2730

mg/Kg

5

 $<\!19.2$ 

109

2500

85 - 115

2

20

Chloride

# Matrix Spikes

Prep Batch:98619QC Preparation:2014-10-23Prepared By:SCMSSpikeMatrixRec.LimitDRO5705mg/Kg125038013070 - 13Percent recovery is based on the spike result.RPDis based on the spike and spike duplicate result.MSDSpikeMatrixRec.RefParamFCResultUnitsDil.AmountResultRec.RPDDRO $Q_{r,Q_{R}}$ $Q_{r,Q_{R}}$ $q_{r,Q_{R}}$ $s$ 497mg/Kg12503804770 - 1303520ParamFCResultUnitsDil.AmountResultRec.LimitRPDLimitDRO $Q_{r,Q_{R}}$ $q_{r,Q_{R}}$ $s$ 497mg/Kg12503804770 - 1303520Percent recovery is based on the spike result.RPD is based on the spike and spike duplicate result.SurrogateResultResultUnitsDil.AmountRec.Rec.LimitSurrogateMSMSDSpikeMSMSDRec.Rec.LimitTo - 13012570 - 130QC Batch:116625DateAnalyzed:2014-10-24Analyzed By:SCPrep Batch:98619QC Preparation:2014-10-23Prepared By:SCSurrogateResultResultUnitsDil.AmountRec.Rec.LimitSurrogate </th <th>Matrix Spike (MS-1)</th> <th>Spiked Sample: 3</th> <th>77607</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Matrix Spike (MS-1)	Spiked Sample: 3	77607						
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	QC Batch: 116624		Date Ana	lyzed: $201_{-}$	4-10-24			Analyz	ed By: SC
ParamFCResultUnitsDil.AmountResultRec.LimitDROs705mg/Kg125038013070 - 13Percent recovery is based on the spike result.RPD is based on the spike and spike duplicate result.MSDSpikeMatrixRec.RPIParamFCResultUnitsDil.AmountResultRec.RPIDRO $qr.qs$ $qr.qs$ s497mg/Kg12503804770 - 1303520Percent recovery is based on the spike result.RPD is based on the spike and spike duplicate result.RPD Lim100303520Percent recovery is based on the spike result.RPD is based on the spike and spike duplicate result.RPD LimSurrogateResultResultUnitsDil.AmountRec.Rec.Limitn-Tricosane130125mg/Kg110013012570 - 13Matrix Spike (xMS-1)Spiked Sample:3776073776072014-10-24Analyzed By:S0QC Batch:116625Date Analyzed:2014-10-23Prepared By:S0Prep Batch:98619QC Preparation:2014-10-23Prepared By:S0SurrogateResultResultUnitsDil.AmountRec.Rec.Limit	Prep Batch: 98619		QC Prepa	ration: $201_{-}$	4-10-23			Prepar	ed By: SC
ParamFCResultUnitsDil.AmountResultRec.LimitDROs705mg/Kg125038013070 - 130Percent recovery is based on the spike result.RPD is based on the spike and spike duplicate result.Rec.RPIParamFCResultUnitsDil.AmountResultRec.RPIDRO $qr.qs$ $qr.qs$ s497mg/Kg12503804770 - 1303520Percent recovery is based on the spike result.RPD is based on the spike and spike duplicate result.RPD LimImitDil.AmountRec.Ref.SurrogateResultResultUnitsDil.AmountRec.Rec.Limitn-Tricosane130125mg/Kg110013012570 - 13QC Batch:116625Date Analyzed:2014-10-24Analyzed By:SCPrep Batch:98619QC Preparation:2014-10-23Prepared By:SCSurrogateMSMSDRec.LimitMSMSDResultUnitsDil.AmountRec.Rec.LiftStipStipStipStipRec.Imitn-Tricosane130125T7607StipStipStipQC Batch:116625Date Analyzed:2014-10-23Prepared By:StipSurrogateResultResultResultUnits <td< td=""><td></td><td></td><td>MS</td><td></td><td></td><td>Spike</td><td>Mat</td><td>rix</td><td>Rec.</td></td<>			MS			Spike	Mat	rix	Rec.
Or one of the spike result. RPD is based on the spike and spike duplicate result.         MSD       Spike       Matrix       Rec.       RPI         Param       F       C       Result       Units       Dil. Amount       Result       RPI         MSD       Spike       Matrix       Rec.       RPI         DRO       Qr.Qs       5       497       mg/Kg       1       250       380       47       70 - 130       35       20         Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.         MS       MSD       Spike       MS       MSD <td>Param</td> <td><math>\mathbf{F}</math></td> <td>C Result</td> <td>Units</td> <td>Dil.</td> <td>-</td> <td>Rest</td> <td>ilt Rec.</td> <td>Limit</td>	Param	$\mathbf{F}$	C Result	Units	Dil.	-	Rest	ilt Rec.	Limit
MSDSpikeMatrixRec.RPIParamFCResultUnitsDil.AmountResultRec.LimitRPDLimDRO $Qr, Qs$ $Qr, Qs$ $Qr, Qs$ $qr, Qs$ $s$ 497mg/Kg12503804770 - 1303520Percent recovery is based on the spike result.RPD is based on the spike and spike duplicate result.SurrogateMSMSDSpikeMSMSDRec.n-Tricosane130125mg/Kg110013012570 - 13Matrix Spike (xMS-1)Spiked Sample:377607QC Batch:116625Date Analyzed:2014-10-24Analyzed By:S0Prep Batch:98619QC Preparation:2014-10-23Prepared By:S0SurrogateMSMSDRec.Rec.LimitMSMSDDateAnalyzed:2014-10-23Prepared By:S0	DRO		5 705	mg/Kg	1	250	38	) 130	70 - 130
ParamFCResultUnitsDil.AmountResultRec.LimitRPDLimitDRO $qr,Qs$ $qr,Qs$ $s$ 497 $mg/Kg$ 12503804770 - 1303520Percent recovery is based on the spike result.RPD is based on the spike and spike duplicate result.MSMSDSpikeMSMSDRec.SurrogateResultResultUnitsDil.AmountRec.Rec.In-Tricosane130125mg/Kg110013012570 - 13Matrix Spike (xMS-1)Spiked Sample:377607Materian Spike (xMS-1)Spiked Sample:377607QC Batch:116625Date Analyzed:2014-10-24Analyzed By:SOPrep Batch:98619QC Preparation:2014-10-23Prepared By:SOSurrogateMSMSDRec.LimitMSDRec.KesultResultResultUnitsDil.AmountRec.Rec.	Percent recovery is based o	on the spike result.	RPD is bas	sed on the spi	ke and spi	ike duplica	te result		
DRO       Qr.Qs       Qr.Qs       5       497       mg/Kg       1       250       380       47       70 - 130       35       20         Percent recovery is based on the spike result.       RPD is based on the spike and spike duplicate result.       MS       MSD       Rec.         Surrogate       Result       Result       Units       Dil.       Amount       Rec.       Rec.       Limit         n-Tricosane       130       125       mg/Kg       1       100       130       125       70 - 13         Matrix Spike (xMS-1)       Spiked Sample: 377607         QC Batch:       116625       Date Analyzed:       2014-10-24       Analyzed By:       SC         Prep Batch:       98619       QC Preparation:       2014-10-23       Prepared By:       SC         Surrogate       MS       MSD       Spike       MS       MSD       Rec.			MSD		Spike	Matrix		Rec.	RPD
Or one of the spike method of the spike result. RPD is based on the spike and spike duplicate result.         MS       MSD       Spike       MS       MSD       Rec.         Surrogate       Result       Result       Units       Dil.       Amount       Rec.       Rec.       Limit         n-Tricosane       130       125       mg/Kg       1       100       130       125       70 - 13         Matrix Spike (xMS-1)       Spiked Sample: 377607       Date Analyzed:       2014-10-24       Analyzed By:       SC         Prep Batch:       116625       Date Analyzed:       2014-10-23       Prepared By:       SC         Surrogate       MS       MSD       Spike       MS       MSD       Rec.         Surrogate       Result       Result       Units       Dil.       Amount       Rec.       Rec.	Param	F (	C Result	Units Dil.	Amount	t Result	Rec.	Limit	RPD Limit
MS     MSD     Spike     MS     MSD     Rec. <u>n-Tricosane</u> 130     125     mg/Kg     1     100     130     125     70 - 13       Matrix Spike (xMS-1)     Spiked Sample: 377607       QC Batch:     116625     Date Analyzed:     2014-10-24     Analyzed By:     SC       Prep Batch:     98619     QC Preparation:     2014-10-23     Prepared By:     SC       Surrogate     MS     MSD     Spike     MS     MSD     Rec.	DRO	Qr,Qs Qr,Qs	5 497	mg/Kg 1	250	380	47	70 - 130	35 20
Matrix Spike (xMS-1)       Spiked Sample: 377607         QC Batch:       116625       Date Analyzed: 2014-10-24       Analyzed By: SC         Prep Batch:       98619       QC Preparation: 2014-10-23       Prepared By: SC         MS       MSD       Spike       MS       MSD       Rec.         Surrogate       Result       Result       Units       Dil.       Amount       Rec.       Limit	Surrogate			Units	Dil.	-			Limit
QC Batch:116625Date Analyzed:2014-10-24Analyzed By:SOPrep Batch:98619QC Preparation:2014-10-23Prepared By:SOMSMSDSpikeMSMSDRec.SurrogateResultResultUnitsDil.AmountRec.Rec.	n-Tricosane	130	125	mg/Kg	1	100	130	125	70 - 130
Surrogate Result Result Units Dil. Amount Rec. Rec. Limit	QC Batch: 116625	Spiked Sample:	Date Ana	•					v
	Sumoroto			Unita	Dil	-			
									70 - 130
n-Triacontane 94.1 81.7 mg/Kg 1 100 94 82 10 - 25									10 - 258

Matrix Spike (MS-1) Spiked Sample: 377115

QC Batch:	116629	Date Analyzed:	2014-10-24	Analyzed By:	AK
Prep Batch:	98602	QC Preparation:	2014-10-23	Prepared By:	AK

Report Date: October 29, 2014 2014-178			Woi	rk Order: 14 Tract 19-4	Page Number: 17 of 23 Eunice, NM				
			MS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	С	Result	Units	Dil.	Amount	$\mathbf{Result}$	Rec.	$\operatorname{Limit}$
Benzene		5	1.81	mg/Kg	1	2.00	< 0.00533	90	70 - 130
Toluene		5	1.85	mg/Kg	1	2.00	< 0.00645	92	70 - 130
Ethylbenzene		5	1.92	mg/Kg	1	2.00	< 0.0116	96	70 - 130
Xylene		5	5.97	mg/Kg	1	6.00	< 0.00874	100	70 - 130

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

			MSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	$\operatorname{Result}$	Units	Dil.	$\operatorname{Amount}$	Result	Rec.	Limit	RPD	Limit
Benzene		5	1.69	mg/Kg	1	2.00	< 0.00533	84	70 - 130	7	20
Toluene		5	1.75	mg/Kg	1	2.00	$<\!0.00645$	88	70 - 130	6	20
Ethylbenzene		5	1.90	mg/Kg	1	2.00	< 0.0116	95	70 - 130	1	20
Xylene		5	5.77	mg/Kg	1	6.00	< 0.00874	96	70 - 130	3	20

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

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.95	1.94	mg/Kg	1	2	98	97	70 - 130
4-Bromofluorobenzene (4-BFB)	2.15	2.10	mg/Kg	1	2	108	105	70 - 130

#### Matrix Spike (MS-1) Spiked Sample: 377115

QC Batch:	116631	Date Analyzed:	2014-10-24	Analyzed By:	AK
Prep Batch:	98602	QC Preparation:	2014-10-23	Prepared By:	AK

			MS			$\mathbf{Spike}$	Matrix		Rec.
Param	$\mathbf{F}$	$\mathbf{C}$	$\operatorname{Result}$	Units	Dil.	$\operatorname{Amount}$	Result	Rec.	Limit
GRO		5	16.4	mg/Kg	1	20.0	$<\!2.32$	82	70 - 130

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

Param	F	С	MSD Result	Units	Dil.	Spike Amour		atrix sult H	Rec.	Rec Lim		RPD	RPD Limit
GRO	-	5	19.0	mg/Kg	1	20.0		2.32	95	70 - 1	.30	15	20
Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.													
			MS	5 М	SD			Spik	æ	MS	MS	D	Rec.
Surrogate			Rest	ılt Re	sult	Units	Dil.	Amou		Rec.	Ree	с.	Limit
Trifluorotoluene (TFT)			1.8	3 1.	81	mg/Kg	1	2		92	90	)	70 - 130
4-Bromofluorobenzene (4-BFB)			1.6	51.	68	mg/Kg	1	2		82	84	ļ	70 - 130

Report Date: October 29, 201 2014-178	4				Order: 1 Fract 19	14102321 -4"			Page Nu		18 of 23 ice, NM
Matrix Spike (MS-1) Spi	iked Sa	mple	: 377783								
QC Batch: 116737 Prep Batch: 98706				e Analyze Preparati		14-10-29 14-10-28				zed By: red By:	
Param		F	C F	MS lesult	Units	Dil.	Spike Amount	Mat: Rest			Rec. Limit
Chloride		-			mg/Kg		2500	19			.9 - 121
Percent recovery is based on th	ne spike	e rest	ılt. RPD	is based	on the s	pike and s	pike dupli	cate resu	ılt.		
			MSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			3160	mg/Kg	5	2500	191	119 '	78.9 - 121	5	20

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

## **Calibration Standards**

### Standard (CCV-2)

QC Batch:	116624		Date	Analyzed:	2014-10-24		Analy	zed By: SC
				CCVs	CCVs	$\mathrm{CCVs}$	Percent	
				True	Found	Percent	Recovery	$\mathbf{Date}$
Param	$\mathbf{Flag}$	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		5	mg/Kg	250	243	97	80 - 120	2014-10-24

### Standard (CCV-3)

QC Batch:	116624		Date	Analyzed:	2014-10-24		Analy	vzed By: SC
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		5	m mg/Kg	250	235	94	80 - 120	2014-10-24

### Standard (CCV-2)

QC Batch: 116629			Date An	alyzed: 20	14-10-24		Analyzed By: AK								
				CCVs	$\mathrm{CCVs}$	CCVs	Percent								
				True	Found	Percent	Recovery	$\mathbf{Date}$							
Param	$\operatorname{Flag}$	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed							
Benzene		5	mg/kg	0.100	0.102	102	80 - 120	2014-10-24							
Toluene		5	m mg/kg	0.100	0.102	102	80 - 120	2014 - 10 - 24							
Ethylbenzene		5	m mg/kg	0.100	0.0991	99	80 - 120	2014 - 10 - 24							
Xylene		5	mg/kg	0.300	0.300	100	80 - 120	2014-10-24							

#### Standard (CCV-3)

QC Batch: 116629

Date Analyzed: 2014-10-24

Analyzed By: AK

Report Date: Octo 2014-178	ober 29, 2014		V	Vork Order: Tract 1	Page Number: 20 of 23 Eunice, NM							
Report Date: Octo 2014-178 Param Benzene Toluene Ethylbenzene Xylene	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed				
Benzene		5	mg/kg	0.100	0.0966	97	80 - 120	2014-10-24				
Toluene		5	mg/kg	0.100	0.0983	98	80 - 120	2014-10-24				
Ethylbenzene		5	mg/kg	0.100	0.0953	95	80 - 120	2014 - 10 - 24				
Xylene		5	mg/kg	0.300	0.288	96	80 - 120	2014-10-24				

## Standard (CCV-2)

QC Batch:	116631		Date	Analyzed:	2014-10-24		Analy	zed By: AK
				CCVs True	$\operatorname{CCVs}$ Found	$\begin{array}{c} \mathrm{CCVs} \\ \mathrm{Percent} \end{array}$	Percent Recovery	Date
Param	$\mathbf{Flag}$	$\operatorname{Cert}$	$\mathbf{Units}$	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		5	m mg/Kg	1.00	0.913	91	80 - 120	2014-10-24

### Standard (CCV-3)

QC Batch:	116631		Date	Analy	zed By: AK			
				CCVs True	$\operatorname{CCVs}$ Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		5	mg/Kg	1.00	0.848	85	80 - 120	2014-10-24

### Standard (ICV-1)

QC Batch:	116737			Date A	Analyzed:	2014-10-29		Analyz	zed By: MM
					ICVs	ICVs	ICVs	Percent	Data
					True	Found	Percent	Recovery	$\mathbf{Date}$
$\mathbf{Param}$		Flag	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride				mg/Kg	100	101	101	85 - 115	2014-10-29

### Standard (CCV-1)

QC Batch: 116737

Report Date: 0 2014-178	October 29, 20	014		Work Orde Tract	Page Number: 21 of 23 Eunice, NM						
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date			
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed			
Chloride			mg/Kg	100	99.0	99	85 - 115	2014-10-29			

Work Order: 14102321 Tract 19-4"

Page Number: 22 of 23 Eunice, NM

## Appendix

### **Report Definitions**

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

### Laboratory Certifications

	Certifying	Certification	Laboratory
С	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	PJLA	L14-93	Lubbock
<b>2</b>	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-14-10	Lubbock
5	NELAP	T104704392-14-8	Midland
6		2014-018	Lubbock

## Standard Flags

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

Report Date: October 29, 2014 2014-178

Work Order: 14102321 Tract 19-4" Page Number: 23 of 23 Eunice, NM

#### F Description

Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

### Attachments

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

LAB Ord	er ID # <u>1410232</u>	/																								Pa	ge_		1	01	f	1		
		6	6701 Aberdeen Avenue, Suite 9         5002 Basin Street, Suite A1         200 East Sunset Rd.,           Lubbock, Texas 79424         Midland, Texas 79703         El Paso, Texas 7           Tel (806) 794-1296         Tel (432) 689-6301         Tel (915) 585-34           Fax (806) 794-1296         Fax (432) 689-6313         Fax (915) 585-34           1 (800) 378-1296         1 (888) 588-344         1 (888) 588-344											7992	79922 2501 Mayes Rd., She 100 V 3403 Industrial Blvd											/d. 10								
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	FIELD CODE	CONTAINERS	Volume / Amount								ATIV	E	SAMF	PLING	161	1) 602 /	8.1 / TX100	PAH 8270 / 625	Total Metals Ag As Ba Cd Cr Pb Se Hg TrO B Metals Ag As Ba Cd Cr Pb Se Hg	olatiles	Semi Volatiles	I CLP Pesticides RCI	Vol. 8260 / 624	GC/MS Semi. Vol. 8270 / 625		POSTICIOOS 50161 / 5015 ROD TSS nH	ao, pri	INO3-N, N	Ъ Ч			1	ound time It o	
AB USE ORILY 7778/	NSW-1@1	+ CON	Volume	WATER		SLUDGE	Ŧ	- NH	H <sub>2</sub> SO4	HOBN	U U U	NONE	DATE DATE	₩ 	MTBE	X BIEV		PAH 82	Total Met	TCLP Volatiles	TCLP S	RCLPT	GC/MS Vol.	GC/MS	PCB's 8	ROD TSS AH	Moistum	X COF, SO	Na, C					DIOL
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5701 Aberdeen Avenue, Suite 9 200 East Sunset Road, Suite E 5002 Basin Street, Suite A1 (BioAquatic) 2501 Mayes Rd., Suite 100

Texas 79424 Lubbock, El Paso. Texas 79922 Midland. Texas 79703 Carroliton. Texas 75006

E-Mail: lab@traceanalysis.com WEB. www.traceanalysis.com

Certifications

NCTRCA DBE NELAP DoD LELAP Oklahoma ISO 17025 WBE HUB Kansas

## **Analytical and Quality Control Report**

Curt Stanley Nova Safety & Environmental 2057 Commerce St. Midland, TX, 79703

Report Date: November 24, 2014

FAX 915-585-4944

FAX 432-689-6313

Work Order: 14112104 

915-585-3443

432-689-6301

972-242-7750

Project Location: Eunice, NM **Project Name:** Tract 19-4" **Project Number:** 2014-178 SRS #: 2014-178

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

			Date	Time	Date
$\mathbf{Sample}$	Description	Matrix	Taken	Taken	Received
380227	TOP SOIL SP	soil	2014-11-18	16:00	2014-11-20

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

This report consists of a total of 18 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Slan 1

Dr. Blair Leftwich, Director James Taylor, Assistant Director Brian Pellam, Operations Manager

# **Report Contents**

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Report Date: November 24, 2014 2014-178

Work Order: 14112104 Tract 19-4"

