INFORMATION ONLY

1RP-4665
SPILL DELINEATION REPORT
Epperson 16 Inch Pipeline Release Site #2
Lea County, New Mexico

Latitude: 33°20'49.1352" North
Longitude: 103°34'29.0172" West

LAI Project No. 16-0120-02

March 9, 2017

Prepared for:

Targa Midstream Services, LLC
P.O. Box 1689
Lovington, New Mexico 88269

Prepared by:

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Certified Professional Geologist #10490

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1.0 INTRODUCTION

Larson & Associates, Inc. (LAI) has prepared this delineation report on behalf of Targa Midstream Services, LLC (Targa) for a natural gas liquids release at the Epperson 16" pipeline (Site #2) in Unit L (NW/4, SW/4), Section 24, Township 11 South, Range 33 East, in Lea County, New Mexico (the Site). The Site is located about 15 miles west of Tatum, New Mexico. On May 27, 2016 LAI, personnel were requested by Targa representative, Ralph England, to visit the Site to document the release. LAI personnel observed an area without vegetation measuring about 45 x 50 feet or about 2,250 square feet. The geodetic location is 33°20'49.1352" North and 103°34'29.0172" West. The initial C-141 was submitted to the New Mexico Oil Conservation Division (OCD) District 1 on March 29, 2017 and assigned remediation permit number 1RP-4665. Figure 1 presents a topographic map. Figure 2 presents a general aerial map. Figure 2a presents a focused aerial map.

1.1 Physical Setting

The physical setting is as follows:

- The surface elevation is about 4,227 feet above mean sea level (MSL);
- The topography is slightly undulating with the regional slope to the southeast;
- No surface water features are present within 1 mile of Site #2;
- The soils are designated as "Kimbrough-Lea complex", consisting of calcareous alluvium derived from reworking the Blackwater Draw (Pleistocene) and Ogallala (Pliocene) formations, in descending order;
- The soil developed over sandy clay loam that extends to depths greater than about 6 feet below ground surface (bgs);
- The nearest fresh water well is located about 2,250 feet southeast in Unit N (SE/4, SW/4), Section 24, Township 11 South, Range 33 East;
- According to records from the New Mexico Office of the State Engineer (OSE), groundwater is expected to occur at about 32 feet below ground surface (bgs).

The fresh water well appears to be used for watering livestock based on field observation. Figure 1 presents the water well location.

1.2 Recommended Remediation Action Levels

Recommended remediation action levels (RRALs) were calculated for benzene, BTEX and TPH based on the following criteria established by the New Mexico Oil Conservation Division (OCD) in *"Guidelines for Remediation of Leaks, Spills and Releases, August 13, 1993"*:

Criteria	*Result*	*Score*
Depth-to-Groundwater	<50 feet	20
Wellhead Protection Area	No (>1,000 horizontal feet)	0
Distance to Surface Water Body	>1000 horizontal feet	0

The following RRAL apply to the release for ranking score: 20

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

2.0 DELINEATON

On June 16, 2016, LAI personnel collected soil samples from the non-vegetated area. The soil samples were collected at 0.5 feet bgs from four (4) locations (HA-1 through HA-4) with a stainless steel hand auger. The samples were screened for headspace vapors with a calibrated photoionization detector (PID) in 8 ounce glass jars sealed with aluminum foil. The PID readings were below the New Mexico Oil Conservation Division (OCD) action level of 100 parts per million (ppm). Therefore laboratory analysis for benzene, toluene, ethylbenzene and xylenes (BTEX) was not required according to OCD guideline 7b Section IV Part 2b (Guidelines for Remediation of Leaks, Spills and Releases, August 13, 1993). The laboratory samples were delivered under preservation and chain of custody to Trace Analysis, Inc. (Trace), in Lubbock, Texas, and were analyzed for total petroleum hydrocarbons (TPH) by EPA SW-846 Method 8015 including gasoline range organics (GRO), diesel range organics (DRO) and oil range organics (ORO) and chloride by Method 300. Table 1 presents the delineation soil sample analytical data summary. Figure 3 presents a Site drawing and the hand auger soil sample locations HA-1 through HA-4. Appendix A presents the laboratory report.

