



AE Order Number Banner

Report Description

This report shows an AE Order Number in Barcode format for purposes of scanning. The Barcode format is Code 39.



App Number: pGRL1311953585

1RP - 2912

SIANA OPERATING LLC



SPORT ENVIRONMENTAL SERVICES, PLLC

502 N. Big Spring Street, Midland, Texas 79701
Business: 432.683.1100 Fax: 888.500.0622

HOBBS OCD

JAN 04 2013

January 2, 2013

RECEIVED

Mr. Geoffrey R. Leking, Environmental Engineer
State of New Mexico
Oil Conservation Division, District 1
1625 N. French Drive
Hobbs, New Mexico 88240

Mr. Legion Brumley, Realty Compliance
U.S. Department of the Interior
Bureau of Land Management
620 East Greene
Carlsbad, NM 88220

REVIEWED W/ COMMENTS

Geoffrey Leking
Environmental Specialist

RE: **Site Remediation Work Plan**
Siana Operating, LLC
Curry Federal #2 SWD
Section 22, T-23-S, R-34-E
Lea County, New Mexico

NMOCD-DIST 1
2/12/13

Dear Mr. Leking and Mr. Brumley,

On behalf of Siana Operating, LLC, attached please find a work plan for remediation and treatment of residual chloride contaminated soils at the abovementioned site in accordance with Bureau of Land Management (BLM) and NM Oil Conservation Division (NMOCD) guidance.

On November 2, 2012, Sport Environmental performed delineation sampling along the two spill paths (see Sample Location Map) at the Curry Federal #2 release location. Attached please find the analytical results identifying six distinct sample locations that were above the predetermined 1,000 ppm chloride (Cl) limit. The analytical results also demonstrate no presence of TPH or BTEX constituents within the samples.

For the primary spill path, four sample locations (SP-1, SP-2, SP-2b, and SP-9) with elevated chlorides comprise two areas of concern measuring approximately 25,300 sf (230ft by 110ft encompassing sample points requiring soils SP-1, SP-2 and SP-2b) and approximately 7,500 sf (150ft by 50ft encompassing sample point SP-9).

For the pit path, two sample locations (PP-2 and PP-4) exceeded the Cl limit. These separate and distinct sample points created two areas of concern with surface areas approximately 6,000 sf (120ft x 50ft) and 2,500 sf (50ft x 50ft).

The work plan will consist of the following:

- Both sections along the primary spill path will be excavated to a depth of 18 inches. Confirmation field titrations will be performed to confirm chloride concentrations both horizontally and vertically are below the 1,000 ppm Cl limit.
- Both sections along the pit spill path will be excavated to a depth of 18 inches. Confirmation field titrations will be performed to confirm chloride concentrations both horizontally and vertically are below the 1,000 ppm Cl limit.
- The affected soils will be blended with surrounding soils to chloride concentrations below 1,000 ppm and confirmed through the use of field titrations and laboratory analyses on 30% of the samples with the highest chloride readings per spill path. The area will be feathered to blend with the natural contour of the land and the affected areas will be reseeded in accordance with BLM guidance and seed mixture specification.

If you have any questions or comments, please don't hesitate to contact me anytime at either my office (432-683-1100) or on my mobile (432-553-8555).