## **Analytical Report**

Sample: 380227 - TOP SOIL SP

Laboratory:	Midland									
Analysis:	BTEX		A	Analytical	Method:	S 8021	В		Prep Metho	d: S 503
QC Batch:	117451		I	Date Anal	lyzed:	2014-1	1-23		Analyzed By	r: AK
Prep Batch:	99299		S	Sample Pr	reparation:	2014-1	1-21		Prepared By	r: AK
						$\mathbf{RL}$				
Parameter		Flag		$\mathbf{Cert}$	]	Result	Units	3	Dilution	R
Benzene		U		5	<	0.0200	mg/Kg	5	1	0.020
Toluene		U		5	<(	0.0200	mg/Kg		1	0.020
Ethylbenzene		U		5	<(	0.0200	mg/Kg	5	1	0.020
Xylene		U		5	<	0.0200	mg/Kg	5	1	0.020
								Spike	Percent	Recover
Surrogate			Flag	Cert	Result	$\mathbf{Units}$	Dilution	Amount		Limits
						mg/Kg	1	2.00	101	70 - 130
	ene (TFT)				2.02					
Trifluorotolue 4-Bromofluoro	obenzene (4-BFB)				2.02 2.14	mg/Kg	1	2.00	107	70 - 130
Trifluorotolue 4-Bromofluore				Dat		mg/Kg thod:				70 - 130 nod: N/- By: SC
Trifluorotolue 4-Bromofluoro Sample: 380 Laboratory: Analysis: QC Batch:	D227 - TOP SOI Midland TPH DRO - NEW 117467			Dat	2.14 alytical Me e Analyzed aple Prepar	mg/Kg thod: 1: ration:	1 S 8015 D	2.00	107 Prep Metl Analyzed	70 - 130 nod: N/. By: SC By: SC R
Trifluorotolue 4-Bromofluoro Sample: 380 Laboratory: Analysis: QC Batch: Prep Batch:	D227 - TOP SOI Midland TPH DRO - NEW 117467	V		Dat San	2.14 lytical Me e Analyzed ple Prepar F	mg/Kg thod: 1: ration: RL	1 S 8015 D 2014-11-24	2.00 s	107 Prep Metl Analyzed Prepared	70 - 130 nod: N/. By: SC By: SC
Trifluorotolue 4-Bromofluoro Laboratory: Analysis: QC Batch: Prep Batch: Parameter	D227 - TOP SOI Midland TPH DRO - NEW 117467	V Flag		Dat San Cert	2.14 lytical Me e Analyzed ple Prepar F	mg/Kg thod: t: ration: RL Result	1 S 8015 D 2014-11-24 Unit mg/K	2.00 s	107 Prep Meth Analyzed Prepared Dilution	70 - 130 nod: N/. By: SC By: SC R
Trifluorotolue 4-Bromofluoro Laboratory: Analysis: QC Batch: Prep Batch: Parameter	D227 - TOP SOI Midland TPH DRO - NEW 117467	V Flag		Dat San Cert	2.14 lytical Me e Analyzed ple Prepar F	mg/Kg thod: t: tration: RL Result <50.0	1 S 8015 D 2014-11-24 Unit mg/K	2.00 s g	107 Prep Meth Analyzed Prepared Dilution 1	70 - 130 hod: N/. By: SC By: SC R 

#### Sample: 380227 - TOP SOIL SP

	Laboratory:					
•	Analysis: QC Batch:		Analytical Method: Date Analyzed:	S 8015 D 2014-11-23	Prep Method: Analyzed By:	
-	Prep Batch:	99299	Sample Preparation:	2014-11-21	Prepared By:	AK

Report Date: Novemb 2014-178			ler: 14112104 ct 19-4"		Page Number: 7 of 1 Eunice, NM			
					DL			
arameter Fla PRO				Cert	Res	ult .41	Units mg/Kg	R. 50
				5	<1	.41	mg/ Kg	00
						Spike	Percent	Recover
Surrogate	$\mathbf{Flag}$	Cert	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane			97.7	mg/Kg	1	100	98	70 - 130
		atch: 11746	13					
	40 D		Date A	nalyzed: eparation:	2014-11-24 2014-11-21		Analyz Prepar	-
QC Batch: 117469	40 D		Date A	•	2014-11-21	DL	•	
QC Batch: 117469 Prep Batch: 99286	40 D	Flag	Date A QC Pr	•	2014-11-21	_	•	ed By: SC
<b>v</b>	40 D		Date A QC Pr	eparation:	2014-11-21 M Res	_	Prepar	ed By: S(
QC Batch: 117469 Prep Batch: 99286 Parameter			Date A QC Pr	eparation:	2014-11-21 M Res	sult	Prepar	ed By: SC R 5
QC Batch: 117469 Prep Batch: 99286 Parameter ORO Surrogate	Flag		Date A QC Pr	eparation: Cert Units	2014-11-21 M Res Dilution	sult 1.00 Spike Amount	Prepar Units mg/Kg Percent Recovery	ed By: SC R S Recover Limits
QC Batch: 117469 Prep Batch: 99286 Parameter ORO		Flag	Date A QC Pr	eparation: Cert	2014-11-21 M Res 0 Dilution 1	sult 0.00 Spike	Prepar Units mg/Kg Percent	

Report Date: November 24, 2014	Work Order: 14112104	Page Number: 10 of 18
2014-178	Tract 19-4"	Eunice, NM

Param	F (	LCSD C Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit		
ORO		0.00	mg/Kg	1	250	0	0	-	0			
Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.												
	LCS	LCSD	)			Spike	LCS	LCSD		Rec.		
Surrogate	Resul	t Result	t Unit	s	Dil. A	Amount	Rec.	Rec.		$\operatorname{Limit}$		
n-Tricosane	104	107	mg/K	ζg	1	100	104	107	7	0 - 130		
n-Triacontane	84.1	86.2	mg/k	Κg	1	100	84	86	54	.8 - 164		

## Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 380216

QC Batch:	117451	Date Analyzed:	2014-11-23	Analyzed By:	AK
Prep Batch:	99299	QC Preparation:	2014-11-21	Prepared By:	AK

			MS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	С	Result	Units	Dil.	Amount	Result	Rec.	$\mathbf{Limit}$
Benzene		5	1.73	mg/Kg	1	2.00	< 0.00533	86	70 - 130
Toluene		5	1.83	mg/Kg	1	2.00	$<\!0.00645$	92	70 - 130
Ethylbenzene		5	1.94	mg/Kg	1	2.00	< 0.0116	97	70 - 130
Xylene		5	5.95	mg/Kg	1	6.00	< 0.00874	99	70 - 130

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

			MSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	$\operatorname{Limit}$	RPD	Limit
Benzene		5	1.72	mg/Kg	1	2.00	< 0.00533	86	70 - 130	1	20
Toluene		5	1.80	mg/Kg	1	2.00	$<\!0.00645$	90	70 - 130	2	<b>20</b>
Ethylbenzene		5	1.96	mg/Kg	1	2.00	< 0.0116	98	70 - 130	1	<b>20</b>
Xylene		5	5.98	mg/Kg	1	6.00	< 0.00874	100	70 - 130	0	20

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

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	2.14	1.97	mg/Kg	1	2	107	98	70 - 130
4-Bromofluorobenzene (4-BFB)	2.24	2.25	mg/Kg	1	2	112	112	70 - 130

#### Matrix Spike (MS-1) Spiked Sample: 380216

QC Batch: Prep Batch:	$117452 \\ 99299$									By: AK By: AK
				MS			Spike	Matrix		Rec.
Param		$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	$\mathbf{Limit}$
GRO			5	16.0	mg/Kg	1	20.0	$<\!\!2.32$	80	70 - 130
		_				-				

Report Date: November 24, 2014 2014-178			Work Order: 14112104 Tract 19-4"					Page Number: 12 of 18 Eunice, NM			
matrix spikes continued			Map			G 11			D		DDD
Param	$\mathbf{F}$	С	$egin{array}{c} \mathrm{MSD} \ \mathrm{Result} \end{array}$	Units	Dil.	Spike Amount	Matr Resu		Rec. Limit	RPD	$f RPD \ Limit$
Param	F	С	$egin{array}{c} \mathrm{MSD} \ \mathrm{Result} \end{array}$	Units	Dil.	Spike Amount	Matr Resu		Rec. Limit	RPD	f RPD
GRO	<u> </u>	5	17.8	mg/Kg	1	20.0	<2.3		70 - 13		20
Percent recovery is based on the	spike	resu	lt. RPD i		on the s	spike and s	spike du	plicate res	sult.		
,	r						-			MOD	Dee
Surrogate			MS Rest			Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	${f Rec.}\ {f Limit}$
Trifluorotoluene (TFT)			1.7			mg/Kg	1	2	88	90	70 - 130
4-Bromofluorobenzene (4-BFB)			1.7			mg/Kg	1	2	86	86	70 - 130
Param		F	C F	MS Result	Units	s Dil.	Spi Amo		Aatrix Result	Rec.	Rec. Limit
		F	C F	MS Result 259	Units mg/K		Spi Amo 25	ount F	latrix Result <7.41	Rec.	Rec. Limit 70 - 130
DRO	spike		5	Result 259	mg/K	g 1	Amo 25	ount F	Result <7.41		Limit
DRO	spike		5 lt. RPD	Result 259	mg/K	g 1 spike and s	Amo 25 spike du	punt F 0 < plicate res	Result <7.41 sult.		Limit 70 - 130
DRO Percent recovery is based on the	spike		5	Result 259	mg/K	g 1	Amo 25 spike du Matr	ount F 0 < plicate res ix	Result <7.41 sult. Rec.	104	Limit 70 - 130 RPD
DRO Percent recovery is based on the Param	-	e resu	5 lt. RPD MSD	tesult 259 is based o	mg/K on the	g 1 spike and s Spike	Amo 25 spike du Matr	punt F 0 < plicate res fix alt Rec.	Result <7.41 sult. Rec.	104 RPD	Limit 70 - 130 RPD
DRO Percent recovery is based on the Param DRO	F	e resu C 5	5 lt. RPD MSD Result 237	tesult 259 is based o Units mg/Kg	mg/K on the Dil. 1	g 1 spike and s Spike Amount 250	Amo 25 spike du Matr z Resu <7.4	ount F 0 < plicate res ix ilt Rec. il 95	Result <7.41 sult. Rec. Limit 70 - 13	104 RPD	Limit 70 - 130 RPD Limit
DRO Percent recovery is based on the Param DRO	F	e resu C 5	5 lt. RPD MSD Result 237	tesult 259 is based o Units mg/Kg is based o	mg/K on the Dil. 1	g 1 spike and s Spike Amount 250	Amo 25 spike du Matr 2 Resu <7.4 spike du	punt F 0 < plicate res ix lt Rec. l1 95 plicate re	Result <7.41 sult. Rec. Limit 70 - 13 sult.	104 RPD	Limit 70 - 130 RPD Limit
DRO Percent recovery is based on the Param DRO Percent recovery is based on the	F spike	e resu C 5 e resu	5 It. RPD MSD Result 237 It. RPD	tesult 259 is based of Units mg/Kg is based of D ult U	mg/K on the Dil. 1 on the Units	g 1 spike and s Spike Amount 250	Amo 25 spike du Matr 7.4 spike du Spike du Spil Amou	ount     F       0        plicate restrict       ix       ult     Rec.       11     95       plicate restrict       case     N       unt     F	Result           <7.41	104 7 RPD 80 9 MSD Rec.	Limit 70 - 130 RPD Limit 20 Rec. Limit
Param DRO Percent recovery is based on the Param DRO Percent recovery is based on the Surrogate	F spike	e resu C 5 e resu MS	5 It. RPD MSD Result 237 It. RPD MSI	tesult 259 is based o Units mg/Kg is based o D	mg/K on the Dil. 1 on the	g 1 spike and s Spike Amount 250 spike and s	Amo 25 spike du Matr 27.4 spike du Spike du	punt     F       0        plicate restrict       dt     Rec.       t1     95       plicate restrict       call     end	Result <7.41 sult. Rec. Limit 70 - 13 sult. MS N	104 : RPD 30 9 MSD	Limit 70 - 130 RPD Limit 20 Rec.
DRO Percent recovery is based on the Param DRO Percent recovery is based on the Surrogate n-Tricosane	F spike Re 1	c 5 e resu MS esult .05	5 It. RPD MSD Result 237 It. RPD MSI	tesult 259 is based of mg/Kg is based of D ult U m	mg/K on the Dil. 1 on the	g 1 spike and s Spike Amount 250 spike and s	Amo 25 spike du Matr 27.4 spike du Spike du	ount     F       0        plicate restrict       ix       ult     Rec.       11     95       plicate restrict       case     N       unt     F	Result <7.41 sult. Rec. Limit 70 - 13 sult. MS N Rec. 1 105	104 RPD 30 9 MSD Rec. 102	Limit 70 - 130 RPD Limit 20 Rec. Limit 70 - 130
DRO Percent recovery is based on the Param DRO Percent recovery is based on the Surrogate n-Tricosane	F spike Re 1	c 5 e resu MS esult .05	5 MSD Result 237 It. RPD MSI Resu 102	tesult 259 is based of mg/Kg is based of D ult U m	mg/K on the Dil. 1 on the Juits g/Kg d: 2	g 1 spike and s Spike Amount 250 spike and s Dil.	Amo 25 spike du Matr 7.4 spike du Spike du Spil Amou	ount     F       0        plicate restrict       ix       ult     Rec.       11     95       plicate restrict       case     N       unt     F	Result           <7.41	104 7 RPD 80 9 MSD Rec.	Limit 70 - 130 RPD Limit 20 Rec. Limit 70 - 130

			MS			$\mathbf{Spike}$	Matrix		Rec.
Param	$\mathbf{F}$	С	$\mathbf{Result}$	Units	Dil.	Amount	$\mathbf{Result}$	Rec.	Limit
ORO			0.00	mg/Kg	1	250	0	0	-

Report Date: November 24, 2014	Work Order: 14112104	Page Number: 13 of 18
2014-178	Tract 19-4"	Eunice, NM

Param	FC	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
ORO		0.00	mg/Kg	1	250	0	0	-	0	
Percent recovery is based on the	spike resu	lt. RPD is	based on	the sp	oike and spi	ke duplica	te result	•		
	MS	MSI	D			Spike	MS	MS	D	Rec.
Surrogate	Resul	t Resu	lt U	nits	Dil.	Amount	Rec.	Re	c.	$\operatorname{Limit}$
n-Tricosane	106	102	2 mg	/Kg	1	100	106	10	2	70 - 130
n-Triacontane	84.2	82.	3 mg	;/Kg	1	100	84	82	2	10 - 258

## **Calibration Standards**

Standard (CCV-1)

QC Batch: 117451			Date An	Date Analyzed: 2014-11-23				Analyzed By: AK		
				CCVs	CCVs	CCVs	Percent			
				True	Found	Percent	Recovery	Date		
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed		
Benzene		5	mg/kg	0.100	0.0982	98	80 - 120	2014-11-23		
Toluene		5	mg/kg	0.100	0.0992	99	80 - 120	2014-11-23		
Ethylbenzene		5	mg/kg	0.100	0.0997	100	80 - 120	2014-11-23		
Xylene		5	mg/kg	0.300	0.300	100	80 - 120	2014-11-23		

#### Standard (CCV-2)

QC Batch: 117451			Date An	Date Analyzed: 2014-11-23				Analyzed By: AK		
				CCVs	CCVs	CCVs	Percent			
				$\mathbf{True}$	Found	$\mathbf{Percent}$	Recovery	Date		
Param	Flag	$\mathbf{Cert}$	$\mathbf{Units}$	Conc.	Conc.	Recovery	Limits	Analyzed		
Benzene		5	mg/kg	0.100	0.0965	96	80 - 120	2014-11-23		
Toluene		5	mg/kg	0.100	0.100	100	80 - 120	2014-11-23		
Ethylbenzene		5	mg/kg	0.100	0.0995	100	80 - 120	2014-11-23		
Xylene		5	mg/kg	0.300	0.302	101	80 - 120	2014-11-23		

#### Standard (CCV-1)

QC Batch:	117452		Date	Analyzed:	2014-11-23		Analyzed By: AK	
				CCVs True	CCVs Found	$\operatorname{CCVs}$	Percent Recovery	Date
Param	Flag	$\mathbf{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO	· · · · ·	5	mg/Kg	1.00	0.922	92	80 - 120	2014-11-23

Standard (CCV-2)

QC Batch: 117452

2014-178	November 24	, 2014		Work Or Tra	Page Number: 15 of 18 Eunice, NM			
				CCVs	CCVs	$\mathbf{CCVs}$	Percent	
_				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		5	mg/Kg	1.00	0.917	92	80 - 120	2014-11-23
Standard (CC	CV-2)							
QC Batch: 11	7467		Date	Analyzed:	2014-11-24		Analy	yzed By: SC
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		5	mg/Kg	250	233	93	80 - 120	2014-11-24
	-		Date	Analyzed:	2014-11-24		Analy	yzed By: SC
QC Batch: 11 Param	-	Cert5	Date Units mg/Kg	Analyzed: CCVs True Conc. 250	2014-11-24 CCVs Found Conc. 251	CCVs Percent Recovery 100	Analy Percent Recovery Limits 80 - 120	yzed By: SC Date Analyzed 2014-11-24
QC Batch: 11 Param DRO Standard (CC	Flag		Units mg/Kg	CCVs True Conc.	CCVs Found Conc. 251	Percent Recovery	Percent Recovery Limits 80 - 120	Date Analyzed
QC Batch: 11 Param DRO Standard (CC	Flag		Units mg/Kg	CCVs True Conc. 250	CCVs Found Conc. 251 2014-11-24	Percent Recovery 100	Percent Recovery Limits 80 - 120 Analy	Date Analyzed 2014-11-24
Standard (CC QC Batch: 11 Param DRO Standard (CC QC Batch: 11	Flag		Units mg/Kg	CCVs True Conc. 250 Analyzed: CCVs	CCVs Found Conc. 251 2014-11-24 CCVs	Percent Recovery 100 CCVs	Percent Recovery Limits 80 - 120 Analy Percent	Date Analyzed 2014-11-24 yzed By: SC
QC Batch: 11 Param DRO Standard (CC	Flag		Units mg/Kg	CCVs True Conc. 250	CCVs Found Conc. 251 2014-11-24	Percent Recovery 100	Percent Recovery Limits 80 - 120 Analy	Date Analyzed 2014-11-24

QC Batch: 117469

Date Analyzed: 2014-11-24

Analyzed By: SC

Report Date: 2014-178	November 24	, 2014		Work Order: 14112104 Tract 19-4"				Page Number: 16 of 18 Eunice, NM		
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date		
Param	$\operatorname{Flag}$	$\mathbf{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed		
ORO			mg/Kg	250	0.00	0	-	2014-11-24		

Work Order: 14112104 Tract 19-4"

Page Number: 17 of 18 Eunice, NM

## Appendix

### **Report Definitions**

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
$\operatorname{SDL}$	Sample Detection Limit

### Laboratory Certifications

	Certifying	Certification	Laboratory
$\mathbf{C}$	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	PJLA	L14-93	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-14-10	Lubbock
<b>5</b>	NELAP	T104704392-14-8	Midland
6		2014-018	Lubbock

## **Standard Flags**

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

Report Date: November 24, 2014 2014-178

Work Order: 14112104 Tract 19-4" Page Number: 18 of 18 Eunice, NM

#### F Description

Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

## Attachments

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

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5701 Aberdeen Avenue, Suite 9 200 East Sunset Road, Suite E 5002 Basin Street, Suite A1 (BioAquatic) 2501 Mayes Rd., Suite 100

Texas 79424 Lubbock, El Paso. Texas 79922 Midland, Texas 79703 Texas 75006 Carrolton, E-Mail: tab@traceanalysis.com WEB. www.traceanalysis.com

Certifications

800-378-1296

806-794-1295

915-585-3443

432-689-6301

972-242-7750

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

## **Analytical and Quality Control Report**

Curt Stanley Nova Safety & Environmental 2057 Commerce St. Midland, TX, 79703

Report Date: November 26, 2014

FAX 806+794+1298

FAX 915-585-4944

FAX 432-689-6313

Work Order: 14112524 

Project Location: Eunice, NM Project Name: Tract 19-4" **Project Number:** 2014-178 SRS #: 2014-178

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

			Date	$\mathbf{Time}$	Date
Sample	Description	Matrix	Taken	Taken	Received
380706	SSW- 2@ 18'	soil	2014-11-23	13:00	2014-11-25
380707	ESW- 1@ 18'	soil	2014-11-23	13:05	2014 - 11 - 25
380708	NSW- 2@ 18'	soil	2014-11-23	16:00	2014-11-25

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

This report consists of a total of 20 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Blain fapou rich 7

Dr. Blair Leftwich, Director James Taylor, Assistant Director Brian Pellam, Operations Manager

# **Report Contents**

Case Narrative	4
Sample 380706 (SSW- 2@18')	<b>5</b> 5 6 8
QC Batch 117547 - Method Blank (1)       1         QC Batch 117548 - Method Blank (1)       1         QC Batch 117549 - Method Blank (1)       1	10 10 10 10
QC Batch 117547 - LCS (1)       1         QC Batch 117548 - LCS (1)       1         QC Batch 117549 - LCS (1)       1         QC Batch 117549 - LCS (1)       1	12 12 13 13
QC Batch 117547 - xMS (1)       1         QC Batch 117548 - MS (1)       1         QC Batch 117549 - xMS (1)       1         QC Batch 117549 - xMS (1)       1	14 14 15 15
QC Batch 117547 - CCV (1)       1         QC Batch 117547 - CCV (2)       1         QC Batch 117548 - CCV (1)       1         QC Batch 117548 - CCV (2)       1         QC Batch 117548 - CCV (2)       1         QC Batch 117548 - CCV (1)       1         QC Batch 117548 - CCV (2)       1         QC Batch 117550 - CCV (1)       1	17 17 17 17 17 18
Report Definitions       1         Laboratory Certifications       1         Standard Flags       1	

## **Case Narrative**

Samples for project Tract 19-4" were received by TraceAnalysis, Inc. on 2014-11-25 and assigned to work order 14112524. Samples for work order 14112524 were received intact at a temperature of 5.0 C.