Hand auger soil samples reported TPH below the method reporting limit (see Table 1). Chloride was less than the reporting limit of 25 milligrams per kilogram (mg/Kg) in sample HA-2 and below the OCD delineation limit of 250 mg/Kg in samples HA-1 (79.5 mg/Kg) and HA-4 (174 mg/Kg). Sample HA-3 (414 mg/kg) exceeded the OCD delineation limit.

On July 5, 2016, LAI personnel used a direct push technology (DPT) to collect samples at four (4) locations (SB-1 through SB-4). Soil samples were collected in one foot increments between approximately 2 feet (SB-2), 3 feet (SB-1 and SB-3) and 4 feet (SB-4) bgs. The samples were analyzed for headspace vapors with a calibrated PID and reported readings below the OCD action level of 100 ppm. Therefore no analysis for BTEX was performed according to OCD guidelines 7b Section IV Part 2b (Guidelines for Remediation of Leaks, Spills and Releases, August 13, 1993). Trace analyzed the samples for TPH by EPA SW-846 Method 8015 including GRO, DRO and ORO and chloride by Method 300. Table 1 presents the delineation soil sample analytical data summary. Figure 3 presents a Site drawing and the direct push soil sample locations. Appendix A presents the laboratory report.

All direct push soil samples reported TPH concentrations below the method reporting limit (see Table 1). Chloride ranged from less than the method reporting limit (<25.0 mg/Kg) to 742 mg/kg in sample SB-1, 2 feet. The vertical extent of chloride was not delineated to 250 mg/Kg, as required by OCD.

On October 20, 2016, additional samples were collected near direct push boring SB-2 to delineate chloride vertically to 250 mg/Kg. The samples were collected with a trackhoe about every two (2) feet beginning at about 6 feet bgs and terminating at about 16 feet bgs. The samples were analyzed for headspace vapors with a calibrated PID and reported readings below the OCD action level of 100 ppm. Therefore no analysis for BTEX was performed according to OCD guidelines. No analysis for TPH was performed since TPH was not reported above the method reporting limit in samples between ground surface and 2 feet bgs. The samples were analyzed for chloride by Method 300. Table 1 presents the delineation soil sample analytical data summary. Figure 3 presents a Site drawing and the location for direct push boring. Appendix A presents the laboratory report.

On February 9, 2017, LAI personnel supervised Scarborough Drilling, Inc. (SDI) to drill three (3) air rotary borings (SB-5, SB-6 and SB-7) to complete the delineation. The borings were drilled to about 25 feet bgs

with soil samples collected every 5 feet with a jam tube sampler approximately 1 foot in length. The samples were screened for headspace vapors as previously discussed and recorded PID readings below the OCD action level of 100 ppm. Therefore no analysis for BTEX was performed according to OCD guidelines. The samples were delivered to Permian Basin Environmental Laboratory (PBEL) in Midland, Texas, which analyzed samples from 0, 5, 15 and 25 feet bgs for TPH including GRO, DRO and ORO) by EPA SW-846-8015M and chloride by Method 300. Table 1 presents the delineation soil sample analytical data summary. Figure 3 presents a Site drawing and the location for borings SB-5, SB-6 and SB-7. Appendix A presents the laboratory report. Appendix B presents boring logs. Appendix C presents photographs.

TPH was below the method reporting limit and RRAL. Chloride was delineated vertically to 250 mg/Kg, as required by OCD.

3.0 CONCLUSIONS

The following conclusions are assessment activities performed at the Site:

- Concentrations of TPH were less than the method reporting limit in all samples;
- The highest chloride concentration (732 mg/Kg) was reported in sample SB-4 at 3 feet bgs.

4.0 RECOMENDATION

Targa requests no further action for 1RP-4665. Appendix D presents the initial and final C-141.

Tables

Table 1
1RP-4665
Delineation Soil Sample Analytical Data Summary
Targa Midstream Services, LLC, Epperson 16" Pipeline Release Site #2
Lea County, New Mexico