Sincerely,

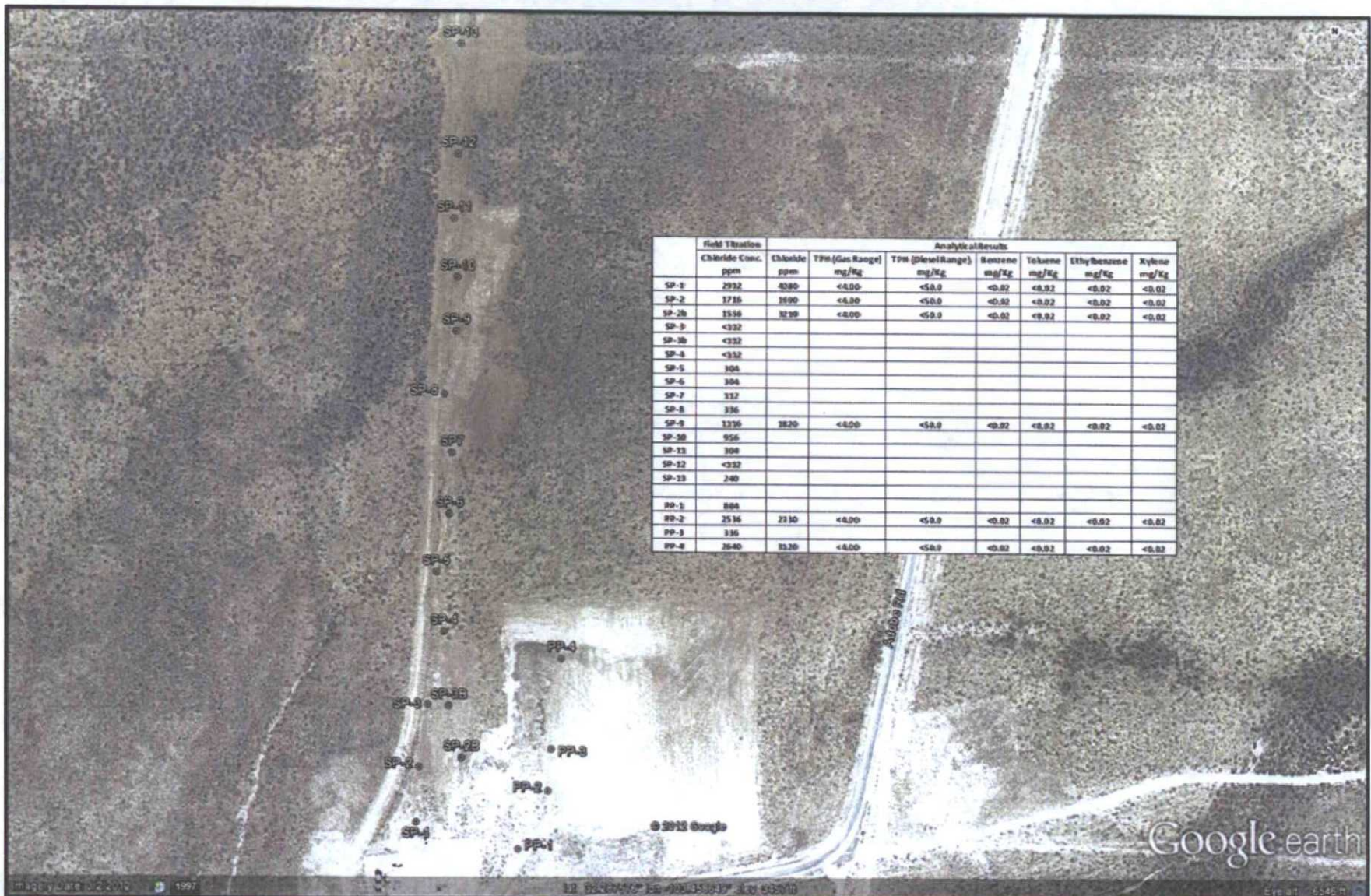
 Debi S. Moore.

Debi Sport Moore, M.E., R.E.P.A.
President

Cc via email: Mr. Matt Doffer
Siana Oil and Gas Co., LLC
601 N. Marienfeld, Suite 300
Midland, Texas 79701

Mr. Paul J. Muthig, PG
Muthig Environmental, Inc.
100 East Springs Road
Columbia, SC 29223

Mr. Dale Reed
Travelers – Oil & Gas Claims
3245 Whitcomb Road
Casper, WY 82601



Siana Operating, LLC
Curry Federal #2 SWD Release
Section 22, T23S, R34E
Lea County, New Mexico

Remediation
Spill Path & Excavation Area

Author
mlb

Date
11/26/2012

November 2012



Client - Siana Oil and Gas
 Project - Curry Federal #2 SWD Spill
 Sample Date - November 2, 2012