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

		$\mathbf{Prep}$	$\mathbf{Prep}$	$\mathbf{QC}$	Analysis
Test	Method	$\operatorname{Batch}$	Date	Batch	Date
BTEX	S 8021B	99379	2014-11-25 at 15:00	117548	2014-11-26 at 08:36
TPH DRO - NEW	S 8015 D	99378	2014-11-25 at 15:51	117547	2014-11-26 at 08:19
TPH GRO	S 8015 D	99379	2014-11-25 at 15:00	117550	2014-11-26 at 08:39
TPH ORO	S 8015 D	99378	2014-11-25 at $15:51$	117549	2014-11-26 at $08:37$

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

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 14112524 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

## **Analytical Report**

#### Sample: 380706 - SSW- 2@ 18'

Laboratory:MidlandAnalysis:BTEXQC Batch:117548Prep Batch:99379		Date Ana	l Method: lyzed: reparation:	S 8021E 2014-11 2014-11	-26		Prep Method Analyzed By Prepared By:	: AK
				$\mathbf{RL}$				
Parameter	Flag	$\operatorname{Cert}$		$\operatorname{Result}$	Units		Dilution	$\operatorname{RL}$
Benzene	U	1	<	0.0200	mg/Kg		1	0.0200
Toluene	U	1	<	0.0200	mg/Kg		1	0.0200
Ethylbenzene	U	1	<	0.0200	mg/Kg		1	0.0200
Xylene	U	1	<	0.0200	mg/Kg		1	0.0200
Surrogate	Fla	ag Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		-0 -011	1.77	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			1.99	mg/Kg	1	2.00	100	70 - 130

#### Sample: 380706 - SSW- 2@ 18'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - NE 117547 99378	ZW	Date	lytical Metho e Analyzed: ple Preparat:	2014-1	1-26	Prep Me Analyzed Prepared	l By: SC
				1	RL			
Parameter		Flag	$\operatorname{Cert}$	Res	ult	Units	Dilution	RL
DRO		U	1	<5	0.0	mg/Kg	1	50.0
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			130	mg/Kg	1	100	130	70 - 130

#### Sample: 380706 - SSW- 2@ 18'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	117550	Date Analyzed:	2014-11-26	Analyzed By:	$\mathbf{A}\mathbf{K}$
Prep Batch:	99379	Sample Preparation:	2014-11-25	Prepared By:	$\mathbf{A}\mathbf{K}$

Report Date: Nover 2014-178	ıber 26, 20	14 Work Order: 14112524 Tract 19-4"							Page Nu	6 of 20 ce, NM			
Parameter		Flag		Cert		R. Resul			Units		Dilution		$\operatorname{RL}$
GRO		U		1		<4.0	-	n	ng/Kg		1		4.00
Surrogate			Flag (	Cert	Resu	lt U	nits	Dilut	SI	oike .ount	Percent Recover		covery imits
Trifluorotoluene (TF	<b>Γ</b> )				1.8	32 mg	/Kg	1		.00	91	U	- 130
4-Bromofluorobenzer	e (4-BFB)				1.5		/Kg	1	2	.00	76	70	- 130
Sample: 380706 -	SSW- 2@	18'											
Sample: 380706 - Laboratory: Midlar Analysis: TPH 0 QC Batch: 117549 Prep Batch: 99378	ıd )RO	18'	$\mathbf{D}$	ate A	cal Me nalyzec Prepar	1:	S 8015 2014-1 2014-1	1-26			Prep M Analyz Prepar	-	N/A SC SC
Laboratory: Midlar Analysis: TPH ( QC Batch: 11754 Prep Batch: 99378	id DRO	MDL	Da Sa , MQL	ate An ample	nalyzec Prepa PQL	l: ration: RL	2014-1 2014-1	1-26 1-25			Analyz Prepar	ed By: ed By:	SC SC
Laboratory: Midla Analysis: TPH QC Batch: 11754 Prep Batch: 99378 Parameter Fla	id DRO	MDL Result	D Sa MQL Result	ate An ample , ] ; Re	nalyzec Prepa PQL esult	l: ration: RL Result	2014-1 2014-1 Ur	1-26 1-25	Dilution	MDL	Analyz Prepar . MQL	ed By: ed By: PQL	SĆ SC RL
Laboratory: Midlar Analysis: TPH ( QC Batch: 11754 Prep Batch: 99378	id DRO	MDL	D Sa MQL Result	ate An ample , ] ; Re	nalyzec Prepa PQL	l: ration: RL	2014-1 2014-1	1-26 1-25	Dilution 1	MDL 0.00	Analyz Prepar . MQL	ed By: ed By:	SC SC
Laboratory: Midla Analysis: TPH 0 QC Batch: 117549 Prep Batch: 99378 Parameter Fla ORO	id DRO g Cert	MDL Result 0.00	Da Sa MQL Result 0 <50.0	ate An ample 2 Re 0 <	nalyzec Prepar PQL esult 50.0	l: ration: RL Result <50.0	2014-1 2014-1 Ur mg/	1-26 1-25 nits Kg	1 Spike	0.00	Analyz Prepar MQL 50.0 Percent	ed By: ed By: PQL 50.0 Rec	SC SC RL 50.0
Laboratory: Midla Analysis: TPH QC Batch: 11754 Prep Batch: 99378 Parameter Fla	id DRO	MDL Result	D. Sa MQL Result O <50.0	ate An ample , ] ; Re	nalyzec Prepar PQL esult 50.0 Uı	l: ration: RL Result	2014-1 2014-1 Ur	1-26 1-25 nits Kg	1	0.00	Analyz Prepar MQL 50.0	ed By: ed By: PQL 50.0 Rec	SC SC RL 50.0

### Sample: 380707 - ESW- 1@ 18'

Laboratory: Midland									
Analysis: BTEX		A	nalytical	Method:	S 8021B			Prep Method	: S 5035
QC Batch: 117548		$\mathbf{D}$	ate Analy	yzed:	2014-11-	26		Analyzed By:	AK
Prep Batch: 99379		Sa	ample Pre	eparation:	2014-11-	25		Prepared By:	AK
					RL				
Parameter	Flag		Cert	R	esult	Units	I	Dilution	$\mathbf{RL}$
Benzene			1	0	0.165	mg/Kg		2	0.0200
Toluene			1	0	.228	mg/Kg		2	0.0200
Ethylbenzene			1	0	.473	mg/Kg		2	0.0200
Xylene			1	0	.667	mg/Kg		2	0.0200
							Spike	Percent	Recovery
Surrogate		Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)				3.66	mg/Kg	2	4.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr		7.85	mg/Kg	2	4.00	196	70 - 130

Report Date 2014-178	: November	26, 201	14		Work Order: 14112524 Tract 19-4"						0	ber: 7 of 20 Eunice, NM
Sample: 38	0707 - ES	<b>W-</b> 1@	18'									
Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRC 117547 99378	) - NEV	V		Date	lytical Me e Analyzec ple Prepar	l: 20 ration: 20	8015 D )14-11-2 )14-11-2	26		Prep Met Analyzed Prepared	By: SC
D					<b>a</b> .		RL				DU	D.r
Parameter			Flag		$\operatorname{Cert}$		lesult		Units		Dilution	RL
DRO					1		2320	n	ng/Kg		2	50.0
Surrogate		Flag	Cert	F	Result	Units	Dilu	tion	-	ike ount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr			215	mg/Kg				00	215	70 - 130
Sample: 38 Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GR0 117550 99379			Ι	Date Ana Sample F	Preparation	2014-1 n: 2014-1 RL	1-26			Prep Metho Analyzed E Prepared B	sy: AK y: AK
Parameter			Flag		$\operatorname{Cert}$	F	Result		Units		Dilution	RL
GRO					1		548		ng/Kg	Spike	5 Percent	4.00 Recovery
Surrogate				Flag	$\operatorname{Cert}$	Result	Units	Dilu		Amount	Recovery	Limits
Trifluorotolu 4-Bromofluor	· · ·	4-BFB)	Qar	Qsr		$\begin{array}{c} 8.37\\ 22.2\end{array}$	m mg/Kg $ m mg/Kg$	5 5		$\begin{array}{c} 10.0 \\ 10.0 \end{array}$	$\frac{84}{222}$	70 - 130 70 - 130
Sample: 38 Laboratory: Analysis: QC Batch: Prep Batch:	0707 - ES Midland TPH OR( 117549 99378		18'		Date A	cal Methoo nalyzed: Preparatio	2014-	11-26			Prep Met Analyzed Prepared	By: SC

			MDL	MQL	$\operatorname{PQL}$	$\operatorname{RL}$						
Parameter	Flag	$\operatorname{Cert}$	Result	$\operatorname{Result}$	$\operatorname{Result}$	$\operatorname{Result}$	Units	Dilution	MDL	MQL	$\mathbf{PQL}$	RL
ORO			0.00	<100	<100	<100	mg/Kg	2	0.00	50.0	50.0	50.0
				Dee	14	I: ta	Dilation	Spike	_	Percent		overy
Surrogate		Flag	Cert	Res		Units	Dilution	Amoun	t R	ecovery		mits
					000	mm/IZm	9	100		200	70	- 130
n-Tricosane	Qsr	Qsr		2	200 r	ng/Kg	Z	100		200	10	- 130

Report Date: November 26, 2014	Work Order: 14112524	Page Number: 8 of 20
2014-178	Tract 19-4"	Eunice, NM
sample continued		

							Spike	Percent	Recovery
Surrogate		Flag	Cert	$\mathbf{Result}$	Units	Dilution	Amount	Recovery	Limits
n-Triacontane	Qsr	Qsr		169	mg/Kg	2	100	169	37.1 - 162

#### Sample: 380708 - NSW- 2@ 18'

Laboratory: Midland Analysis: BTEX QC Batch: 117548 Prep Batch: 99379		Date Ana	l Method: lyzed: reparation:	S 8021E 2014-11 2014-11	-26		Prep Method Analyzed By: Prepared By:	: AK
				$\mathbf{RL}$				
Parameter	Flag	$\operatorname{Cert}$		$\operatorname{Result}$	Units	;	Dilution	$\operatorname{RL}$
Benzene	U	1	<	0.0200	mg/Kg	5	1	0.0200
Toluene	U	1	<	0.0200	mg/Kg	5	1	0.0200
Ethylbenzene	U	1	<	0.0200	mg/Kg	5	1	0.0200
Xylene	U	1	<	0.0200	mg/Kg	5	1	0.0200
		<i>C</i>				Spike	Percent	Recovery
Surrogate	Fla	g Cert	Result	$\mathbf{Units}$	Dilution	Amount	· · · · ·	Limits
Trifluorotoluene (TFT)			1.90	m mg/Kg	1	2.00	95	70 - 130
4-Bromofluorobenzene (4-BFB)			2.08	$\mathrm{mg/Kg}$	1	2.00	104	70 - 130

#### Sample: 380708 - NSW- 2@ 18'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DR 117547 99378	O - NEV	N	Date	ytical Metho Analyzed: ple Preparati	2014-11	-26	Prep Mer Analyzed Prepared	l By: SC
					I	RL			
Parameter			Flag	$\operatorname{Cert}$	Res	ılt	Units	Dilution	RL
DRO				1	<50	).0	mg/Kg	1	50.0
Surrogate		Flag	Cert	$\operatorname{Result}$	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		130	mg/Kg	1	100	130	70 - 130

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Sample: 380708	- NSW- 2@ 18'									
		Analytical Method:S 8015 DDate Analyzed:2014-11-26Sample Preparation:2014-11-25					Prep Metho Analyzed B Prepared B	y: AK		
					$\mathbf{RL}$					
Parameter	Flag		Cert		Result	Unit	S	Dilution	$\mathbf{RL}$	
GRO	U		1		<4.00	mg/K	g	1	4.00	
Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits	
Trifluorotoluene (7	(FT)			1.84	mg/Kg	1	2.00	92	70 - 130	
4-Bromofluoroben	,			1.60	mg/Kg	1	2.00	80	70 - 130	

### Sample: 380708 - NSW- 2@ 18'

Laboratory:	Midland											
Analysis:	TPH OR	C		Ana	lytical N	lethod:	S 8015 D			Prep M	lethod:	N/A
QC Batch:	117549			$\operatorname{Dat}$	e Analyz	æd:	2014-11-26			Analyz	ed By:	$\mathbf{SC}$
Prep Batch:	99378			$\operatorname{San}$	ple Prer	paration:	2014 - 11 - 25			Prepar	ed By:	$\mathbf{SC}$
			MDL	MQL	PQL	$\mathbf{RL}$						
Parameter	Flag	Cert	Result	Result	Result	Result		Dilution	MDL	MQL	PQL	RL
ORO			0.00	$<\!50.0$	$<\!50.0$	$<\!50.0$	mg/Kg	1	0.00	50.0	50.0	50.0
								Spike	I	Percent	Rec	covery
Surrogate		Flag	Cert	$\operatorname{Res}$	ult	Units	Dilution	Amoun	t R	ecovery	Li	mits
n-Tricosane	Qsr	Qsr		1	31	mg/Kg	1	100		131	70	- 130
n-Triacontan	е			1	120	mg/Kg	1	100		120	37.1	- 162

## Method Blanks

Method Bla	ank (1)	QC Ba	tch: 11754	7							
QC Batch: Prep Batch:	$117547 \\ 99378$				Analyzed: reparation:	2014-11-26 2014-11-25			•	zed By: red By:	
Parameter			Flag		Cert		${ m MDL} { m Result}$		Units		RL
DRO					1		<7.41		mg/Kg		50
Surrogate		Flag	Cert	Result	Units	Dilutio	-	pike 10unt	Percent Recovery		overy mits
n-Tricosane				118	mg/Kg	1	1	00	118	70 -	- 130

### Method Blank (1) QC Batch: 117548

QC Batch: 117548		Date A	nalyzed:	2014-11-2	26		Analyzed	By: AK
Prep Batch: 99379		QC Pre	eparation:	2014-11-2	25		Prepared	By: AK
					MDL			
Parameter	$\operatorname{Flag}$		$\operatorname{Cert}$		Result		Units	RL
Benzene			1		< 0.00533	1	mg/Kg	0.02
Toluene			1		< 0.00645	1	m mg/Kg	0.02
Ethylbenzene			1		< 0.0116	1	m mg/Kg	0.02
Xylene			1		< 0.00874	1	mg/Kg	0.02
						Cmiles	Democrat	Deservery
						$\mathbf{Spike}$	Percent	Recovery
Surrogate	$\operatorname{Flag}$	$\operatorname{Cert}$	$\mathbf{Result}$	$\mathbf{Units}$	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.76	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			2.13	mg/Kg	1	2.00	106	70 - 130

Method Blank	(1)	QC Batch: 117549
--------------	-----	------------------

QC Batch:	117549	Date Analyzed:	2014-11-26	Analyzed By:	$\mathbf{SC}$
Prep Batch:	99378	QC Preparation:	2014-11-25	Prepared By:	$\mathbf{SC}$

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			_		MDL			
Parameter	Flag		Cert		Result		Units	RL
ORO					0.00		mg/Kg	50
					ŝ	Spike	Percent	Recovery
Surrogate Flag	Cert	Result	Units	Diluti	ion A	mount	Recovery	Limits
n-Tricosane		119	mg/Kg	1		100	119	70 - 130
n-Triacontane		111	mg/Kg	1		100	111	37.1 - 162
Method Blank (1) OC B	atch: 117550	1						
Method Blank (1) QC Ba QC Batch: 117550 Prep Batch: 99379	atch: 117550	Date A	nalyzed: eparation:	2014-11-20 2014-11-23	-		Analyze Prepare	v
QC Batch: 117550	atch: 117550	Date A	•		-			v
QC Batch: 117550	atch: 117550 Flag	Date A	•		5			v
QC Batch: 117550 Prep Batch: 99379		Date A	eparation:		5 MDL		Prepare	ed By: AK
QC Batch: 117550 Prep Batch: 99379 Parameter		Date A	eparation: Cert		5 MDL Result	Spike	Prepare	ed By: AK
QC Batch: 117550 Prep Batch: 99379 Parameter GRO	Flag	Date A QC Pro	eparation: Cert		5 MDL Result	Spike	Prepare Units mg/Kg Percent	d By: AK
QC Batch: 117550 Prep Batch: 99379 Parameter		Date A QC Pro	eparation: Cert	2014-11-25	MDL Result <2.32	-	Prepare Units mg/Kg Percent	d By: AK RI 4 Recovery

## Laboratory Control Spikes

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

QC Batch: 117547 Prep Batch: 99378		Date Ana QC Prepa	0	14-11-26 14-11-25			Analyze Prepare	v
		LCS			Spike	Matr	rix	Rec.
Param	$\mathbf{F}$	C Resul	t Units	Dil.	Amount	Resu	ilt Rec.	Limit
DRO		1 264	mg/Kg	; 1	250	<7.4	41 106	70 - 130
Percent recovery is based on t	he spike resu	lt. RPD is ba	sed on the s	pike and s	pike duplic	ate result		
		LCSD		Spike	Matrix		Rec.	$\operatorname{RPD}$
Param	F C	Result U	nits Dil.	Amount	Result	Rec.	Limit R	PD Limit
DRO	1	280 mg	/Kg = 1	250	<7.41	112 7	70 - 130	6 20
Percent recovery is based on t	he spike resu	lt. RPD is ba	sed on the s	pike and s	pike duplic	ate result		
	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	116	118	mg/Kg	1	100	116	118	70 - 130
Laboratory Control Spike	(LCS-1)							
OC Batch: 117548		Date Ana	lvzed· 20	14-11-26			Analyze	Bv: AK

QC Batch:	117548	Date Analyzed:	2014-11-26	Analyzed By:	AK
Prep Batch:	99379	QC Preparation:	2014-11-25	Prepared By:	AK

			LCS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	$\mathbf{C}$	$\mathbf{Result}$	Units	Dil.	Amount	$\mathbf{Result}$	Rec.	Limit
Benzene		1	1.70	mg/Kg	1	2.00	< 0.00533	85	70 - 130
Toluene		1	1.75	m mg/Kg	1	2.00	$<\!0.00645$	88	70 - 130
${f Ethylbenzene}$		1	1.84	$\mathrm{mg/Kg}$	1	2.00	< 0.0116	92	70 - 130
Xylene		1	5.72	mg/Kg	1	6.00	< 0.00874	95	70 - 130

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	$\mathbf{Result}$	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene		1	1.70	mg/Kg	1	2.00	< 0.00533	85	70 - 130	0	20
Toluene		1	1.73	mg/Kg	1	2.00	$<\!0.00645$	86	70 - 130	1	20
Ethylbenzene		1	1.88	mg/Kg	1	2.00	$<\!0.0116$	<b>94</b>	70 - 130	<b>2</b>	20
Xylene		1	5.71	mg/Kg	1	6.00	< 0.00874	95	70 - 130	0	20