Sample	Depth (Feet)	Collection Date	Status	PID (ppm)	GRO (mg/Kg)	DRO (mg/Kg)	ORO (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
OCD RRAL:								**100**	****250**
				Hand Auger Soil Samples					
HA-1	0.50	6/16/2016	In-Situ	0.0	<4.00	<50.0	<50.0	<50.0	79.5
HA-2	0.50	6/16/2016	In-Situ	0.0	<4.00	<50.0	<50.0	<50.0	<25.0
HA-3	0.50	6/16/2016	In-Situ	0.8	<4.00	<50.0	<50.0	<50.0	414
HA-4	0.50	6/16/2016	In-Situ	0.0	<4.00	<50.0	<50.0	<50.0	174
				Soil Boring Samples					
SB-1	1	7/5/2016	In-Situ	0.9	<4.00	<50.0	<50.0	<50.0	173
	2	7/5/2016	In-Situ	1.2	<4.00	<50.0	<50.0	<50.0	742
	3	7/5/2016	In-Situ	2.0	<4.00	<50.0	<50.0	<50.0	438
SB-2	1	7/5/2016	In-Situ	0.1	<4.00	<50.0	<50.0	<50.0	72.2
	2	7/5/2016	In-Situ	0.1	<4.00	<50.0	<50.0	<50.0	508
	6	10/20/2016	In-Situ	--	--	--	--	--	64.7
	8	10/20/2016	In-Situ	--	--	--	--	--	<25.0
	10	10/20/2016	In-Situ	--	--	--	--	--	<25.0
	12	10/20/2016	In-Situ	--	--	--	--	--	28.0
	14	10/20/2016	In-Situ	--	--	--	--	--	<25.0
	16	10/20/2016	In-Situ	--	--	--	--	--	<25.0
SB-3	1	7/5/2016	In-Situ	0.0	<4.00	<50.0	<50.0	<50.0	<25.0
	2	7/5/2016	In-Situ	0.0	<4.00	<50.0	<50.0	<50.0	255
	3	7/5/2016	In-Situ	0.0	<4.00	<50.0	<50.0	<50.0	222
SB-4	1	7/5/2016	In-Situ	0.0	<4.00	<50.0	<50.0	<50.0	193
	2	7/5/2016	In-Situ	0.0	<4.00	<50.0	<50.0	<50.0	658
	3	7/5/2016	In-Situ	1.0	<4.00	<50.0	<50.0	<50.0	732
	4	7/5/2016	In-Situ	3.7	<4.00	<50.0	<50.0	<50.0	131
***SB-5**	0	2/9/2017	In-Situ	0.6	<26.6	<26.6	<26.6	<26.6	44.2
	5	2/9/2017	In-Situ	1.4	<26.6	<26.6	<26.6	<26.6	12.3
	10	2/9/2017	In-Situ	2.3	--	--	--	--	--
	15	2/9/2017	In-Situ	1.4	<26.6	<26.6	<26.6	<26.6	3.85
	20	2/9/2017	In-Situ	1.5	--	--	--	--	--
	25	2/9/2017	In-Situ	4.6	<26.6	<26.6	<26.6	<26.6	4.11
***SB-6**	0	2/9/2017	In-Situ	0.3	<27.8	<27.8	<27.8	<27.8	16.1
	5	2/9/2017	In-Situ	0.5	<27.5	<27.5	<27.5	<27.5	646
	10	2/9/2017	In-Situ	7.6	--	--	--	--	--
	15	2/9/2017	In-Situ	1.4	<26.0	<26.0	<26.0	<26.0	7.28
	20	2/9/2017	In-Situ	0.8	--	--	--	--	--
	25	2/9/2017	In-Situ	1.1	<26.3	<26.3	<26.3	<26.3	5.51

Table 1

1RP-4665

Delineation Soil Sample Analytical Data Summary

Targa Midstream Services, LLC, Epperson 16" Pipeline Release Site #2

Lea County, New Mexico

Sample	Depth (Feet)	Collection Date	Status	PID (ppm)	GRO (mg/Kg)	DRO (mg/Kg)	ORO (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
OCD RRAL:								**100**	****250**
***SB-7**	0	2/9/2017	In-Situ	0.3	<25.3	<25.3	<25.3	<25.3	65.8
	5	2/9/2017	In-Situ	0.3	<27.8	<27.8	<27.8	<27.8	360
	10	2/9/2017	In-Situ	3.9	--	--	--	--	--
	15	2/9/2017	In-Situ	25	<28.4	<28.4	<28.4	<28.4	12.0
	20	2/9/2017	In-Situ	1.0					
	25	2/9/2017	In-Situ	6.1	<26.3	<26.3	<26.3	<26.3	--

Notes: Laboratory analysis performed by Trace Analysis, Inc., Lubbock, Texas by EPA SW-846 Method 8021B (BTEX), Method 8015M (TPH) and Method 300 (chloride).