	Sample ID	Latitude	Longitude	Sample Time	Field Titration	Analytical Results						
					Chloride Conc. ppm	Chloride ppm	TPH (Gas Range) mg/Kg	TPH (Diesel Range) mg/Kg	Benzene mg/Kg	Toluene mg/Kg	Ethylbenzene mg/Kg	Xylene mg/Kg
SP-1	SP-1-001	32.28510	-103.46094	9:40	2912	4280	<4.00	<50.0	<0.02	<0.02	<0.02	<0.02
SP-2	SP-2-001	32.28547	-103.46092	9:50	1716	1690	<4.00	<50.0	<0.02	<0.02	<0.02	<0.02
SP-2b	SP-2b-001	32.28553	-103.46056	10:25	1556	3210	<4.00	<50.0	<0.02	<0.02	<0.02	<0.02
SP-3	SP-3-001	32.28589	-103.46085	10:00	<112							
SP-3b	SP-3b-001	32.28588	-103.46067	10:35	<112							
SP-4	SP-4-001	32.28638	-103.46072	10:45	<112							
SP-5	SP-5-001	32.28679	-103.46079	10:53	304							
SP-6	SP-6-001	32.28719	-103.46068	11:00	304							
SP-7	SP-7-001	32.28761	-103.46066	11:15	112							
SP-8	SP-8-001	32.28801	-103.46073	11:23	336							
SP-9	SP-9-001	32.28844	-103.46063	11:30	1116	1820	<4.00	<50.0	<0.02	<0.02	<0.02	<0.02
SP-10	SP-10-001	32.28881	-103.46062	11:40	956							
SP-11	SP-11-001	32.28922	-103.46065	11:46	304							
SP-12	SP-12-001	32.28966	-103.46062	11:55	<112							
SP-13	SP-13-001	32.29041	-103.46060	12:00	240							
PP-1	PP-1-001	32.28492	-103.46008	12:20	884							
PP-2	PP-2-001	32.28531	-103.45983	12:29	2536	2730	<4.00	<50.0	<0.02	<0.02	<0.02	<0.02
PP-3	PP-3-001	32.28559	-103.45980	12:35	336							
PP-4	PP-4-001	32.28620	-103.45972	12:45	2640	3120	<4.00	<50.0	<0.02	<0.02	<0.02	<0.02

Summary Report

Debi Sport Moore
Sport Environmental Services
502 N. Big Spring Street
Midland, TX 79701

Report Date: November 13, 2012

Work Order: 12110505



Project Location: Jal, NM
Project Name: Siana Curry Fed. #2 (SWD Release)

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
313428	SP-1-001	soil	2012-11-02	09:40	2012-11-05
313429	SP-2-001	soil	2012-11-02	09:50	2012-11-05
313430	SP-2B-001	soil	2012-11-02	10:25	2012-11-05
313431	SP-9-001	soil	2012-11-02	11:30	2012-11-05
313432	PP-2-001	soil	2012-11-02	12:29	2012-11-05
313433	PP-4-001	soil	2012-11-02	12:45	2012-11-05

Sample - Field Code	BTEX				TPH DRO - NEW	TPH GRO
	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
313428 - SP-1-001	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
313429 - SP-2-001	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
313430 - SP-2B-001	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
313431 - SP-9-001	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
313432 - PP-2-001	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00
313433 - PP-4-001	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<4.00

Sample: 313428 - SP-1-001

Param	Flag	Result	Units	RL
Chloride		4280	mg/Kg	4

Sample: 313429 - SP-2-001

Param	Flag	Result	Units	RL
Chloride		1690	mg/Kg	4

Sample: 313430 - SP-2B-001

Param	Flag	Result	Units	RL
Chloride		3210	mg/Kg	4

Sample: 313431 - SP-9-001

Param	Flag	Result	Units	RL
Chloride		1820	mg/Kg	4

Sample: 313432 - PP-2-001

Param	Flag	Result	Units	RL
Chloride		2730	mg/Kg	4

Sample: 313433 - PP-4-001

Param	Flag	Result	Units	RL
Chloride		3120	mg/Kg	4



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

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Debi Sport Moore
Sport Environmental Services
502 N. Big Spring Street
Midland, TX, 79701

Report Date: November 13, 2012

Work Order: 12110505



Project Location: Jal, NM
Project Name: Siana Curry Fed. #2 (SWD Release)
Project Number: Siana Curry Fed. #2 (SWD Release)

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

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
313428	SP-1-001	soil	2012-11-02	09:40	2012-11-05
313429	SP-2-001	soil	2012-11-02	09:50	2012-11-05
313430	SP-2B-001	soil	2012-11-02	10:25	2012-11-05
313431	SP-9-001	soil	2012-11-02	11:30	2012-11-05
313432	PP-2-001	soil	2012-11-02	12:29	2012-11-05
313433	PP-4-001	soil	2012-11-02	12:45	2012-11-05