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Surrogate		LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)		1.89	1.87	mg/Kg	1	2.00	94	94	70 - 130
4-Bromofluorobenzene (4-BFB)		2.29	2.18	mg/Kg	1	2.00	114	109	70 - 130
Laboratory Control Spike (L0	CS-1)								
QC Batch: 117549 Prep Batch: 99378		Date An QC Prep	alyzed: paration:	2014-11-26 2014-11-25				Analyzed Prepared	v
Summerste	LCS Result	$\begin{array}{c} \mathrm{LCSD} \\ \mathrm{Result} \end{array}$	Units	Dil.	Spik Amou			LCSD Rec.	Rec. Limit
Surrogate n-Tricosane	116		mg/Kg		100			118	70 - 130
n-Triacontane	106	106	mg/Kg		100			106	54.8 - 164
Laboratory Control Spike (L4	CS-1)								
QC Batch: 117550		Date An	alyzed:	2014-11-26	5			Analyzed	By: AK
Prep Batch: 99379		QC Prep	paration:	2014-11-25	5			Prepared	By: AK
		LC	S		Sr	oike I	Matrix		Rec.
Param	F	C Resu	ılt Un	its Dil	-		Result	Rec.	Limit
GRO		1 14.9	9 mg/	/Kg 1	2	0.0	<2.32	74	70 - 130

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	$\mathbf{Result}$	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO		1	15.3	m mg/Kg	1	20.0	<2.32	76	70 - 130	3	20

	LCS	LCSD			$\mathbf{Spike}$	LCS	LCSD	Rec.
Surrogate	$\mathbf{Result}$	$\mathbf{Result}$	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	1.74	1.76	mg/Kg	1	2.00	87	88	70 - 130
4-Bromofluorobenzene (4-BFB)	1.70	1.65	mg/Kg	1	2.00	85	82	70 - 130

## Matrix Spikes

Matrix Spike (xMS-1)	Spiked Sampl	e: 380374						
QC Batch: 117547		Date A	nalyzed: 20	14-11-26			Analyzed	By: SC
Prep Batch: 99378		QC Pre	eparation: 20	14-11-25			Prepared	By: SC
		Μ	S		Spike	Matrix		Rec.
Param	F	C Res		Dil.	Amount	Result	Rec.	Limit
DRO		1 22	20 mg/Kg	1	250	<7.41	88	70 - 130
Percent recovery is based o	n the spike resu	lt. RPD is	based on the s	pike and sp	pike duplica	ate result.		
		MSD		Spike	Matrix	R	ec.	RPD
Param	$\mathbf{F} = \mathbf{C}$	Result	Units Dil.	Amount	Result	Rec. Li	mit RP	D Limit
DRO	1	235 г	ng/Kg 1	250	<7.41	94 70 -	- 130 7	20
Percent recovery is based o	-		based on the s	pike and s	_		MCD	Rec.
	MS	MSD			Spike	MS	MSD	
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Surrogate n-Tricosane			Units mg/Kg	Dil.	-			
	Result	Result 121 : 380429 Date A	mg/Kg nalyzed: 20		Amount	Rec.	Rec.	Limit 70 - 130 By: AK
n-Tricosane Matrix Spike (MS-1) QC Batch: 117548	Result 123	Result 121 : 380429 Date A	mg/Kg nalyzed: 20 eparation: 20	1	Amount	Rec.	Rec. 121 Analyzed	Limit 70 - 130 By: AK
n-Tricosane Matrix Spike (MS-1) QC Batch: 117548	Result 123	Result 121 : 380429 Date A QC Pre MS C Resu	mg/Kg nalyzed: 20 eparation: 20 S llt Units	1	Amount 100 Spike Amount	Rec. 123 Matrix Result	Rec. 121 Analyzed Prepared Rec.	Limit 70 - 130 By: AK By: AK Rec. Limit
n-Tricosane Matrix Spike (MS-1) QC Batch: 117548 Prep Batch: 99379 Param Benzene	Result 123 Spiked Sample	Result 121 : 380429 Date A QC Pre MS C Resu	mg/Kg nalyzed: 20 eparation: 20 S <u>alt Units</u> 1 mg/Kg	1 14-11-26 14-11-25 Dil. 1	Amount 100 Spike Amount 2.00	Rec. 123 Matrix Result <0.00533	Rec. 121 Analyzed Prepared Rec. 86	Limit 70 - 130 By: AK By: AK Rec. Limit 70 - 130
n-Tricosane Matrix Spike (MS-1) QC Batch: 117548 Prep Batch: 99379 Param Benzene Toluene	Result 123 Spiked Sample	Result 121 : 380429 Date A QC Pre MS C Resu 1 1.7 1 1.7	mg/Kg nalyzed: 20 eparation: 20 S ilt Units 1 mg/Kg 7 mg/Kg	1 14-11-26 14-11-25 Dil. 1 1	Amount 100 Spike Amount 2.00 2.00	Rec. 123 Matrix Result <0.00533 <0.00645	Rec. 121 Analyzed Prepared Rec. 86 88	Limit 70 - 130 By: AK By: AK Rec. Limit 70 - 130 70 - 130
n-Tricosane Matrix Spike (MS-1) QC Batch: 117548 Prep Batch: 99379 Param Benzene	Result 123 Spiked Sample	Result 121 : 380429 Date A QC Pre MS C Resu	mg/Kg nalyzed: 20 eparation: 20 s ilt Units 1 mg/Kg 7 mg/Kg 2 mg/Kg	1 14-11-26 14-11-25 Dil. 1	Amount 100 Spike Amount 2.00	Rec. 123 Matrix Result <0.00533	Rec. 121 Analyzed Prepared Rec. 86 88 96	Limit 70 - 130 By: AK By: AK Rec. Limit 70 - 130

			MSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	$\operatorname{Result}$	Units	Dil.	Amount	Result	Rec.	Limit	$\mathbf{RPD}$	Limit
Benzene		1	1.65	mg/Kg	1	2.00	< 0.00533	82	70 - 130	4	20
Toluene		1	1.71	mg/Kg	1	2.00	$<\!0.00645$	86	70 - 130	3	20
Ethylbenzene		1	1.82	mg/Kg	1	2.00	< 0.0116	91	70 - 130	5	20
Xylene		1	5.60	mg/Kg	1	6.00	< 0.00874	93	70 - 130	3	20

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Sumogoto			MS Resi			nits I	Spi Dil. Amo		MS Rec.	MSD Rec.	Rec. Limit
Surrogate Trifluorotoluene (TFT)			1.8			$\frac{1}{g/Kg}$	$\frac{1}{1}$ $\frac{1}{2}$		93		70 - 130
4-Bromofluorobenzene (4-B	(FB)		2.1			g/Kg	1 2		108		70 - 130
Matrix Spike (xMS-1)	Spiked Sa	ample	: 380374								
QC Batch: 117549			Date	Analyzed	l: 2014	4-11-26			Aı	nalyzed E	y: SC
Prep Batch: 99378				Preparatio		4-11-25				epared B	-
-											
				MS			Spike	N	Iatrix		Rec.
Param		$\mathbf{F}$	C	Result	Units	Dil.	Amoun		Result	Rec.	Limit
ORO				0.00	mg/Kg		250		0	0	
Percent recovery is based o	n the spike	result	t BPD i				ike duplica	te resu	1t.	-	
I creent recovery is based o	n une spike	icour		is based o	in one op.	_		00 1004			
_	_	~	MSD			Spike	Matrix	T.	Rec.		RPD
Param	F	C	Result	Units	Dil.	Amount		Rec.	Limi		Limit
ORO			0.00	mg/Kg		250	0	0		0	
Percent recovery is based o	n the spike	result	t. RPD i	is based o	n the spi	ike and sp	oike duplica	te resu	lt.		
		MS	MS	SD			Spike	Μ	S N	ASD	Rec.
Surrogate	F	Result	Res		Units	Dil.	Amount	$\mathbf{Re}$		Rec.	Limit
n-Tricosane		123	12	1 n	ng/Kg	1	100	12	3	121	70 - 130
n-Triacontane		114	11	2 n	ng/Kg	1	100	11	4	112	10 - 258
Matrix Spike (MS-1) QC Batch: 117550 Prep Batch: 99379	Spiked Sa	mple:	Date	Analyzed		4-11-26 4-11-25				alyzed B epared B	
Param		F	C F	MS lesult	Units	Dil.	Spike Amount		atrix sult	Rec.	Rec. Limit
GRO				15.4	mg/Kg	1	20.0		2.32	77	70 - 130
Percent recovery is based of	on the spike	resul	t. RPD	is based o		ike and s	oike duplica	te resu	ılt.		
is babble of	opine				- P						
_	_	~	MSD		D.1	Spike	Matrix	D	Rec.	707	RPD
Param	F	С	Result	Units	Dil.	Amount	Result	Rec.	Limit		
GRO		1	15.3	mg/Kg	1	20.0	<2.32	76	70 - 13	80 1	20

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	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	$\operatorname{Result}$	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Triffuorotoluene (TFT)	1.73	1.70	mg/Kg	1	2	86	85	70 - 130
4-Bromofluorobenzene (4-BFB)	1.71	1.70	mg/Kg	1	2	86	85	70 - 130

# **Calibration Standards**

#### Standard (CCV-1)

QC Batch:	117547		Date	Analyzed:	2014-11-26		Analy	zed By: SC
				CCVs	CCVs	$\mathrm{CCVs}$	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	$\mathbf{Units}$	Conc.	Conc.	Recovery	$\mathbf{Limits}$	Analyzed
DRO		1	mg/Kg	250	252	101	80 - 120	2014-11-26

#### Standard (CCV-2)

QC Batch:	117547		Date	Analyzed:	2014-11-26		Analy	vzed By: SC
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	$\mathbf{Date}$
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		1	m mg/Kg	250	267	107	80 - 120	2014-11-26

#### Standard (CCV-1)

QC Batch: 117548			Date An	alyzed: 20	Analyzed By: AK				
				CCVs	CCVs	CCVs	Percent		
				True	Found	Percent	Recovery	Date	
Param	Flag	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	$\mathbf{Limits}$	Analyzed	
Benzene		1	mg/kg	0.100	0.0961	96	80 - 120	2014-11-26	
Toluene		1	m mg/kg	0.100	0.0970	97	80 - 120	2014 - 11 - 26	
Ethylbenzene		1	m mg/kg	0.100	0.0973	97	80 - 120	2014 - 11 - 26	
Xylene		1	m mg/kg	0.300	0.293	98	80 - 120	2014-11-26	

#### Standard (CCV-2)

QC Batch: 117548

Date Analyzed: 2014-11-26

Analyzed By: AK

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Param	Elec	Cont	Un:ta	CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
	Flag	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		1	mg/kg	0.100	0.0963	96	80 - 120	2014 - 11 - 26
Toluene		1	mg/kg	0.100	0.0963	96	80 - 120	2014-11-26
${f Ethylbenzene}$		1	mg/kg	0.100	0.0962	96	80 - 120	2014-11-26
Xylene		1	mg/kg	0.300	0.287	96	80 - 120	2014-11-26

### Standard (CCV-1)

QC Batch:	117550		Date	Analyzed:	2014-11-26	Analyzed By: AK				
				CCVs	CCVs	CCVs	Percent			
				$\operatorname{True}$	$\mathbf{Found}$	$\mathbf{Percent}$	Recovery	Date		
$\mathbf{Param}$	$\mathbf{Flag}$	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed		
GRO		1	mg/Kg	1.00	0.826	83	80 - 120	2014-11-26		

## Standard (CCV-2)

QC Batch:	117550		Date	Analyzed:	2014-11-26		Analyzed By: A				
				CCVs True	$\operatorname{CCVs}$ Found	$\operatorname{CCVs}$	Percent Recovery	Date			
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed			
GRO		1	mg/Kg	1.00	0.856	86	80 - 120	2014-11-26			

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# Appendix

## **Report Definitions**

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

## Laboratory Certifications

	Certifying	Certification	Laboratory
С	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-14-8	Midland

## **Standard Flags**

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

## Attachments

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The scanned attachments will follow this page.

Please note, each attachment may consist of more than one page.

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AB FIELD CODE	# CONTAINERS	Volume / Amount	WATER	SOIL	AIR		Ę			NaOH	ų			14(	TIME	MTBE 8021/	BTEX (021)6	TPH OIS GRO / DROY TVHC	PAH 8270 / 625	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010/200.7 TCL P Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260 / 624	GC/MS Semi. Vol. 8270 / 625	PUBS 0002 / 000 Dectrides 2081 / 608	BOD, TSS, pH	Moisture Contei	Na, Ca, Mg, K, TDS, EC				Turn Around Time if different from standard
3070655W-Z@18' 707 ESW-1@18'		40		X						<b>&gt;</b>			u	23	130	9 7		X															X 
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ubmittal of samples constitutes agreement to T	erms a	and Co	nditic	ons l	isted o	on re	verse	sid	e of	C. C	<b>). C</b> .		 		OB CO	R	o arrier			20	<u>p</u>		Checi Limits	k H Sp Are I	ecia	( Rej	porting	9					



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915-585-3443

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WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

## Analytical and Quality Control Report

Curt Stanley Nova Safety & Environmental 2057 Commerce St. Midland, TX, 79703

Report Date: March 16, 2015

FAX 806+794+1298

FAX 915+585-4944

FAX 432-689-6313

Work Order: 15031108

Project Location:Eunice, NMProject Name:Tract 19-4"Project Number:2014-178SRS #:2014-178

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

			$\mathbf{Date}$	$\operatorname{Time}$	$\operatorname{Date}$
Sample	Description	$\operatorname{Matrix}$	$\mathbf{Taken}$	Taken	Received
388487	A-1 @ 8'	soil	2015-03-09	13:00	2015-03-11
388488	A-2 @ 5'	soil	2015-03-09	13:30	2015-03-11

#### Notes

• Work Order 15031108: changed to 24hrs per Curt Stanley on 3/13

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

This report consists of a total of 21 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Blain Leptinich 7

Dr. Blair Leftwich, Director James Taylor, Assistant Director Brian Pellam, Operations Manager

# **Report Contents**

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# **Case Narrative**

Samples for project Tract 19-4" were received by TraceAnalysis, Inc. on 2015-03-11 and assigned to work order 15031108. Samples for work order 15031108 were received intact at a temperature of -0.9 C.

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

		Prep	Prep	$\mathbf{QC}$	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	101490	2015-03-13 at 08:31	120006	2015-03-16 at 11:04
TPH DRO - NEW	S 8015 D	101518	2015-03-14 at 17:55	120000	2015-03-16 at 09:23
TPH GRO	S 8015 D	101490	2015-03-13 at $08:31$	120007	2015-03-16 at 11:07
TPH ORO	S 8015 D	101518	2015-03-14 at 17:55	120010	2015-03-16 at 11:28

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

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 15031108 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

# **Analytical Report**

#### Sample: 388487 - A-1 @ 8'

Laboratory:MidlandAnalysis:BTEXQC Batch:120006Prep Batch:101490		Date Ana	l Method: lyzed: reparation:	S 8021E 2015-03 2015-03	-16		Prep Method Analyzed By: Prepared By:	AK
				$\mathbf{RL}$				
Parameter	Flag	$\operatorname{Cert}$		$\operatorname{Result}$	Units	3	Dilution	$\operatorname{RL}$
Benzene	U	1	<	0.0200	mg/Kg	g	1	0.0200
Toluene	U	1	<	0.0200	m mg/Kg	g	1	0.0200
Ethylbenzene	U	1	<	0.0200	mg/Kg	g	1	0.0200
Xylene	U	1	<	0.0200	mg/Kg	S	1	0.0200
Surrogate	Fla	ag Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.84	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			2.05	mg/Kg	1	2.00	102	70 - 130

#### Sample: 388487 - A-1 @ 8'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO - N 120000 101518	EW	Date	ytical Metho Analyzed: ple Preparat	2015-0	3-16	Prep Me Analyzed Prepared	l By: SC
					RL			
Parameter		$\operatorname{Flag}$	Cert	$\operatorname{Res}$	$\operatorname{sult}$	Units	Dilution	$\operatorname{RL}$
DRO		$\mathbf{Qr}, \mathbf{Qs}, \mathbf{U}$	1	<5	0.0	mg/Kg	1	50.0
						Spike	Percent	Recovery
Surrogate	$\operatorname{Flag}$	$\operatorname{Cert}$	$\operatorname{Result}$	Units	Dilution	$\operatorname{Amount}$	Recovery	Limits
n-Tricosane			114	mg/Kg	1	100	114	70 - 130

#### Sample: 388487 - A-1 @ 8'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	120007	Date Analyzed:	2015-03-16	Analyzed By:	AK
Prep Batch:	101490	Sample Preparation:	2015-03-13	Prepared By:	AK

Report Date: 2014-178	March 16,	2015		Work Order:15031108Page NumberTract 19-4"Eu							6 of 21 e, NM			
Parameter			Flag	C	ert		R Resu			Units		Dilution		RL
GRO			U		1		<4.0	0	1	mg/Kg		1		4.00
Surrogate			F	lag Ce	ert	Resu	lt U	nits	Dilu		Spike mount	Percent Recover		covery imits
Trifluorotoluer	ne (TFT)			<u> </u>		1.8	88 mg	g/Kg	1		2.00	94	70	- 130
4-Bromofluoro	benzene (4-	-BFB)				1.9	)0 mg	g/Kg	1		2.00	95	70	- 130
Analysis: QC Batch:	Midland TPH ORO 120010 101518			Da	te Aı	cal Me nalyzec Prepa		S 801 2015- 2015-	03-16			Prep M Analyz Prepar		N/A SC SC
Parameter	Flag	Cert	MDL Result	MQL Result		PQL esult	RL Result	U	nits	Dilution	MDI	L MQL	PQL	$\operatorname{RL}$
ORO			0.00	$<\!50.0$	<	50.0	$<\!50.0$	mg	/Kg	1	0.00	) 50.0	50.0	50.0
Surrogate		Flag	Cert	Res	ult		nits	Dilu	tion	Spik Amou	ınt	Percent Recovery	Li	covery mits
n-Tricosane n-Triacontane					.14 9.0		g/Kg g/Kg	1 1	_	100 100		114 99		- 130   - 162

#### Sample: 388488 - A-2 @ 5'

Laboratory:MidlandAnalysis:BTEXQC Batch:120006Prep Batch:101490		Analytical Date Anal Sample Pr	lyzed:	2015-03	-16		Prep Method Analyzed By: Prepared By:	AK
				$\mathbf{RL}$				
Parameter	Flag	Cert		Result	Unit	s	Dilution	$\mathbf{RL}$
Benzene 1	U	1	<	< 0.0400	mg/K	g	2	0.0200
Toluene	U	1	<	< 0.0400	mg/K	g	2	0.0200
Ethylbenzene	U	1	<	< 0.0400	mg/K	g	2	0.0200
Xylene	U	1	<	< 0.0400	mg/K	g	2	0.0200
Surrogate	Fla	g Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	1 10	5 0010	3.56	mg/Kg	2	4.00	89	70 - 130
4-Bromofluorobenzene (4-BFB)			3.91	mg/Kg	2	4.00	98	70 - 130

Report Date: March 16, 2015 2014-178		Work Order: 15031108 Tract 19-4"						Page Numbe Eu	er: 7 of 21 inice, NM
Sample: 388488 - A-2 @ 5'									
Laboratory: Midland									
Analysis: TPH DRO - NE	W			lytical M	)	Prep Metho	,		
QC Batch: 120000				e Analyze		2015-03-		Analyzed B	•
Prep Batch: 101518			Sam	ple Prepa	aration:	2015-03-1	14	Prepared B	y: SC
					$\mathbf{RL}$				
Parameter	Flag		Cert		Result		Units	Dilution	$\mathbf{RL}$
DRO	Qr,Qs,U		1		<50.0	1	ng/Kg	1	50.0
							Spike	Percent	Recovery
Surrogate Flag	Cert	•				Recovery	Limits		
n-Tricosane			115 mg/Kg 1 100		115	70 - 130			
Sample: 388488 - A-2 @ 5' Laboratory: Midland Analysis: TPH GRO QC Batch: 120007 Prep Batch: 101490			Date An	al Methoo alyzed: Preparatio	2015-	15 D -03-16 -03-13		Prep Method Analyzed By: Prepared By:	AK
					$\mathbf{RL}$				
Parameter	Flag		Cert		Result		Units	Dilution	RL
GRO <sup>2</sup>	U		1		<8.00	1	ng/Kg	2	4.00
							Spike	Percent	Recovery
Surrogate		Flag	Cert	$\mathbf{Result}$	Units	Dilut	ion Amount	Recovery	Limits
Trifluorotoluene (TFT)				3.80	mg/Kg		4.00	95	70 - 130
4-Bromofluorobenzene (4-BFB)				3.64	mg/Kg	2	4.00	91	70 - 130