*: Anaylsis performed by Permian Basin Environmental Lab, Midland, Texas

**: OCD delineation limit

--: No data available

Depth in feet below ground surface (bgs)

mg/Kg: milligrams per kilogram equivalent to parts per million (ppm)

Figures

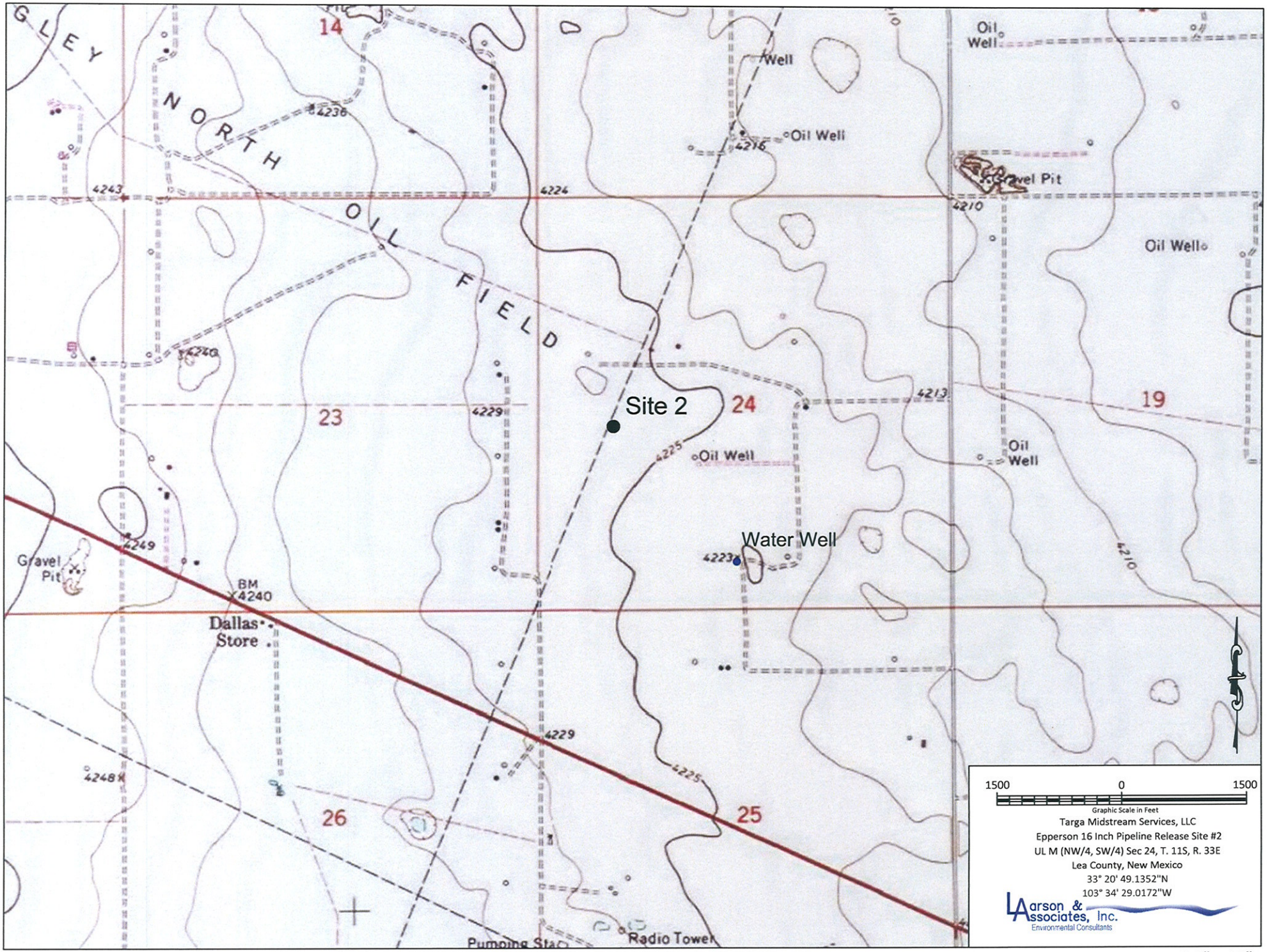


Figure 1 - Topographic Map

8.5" x 11"

Legend

- Site Location

- Targa Pipeline (Approximate)