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

This report consists of a total of 24 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael Abel

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

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Case Narrative

Samples for project Siana Curry Fed. #2 (SWD Release) were received by TraceAnalysis, Inc. on 2012-11-05 and assigned to work order 12110505. Samples for work order 12110505 were received intact at a temperature of 5.2 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	81655	2012-11-06 at 13:40	96348	2012-11-06 at 13:40
Chloride (Titration)	SM 4500-Cl B	81793	2012-11-12 at 10:38	96521	2012-11-13 at 10:38
TPH DRO - NEW	S 8015 D	81632	2012-11-05 at 08:00	96324	2012-11-06 at 08:27
TPH GRO	S 8015 D	81655	2012-11-06 at 13:40	96350	2012-11-06 at 13:40

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 12110505 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.

Report Date: November 13, 2012
Siana Curry Fed. #2 (SWD Release)

Work Order: 12110505
Siana Curry Fed. #2 (SWD Release)

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Analytical Report

Sample: 313428 - SP-1-001

Laboratory: Lubbock
Analysis: BTEX
QC Batch: 96348
Prep Batch: 81655

Analytical Method: S 8021B
Date Analyzed: 2012-11-06
Sample Preparation: 2012-11-06

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	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	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.03	mg/Kg	1	2.00	102	73.1 - 120
4-Bromofluorobenzene (4-BFB)			2.28	mg/Kg	1	2.00	114	71.5 - 120

Sample: 313428 - SP-1-001

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 96521
Prep Batch: 81793

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-11-13
Sample Preparation: 2012-11-12

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			4280	mg/Kg	10	4.00

Sample: 313428 - SP-1-001

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 96324
Prep Batch: 81632

Analytical Method: S 8015 D
Date Analyzed: 2012-11-06
Sample Preparation: 2012-11-05

Prep Method: N/A
Analyzed By: CW
Prepared By: CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	u	2	<50.0	mg/Kg	1	50.0

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Siana Curry Fed. #2 (SWD Release)

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Q _{nr}	Q _{nr}	151	mg/Kg	1	100	151	55.1 - 135.7

Sample: 313428 - SP-1-001

Laboratory: Lubbock

Analysis: TPH GRO

QC Batch: 96350

Prep Batch: 81655

Analytical Method: S 8015 D

Date Analyzed: 2012-11-06

Sample Preparation: 2012-11-06

Prep Method: S 5035

Analyzed By: MT

Prepared By: MT

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.98	mg/Kg	1	2.00	99	74.4 - 120
4-Bromofluorobenzene (4-BFB)			2.13	mg/Kg	1	2.00	106	74 - 120

Sample: 313429 - SP-2-001

Laboratory: Lubbock

Analysis: BTEX

QC Batch: 96348

Prep Batch: 81655

Analytical Method: S 8021B

Date Analyzed: 2012-11-06

Sample Preparation: 2012-11-06

Prep Method: S 5035

Analyzed By: MT

Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	i	<0.0200	mg/Kg	1	0.0200
Toluene	u	i	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	u	i	<0.0200	mg/Kg	1	0.0200
Xylene	u	i	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.87	mg/Kg	1	2.00	94	73.1 - 120
4-Bromofluorobenzene (4-BFB)			2.12	mg/Kg	1	2.00	106	71.5 - 120

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Siana Curry Fed. #2 (SWD Release)

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Jal, NM

Sample: 313429 - SP-2-001

Laboratory: Midland
Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A
QC Batch: 96521 Date Analyzed: 2012-11-13 Analyzed By: AR
Prep Batch: 81793 Sample Preparation: 2012-11-12 Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1690	mg/Kg	10	4.00

Sample: 313429 - SP-2-001

Laboratory: Midland
Analysis: TPH DRO - NEW Analytical Method: S 8015 D Prep Method: N/A
QC Batch: 96324 Date Analyzed: 2012-11-06 Analyzed By: CW
Prep Batch: 81632 Sample Preparation: 2012-11-05 Prepared By: CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	nb	2	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qm	Qm	140	mg/Kg	1	100	140	55.1 - 135.7