#### Sample: 388488 - A-2 @ 5'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH OR 120010 101518	C		Analytical Method: Date Analyzed: Sample Preparation:		S 8015 D 2015-03-16 2015-03-14			Prep M Analyz Prepar	e	N/A SC SC	
			MDL	MQL	PQL	$\mathbf{RL}$						
Parameter	Flag	Cert	Result	Result	Result	Result	Units	Dilution	MDL	MQL	PQL	$\mathbf{RL}$
ORO			0.00	$<\!50.0$	$<\!50.0$	<50.0	mg/Kg	1	0.00	50.0	50.0	50.0
Surrogate		Flag	Cert	Resu	ılt U	Jnits	Dilution	Spike Amoun	-	Percent ecovery		covery imits
n-Tricosane		0		1	17 m	g/Kg	1	100		117	70	- 130
							cor	tinued				

Report Date: March 2014-178	16, 2015		V	Work Order: Tract 19		Page Number: Euni			
sample continued						0 11	Deset	D	
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits	
n-Triacontane			97.6	mg/Kg	1	100	98	37.1 - 162	

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2014-178	Tract 19-4"	Eunice, NM

# Method Blanks

Method Bla	ank (1)	QC Ba	atch: 1200	000					
QC Batch: Prep Batch:	$\begin{array}{c} 120000\\ 101518 \end{array}$				Analyzed: reparation:	2015-03-16 2015-03-14			ed By: SC ed By: SC
							MDL		
Parameter			Fla	g	$\operatorname{Cert}$		Result	Units	$\mathbf{RL}$
DRO					1		<7.41	mg/Kg	50
							Spike	Percent	Recovery
Surrogate		Flag	$\operatorname{Cert}$	Result	Units	Dilutior	n Amount	Recovery	Limits
n-Tricosane			W4	108	mg/Kg	1	100	108	70 - 130

#### Method Blank (1) QC Batch: 120006

QC Batch: 120006	Date Analyzed:			2015-03-16			Analyzed	By: AK
Prep Batch: 101490		QC Pre	eparation:	2015-03-1	13		Prepared	By: AK
					MDL			
Parameter	Flag		Cert		Result		Units	$\mathbf{RL}$
Benzene			1		< 0.00533	1	ng/Kg	0.02
Toluene			1		$<\!0.00645$	1	m mg/Kg	0.02
$\mathbf{Ethylbenzene}$			1		< 0.0116	1	m mg/Kg	0.02
Xylene			1		< 0.00874	1	mg/Kg	0.02
						Spike	Percent	Recovery
Surrogate	Flag	$\operatorname{Cert}$	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.82	mg/Kg	1	2.00	91	70 - 130
4-Bromofluorobenzene (4-BFB)			1.93	mg/Kg	1	2.00	96	70 - 130

Method Blank (1)	QC Batch: $120007$
------------------	--------------------

QC Batch:	120007	Date Analyzed:	2015-03-16	Analyzed By:	AK
Prep Batch:	101490	QC Preparation:	2015-03-13	Prepared By:	AK

Report Date: March 16. 2014-178		Work Order Tract			Page Number: 10 of 21 Eunice, NM					
Parameter		Flag		Cert		$egin{array}{c} \mathrm{MDL} \ \mathrm{Result} \end{array}$		Units		$\mathbf{RL}$
GRO				1		<2.32		mg/Kg		4
Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent		overy nits
Trifluorotoluene (TFT)				1.97	mg/Kg	1	2.00	98	70 -	130
4-Bromofluorobenzene (4	4-BFB)			1.81	mg/Kg	1	2.00	90	70 -	130
Method Blank (1) QC Batch: 120010 Prep Batch: 101518	QC Ba	tch: 120010	Date A	Analyzed: eparation:	2015-03- 2015-03-	14		Analyze Prepare	•	SC SC
Parameter		Flor		Cont		MDL Degult		Units		$\mathbf{RL}$
ORO		Flag		Cert		Result 0.00		mg/Kg		$\frac{\text{RL}}{50}$
	Flore	Cont	Degult	Υĭ	D!1		Spike	Percent	Reco	overy
Surrogate n-Tricosane	Flag	Cert	Result 109	Units mg/Kg	Dilu		$\frac{100}{100}$	Recovery 109	Lin 70 -	$\frac{1115}{130}$
n-Triacontane		····	92.5	mg/Kg			100	92		- 162

## Laboratory Control Spikes

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

QC Batch: 120000 Prep Batch: 101518		Date Analy QC Prepar		5-03-16 5-03-14			Analyz Prepar	•
Ttep Daten. 101010		QU I Topar	201 Zol	0 00-14			Tiopar	cu by. Se
		LCS			Spike	Mat	trix	Rec.
Param	$\mathbf{F}$	C Result	Units	Dil.	Amount	Res	sult Rec.	Limit
DRO	3	1 89.1	mg/Kg	1	83.3	<7.	.41 107	70 - 130
Percent recovery is based on	the spike resul	t. RPD is base	d on the sp	ike and sp	ike duplica	te resul	t.	
		LCSD		Spike	Matrix		Rec.	RPD
Param	F C	Result Un	its Dil.	Amount	Result	Rec.		RPD Limit
DRO	4 1	74.2 mg/	Kg 1	83.3	<7.41	89	70 - 130	18 20
Percent recovery is based on	the spike resul			oike and sp	ike duplica	te resul	t.	
			1	1	-	LCS		Rec.
Second and a	$\begin{array}{c} \mathrm{LCS} \\ \mathrm{Result} \end{array}$	LCSD Begult	Units	Dil.	Spike Amount	Rec.		Limit
Surrogate		Result		<u> </u>	33.3	<u>99</u>	116	70 - 130
n-Tricosane <sup>5</sup>	32.9	38.6	mg/Kg	1	JJ.J	99	110	10 - 150
Laboratory Control Spike	e (LCS-1)							

QC Batch:	120006	Date Analyzed:	2015-03-16	Analyzed By:	$\mathbf{A}\mathbf{K}$
Prep Batch:	101490	QC Preparation:	2015-03-13	Prepared By:	$\mathbf{A}\mathbf{K}$

Param	Б	C	$\begin{array}{c} \mathrm{LCS} \\ \mathrm{Result} \end{array}$	Units	Dil.	Spike Amount	${f Matrix} {f Result}$	Rec.	${ m Rec.}\ { m Limit}$
Faram	<b></b>	0	nesuit		Dii.				
Benzene		1	1.99	mg/Kg	1	2.00	< 0.00533	100	70 - 130
Toluene		1	1.95	mg/Kg	1	2.00	$<\!0.00645$	<b>9</b> 8	70 - 130
Ethylbenzene		1	1.96	mg/Kg	1	2.00	$<\!0.0116$	<b>9</b> 8	70 - 130
Xylene		1	5.93	mg/Kg	1	6.00	< 0.00874	99	70 - 130

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	$\operatorname{Amount}$	$\mathbf{Result}$	Rec.	Limit	RPD	Limit
Benzene		1	1.90	mg/Kg	1	2.00	< 0.00533	95	70 - 130	5	20
Toluene		1	1.86	mg/Kg	1	2.00	$<\!0.00645$	93	70 - 130	5	20
Ethylbenzene		1	1.90	mg/Kg	<b>1</b>	2.00	$<\!0.0116$	95	70 - 130	3	20
Xylene		1	5.77	mg/Kg	1	6.00	< 0.00874	96	70 - 130	3	20

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

Report Date: March 16, 2015 2014-178	Work Order: 15031108Page Number: 12 of 2Tract 19-4"Eunice, N										
Surrogate		LCS Result	LCSD Result	t Un		Dil.	Spike Amount	R	ec. R	CSD .ec.	Rec. Limit
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)		$\begin{array}{c} 1.76 \\ 1.92 \end{array}$	$1.82 \\ 1.92$	mg/ mg/		1 1	$2.00 \\ 2.00$				'0 - 130 '0 - 130
		1.02	1.02		115	1	2.00		<u>, , , , , , , , , , , , , , , , , , , </u>	<u>, , , , , , , , , , , , , , , , , , , </u>	0 100
Laboratory Control Spike (LCS-	1)										
QC Batch: 120007		Date A:	nalyzed:	2015-	03-16				Anal	yzed By	: AK
Prep Batch: 101490			paration:		03-13					ared By	
Param GRO	F	LC C Res	ult (	Units ig/Kg	Dil.		Spike mount 20.0	Mat Res	ult R	lec.	Rec. Limit 70 - 130
											0 - 150
Percent recovery is based on the spik	e resu	It. RPD is	based on	the spir	te and s	ріке	duplicate	resun			
		LCSD			Spike		latrix		Rec.		RPD
Param F	C		Units		Amount			ec.	Limit	RPD	Limit
GRO	1		ng/Kg	1	20.0				70 - 130	10	20
Percent recovery is based on the spik	e resu	It. RPD is	based on	the spil	ke and s	pike	duplicate	result	t.		
Surrogate		LCS Result	LCSI Resul	t Un		Dil.	Spike Amount	t R	lec. F	CSD Rec.	Rec. Limit
Trifluorotoluene (TFT)		2.00	1.96	01	$/\mathrm{Kg}$	1	2.00				70 - 130
4-Bromofluorobenzene (4-BFB)		1.84	1.86	mg	/Kg	1	2.00		92	93	70 - 130
Laboratory Control Spike (LCS QC Batch: 120010 Prep Batch: 101518	-1)		nalyzed: eparation		-03-16 -03-14					ulyzed B pared B	
			LCS	<b>TT 1</b>	D.1		Spike		latrix	D	Rec.
Param OPO 6	F	17. AU	esult 0.00	Units mg/Kg	Dil 1	•	Amount 83.3	R	esult 0	$\frac{\text{Rec.}}{0}$	Limit -
ORO						niko		rocul	-	0	_
Percent recovery is based on the spil	e resu	III. RPD IS	Dased on	the spi	ke and s	ріке	auplicate	resul			
		LCSD		-	Spike		Matrix		Rec.		RPD
Param	F C		Units	Dil.	Amou		Result	Rec.	Limit	RPD	Limit
ORO 7		0.00	mg/Kg	1	83.3		0	0	-	0	

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

Report Date: March 16, 2015 2014-178		Wo	ork Order: 1 Tract 19-		Page Number: 13 of 21 Eunice, NM			
	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	$\mathbf{Result}$	$\mathbf{Result}$	$\mathbf{Units}$	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane <sup>8</sup>	33.3	38.8	mg/Kg	1	33.3	100	116	70 - 130
n-Triacontane <sup>9</sup>	20.7	25.2	mg/Kg	1	33.3	62	76	54.8 - 164

## Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 388660

QC Batch:	120000	Date Analyzed:	2015-03-16	Analyzed By:	$\mathbf{SC}$
Prep Batch:	101518	QC Preparation:	2015-03-14	Prepared By:	$\mathbf{SC}$

			MS			Spike	Matrix		Rec.
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
DRO		1	277	mg/Kg	1	250	<7.41	111	70 - 130

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

				MSD			Spike	Matrix		Rec.		RPD
Param		$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO	10 <sub>Qr,Qs</sub>	Qr,Qs	1	<7.41	mg/Kg	1	250	<7.41	0	70 - 130	200	$\overline{20}$

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

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Tricosane	104	109	mg/Kg	1	100	104	109	70 - 130

#### Matrix Spike (MS-1) Spiked Sample: 388487

QC Batch:	120006	Date Analyzed:	2015-03-16	Analyzed By:	$\mathbf{A}\mathbf{K}$
Prep Batch:	101490	QC Preparation:	2015-03-13	Prepared By:	$\mathbf{A}\mathbf{K}$

			MS			$\mathbf{Spike}$	Matrix		Rec.
Param	$\mathbf{F}$	$\mathbf{C}$	$\mathbf{Result}$	Units	Dil.	Amount	Result	Rec.	$\mathbf{Limit}$
Benzene		1	1.73	mg/Kg	1	2.00	< 0.00533	86	70 - 130
Toluene		1	1.77	m mg/Kg	1	2.00	$<\!0.00645$	88	70 - 130
Ethylbenzene		1	1.88	$\mathrm{mg/Kg}$	1	2.00	< 0.0116	94	70 - 130
Xylene		1	5.74	mg/Kg	1	6.00	< 0.00874	96	70 - 130

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

			MSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	$\mathbf{Result}$	Units	Dil.	Amount	$\mathbf{Result}$	Rec.	Limit	RPD	Limit
Benzene		1	1.69	mg/Kg	1	2.00	< 0.00533	84	70 - 130	2	20
Toluene		1	1.73	m mg/Kg	1	2.00	$<\!0.00645$	86	70 - 130	2	20
Ethylbenzene		1	1.85	mg/Kg	1	2.00	< 0.0116	92	70 - 130	<b>2</b>	20
Xylene		1	5.67	mg/Kg	1	6.00	< 0.00874	94	70 - 130	1	20

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

Report Date: March 16, 2015 2014-178		Work Order: 15031108 Tract 19-4"							Page N		15 of 21 nice, NM
		MS					Spike		IS I	MSD	Rec.
Surrogate		Resu			Jnits	Dil.	Amoun			Rec.	Limit
Trifluorotoluene (TFT)		1.73			lg/Kg	1	2		36	87	70 - 130
4-Bromofluorobenzene (4-BFB)		1.98	3 1.9	<u>9 II</u>	lg/Kg	1	2		)9	100	70 - 130
Matrix Spike (MS-1) Spiked S	Sample:	388487									
QC Batch: 120007		Date	Analyzed	201	5-03-16				Ana	lyzed B	v: AK
Prep Batch: 101490			reparation		5-03-13					pared B	
		1	MS			S	pike	Matri	ix		Rec.
Param	$\mathbf{F}$	C Re	esult	Units	Dil.	Ar	nount	Resu	lt I	Rec.	Limit
GRO		1 1	4.6	mg/Kg	1		20.0	<2.3	2	73	70 - 130
Percent recovery is based on the spi	ke resu	lt. RPD is	s based or	ı the sp	ike and	spike o	duplicate	result.			
		MSD			Spike	Ma	atrix		Rec.		RPD
Param	F C	Result	Units	Dil.	Amount		sult Re	ec.	Limit	RPD	Limit
GRO	1	15.7	mg/Kg	1	20.0	<	2.32 7	8 7	0 - 130	7	20
Percent recovery is based on the spi	ke resu	lt. RPD is	s based or	1 the sp	ike and	spike o	duplicate	result.			
		MS	MS	D			Spike	λ	IS	MSD	Rec.
Surrogate		Resu			Units	Dil.	Amoun			Rec.	Limit
Trifluorotoluene (TFT)		1.86	3 1.8	7 m	ig/Kg	1	2		93	94	70 - 130
4-Bromofluorobenzene (4-BFB)		1.94	1.9		ng/Kg	1	2	9	97	98	70 - 130
Matrix Spike (xMS-1) Spiked QC Batch: 120010 Prep Batch: 101518	Sampl		Analyzed reparatio		5-0 <b>3-16</b> 5-03-14					alyzed E epared E	•
Param	F	C F	MS Result	Units	Di		Spike Amount		trix sult	Rec.	Rec. Limit
ORO			0.00	mg/Kg			250		0	0	-
Percent recovery is based on the spi	ke resu	lt. RPD is	s based or	n the sp	ike and	spike	duplicate	result.			
		MSD			Spik	<u>م</u> ۱	Matrix		Rec.		RPD
Param	F C	Result	Units	Dil.	Amou			Rec.	Limit	RPD	Limit
		TUCOUTO	0 11100	L	u	- v - 1				1011	

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

Report Date: March 16, 2015 2014-178		Woi	rk Order: 15 Tract 19-4	P	Page Number: 16 of 21 Eunice, NM			
Surrogate	${ m MS} { m Result}$	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	104	110	mg/Kg	1	100	104	110	70 - 130
n-Triacontane	89.3	94.0	mg/Kg	1	100	89	94	10 - 258

# **Calibration Standards**

#### Standard (CCV-1)

QC Batch:	120000		Dat	te Analyzed:	2015-03-16		yzed By: SC	
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Fla	ag Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		1	mg/Kg	250	292	117	80 - 120	2015-03-16

#### Standard (CCV-2)

QC Batch:	120000	Date Analyzed:			2015-03-16		Analy	Analyzed By: SC		
				CCVs	CCVs	CCVs	Percent			
				True	Found	Percent	Recovery	Date		
Param	$\mathbf{Flag}$	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed		
DRO		1	mg/Kg	250	266	106	80 - 120	2015-03-16		

#### Standard (CCV-1)

QC Batch: 120006			Date An	alyzed: 20	Analyzed By: AK			
				CCVs	$\mathrm{CCVs}$	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		1	mg/kg	0.100	0.0998	100	80 - 120	2015-03-16
Toluene		1	mg/kg	0.100	0.0971	97	80 - 120	2015 - 03 - 16
Ethylbenzene		1	mg/kg	0.100	0.0976	98	80 - 120	2015 - 03 - 16
Xylene		1	mg/kg	0.300	0.294	98	80 - 120	2015-03-16

#### Standard (CCV-2)

QC Batch: 120006

Date Analyzed: 2015-03-16

Analyzed By: AK

Report Date: Marc 2014-178	Date: March 16, 2015       Work Order: 15031108         78       Tract 19-4"						Page Number: 18 of 21 Eunice, NM			
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date		
Param	$\mathbf{Flag}$	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed		
Benzene		1	mg/kg	0.100	0.101	101	80 - 120	2015-03-16		
Toluene		1	mg/kg	0.100	0.0985	98	80 - 120	2015-03-16		
Ethylbenzene		1	mg/kg	0.100	0.0973	97	80 - 120	2015-03-16		
Xylene		1	mg/kg	0.300	0.297	99	80 - 120	2015-03-16		

## Standard (CCV-1)

QC Batch:	120007	Date Analyzed:			2015-03-16		Analy	zed By: AK
				$\mathbf{CCVs}$	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		1	mg/Kg	1.00	1.04	104	80 - 120	2015-03-16

### Standard (CCV-2)

QC Batch:	120007	Date Analyzed:			2015-03-16		Analyzed By: AK		
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date	
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
GRO		1	m mg/Kg	1.00	0.976	98	80 - 120	2015-03-16	

### Standard (CCV-1)

QC Batch:	120010	Date Analyzed:			2015-03-16		Analy	Analyzed By: SC		
				CCVs True	$\operatorname{CCVs}$ Found	CCVs Percent	Percent Recovery	Date		
Param	$\operatorname{Flag}$	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed		
ORO			mg/Kg	250	0.00	0	-	2015-03-16		

### Standard (CCV-2)

QC Batch: 120010

Report Date: 2014-178	March 16, 20	15			r: 15031108 19-4"		Page Nu	mber: 19 of 21 Eunice, NM
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
$\mathbf{Param}$	Flag	$\operatorname{Cert}$	$\mathbf{Units}$	Conc.	Conc.	Recovery	Limits	Analyzed
ORO			mg/Kg	250	0.00	0	-	2015-03-16

Work Order: 15031108 Tract 19-4"

Page Number: 20 of 21 Eunice, NM

# Appendix

## **Report Definitions**

NameDefinitionMDLMethod Detection LimitMQLMinimum Quantitation LimitSDLSample Detection Limit

## Laboratory Certifications

	Certifying	Certification	Laboratory
С	Authority	Number	Location
_	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100 - 86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-14-8	Midland

## Standard Flags

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

## **Result Comments**

Work Order: 15031108 Tract 19-4" Page Number: 21 of 21 Eunice, NM

- 1 Dilution due to surfactants.
- 2 Dilution due to surfactants.
- 3 Analyst spiked at 1/3.
- 4 Analyst spiked at 1/3.
- 5 Analyst spiked at 1/3.
- 6 Analyst spike at 1/3.
- 7 Analyst spike at 1/3.
- 8 Analyst spike at 1/3.
- 9 Analyst spike at 1/3.
- 10 Analyst failed to spike duplicate.

## Attachments

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

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Project Location: Include state)					ample ignatu		$I_{\mathcal{J}}$	Į.		X	Per	1	$\sim$	** >** +*		/ 82608 / (	8260B / 6	418.1 / I X1005 / UKU / I VHC 8270C / 625	Ba Cd Cr Pb Se Hg	BacdCr				624	8270C/625	80%	3		NO <sub>2</sub> -N, P(	), EC ded to C35)		Around Time if different from	
		IERS	ount		MATI	RIX		, ,			HOD		)	SAM	PLING	8021B / 602	1,6021	1 X 1000	1 10	Ag As	S	olautes des		8260B		000 181A/6		ntent	03-N	K, TUN		Time i	
LAB # ( LAB USE ONLY )	FIELD CODE	# CONTAINERS	Volume/Amount	WATER	AIR	SLUDGE		HCL	L CO	NaOH	ICE	NONE		DATE	TIME	MTBE 8021E	· • ·	PAH 8270C / 625	Total Metals /	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B / 624	GCMS Semi. Vol.	Pesticides 8081A / 608	BOD, TSS, pH	Moisture Content	Cl, F, SO4, N	Na, Ca, Mg, K, TDS, EC TPH(8015M\(Extended to		Turn Around	Hold
388487	A-1 @ 8'	1	4 oz	X	_				T		X			3/4	1	7	х							$\Box$			T	$\Box$		X	$\Box$		
1 488	A-2 @ 5'	1	4 oz	×	<u>.</u>		-		_	_	×			3/9	1330		x	+	╞		+	_	_	$\square$	_	╇	╞	$\square$	$\downarrow$	×	$\square$		
				┼╌┼╴	+-		-+	+	+	+	╋					$\left  - \right $		+	┢	$\left  - \right $	+	-	-	┝╌┥		╀	╀	┼┤	+	+	⊢		_
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ubmittal of sample	es constitutes agreement to Terms and Conditio	ns														Can	rier #_	Ċ	ä	22	Y -	- 4											

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Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

## Analytical and Quality Control Report

Curt Stanley Nova Safety & Environmental 2057 Commerce St. Midland, TX, 79703

Report Date: March 16, 2015

FAX 915+585-4944

FAX 432-689-6313

Work Order: 15031311

915-585-3443

432-689-6301

972-242-7750

Project Location:Eunice, NMProject Name:Tract 19-4"Project Number:2014-178SRS #:2014-178

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

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
388668	ESW-1A @ 18'	soil	2015-03-13	00:00	2015-03-13

#### Notes

• Work Order 15031311: call w/ verbals

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

This report consists of a total of 19 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Blain Left rich

Dr. Blair Leftwich, Director James Taylor, Assistant Director Brian Pellam, Operations Manager

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QC Batch 120000 - MS (1)       1         QC Batch 120006 - MS (1)       1         QC Batch 120007 - MS (1)       1	12 12 13 13
QC Batch 120000 - CCV (1)       1         QC Batch 120000 - CCV (2)       1         QC Batch 120006 - CCV (1)       1         QC Batch 120006 - CCV (2)       1         QC Batch 120007 - CCV (1)       1         QC Batch 120007 - CCV (2)       1         QC Batch 120007 - CCV (1)       1         QC Batch 120007 - CCV (1)       1         QC Batch 120007 - CCV (1)       1	15 15 15 15 16 16
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# **Case Narrative**

Samples for project Tract 19-4" were received by TraceAnalysis, Inc. on 2015-03-13 and assigned to work order 15031311. Samples for work order 15031311 were received intact at a temperature of 1.2 C.

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

		$\operatorname{Prep}$	$\mathbf{Prep}$	$\mathbf{QC}$	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	101490	2015-03-13 at 08:31	120006	2015-03-16 at 11:04
TPH DRO - NEW	S 8015 D	101518	2015-03-14 at 17:55	120000	2015-03-16 at 09:23
TPH GRO	S 8015 D	101490	2015-03-13 at 08:31	120007	2015-03-16 at 11:07
TPH ORO	S 8015 D	101518	2015-03-14 at 17:55	120010	2015-03-16 at 11:28

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

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 15031311 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

# Analytical Report

#### Sample: 388668 - ESW-1A @ 18'

Laboratory:MidlandAnalysis:BTEXQC Batch:120006Prep Batch:101490		Date	e Analy	Method: vzed: eparation:	S 8021B 2015-03- 2015-03-	16		Prep Method Analyzed By Prepared By:	AK
					$\mathbf{RL}$				
Parameter	$\mathbf{Flag}$		$\operatorname{Cert}$	]	$\operatorname{Result}$	Units		Dilution	$\mathbf{RL}$
Benzene 1	U		1	<	< 0.100	mg/Kg		5	0.0200
Toluene			1		0.204	mg/Kg		5	0.0200
Ethylbenzene			1		0.574	mg/Kg		5	0.0200
Xylene			1		1.39	mg/Kg		5	0.0200
Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		Tiag	Cert	8.92			10.0	<u></u>	
					mg/Kg	5		00	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr		13.2	mg/Kg	5	10.0	132	70 - 130

#### Sample: 388668 - ESW-1A @ 18'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DR 120000 101518	RO - NEV	N	Date	ytical Metho Analyzed: ple Preparati	2015-03	3-16	Prep Me Analyzec Prepared	By: SC
					F	RL			
Parameter			Flag	Cert	Rest	ılt	Units	Dilution	$\operatorname{RL}$
DRO			Qr,Qs	1	24	40	mg/Kg	5	50.0
Surrogate		Flag	Cert	$\operatorname{Result}$	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		230	mg/Kg	5	100	230	70 - 130

#### Sample: 388668 - ESW-1A @ 18'

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	120007	Date Analyzed:	2015-03-16	Analyzed By:	$\mathbf{A}\mathbf{K}$
Prep Batch:	101490	Sample Preparation:	2015-03-13	Prepared By:	AK

Report Date: 2014-178	March 16	, 2015			Wo	ork Ord Trac	er: 1 t 19-		.1			Page Nu		6 of 19 æ, NM
Parameter			Flag	C	Cert		R Resu			Units		Dilution		$\operatorname{RL}$
GRO			I lug		1		28			mg/Kg		5		4.00
Surrogate			]	Flag (	Cert	Result	τ	Jnits			Spike mount	Percent Recover		covery imits
Trifluorotolue	ene (TFT)					9.60		g/Kg		5	10.0	96		- 130
4-Bromofluor	obenzene (	4-BFB)	Qsr	Qsr		21.3	m	g/Kg		5	10.0	213	70	- 130
Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH ORC 120010 101518	)		Da	te Ana	l Metho lyzed: reparati		S 8013 2015-0 2015-0	)3-16			Prep M Analyz Prepare	ed By:	N/A SC SC
Parameter	Flag	Cert	MDL Result	MQL Result	PG Resu	-	RL esult	U	nits	Dilution	MDI	L MQL	$\mathbf{PQL}$	RL
ORO	0	-	0.00	<250	<2		<250	mg/	′Kg	5	0.0		50.0	50.0
Surrogate		Flag	Cert	; Re	sult	Unit	s	Dilu		Spik Amou		Percent Recovery		covery imits
n-Tricosane n-Triacontane	Qar Ə	Qsr			598 99.1	mg/K mg/K	-	۲. ۲.		100 100		598 99		- 130 I - 162

# Method Blanks

Method Blank (1)		QC Ba	atch: 12000	)					
<b>v</b> -	120000				Analyzed:	2015-03-16			ed By: SC
Prep Batch:	101518			QC Pi	QC Preparation: 2015-03-14 Prepared		ed By: SC		
							MDL		
Parameter			Flag		Cert	]	Result	Units	$\mathbf{RL}$
DRO					1		<7.41	mg/Kg	50
							Spike	Percent	Recovery
Surrogate		Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane				108	mg/Kg	1	100	108	70 - 130

#### Method Blank (1) QC Batch: 120006

QC Batch: 120006	Date Analyzed:		2015-03-16			Analyzed	By: AK	
Prep Batch: 101490		QC Pre	eparation:	2015-03-2	13	Prepared By:		By: AK
					MDI			
					MDL			
Parameter	Flag		$\operatorname{Cert}$		Result		Units	RL
Benzene			1		< 0.00533	1	ng/Kg	0.02
Toluene			1		$<\!0.00645$	1	ng/Kg	0.02
Ethylbenzene			1		< 0.0116	1	ng/Kg	0.02
Xylene			1		< 0.00874	mg/Kg		0.02
						Spike	Percent	Recovery
	<b>D</b>	<b>a</b> .		<b>TT</b> •.		. 1		U
Surrogate	Flag	$\operatorname{Cert}$	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.82	mg/Kg	1	2.00	91	70 - 130
4-Bromofluorobenzene (4-BFB)			1.93	mg/Kg	1	2.00	96	70 - 130

Method Blank	(1)	QC Batch:	120007
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QC Batch:	120007	Date Analyzed:	2015-03-16	Analyzed By:	AK
Prep Batch:	101490	QC Preparation:	2015-03-13	Prepared By:	AK

Report Date: March 16, 2015 2014-178				Work Orde Tract	r: 150313 19-4"		Page Number: 8 of 19 Eunice, NM			
Parameter		Flag		Cert		MDL Result		Units		RL
GRO				1		<2.32		mg/Kg		4
Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery		overy nits
Trifluorotoluene (TFT)	(FT)			1.97	mg/Kg	1	2.00	98		- 130
4-Bromofluorobenzene (	4-BFB)			1.81	mg/Kg	1	2.00	90	70 -	- 130
Method Blank (1) QC Batch: 120010 Prep Batch: 101518	QC Ba	tch: 120010	Date A	Analyzed: reparation:	2015-03- 2015-03-	14		Analyze Prepare		SC SC
QC Batch: 120010 Prep Batch: 101518	QC Ba		Date A	reparation:		MDL		Prepare		$\mathbf{SC}$
QC Batch: 120010 Prep Batch: 101518 Parameter	QC Ba	tch: 120010 Flag	Date A	-		14 MDL Result		Prepare		SC RL
QC Batch: 120010 Prep Batch: 101518	QC Ba		Date A	reparation:		MDL		Prepare		$\mathbf{SC}$
QC Batch: 120010 Prep Batch: 101518 Parameter	QC Ba		Date A	reparation:		14 MDL Result	Spike	Prepare	ed By:	SC RL
QC Batch: 120010 Prep Batch: 101518 Parameter	QC Ba		Date A	Cert Units	2015-03-	14 MDL Result 0.00	Spike	Prepare Units mg/Kg	ed By: Reco Lir	SC RL 50 overy nits
QC Batch: 120010 Prep Batch: 101518 Parameter ORO		Flag	Date A QC Pr	Cert	2015-03-	14 MDL Result 0.00	-	Prepare Units mg/Kg Percent	ed By: Reco Lir 70 -	SC RL 50

# Laboratory Control Spikes

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

QC Batch: 120000 Prep Batch: 101518		Date Analy QC Prepara		5-03-16 5-03-14			v	zed By: SC red By: SC
Derrore	F	LCS C Result	Units	Dil	Spike Amount		trix sult Ree	Rec. c. Limit
Param DRO	2	00.1	mg/Kg	Dil.	83.3	-	$\frac{100}{1.41}$	
								10-100
Percent recovery is based on	the spike resul	t. RPD is base	d on the sp	oike and sp	oike duplica	ate resul	lt.	
		LCSD		Spike	Matrix		Rec.	RPD
Param	F C	Result Uni	ts Dil.	Amount	Result	Rec.	$\operatorname{Limit}$	RPD Limit
DRO	3 1	74.2 mg/	Kg 1	83.3	<7.41	89	70 - 130	18 20
Percent recovery is based on	the spike result	t. RPD is base	d on the sr	oike and sr	oike duplica	ate resul	lt.	
I create recovery to subce on	the spine resul			ine and of	me aupnot			
	LCS	LCSD			Spike	LCS	5 LCSE	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	. Rec.	Limit
n-Tricosane <sup>4</sup>	32.9	38.6	mg/Kg	1	33.3	99	116	70 - 130
Laboratory Control Spike	e (LCS-1)							

QC Batch:	120006	Date Analyzed:	2015-03-16	Analyzed By:	AK
Prep Batch:	101490	QC Preparation:	2015-03-13	Prepared By:	AK

			LCS			Spike	Matrix		Rec.
Param	F	С	Result	Units	Dil.	Amount	Result	Rec.	Limit
Benzene		1	1.99	mg/Kg	1	2.00	< 0.00533	100	70 - 130
Toluene		1	1.95	mg/Kg	1	2.00	$<\!0.00645$	98	70 - 130
Ethylbenzene		1	1.96	mg/Kg	1	2.00	< 0.0116	98	70 - 130
Xylene		1	5.93	mg/Kg	1	6.00	< 0.00874	99	70 - 130

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene		1	1.90	mg/Kg	1	2.00	< 0.00533	95	70 - 130	5	20
Toluene		1	1.86	mg/Kg	1	2.00	$<\!0.00645$	93	70 - 130	5	20
Ethylbenzene		1	1.90	mg/Kg	1	2.00	< 0.0116	95	70 - 130	3	20
Xylene		1	5.77	mg/Kg	1	6.00	< 0.00874	96	70 - 130	3	20

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

Report Date: March 16, 2015 2014-178			W	Vork Orde Tract	I	Page Number: 10 of 19 Eunice, NM					
Surrogate			LCS Result	LCSD Result	Units	Dil		it Rec	. Re	SD ec.	Rec. Limit
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)			1.76 1.92	1.82 $1.92$	mg/Kg mg/Kg	1 1	2.00 2.00	88 96			70 - 130 70 - 130
Laboratory Control Spike (I	JCS-1)										
QC Batch: 120007 Prep Batch: 101490			Date An QC Prej	alyzed: paration:	2015-03-1 2015-03-1					yzed By ared By	
Param	$\mathbf{F}$	C	LC C Rest		nits D	il.	Spike Amount	Matriz Result		ec.	Rec. Limit
GRO		1	18.	4 mg	g/Kg	1	20.0	<2.32	9	2	70 - 130
Percent recovery is based on the	spike re	sult.	RPD is b	based on t	he spike a	nd spik	æ duplicate	e result.			
		L	CSD		Spi	ke	Matrix	]	Rec.		RPD
Param	F C	R	esult V	Units 1	Dil. Amo	$\operatorname{unt}$	Result R	lec. I	Limit	RPD	$\operatorname{Limit}$
GRO	1		20.3 n	ng/Kg	1 20.	0	<2.32 1	.02 70	- 130	10	20
			DDD · I		ho sniko a	nd spik	æ duplicate	e result.			
Percent recovery is based on the	spike re	sult.	RPD is b	ased on u	inc spine a		r				
Percent recovery is based on the	spike re	sult.			ле зріке а	ia spii	_		S LC	CSD	Rec.
Percent recovery is based on the Surrogate	spike re	sult.	RPD is b LCS Result	LCSD Result	-	Dil	Spike	$\mathbf{LC}$		CSD ec.	Rec. Limit
Surrogate Trifluorotoluene (TFT)	spike re	sult.	LCS Result 2.00	LCSD Result 1.96	Units mg/Kg	Dil	Spike . Amoun 2.00	LC nt Rec 100	$\frac{\mathbf{R}}{\mathbf{R}}$	ec. 98	Limit 70 - 130
Surrogate	spike re	sult.	LCS Result	$\begin{array}{c} \mathrm{LCSD} \\ \mathrm{Result} \end{array}$	Units	Dil	Spike . Amoun	LC nt Rec	$\frac{\mathbf{R}}{\mathbf{R}}$	ec. 98	$\operatorname{Limit}$
Surrogate Trifluorotoluene (TFT)		sult.	LCS Result 2.00 1.84 Date An	LCSD Result 1.96 1.86	Units mg/Kg mg/Kg 2015-03-	Dil 1 1	Spike . Amoun 2.00	LC nt Rec 100	Ana	ec. 98	Limit 70 - 130 70 - 130 y: SC
Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Laboratory Control Spike (I QC Batch: 120010			LCS Result 2.00 1.84 Date An QC Pre	LCSD Result 1.96 1.86	Units mg/Kg mg/Kg 2015-03-	Dil 1 1	Spike . Amoun 2.00	LC nt Rec 100	e. R ) 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ec. 98 93 lyzed B	Limit 70 - 130 70 - 130 y: SC
Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Laboratory Control Spike (I QC Batch: 120010 Prep Batch: 101518			LCS Result 2.00 1.84 Date An QC Pre	LCSD Result 1.96 1.86 nalyzed: paration: CS esult	Units mg/Kg mg/Kg 2015-03- 2015-03-	Dil 1 1 1 1 1 1 1 1 1 1 1 1	Spike . Amoun 2.00 2.00 Spike	LCat Rec 100 92	2. R ) <u>§</u> <u>§</u> Ana Prep crix ult	ec. 18 93 lyzed B bared B	Limit 70 - 130 70 - 130 y: SC y: SC Rec.
Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Laboratory Control Spike (I QC Batch: 120010 Prep Batch: 101518 Param	2CS-1)		LCS Result 2.00 1.84 Date An QC Pre L C Re 0	LCSD Result 1.96 1.86 nalyzed: paration: CS ssult .00 1	Units mg/Kg mg/Kg 2015-03- 2015-03- Units mg/Kg	Dil 1 16 14 Dil. 1	Spike . Amoun 2.00 2.00 Spike Amount 83.3	LC at Rec 100 92 Mat Res	2. R ) <u>§</u> <u>§</u> Ana Prep crix ult	ec. 98 93 lyzed B bared B Rec.	Limit 70 - 130 70 - 130 y: SC y: SC Rec.
Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Laboratory Control Spike (I QC Batch: 120010 Prep Batch: 101518 Param ORO	2CS-1)	sult.	LCS Result 2.00 1.84 Date An QC Pre L C Re 0 RPD is b	LCSD Result 1.96 1.86 nalyzed: paration: CS ssult .00 1	Units mg/Kg mg/Kg 2015-03- 2015-03- Units mg/Kg the spike a	Dil 1 16 14 Dil. 1 nd spil	Spike Amount 2.00 2.00 Spike Amount 83.3 ke duplicate	LC at Rec 100 92 Mat Res	Ana. Prep	ec. 98 93 lyzed B bared B Rec.	Limit 70 - 130 70 - 130 y: SC y: SC y: SC Rec. Limit -
Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Laboratory Control Spike (I QC Batch: 120010 Prep Batch: 101518 Param ORO	2CS-1)	sult.	LCS Result 2.00 1.84 Date An QC Pre L C Re 0	LCSD Result 1.96 1.86 nalyzed: paration: CS ssult .00 1	Units mg/Kg mg/Kg 2015-03- 2015-03- Units mg/Kg the spike a	Dil 1 16 14 Dil. 1	Spike . Amoun 2.00 2.00 Spike Amount 83.3	LC at Rec 100 92 Mat Res C e result.	2. R ) <u>§</u> <u>§</u> Ana Prep crix ult	ec. 98 93 lyzed B bared B Rec.	Limit 70 - 130 70 - 130 y: SC y: SC Rec.