Sample: 313429 - SP-2-001

Laboratory: Lubbock
Analysis: TPH GRO Analytical Method: S 8015 D Prep Method: S 5035
QC Batch: 96350 Date Analyzed: 2012-11-06 Analyzed By: MT
Prep Batch: 81655 Sample Preparation: 2012-11-06 Prepared By: MT

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.86	mg/Kg	1	2.00	93	74.4 - 120
4-Bromofluorobenzene (4-BFB)			2.01	mg/Kg	1	2.00	100	74 - 120

Report Date: November 13, 2012
Siana Curry Fed. #2 (SWD Release)

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Siana Curry Fed. #2 (SWD Release)

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Sample: 313430 - SP-2B-001

Laboratory: Lubbock

Analysis: BTEX

QC Batch: 96348

Prep Batch: 81655

Analytical Method: S 8021B

Date Analyzed: 2012-11-06

Sample Preparation: 2012-11-06

Prep Method: S 5035

Analyzed By: MT

Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	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	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.32	mg/Kg	1	2.00	116	73.1 - 120
4-Bromofluorobenzene (4-BFB)			2.24	mg/Kg	1	2.00	112	71.5 - 120

Sample: 313430 - SP-2B-001

Laboratory: Midland

Analysis: Chloride (Titration)

QC Batch: 96521

Prep Batch: 81793

Analytical Method: SM 4500-Cl B

Date Analyzed: 2012-11-13

Sample Preparation: 2012-11-12

Prep Method: N/A

Analyzed By: AR

Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3210	mg/Kg	10	4.00

Sample: 313430 - SP-2B-001

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 96324

Prep Batch: 81632

Analytical Method: S 8015 D

Date Analyzed: 2012-11-06

Sample Preparation: 2012-11-05

Prep Method: N/A

Analyzed By: CW

Prepared By: CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Ja	2	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qer	Qer	138	mg/Kg	1	100	138	55.1 - 135.7

Report Date: November 13, 2012
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Sample: 313430 - SP-2B-001

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 96350
Prep Batch: 81655

Analytical Method: S 8015 D
Date Analyzed: 2012-11-06
Sample Preparation: 2012-11-06

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.36	mg/Kg	1	2.00	118	74.4 - 120
4-Bromofluorobenzene (4-BFB)			2.14	mg/Kg	1	2.00	107	74 - 120

Sample: 313431 - SP-9-001

Laboratory: Lubbock
Analysis: BTEX
QC Batch: 96348
Prep Batch: 81655

Analytical Method: S 8021B
Date Analyzed: 2012-11-06
Sample Preparation: 2012-11-06

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	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	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.92	mg/Kg	1	2.00	96	73.1 - 120
4-Bromofluorobenzene (4-BFB)			2.20	mg/Kg	1	2.00	110	71.5 - 120

Sample: 313431 - SP-9-001

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 96521
Prep Batch: 81793

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-11-13
Sample Preparation: 2012-11-12

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

continued ...

Report Date: November 13, 2012
Siana Curry Fed. #2 (SWD Release)

Work Order: 12110505
Siana Curry Fed. #2 (SWD Release)

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sample 313431 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			1820	mg/Kg	10	4.00

Sample: 313431 - SP-9-001

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 96324

Prep Batch: 81632

Analytical Method: S 8015 D

Date Analyzed: 2012-11-06

Sample Preparation: 2012-11-05

Prep Method: N/A

Analyzed By: CW

Prepared By: CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	36	2	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			124	mg/Kg	1	100	124	55.1 - 135.7

Sample: 313431 - SP-9-001

Laboratory: Lubbock

Analysis: TPH GRO

QC Batch: 96350

Prep Batch: 81655

Analytical Method: S 8015 D

Date Analyzed: 2012-11-06

Sample Preparation: 2012-11-06

Prep Method: S 5035

Analyzed By: MT

Prepared By: MT

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.93	mg/Kg	1	2.00	96	74.4 - 120
4-Bromofluorobenzene (4-BFB)			2.10	mg/Kg	1	2.00	105	74 - 120

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Sample: 313432 - PP-2-001

Laboratory: Lubbock
Analysis: BTEX
QC Batch: 96348
Prep Batch: 81655

Analytical Method: S 8021B
Date Analyzed: 2012-11-06
Sample Preparation: 2012-11-06