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

Report Date: March 16, 2015 2014-178		Wo		Page Number: 11 of 19 Eunice, NM				
	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	$\mathbf{Limit}$
n-Tricosane <sup>7</sup>	33.3	38.8	mg/Kg	1	33.3	100	116	70 - 130
n-Triacontane <sup>8</sup>	20.7	25.2	mg/Kg	1	33.3	62	76	54.8 - 164

# Matrix Spikes

QC Batch: 120000 Prep Batch: 101518			Date Anal QC Prepa		.5-03-16 .5-03-14			•	zed By red By	
D	P	C	MS	I In it a	Dil	Spike Amount	Matr Resu		_	Rec. Limit
Param DRO	F	1	Result 277	Units mg/Kg	1	250	<7.4			$\frac{11111}{0 - 130}$
·	l en the guile requ								<u> </u>	0 - 100
Percent recovery is based	i on the spike resu	п. к	PD is bas	ea on the sp	nke and sj	pike dupiicat	e result	•		
			MSD		$\operatorname{Spik}$	e Matrix		Rec.		RPD
Param	F	$\mathbf{C}$	Result	Units D			Rec.	Limit	RPD	Limi
DRO	9 Qr,Qs Qr,Q	s 1	< 7.41	mg/Kg	L 250	< 7.41	0	70 - 130	200	20
Percent recovery is based	d on the spike resu	lt. R	PD is bas	ed on the sp	ike and s	pike duplicat	e result			
	MS		MSD			Cnilco	MS	MSE	<b>`</b>	Rec.
	MS		MSD			Spike				
Cumpage to		1	Dogult	Unita	Dil	Amount	P oo	Poo		
	Result 104	]	Result 109	Units mg/Kg	Dil. 1	Amount 100	Rec. 104	Rec. 109		Limit 70 - 130
n-Tricosane	Result		109							
Surrogate n-Tricosane Matrix Spike (MS-1)	Result 104	: 388	109 487	mg/Kg	1			109		70 - 13
n-Tricosane Matrix Spike (MS-1) QC Batch: 120006	Result 104	: 388	109 487 Date Anal	mg/Kg yzed: 201	1 5-03-16			109 Analy	zed By	70 - 130 7: AK
n-Tricosane Matrix Spike (MS-1)	Result 104	: 388	109 487	mg/Kg yzed: 201	1			109 Analy		70 - 139 7: AK
n-Tricosane Matrix Spike (MS-1) QC Batch: 120006	Result 104	: 388	109 487 Date Anal QC Prepa	mg/Kg yzed: 201	1 5-03-16	100	104	109 Analy Prepa	zed By	70 - 130 7: AK 7: AK
n-Tricosane Matrix Spike (MS-1) QC Batch: 120006 Prep Batch: 101490	Result 104 Spiked Sample	: 388 ] (	109 487 Date Anal QC Prepa MS	mg/Kg yzed: 201 ration: 201	1 5-03-16 5-03-13	100 Spike	104 Matr	109 Analy Prepa ix	zed By red By	70 - 130 7: AK 7: AK 8: AK Rec.
n-Tricosane Matrix Spike (MS-1) QC Batch: 120006 Prep Batch: 101490 Param	Result 104	: 388	109 487 Date Anal QC Prepa MS Result	mg/Kg yzed: 201 ration: 201 Units	1 5-03-16	100	104	109 Analy Prepa ix It Re	zed By red By	70 - 13 7: AK 7: AK
n-Tricosane Matrix Spike (MS-1) QC Batch: 120006	Result 104 Spiked Sample	: 388 1 0 C	109 487 Date Anal QC Prepa MS	mg/Kg yzed: 201 ration: 201 Units mg/Kg	1 5-03-16 5-03-13 Dil.	100 Spike Amount	104 Matr Resu	109 Analy Prepa ix It Re 533 80	zed By red By cc.	70 - 13 7: AK 1: AK Rec. Limit
n-Tricosane Matrix Spike (MS-1) QC Batch: 120006 Prep Batch: 101490 Param Benzene	Result 104 Spiked Sample	: 388	109 487 Date Anal QC Prepa MS Result 1.73	mg/Kg yzed: 201 ration: 201 Units	1 5-03-16 5-03-13 Dil. 1	100 Spike Amount 2.00	104 Matr Resu <0.003	109 Analy Prepa ix lt Re 533 80 645 85	zed By red By c. 6 8	70 - 13 7: AK 7: AK 8: AK Rec. Limit 70 - 13

			MSD			Spike	Matrix		Rec.		RPD
Param	$\mathbf{F}$	$\mathbf{C}$	$\mathbf{Result}$	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene		1	1.69	mg/Kg	1	2.00	< 0.00533	84	70 - 130	2	20
Toluene		1	1.73	mg/Kg	1	2.00	$<\!0.00645$	86	70 - 130	2	20
Ethylbenzene		1	1.85	mg/Kg	1	2.00	< 0.0116	92	70 - 130	<b>2</b>	20
Xylene		1	5.67	mg/Kg	1	6.00	< 0.00874	94	70 - 130	1	20

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

Report Date: March 16, 2015 2014-178		Work Order: 15031311 Tract 19-4"						Page	Page Number: 13 of 19 Eunice, NM			
Surrogate			MS tesult	MSD Result		Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit	
Trifluorotoluene (TFT)			1.73	1.74		ng/Kg	1	2	86		70 - 130	
4-Bromofluorobenzene (4-BFB)			1.98	1.99		ng/Kg	1	2	99	100	70 - 130	
Matrix Spike (MS-1) Spiked S	amp	le: 38848	57									
QC Batch: 120007 Prep Batch: 101490				alyzed: aration:		5-03-16 5-03-13				nalyzed B repared B	•	
Ttep Baten. 101490		Q	Jilep	ara61011.	201	0-00-10			1	repared D	y. AR	
			MS				S	spike	Matrix		Rec.	
Param	$\mathbf{F}$	$\mathbf{C}$	Resul	lt U	Inits	Dil.		nount	$\mathbf{Result}$	Rec.	$\mathbf{Limit}$	
GRO		1	14.6	m	g/Kg	1		20.0	<2.32	73	70 - 130	
Percent recovery is based on the spil	ke res	sult. RP	D is ba	ased on <sup>*</sup>	the sp	ike and	spike (	duplicate i	result.			
		MSI	)			Spike	M	atrix	Rec		RPD	
Param H	FC			nits	Dil.	Amount		sult Re				
GRO	1			g/Kg	1	20.0		2.32 78			20	
Percent recovery is based on the spil	ke re	sult. RP	D is ba	ased on	the sp	ike and	spike	duplicate	result.			
· ·			MS	MSD	_		-	Spike	MS	MSD	Rec.	
Surrogate		F	Result	Resul		Units	Dil.	Amount		Rec.	Limit	
Trifluorotoluene (TFT)			1.86	1.87		ng/Kg	1	2	93	94	70 - 130	
4-Bromofluorobenzene (4-BFB)			1.94	1.95	n	ng/Kg	1	2	97	98	70 - 130	
	Sam	ple: 388 D	660 ate An	1.95 alyzed: paration:	201	ng/Kg 5-03-16 5-03-14	1	2	ł	98 Analyzed I Prepared E	3y: SC	
Matrix Spike (xMS-1) Spiked QC Batch: 120010 Prep Batch: 101518		ple: 388 D Q	660 ate An C Prep Mi	alyzed: paration: S	201	.5-03-16 .5-03-14		Spike	ł	Analyzed I	3y: SC	
Matrix Spike (xMS-1) Spiked QC Batch: 120010	Sam F	ple: 388 D	660 ate An C Prep	alyzed: paration: S ult	201 : 201	.5-03-16 .5-03-14 Di			J I Matrix	Analyzed I Prepared E	By: SC By: SC Rec.	
Matrix Spike (xMS-1) Spiked QC Batch: 120010 Prep Batch: 101518 Param ORO	F	ple: 388 D Q C	660 ate An C Prep M: Res 0.0	alyzed: paration: S ult001	201 : 201 Units mg/K	5-03-16 5-03-14 g 1	l.	Spike Amount 250	A I Matrix Result 0	Analyzed I Prepared F Rec.	3y: SC 3y: SC Rec. Limit	
Matrix Spike (xMS-1) Spiked QC Batch: 120010 Prep Batch: 101518 Param	F	ple: 388 D Q C sult. RF	660 ate An C Prep M: <u>Res</u> 0.0 PD is ba	alyzed: paration: S ult001	201 : 201 Units mg/K	5-03-16 5-03-14 <u>pile</u> 1 bike and	l. spike	Spike Amount 250 duplicate	A I Matrix Result 0 result.	Analyzed F Prepared F Rec. 0	By: SC By: SC Rec. Limit	
Matrix Spike (xMS-1)       Spiked         QC Batch:       120010         Prep Batch:       101518         Param       ORO         Percent recovery is based on the spi	F ke re	ple: 388 D Q C	660 ate An C Prep M: Res: 0.0 PD is b: 5D	alyzed: paration: S ult001	201 : 201 Units mg/K	5-03-16 5-03-14 g 1	l. spike e ]	Spike Amount 250 duplicate Matrix	A I Matrix Result 0	Analyzed I Prepared E Rec. 0 c.	By: SC By: SC Rec. Limit - RPD	

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

Report Date: March 16, 2015 2014-178		Wor	Р	Page Number: 14 of 19 Eunice, NM					
-	MS	MSD			Spike	MS	MSD	Rec.	
Surrogate	$\mathbf{Result}$	Result	Units	Dil.	Amount	Rec.	$\operatorname{Rec.}$	$\operatorname{Limit}$	
n-Tricosane	104 110 mg/Kg 1 100						110	70 - 130	
n-Triacontane	89.3 94.0 mg/Kg 1 100						94	10 - 258	

# **Calibration Standards**

Standard (CCV-1)

QC Batch:	120000	Date Analyzed:			2015-03-16		Analy	zed By: SC
				CCVs	CCVs	CCVs	Percent	
				True	Found	$\mathbf{Percent}$	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		1	mg/Kg	250	292	117	80 - 120	2015-03-16

## Standard (CCV-2)

QC Batch:	120000		Date	Analyzed:	2015-03-16	Analy	zed By: SC	
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	$\operatorname{Flag}$	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		1	m mg/Kg	250	266	106	80 - 120	2015-03-16

## Standard (CCV-1)

QC Batch: 120006			Date An	alyzed: 20	Analyzed By: Ak						
				$\operatorname{CCVs}$	$\mathrm{CCVs}$	$\operatorname{CCVs}$	Percent				
				True	Found	Percent	Recovery	Date			
Param	Flag	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed			
Benzene		1	mg/kg	0.100	0.0998	100	80 - 120	2015-03-16			
Toluene		1	mg/kg	0.100	0.0971	97	80 - 120	2015-03-16			
Ethylbenzene		1	mg/kg	0.100	0.0976	98	80 - 120	2015-03-16			
Xylene		1	mg/kg	0.300	0.294	98	80 - 120	2015-03-16			

#### Standard (CCV-2)

QC Batch: 120006

Date Analyzed: 2015-03-16

Analyzed By: AK

Report Date: Marc 2014-178	ch 16, 2015		W	ork Order: Tract 19			Page Nu	Page Number: 16 of 19 Eunice, NM					
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date					
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed					
Benzene		1	mg/kg	0.100	0.101	101	80 - 120	2015-03-16					
Toluene		1	mg/kg	0.100	0.0985	98	80 - 120	2015-03-16					
Ethylbenzene		1	mg/kg	0.100	0.0973	97	80 - 120	2015-03-16					
Xylene		1	mg/kg	0.300	0.297	99	80 - 120	2015-03-16					

## Standard (CCV-1)

QC Batch:	120007		Date	Analyzed:	2015-03-16		Analy	zed By: AK
				CCVs True	$\operatorname{CCVs}$ Found	CCVs Percent	Percent Recovery	Date
Param	$\mathbf{Flag}$	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		1	mg/Kg	1.00	1.04	104	80 - 120	2015-03-16

## Standard (CCV-2)

QC Batch:	120007		Date	Analyzed:	2015-03-16		Analy	zed By: AK
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		1	mg/Kg	1.00	0.976	98	80 - 120	2015-03-16

## Standard (CCV-1)

QC Batch:	120010		Date	Analyzed:	2015-03-16		Analy	zed By: SC
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	$\mathbf{Flag}$	$\operatorname{Cert}$	$\mathbf{Units}$	Conc.	Conc.	Recovery	Limits	Analyzed
ORO			mg/Kg	250	0.00	0	-	2015-03-16

## Standard (CCV-2)

QC Batch: 120010

Report Date: 2014-178	March 16, 20	15			r: 15031311 19-4"	Page Number: 17 of 19 Eunice, NM					
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date			
Param	$\mathbf{Flag}$	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed			
ORO			mg/Kg	250	0.00	0	_	2015-03-16			

Work Order: 15031311 Tract 19-4"

Page Number: 18 of 19 Eunice, NM

# Appendix

## **Report Definitions**

NameDefinitionMDLMethod Detection LimitMQLMinimum Quantitation LimitSDLSample Detection Limit

## Laboratory Certifications

	Certifying	Certification	Laboratory
С	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-14-8	Midland

# **Standard Flags**

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

# **Result Comments**

Work Order: 15031311 Tract 19-4" Page Number: 19 of 19 Eunice, NM

- 1 Dilution due to hydrocarbons.
- 2 Analyst spiked at 1/3.
- 3 Analyst spiked at 1/3.
- 4 Analyst spiked at 1/3.
- 5 Analyst spike at 1/3.
- 6 Analyst spike at 1/3.
- 7 Analyst spike at 1/3.
- 8 Analyst spike at 1/3.
- 9 Analyst failed to spike duplicate.

## Attachments

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

B Order ID	#																									F	Pag	е			0	f_	
	TraceAnalysis, email: lab@traceanalysis.c		IC.		L	1 Aber abbeel Tel (90 Fax (90 1 (80)	(,Texa 6) 79- 06) 79	15 794 4-129 4-129	124 6 6		50	Midler Tel (4	<b>43</b> 2)	ireet, Suil exas 797 689-6301 689-631	<b>83</b> 1		20	Tel	Suns (915) (915)	xas 7 585-3	<b>9022</b> 443	Ē			250 <sup>.</sup> Can	1 May rolltor	es Rd n, Tex	Testin d., Ste kas 71 2-775	100 5006			5	
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LAB # LAB USE ONLY	FIELD CODE	# CONTAINERS	Volume/Amount	WATER	AR	SLUDGE		HUL	H.SO.	NaOH	CE I	NONE		DATE	TIME	MTBE 8021B / 602 /		PAH 8270C / 625	Total Metals A	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Pacticites	RCI	GCMS Vol. 8260B / 624	GCMS Semi. 1	PCB's 8062 / 606	Pesticides 8081A / 608 ROD TSS nH	Moisture Content	CI, F, SO4, NO <sub>2-N</sub> , NO <sub>2-</sub> N, PO4-P, Alkalinity	<b>Mar Ca, Mg, K</b> ,	TPH 8015M (Extended to C35)	Tum Around T	рюн
88668	ESW-1A @ 18'	1	4 oz	X					T		x		T	-			x					Ţ						T	Ĺ		X	$\Sigma$	
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ORIGINAL COPY

From:Oberding, Tomas, EMNRDSent:Friday, August 22, 2014 4:03 PMTo:cstanley@novatraining.ccSubject:RE: Monday Meeting?

Aloha Sir,

Thank you for the info and the GPS. I will be out there bright and early.

Have a wonderful weekend. Mahalo -Doc

Tomáš 'Doc' Oberding, PhD Environmental Specialist – New Mexico Oil Conservation Division Energy, Minerals and Natural Resources Department 1625 N. French Dr. Hobbs, NM 88240 (O): (575) 393-6161 ext 111 (C): 575-370-3180 (F): (575) 393-0720 E-Mail: tomas.oberding@state.nm.us Website: http://www.emnrd.state.nm.us/ocd/

From: Curt Stanley [mailto:cstanley@novatraining.cc]
Sent: Friday, August 22, 2014 2:33 PM
To: Oberding, Tomas, EMNRD
Cc: Camille J Bryant
Subject: RE: Monday Meeting?

Doc,

Attached is a hand drawn site map of the release in Eunice (Tract 19 - 4 Inch). The Site GPS is N32.448517 W103.176603. See you on Monday morning at 9 AM NM Time.

Thanks, Curt

From: Oberding, Tomas, EMNRD [mailto:Tomas.Oberding@state.nm.us] Sent: Friday, August 22, 2014 8:22 AM To: <u>cstanley@novatraining.cc</u> Subject: RE: Monday Meeting?

Aloha Curt,

Sorry for the late response. Indeed Monday looks reasonable, what time? I prefer mornings but as of now it's all free....

Let me know. I'll be back in the office in the afternoon (field morning now). Mahalo -Doc

Tomáš 'Doc' Oberding, PhD Environmental Specialist – New Mexico Oil Conservation Division Energy, Minerals and Natural Resources Department 1625 N. French Dr. Hobbs, NM 88240 (O): (575) 393-6161 ext 111 (C): 575-370-3180 (F): (575) 393-0720 E-Mail: tomas.oberding@state.nm.us Website: http://www.emnrd.state.nm.us/ocd/

From: Curt Stanley [mailto:cstanley@novatraining.cc] Sent: Thursday, August 21, 2014 1:13 PM To: Oberding, Tomas, EMNRD Cc: Camille J Bryant Subject: Monday Meeting?

Doc,

Any chance you might have a few minutes to talk with Camille Bryant (Plains) and me on Monday? We would like to talk with you about a path forward for a Release Site (Tract  $19 - 4^{"}$ ) located northwest of Eunice.

Thanks in advance...

Curt

Curt D. Stanley Senior Project Manager NOVA Safety and Environmental, Inc. 2057 Commerce Midland, Texas 79703 Office: 432.520.7720 Fax: 432.520.7701 Cell: 432.559.3296 Email: <u>cstanley@novatraining.cc</u>

24 TRENCH-IN RUES HONEY RP@35' RP@35' RP@37' SIMPA 3 Int 3216 Cy Impacted havied to unclance KELEASE RAMP RAMP TIZACT 19-4" Ligins Hipeuve React 19.4" TZIS, R376 LEA GO, NM 32.448517 103.174603 xer 29 AND A U H LING

From:	Oberding, Tomas, EMNRD
Sent:	Monday, August 25, 2014 4:55 PM
То:	cstanley@novatraining.cc
Cc:	Camille J Bryant
Subject:	RE: Tract 19-4 Inch Risk-Based Closure Proposal

Aloha Curt and Camille,

Thank you for the prompt email. Please consider this the official notice of receipt for the plan.

I will review it in the morning in detail, but based on our discussions NMOCD gives conditional approval. (final approval in the morning) Thank you for your patience have a wonderful evening! It was wonderful getting to meet with you in the field and I appreciate you showing me the sites! Mahalo -Doc

-PS: please note, please exchange Mr. with Dr. on the official communications (something our bosses can see), otherwise no need for formalities Doc or Tomas is perfectly fine. Thank you!

Tomáš 'Doc' Oberding, PhD Environmental Specialist – New Mexico Oil Conservation Division Energy, Minerals and Natural Resources Department 1625 N. French Dr. Hobbs, NM 88240 (O): (575) 393-6161 ext 111 (C): 575-370-3180 (F): (575) 393-0720 E-Mail: tomas.oberding@state.nm.us Website: <u>http://www.emnrd.state.nm.us/ocd/</u>

From: Curt Stanley [mailto:cstanley@novatraining.cc]
Sent: Monday, August 25, 2014 3:51 PM
To: Oberding, Tomas, EMNRD
Cc: Camille J Bryant
Subject: Tract 19-4 Inch Risk-Based Closure Proposal

August 25, 2014

Re: Plains Pipeline Tract 19 – 4 Inch Release Site 1RP-7-4-3189 Unit Letter "I", Section 29, T21S, R37E Lea County, NM Plains SRS# 2014-178

1

## Mr. Oberding,

Thank you for meeting with us (Camille Bryant – Plains Pipeline and Curt Stanley – NOVA Safety and Environmental) today on site. I have prepared this email to summarize our discussions.

With NMOCD approval, Plains would like to pursue a Risk-Based Closure Strategy at the Tract 19 - 4 Inch Release Site. Plains proposes the following steps to progress the Release Site toward an NMOCD approved closure.

- The existing on-site investigation trenches will be backfilled with like material exhibiting benzene, BTEX and TPH concentrations less than 10 mg/Kg, 50 mg/Kg and 100 mg/Kg, respectively.
- Due to safety concerns with regard to supporting the four (4) inch pipeline, the release site will be excavated in two (2) stages.
- Stage 1:
  - The western area of impact will be excavated to a depth of approximately nineteen (19) feet below ground surface.
  - Excavated soil will be stockpiled adjacent to the excavation, pending transport to Sundance Services in Eunice, NM
  - Soil samples will be collected and submitted to the laboratory from the north, south and west sidewalls of the excavation at a depth of approximately eighteen (18) feet below ground surface.
  - Evaluate soil sample results. The NMOCD Site Classification guidelines indicate the sidewall benzene, BTEX and TPH concentrations should not exceed 10 mg/Kg, 50 mg/Kg and 100 mg/Kg, respectively.
  - On favorable analytical results for the sidewall soil samples, approximately six (6) inches of sand will be placed the floor of the excavation to cushion the impermeable twenty (20) mil poly liner.
  - A twenty (20) mil poly liner will be installed on the floor of the western area of impact and approximately six (6) inches of sand will be placed on top of the poly liner.
  - The western excavation will be partially backfilled with locally purchased like material.
- Stage 2:
  - The eastern area of impact will be excavated to a depth of approximately nineteen (19) feet below ground surface.
  - Excavated soil will be stockpiled adjacent to the excavation, pending transport to Sundance Services in Eunice, NM
  - Soil samples will be collected and submitted to the laboratory from the north, south and east sidewalls of the excavation at a depth of approximately eighteen (18) feet below ground surface.
  - Evaluate soil sample results. The NMOCD Site Classification guidelines indicate the sidewall benzene, BTEX and TPH concentrations should not exceed 10 mg/Kg, 50 mg/Kg and 100 mg/Kg, respectively.
  - On favorable analytical results for the sidewall soil samples, approximately six (6) inches of sand will be placed the floor of the excavation to cushion the impermeable twenty (20) mil poly liner.
  - A twenty (20) mil poly liner will be installed on the floor of the eastern area of impact. The eastern and western excavation poly liners will be chemically welded or sewn together. Following the joining of the poly liners, approximately six (6) inches of sand will be placed on top of the eastern excavation poly liner.
  - $\circ$  The excavation will be backfilled with locally purchased like material.
- Following the completion of the above activities, the site will be contoured to fit the surrounding topography.

Thank you again for your time and consideration,

Curt

Curt D. Stanley Senior Project Manager NOVA Safety and Environmental, Inc. 2057 Commerce Midland, Texas 79703 Office: 432.520.7720 Fax: 432.520.7701 Cell: 432.559.3296 Email: <u>cstanley@novatraining.cc</u>

From: Sent: To: Subject: Camille J Bryant Tuesday, September 02, 2014 8:47 AM cstanley@novatraining.cc FW: Tract 19-4 Inch Risk-Based Closure Proposal

From: Baker, Larry [mailto:Larry.Baker@apachecorp.com]
Sent: Tuesday, September 02, 2014 8:45 AM
To: Camille J Bryant
Cc: Fleming, Steven; Webb, Derek
Subject: RE: Tract 19-4 Inch Risk-Based Closure Proposal

Camille,

Apache has reviewed the information for the Tract 19-4 Inch Risk-Based Closure Proposal and approves the closure proposal as written. Please continue to inform us of any changes if necessary. Thanks and have a good day.