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	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	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.76	mg/Kg	1	2.00	88	73.1 - 120
4-Bromofluorobenzene (4-BFB)			2.09	mg/Kg	1	2.00	104	71.5 - 120

Sample: 313432 - PP-2-001

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 96521
Prep Batch: 81793

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-11-13
Sample Preparation: 2012-11-12

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			2730	mg/Kg	10	4.00

Sample: 313432 - PP-2-001

Laboratory: Midland
Analysis: TPH DRO - NEW
QC Batch: 96324
Prep Batch: 81632

Analytical Method: S 8015 D
Date Analyzed: 2012-11-06
Sample Preparation: 2012-11-05

Prep Method: N/A
Analyzed By: CW
Prepared By: CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	u	2	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			131	mg/Kg	1	100	131	55.1 - 135.7

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Sample: 313432 - PP-2-001

Laboratory: Lubbock
Analysis: TPH GRO
QC Batch: 96350
Prep Batch: 81655

Analytical Method: S 8015 D
Date Analyzed: 2012-11-06
Sample Preparation: 2012-11-06

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.74	mg/Kg	1	2.00	87	74.4 - 120
4-Bromofluorobenzene (4-BFB)			1.95	mg/Kg	1	2.00	98	74 - 120

Sample: 313433 - PP-4-001

Laboratory: Lubbock
Analysis: BTEX
QC Batch: 96348
Prep Batch: 81655

Analytical Method: S 8021B
Date Analyzed: 2012-11-06
Sample Preparation: 2012-11-06

Prep Method: S 5035
Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	u	i	<0.0200	mg/Kg	1	0.0200
Toluene	u	i	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	u	i	<0.0200	mg/Kg	1	0.0200
Xylene	u	i	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.14	mg/Kg	1	2.00	107	73.1 - 120
4-Bromofluorobenzene (4-BFB)			2.06	mg/Kg	1	2.00	103	71.5 - 120

Sample: 313433 - PP-4-001

Laboratory: Midland
Analysis: Chloride (Titration)
QC Batch: 96521
Prep Batch: 81793

Analytical Method: SM 4500-Cl B
Date Analyzed: 2012-11-13
Sample Preparation: 2012-11-12

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

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sample 313433 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			3120	mg/Kg	10	4.00

Sample: 313433 - PP-4-001

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 96324

Prep Batch: 81632

Analytical Method: S 8015 D

Date Analyzed: 2012-11-06

Sample Preparation: 2012-11-05

Prep Method: N/A

Analyzed By: CW

Prepared By: CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	26	2	<50.0	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	55.1 - 135.7

Sample: 313433 - PP-4-001

Laboratory: Lubbock

Analysis: TPH GRO

QC Batch: 96350

Prep Batch: 81655

Analytical Method: S 8015 D

Date Analyzed: 2012-11-06

Sample Preparation: 2012-11-06

Prep Method: S 5035

Analyzed By: MT

Prepared By: MT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	0	1	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.15	mg/Kg	1	2.00	108	74.4 - 120
4-Bromofluorobenzene (4-BFB)			1.97	mg/Kg	1	2.00	98	74 - 120

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Method Blanks

Method Blank (1) QC Batch: 96324

QC Batch: 96324
Prep Batch: 81632

Date Analyzed: 2012-11-06
QC Preparation: 2012-11-05

Analyzed By: CW
Prepared By: CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		±	29.6	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			122	mg/Kg	1	100	122	55.1 - 135.7

Method Blank (1) QC Batch: 96348

QC Batch: 96348
Prep Batch: 81655

Date Analyzed: 2012-11-06
QC Preparation: 2012-11-06

Analyzed By: MT
Prepared By: MT

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		±	<0.00365	mg/Kg	0.02
Toluene		±	<0.00816	mg/Kg	0.02
Ethylbenzene		±	<0.00560	mg/Kg	0.02
Xylene		±	<0.00460	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.94	mg/Kg	1	2.00	97	73.1 - 120
4-Bromofluorobenzene (4-BFB)			1.91	mg/Kg	1	2.00	96	71.5 - 120

Method Blank (1) QC Batch: 96350

QC Batch: 96350
Prep Batch: 81655

Date Analyzed: 2012-11-06
QC Preparation: 2012-11-06

Analyzed By: MT
Prepared By: MT

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Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.359	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.06	mg/Kg	1	2.00	103	74.4 - 120
4-Bromofluorobenzene (4-BFB)			1.80	mg/Kg	1	2.00	90	74 - 120

Method Blank (1) QC Batch: 96521

QC Batch: 96521
Prep Batch: 81793

Date Analyzed: 2012-11-13
QC Preparation: 2012-11-12

Analyzed By: AR
Prepared By: AR

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.85	mg/Kg	4

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Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 96324
Prep Batch: 81632

Date Analyzed: 2012-11-06
QC Preparation: 2012-11-05

Analyzed By: CW
Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	221	mg/Kg	1	250	29.6	76	66.9 - 119.9

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		2	209	mg/Kg	1	250	29.6	72	66.9 - 119.9	6	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	132	110	mg/Kg	1	100	132	110	76.8 - 140.2

Laboratory Control Spike (LCS-1)

QC Batch: 96348
Prep Batch: 81655

Date Analyzed: 2012-11-06
QC Preparation: 2012-11-06

Analyzed By: MT
Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.81	mg/Kg	1	2.00	<0.00365	90	78.4 - 120
Toluene		1	1.86	mg/Kg	1	2.00	<0.00816	93	78.3 - 120
Ethylbenzene		1	1.88	mg/Kg	1	2.00	<0.00560	94	77.4 - 120
Xylene		1	5.64	mg/Kg	1	6.00	<0.00460	94	77 - 120

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.82	mg/Kg	1	2.00	<0.00365	91	78.4 - 120	1	20
Toluene		1	1.83	mg/Kg	1	2.00	<0.00816	92	78.3 - 120	2	20
Ethylbenzene		1	1.88	mg/Kg	1	2.00	<0.00560	94	77.4 - 120	0	20
Xylene		1	5.64	mg/Kg	1	6.00	<0.00460	94	77 - 120	0	20

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

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Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.88	1.79	mg/Kg	1	2.00	94	90	73.1 - 120
4-Bromofluorobenzene (4-BFB)	1.92	1.88	mg/Kg	1	2.00	96	94	71.5 - 120

Laboratory Control Spike (LCS-1)

QC Batch: 96350
Prep Batch: 81655

Date Analyzed: 2012-11-06
QC Preparation: 2012-11-06

Analyzed By: MT
Prepared By: MT

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	17.6	mg/Kg	1	20.0	<0.359	88	66.3 - 120

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	18.6	mg/Kg	1	20.0	<0.359	93	66.3 - 120	6	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.80	1.84	mg/Kg	1	2.00	90	92	74.4 - 120
4-Bromofluorobenzene (4-BFB)	1.85	1.87	mg/Kg	1	2.00	92	94	74 - 120

Laboratory Control Spike (LCS-1)

QC Batch: 96521
Prep Batch: 81793

Date Analyzed: 2012-11-13
QC Preparation: 2012-11-12

Analyzed By: AR
Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2670	mg/Kg	1	2500	<3.85	107	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2630	mg/Kg	1	2500	<3.85	105	85 - 115	2	20

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

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Matrix Spike (MS-1) Spiked Sample: 313223

QC Batch: 96324
Prep Batch: 81632

Date Analyzed: 2012-11-06
QC Preparation: 2012-11-05

Analyzed By: CW
Prepared By: CW

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	226	mg/Kg	1	250	27.8	79	36.1 - 147.2

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		2	252	mg/Kg	1	250	27.8	90	36.1 - 147.2	11	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	130	140	mg/Kg	1	100	130	140	78.3 - 131.6

Matrix Spike (MS-1) Spiked Sample: 313428

QC Batch: 96348
Prep Batch: 81655

Date Analyzed: 2012-11-06
QC Preparation: 2012-11-06

Analyzed By: MT
Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.85	mg/Kg	1	2.00	<0.00365	92	64.4 - 121
Toluene		1	2.03	mg/Kg	1	2.00	<0.00816	102	67.8 - 129
Ethylbenzene		1	2.17	mg/Kg	1	2.00	<0.00560	108	62.6 - 142
Xylene		1	6.55	mg/Kg	1	6.00	<0.00460	109	57.2 - 147