Bruce Baker Apache Corporation Environmental Technician Northwest District Email: <u>larry.baker@apachecorp.com</u> Cell: 432-631-6982

From: Camille J Bryant [mailto:CJBryant@paalp.com]
Sent: Wednesday, August 27, 2014 2:13 PM
To: Baker, Larry
Subject: Fwd: Tract 19-4 Inch Risk-Based Closure Proposal

Bruce

Attached is the documentation for the Plains Remediation Site located on Apache property.

Thanks for the assistance. Camille

Sent from my iPhone

Begin forwarded message:

From: "Curt Stanley" <<u>cstanley@novatraining.cc</u>> To: "Camille J Bryant" <<u>CJBryant@paalp.com</u>> Subject: FW: Tract 19-4 Inch Risk-Based Closure Proposal

Camille,

Per your request, following is the Work Plan sent to Tomas Oberding – NMOCD Hobbs District and Mr. Oberding's response.

A Sketch Map, analytical table and laboratory reports are attached to this email.

Thank you,

Curt D. Stanley Senior Project Manager NOVA Safety and Environmental, Inc. 2057 Commerce Midland, Texas 79703 Office: 432.520.7720 Fax: 432.520.7701 Cell: 432.559.3296 Email: <u>cstanley@novatraining.cc</u><<u>mailto:cstanley@novatraining.cc</u>>

From: Oberding, Tomas, EMNRD [<u>mailto:Tomas.Oberding@state.nm.us</u>] Sent: Tuesday, August 26, 2014 12:13 PM To: <u>cstanley@novatraining.cc</u> Cc: Camille J Bryant Subject: RE: Tract 19-4 Inch Risk-Based Closure Proposal

Aloha Mr. Stanley and Ms. Bryant,

Thank you for providing this update on the closure proposal.

Based on our field meeting yesterday, NMOCD approves this risk-based closure.

Please keep me updated as the situation warrants, and let me know if I can help. Mahalo -Doc

Tomáš 'Doc' Oberding, PhD Environmental Specialist – New Mexico Oil Conservation Division Energy, Minerals and Natural Resources Department 1625 N. French Dr. Hobbs, NM 88240 (O): (575) 393-6161 ext 111 (C): 575-370-3180 (F): (575) 393-0720 E-Mail: tomas.oberding@state.nm.us<mailto:S@state.nm.us> Website: http://www.emnrd.state.nm.us/ocd/<https://webmail.state.nm.us/owa/redir.aspx?C=ZdaS CuGOPU6IkL4QTngvd2FLydwLOdEIek-jJ\_-RLDCw6yzMkZT\_We7xigBKjms8XnTt3MKoDI4.&URL=http%3a%2f%2fwww.emnrd .state.nm.us%2focd%2f>

From: Curt Stanley [mailto:cstanley@novatraining.cc] Sent: Monday, August 25, 2014 3:51 PM To: Oberding, Tomas, EMNRD Cc: Camille J Bryant Subject: Tract 19-4 Inch Risk-Based Closure Proposal

August 25, 2014

Re: Plains Pipeline Tract 19 – 4 Inch Release Site 1RP-7-4-3189 Unit Letter "I", Section 29, T21S, R37E Lea County, NM Plains SRS# 2014-178

Mr. Oberding,

Thank you for meeting with us (Camille Bryant – Plains Pipeline and Curt Stanley – NOVA Safety and Environmental) today on site. I have prepared this email to summarize our discussions.

With NMOCD approval, Plains would like to pursue a Risk-Based Closure Strategy at the Tract 19 - 4 Inch Release Site. Plains proposes the following steps to progress the Release Site toward an NMOCD approved closure.

• The existing on-site investigation trenches will be backfilled with like material exhibiting benzene, BTEX and TPH concentrations less than 10 mg/Kg, 50 mg/Kg and 100 mg/Kg, respectively.

• Due to safety concerns with regard to supporting the four (4) inch pipeline, the release site will be excavated in two (2) stages.

• Stage 1:

o The western area of impact will be excavated to a depth of approximately nineteen (19) feet below ground surface.

o Excavated soil will be stockpiled adjacent to the excavation, pending transport to Sundance Services in Eunice, NM

o Soil samples will be collected and submitted to the laboratory from the north, south and west sidewalls of the excavation at a depth of approximately eighteen (18) feet below ground surface.

o Evaluate soil sample results. The NMOCD Site Classification guidelines indicate the sidewall benzene, BTEX and TPH concentrations should not exceed 10 mg/Kg, 50 mg/Kg and 100 mg/Kg, respectively.

o On favorable analytical results for the sidewall soil samples, approximately six (6) inches of sand will be placed the floor of the excavation to cushion the impermeable twenty (20) mil poly liner.

o A twenty (20) mil poly liner will be installed on the floor of the western area of impact and approximately six (6) inches of sand will be placed on top of the poly liner.

o The western excavation will be partially backfilled with locally purchased like material.

• Stage 2:

o The eastern area of impact will be excavated to a depth of approximately nineteen (19) feet below ground surface.

o Excavated soil will be stockpiled adjacent to the excavation, pending transport to Sundance Services in Eunice, NM

o Soil samples will be collected and submitted to the laboratory from the north, south and east sidewalls of the excavation at a depth of approximately eighteen (18) feet below ground surface.

o Evaluate soil sample results. The NMOCD Site Classification guidelines indicate the sidewall benzene, BTEX and TPH concentrations should not exceed 10 mg/Kg, 50 mg/Kg and 100 mg/Kg, respectively.

o On favorable analytical results for the sidewall soil samples, approximately six (6) inches of sand will be placed the floor of the excavation to cushion the impermeable twenty (20) mil poly liner.

o A twenty (20) mil poly liner will be installed on the floor of the eastern area of impact. The eastern and western excavation poly liners will be chemically welded or sewn together. Following the joining of the poly liners, approximately six (6) inches of sand will be placed on top of the eastern excavation poly liner.

o The excavation will be backfilled with locally purchased like material.

• Following the completion of the above activities, the site will be contoured to fit the surrounding topography.

Thank you again for your time and consideration,

Curt

Curt D. Stanley Senior Project Manager NOVA Safety and Environmental, Inc. 2057 Commerce Midland, Texas 79703 Office: 432.520.7720 Fax: 432.520.7701 Cell: 432.559.3296 Email: <u>cstanley@novatraining.cc</u><<u>mailto:cstanley@novatraining.cc</u>>

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From:	Oberding, Tomas, EMNRD <tomas.oberding@state.nm.us></tomas.oberding@state.nm.us>
Sent:	Friday, October 24, 2014 8:52 AM
To:	Stanley, Curtis D.
Subject:	RE: A meeting with Camille Bryant and I?

Good deal, see you then.

Tomáš 'Doc' Oberding, PhD Environmental Specialist – New Mexico Oil Conservation Division Energy, Minerals and Natural Resources Department 1625 N. French Dr. Hobbs, NM 88240 (O): (575) 393-6161 ext 111 (C): 575-370-3180 (F): (575) 393-0720 E-Mail: tomas.oberding@state.nm.us Website: http://www.emnrd.state.nm.us/ocd/

From: Stanley, Curtis D. [mailto:cstanley@novatraining.cc]
Sent: Friday, October 24, 2014 7:51 AM
To: Oberding, Tomas, EMNRD
Cc: 'Camille J Bryant'
Subject: RE: A meeting with Camille Bryant and I?

Thanks. We will see you at 10 AM.

Curt

From: Oberding, Tomas, EMNRD [mailto:Tomas.Oberding@state.nm.us]
Sent: Friday, October 24, 2014 8:49 AM
To: Stanley, Curtis D.
Cc: 'Camille J Bryant'
Subject: RE: A meeting with Camille Bryant and I?

10 it is, And yes.. ahh Mondays..... (then again this week is filled with Mondays, so it seems par for the course). Have a great weekend (and hopefully restful). Cheers -Doc

Tomáš 'Doc' Oberding, PhD Environmental Specialist – New Mexico Oil Conservation Division Energy, Minerals and Natural Resources Department 1625 N. French Dr. Hobbs, NM 88240 (O): (575) 393-6161 ext 111 (C): 575-370-3180 (F): (575) 393-0720
E-Mail: tomas.oberding@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/

From: Stanley, Curtis D. [mailto:cstanley@novatraining.cc]
Sent: Friday, October 24, 2014 7:47 AM
To: Oberding, Tomas, EMNRD
Cc: 'Camille J Bryant'
Subject: RE: A meeting with Camille Bryant and I?

Tomas,

Are you available at 10 AM? Monday mornings are always a challenge. Nothing ever goes as planned on a Monday morning...

Thanks,

Curt

From: Oberding, Tomas, EMNRD [mailto:Tomas.Oberding@state.nm.us]
Sent: Thursday, October 23, 2014 5:03 PM
To: Stanley, Curtis D.
Cc: 'Camille J Bryant'
Subject: RE: A meeting with Camille Bryant and I?

Monday it is (sorry been a complete Charley Foxtrot of a week here) How's 8:30 or 9:00? Or when is good for you all? Time to clock out (this is day 2 of no lunch) Cheers -Doc

Tomáš 'Doc' Oberding, PhD Environmental Specialist – New Mexico Oil Conservation Division Energy, Minerals and Natural Resources Department 1625 N. French Dr. Hobbs, NM 88240 (O): (575) 393-6161 ext 111 (C): 575-370-3180 (F): (575) 393-0720 E-Mail: tomas.oberding@state.nm.us Website: http://www.emnrd.state.nm.us/ocd/

From: Stanley, Curtis D. [mailto:cstanley@novatraining.cc]
Sent: Thursday, October 23, 2014 3:06 PM
To: Oberding, Tomas, EMNRD
Cc: 'Camille J Bryant'
Subject: A meeting with Camille Bryant and I?

Tomas,

Would you have time to meet with Camille Bryant and I on Monday morning (10/27/14)? We would like to discuss the results of some additional soil sampling completed at the Plains Jal Basin Station. A Site Map and Tables are attached for your reference.

Thanks,

Curt

Curt D. Stanley Senior Project Manager TRC / NOVA Safety and Environmental 2057 Commerce Drive Midland, Texas 79703 Office: 432.520.7720 Cell: 432.559.3296 Fax: 432.520.7720 Email: <u>cdstanley@trcsolutions.com</u>

From:	Oberding, Tomas, EMNRD <tomas.oberding@state.nm.us></tomas.oberding@state.nm.us>
Sent:	Tuesday, November 04, 2014 9:39 AM
То:	Stanley, Curtis D.
Cc:	'Camille J Bryant'
Subject:	RE: Plains Tract 19 - 4 Inch Release Site (1RP-3189)

Aloha Curtis and Camille,

Thank you for the phone discussions and the updated email.

Based on the field results, OCD agrees that the slightly elevated ~CI are within a margin of error and reasonable to continue with the next stage of remediation for the site. You've shown a downward trend in concentrations which is what we need to see. Please be safe out there, and let me know if I can help. Mahalo for all your hard work and prompt action. -Doc

Tomáš 'Doc' Oberding, PhD Senior Environmental Specialist – New Mexico Oil Conservation Division Energy, Minerals and Natural Resources Department 1625 N. French Dr. Hobbs, NM 88240 (O): (575) 393-6161 ext 111 (C): 575-370-3180 (F): (575) 393-0720 E-Mail: <u>tomas.oberding@state.nm.us</u> Website: <u>http://www.emnrd.state.nm.us/ocd/</u>

From: Stanley, Curtis D. [mailto:cstanley@novatraining.cc]
Sent: Tuesday, November 04, 2014 8:21 AM
To: Oberding, Tomas, EMNRD
Cc: 'Camille J Bryant'
Subject: Plains Tract 19 - 4 Inch Release Site (1RP-3189)

Doc,

As a follow up to our conversation this morning (November 4, 2014). The risk-based closure at the Plains Tract 19 – 4 Inch Release Site is progressing. As approved by NMOCD, we have collected soil samples (NSW-1 @ 18', SSW-1 @ 18' and WSW-1 @ 18') from the west side (Stage 1) of the excavation to be lined. The analytical results indicated concentrations of benzene, BTEX, and TPH were less than the method detection limit. In addition, the soil samples were analyzed for concentrations of chloride and the results indicated the north and south sidewall soil samples (NSW-1 @ 18' and SSW-1 @ 18') were slightly elevated at 287 mg/Kg. As we discussed, the soil samples were analyzed using Method 4500 (Titration). A soil sample collected at 37 feet bgs (RP @ 37') indicated chloride concentrations were 72.7 mg/Kg. For reference, a site location map, site map and analytical table are attached. Per our discussion, NMOCD considers the chloride concentrations exhibited in soil samples NSW-1 @ 18' and SSW-1 @ 18' to be within the margin of error and no further delineation of chloride is required.

Thanks for time and have a great day,

Curt

Curt D. Stanley Senior Project Manager TRC / NOVA Safety and Environmental 2057 Commerce Drive Midland, Texas 79703 Office: 432.520.7720 Cell: 432.559.3296 Fax: 432.520.7720 Email: <u>cdstanley@trcsolutions.com</u>

From:Oberding, Tomas, EMNRD <Tomas.Oberding@state.nm.us>Sent:Tuesday, December 16, 2014 8:32 AMTo:Stanley, Curtis D.Cc:'Camille J Bryant'Subject:RE: Plains Tract 19 - 4 Inch WP Modification (1RP-7-14-3189)

Aloha Sir,

Based on our discussion and the documents provided-OCD approves the request for backfill of the open excavation. We do understand that the project is not finished and also grant approval for the modifications as listed. Please keep me informed.

Happy Hanukah, Merry Christmas, and a safe healthy New Years to you all and your families. Cheers -Doc

Tomáš 'Doc' Oberding, PhD Senior Environmental Specialist New Mexico Oil Conservation Division, District 1 Energy, Minerals and Natural Resources Department (575) 393-6161 ext 111 E-Mail: tomas.oberding@state.nm.us

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

If you have any questions or concerns, and for notification, please contact me.

From: Stanley, Curtis D. [mailto:cstanley@novatraining.cc]
Sent: Tuesday, December 16, 2014 7:22 AM
To: Oberding, Tomas, EMNRD
Cc: 'Camille J Bryant'
Subject: Plains Tract 19 - 4 Inch WP Modification (1RP-7-14-3189)

RE: Plains Pipeline Tract 19 – 4 Inch Release Site Unit Letter "I", Section 29, T21S, R37E Lea County, NM 1RP-7-14-3189

Tomas,

As a follow up to your discussion this morning (December 15, 2014) with Camille Bryant of Plains Pipeline, Plains requests NMOCD permission to backfill the excavation at the Plains Tract 19-4 Inch Release Site and conduct horizontal soil delineation activities east of the existing excavation.

As previously approved by the NMOCD, soil samples were collected from the north, south, west and east sidewalls of the excavation and submitted to the laboratory for TPH and BTEX analysis and a twenty (20) mil synthetic liner was installed on the floor of the excavation at approximately 19 feet bgs. The analytical results indicated all collected sidewall soil samples exhibited TPH and BTEX concentrations less than the NMOCD regulatory guideline, with the exception of the soil sample collected from the east sidewall (ESW-1 @ 18'). Soil sample ESW-1 @ 18' exhibited a TPH concentration of 2,868 mg/Kg.

Plains requests NMOCD permission to extend the synthetic liner installed on the floor of the excavation, up the east sidewall of the excavation to approximately three (3) bgs. The "draped" liner will minimize migration of impacted soil located in the east sidewall of the excavation into the non-impacted backfill. The "draped" liner on the east sidewall will be chemically welded the liner installed on the floor of the excavation.

Plains requests this modification to the existing Work Plan due to the proximity of Turner Road on the east side of the excavation. Turner Road is highly a travelled two lane "blacktop" county road and excavation in the right-of-way would constitute a public safety hazard. The Release Site and county road right-of-way are located outside the City of Eunice. Plains requests NMOCD permission and will request Lea County Road Department permission to conduct horizontal soil delineation activities in the Turner Road right-of-way. The horizontal soil delineation activities are designed to determine the horizontal extent of impact east of the existing excavation. The trench located in the right-of-way will be sampled and immediately backfilled with non-impacted soil.

A Site Map and Table are attached for your reference.

Thanks,

Curt

Curt D. Stanley Senior Project Manager



2057 Commerce, Midland, TX 79703 T: 432.520.7720 | F: 432.520.7701 | C: 432.559.3296

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From: Sent: To: Cc: Subject: Oberding, Tomas, EMNRD <Tomas.Oberding@state.nm.us> Thursday, March 19, 2015 2:18 PM Stanley, Curtis D. 'Camille J Bryant' RE: Tract 19 - 4" 1RP-7-14-3189

Aloha all,

Based on the work completed, documents and samples, OCD approves the plan as outlined below. Please keep me informed and let me know if you have any questions or concerns. Stay safe everyone, -Doc

Tomáš 'Doc' Oberding PhD Hydrologist, Adv-District 1 Oil Conservation Division, EMNRD (505) 476-3403 575-370-3180 (emergency-cell) E-Mail: <u>tomas.oberding@state.nm.us</u>

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

If you have any questions or concerns, and for notification, please contact me.

From: Stanley, Curtis D. [mailto:CDStanley@trcsolutions.com]
Sent: Wednesday, March 18, 2015 3:47 PM
To: Oberding, Tomas, EMNRD
Cc: 'Camille J Bryant'
Subject: Tract 19 - 4" 1RP-7-14-3189

Tomas,

Attached is a site map and analytical table for the Plains Tract 19 - 4" Release Site. As background, this is the site located just west of Turner Road and north of Hwy 176 near Eunice. You met Camille and I at the site to discuss a path forward. We have numerous obstacles at the site (Road, power lines and County ROW etc). You requested we attempt to remove impacted soil on the east sidewall of the excavation where soil sample (ESW-1 @ 18') exhibited a TPH concentration of 2,868 mg/Kg. Installation of a 20 mil poly liner on the floor of the excavation was previously approved. The area of concern for this site is the potential migration of impact under Turner Road.

On March 9, 2015, we attempted and appear to be successful in delineating the impact on the east sidewall. We utilized a hand auger to collect a soil sample (A-1 @ 8') from the bottom of the pipe chase at approximately eight (8) feet bgs (at the top of the caliche) and approximately two (2) feet east of the ROW fence. The auger soil sample was located to the west of the pipeline road vent. Please reference the attached site map. During the installation of the pipeline, the pipe chase was apparently cut into the caliche and backfilled with sand. The the release, the sand in the pipe chase would

have provided a preferential pathway over the denser caliche, if the release moved to the east and toward the road. The sand in the pipe chase did not exhibit any hydrocarbon odor or staining during the hand auguring activities.

The soil sample (A-1 @ 8') was analyzed for BTEX and TPH at the laboratory and the results indicated TPH and BTEX concentrations were below the laboratory method detection limit. In addition, a second hand auger soil sample (A-2 @ 5') was collected approximately six (6) feet north of soil sample A-1 @ 8'. The soil sample was collected at the sand / caliche interface (approximately 5' bgs) outside of the pipe chase. Analytical results for TPH and BTEX concentrations indicated soil sample A-2 @ 5' exhibited concentrations less than the method detection limit.

Our premise is, if the sand within the pipe chase and the caliche / sand interface at the bottom of the pipe chase did not exhibit impact, it is unlikely the caliche underlying the pipe chase would be impacted. Based on these assumptions, we excavated the east sidewall approximately five (5) feet to the east (to the fence line). We anticipated the visual staining on the east sidewall would "cleanup" at or near the fence line. On March 13, 2015, a soil sample (ESW-1A @ 18') was collected from the east sidewall below the fence line. The analytical results indicated the TPH was 2,721 mg/Kg, the benzene concentration was 0.165 mg/Kg and the BTEX concentration was 1.533 mg/Kg. The east sidewall below the fence line exhibits some staining in and below the pipe chase (in the caliche) after the limited east sidewall excavation activities.

Based on the analytical results of the soil sample A-1 @ 8' and the hazards and obstacles associated with the site, Plains requests NMOCD permission to leave the limited stained soil observed on the east sidewall in place and backfill the release site with locally purchased caliche. Presently, the open excavation presents a safety hazard due to its proximity to Turner Road and nearby residential property. Topsoil reserved during the excavation activities will be utilized to reestablish the vegetative zone.

Thank you for your consideration,

Curt

Curt D. Stanley Senior Project Manager



2057 Commerce, Midland, TX 79703 T: 432.520.7720 | F: 432.520.7701 | C: 432.559.3296

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