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.87	mg/Kg	1	2.00	<0.00365	94	64.4 - 121	1	20
Toluene		1	2.05	mg/Kg	1	2.00	<0.00816	102	67.8 - 129	1	20
Ethylbenzene		1	2.20	mg/Kg	1	2.00	<0.00560	110	62.6 - 142	1	20
Xylene		1	6.62	mg/Kg	1	6.00	<0.00460	110	57.2 - 147	1	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.95	2.11	mg/Kg	1	2	98	106	73.1 - 120

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Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
4-Bromofluorobenzene (4-BFB)	2.13	2.10	mg/Kg	1	2	106	105	71.5 - 120

Matrix Spike (MS-1) Spiked Sample: 313428

QC Batch: 96350
Prep Batch: 81655

Date Analyzed: 2012-11-06
QC Preparation: 2012-11-06

Analyzed By: MT
Prepared By: MT

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	14.0	mg/Kg	1	20.0	<0.359	70	46 - 122

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.5	mg/Kg	1	20.0	<0.359	78	46 - 122	10	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.87	1.83	mg/Kg	1	2	94	92	74.4 - 120
4-Bromofluorobenzene (4-BFB)	2.10	2.22	mg/Kg	1	2	105	111	74 - 120

Matrix Spike (MS-1) Spiked Sample: 313433

QC Batch: 96521
Prep Batch: 81793

Date Analyzed: 2012-11-13
QC Preparation: 2012-11-12

Analyzed By: AR
Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			5700	mg/Kg	10	2500	3120	103	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			5430	mg/Kg	10	2500	3120	92	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-1)

QC Batch: 96324

Date Analyzed: 2012-11-06

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	227	91	80 - 120	2012-11-06

Standard (CCV-2)

QC Batch: 96324

Date Analyzed: 2012-11-06

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	204	82	80 - 120	2012-11-06

Standard (CCV-3)

QC Batch: 96324

Date Analyzed: 2012-11-06

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	208	83	80 - 120	2012-11-06

Standard (CCV-4)

QC Batch: 96324

Date Analyzed: 2012-11-06

Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	208	83	80 - 120	2012-11-06

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Standard (CCV-1)

QC Batch: 96348

Date Analyzed: 2012-11-06

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0877	88	80 - 120	2012-11-06
Toluene		1	mg/kg	0.100	0.0904	90	80 - 120	2012-11-06
Ethylbenzene		1	mg/kg	0.100	0.0922	92	80 - 120	2012-11-06
Xylene		1	mg/kg	0.300	0.276	92	80 - 120	2012-11-06

Standard (CCV-2)

QC Batch: 96348

Date Analyzed: 2012-11-06

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0887	89	80 - 120	2012-11-06
Toluene		1	mg/kg	0.100	0.0913	91	80 - 120	2012-11-06
Ethylbenzene		1	mg/kg	0.100	0.0927	93	80 - 120	2012-11-06
Xylene		1	mg/kg	0.300	0.277	92	80 - 120	2012-11-06

Standard (CCV-3)

QC Batch: 96348

Date Analyzed: 2012-11-06

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	0.100	0.0876	88	80 - 120	2012-11-06
Toluene		1	mg/kg	0.100	0.0895	90	80 - 120	2012-11-06
Ethylbenzene		1	mg/kg	0.100	0.0911	91	80 - 120	2012-11-06
Xylene		1	mg/kg	0.300	0.272	91	80 - 120	2012-11-06

Standard (CCV-1)

QC Batch: 96350

Date Analyzed: 2012-11-06

Analyzed By: MT

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.863	86	80 - 120	2012-11-06

Standard (CCV-2)

QC Batch: 96350

Date Analyzed: 2012-11-06

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.913	91	80 - 120	2012-11-06

Standard (CCV-3)

QC Batch: 96350

Date Analyzed: 2012-11-06

Analyzed By: MT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.910	91	80 - 120	2012-11-06

Standard (CCV-1)

QC Batch: 96521

Date Analyzed: 2012-11-13

Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.7	100	85 - 115	2012-11-13

Standard (CCV-2)

QC Batch: 96521

Date Analyzed: 2012-11-13

Analyzed By: AR

Report Date: November 13, 2012
Siana Curry Fed. #2 (SWD Release)

Work Order: 12110505
Siana Curry Fed. #2 (SWD Release)

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2012-11-13

Appendix

Report Definitions

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

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704219-12-8	Lubbock
2	NELAP	T104704392-12-4	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 than 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.
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

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