75 0 75

Graphic Scale in Feet

Targa Midstream Services, LLC
Epperson 16 Inch Pipeline Release Site #2
UL M (NW/4, SW/4) Sec 24, T. 11S, R. 33E
Lea County, New Mexico
33° 20' 49.1352"N
103° 34' 29.0172"W

Larson & Associates, Inc.
Environmental Consultants

Figure 2 - General Aerial Map

8.5" x 11"

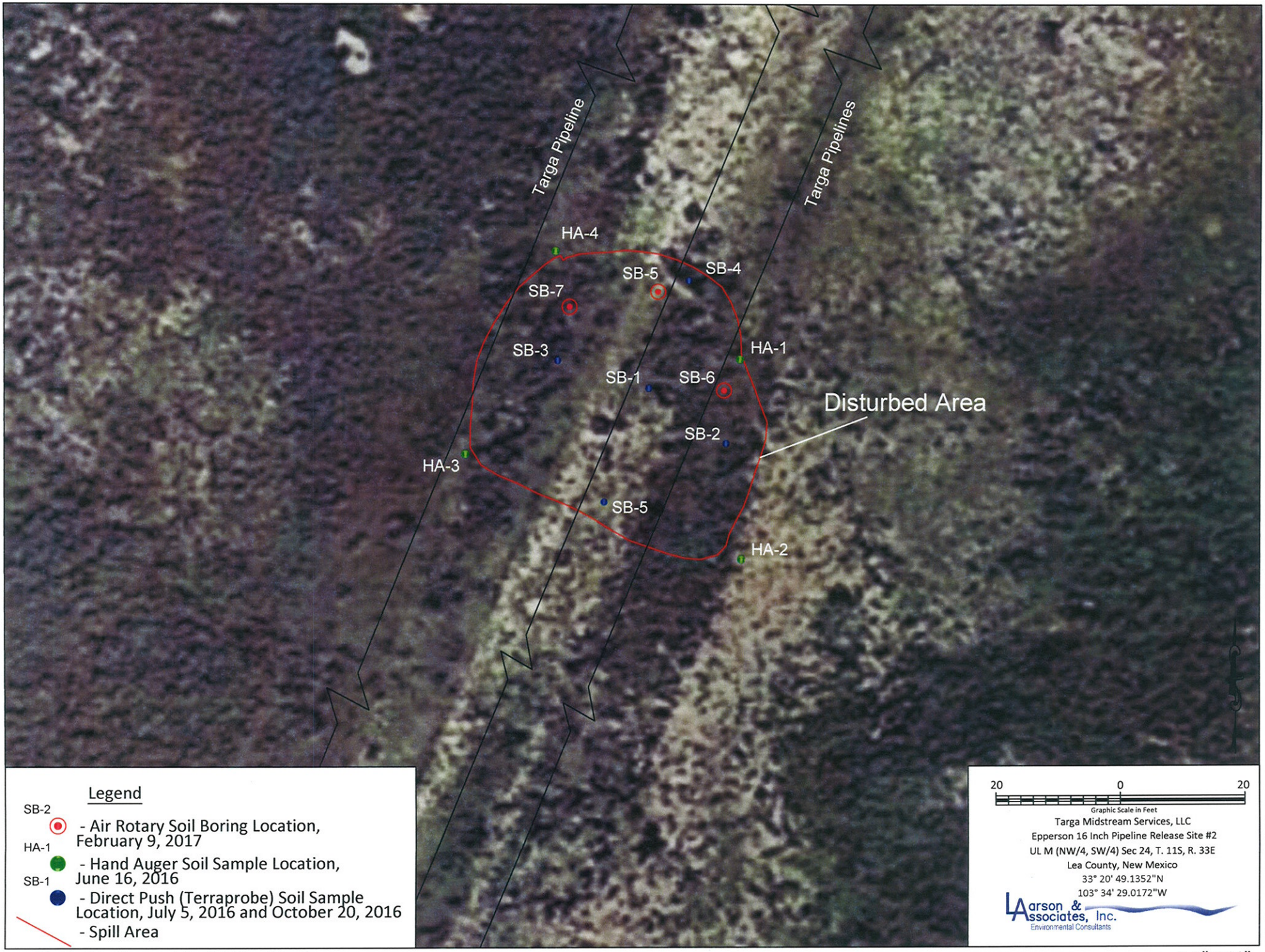


Figure 2a - Focused Aerial Map Site 2

8.5" x 11"

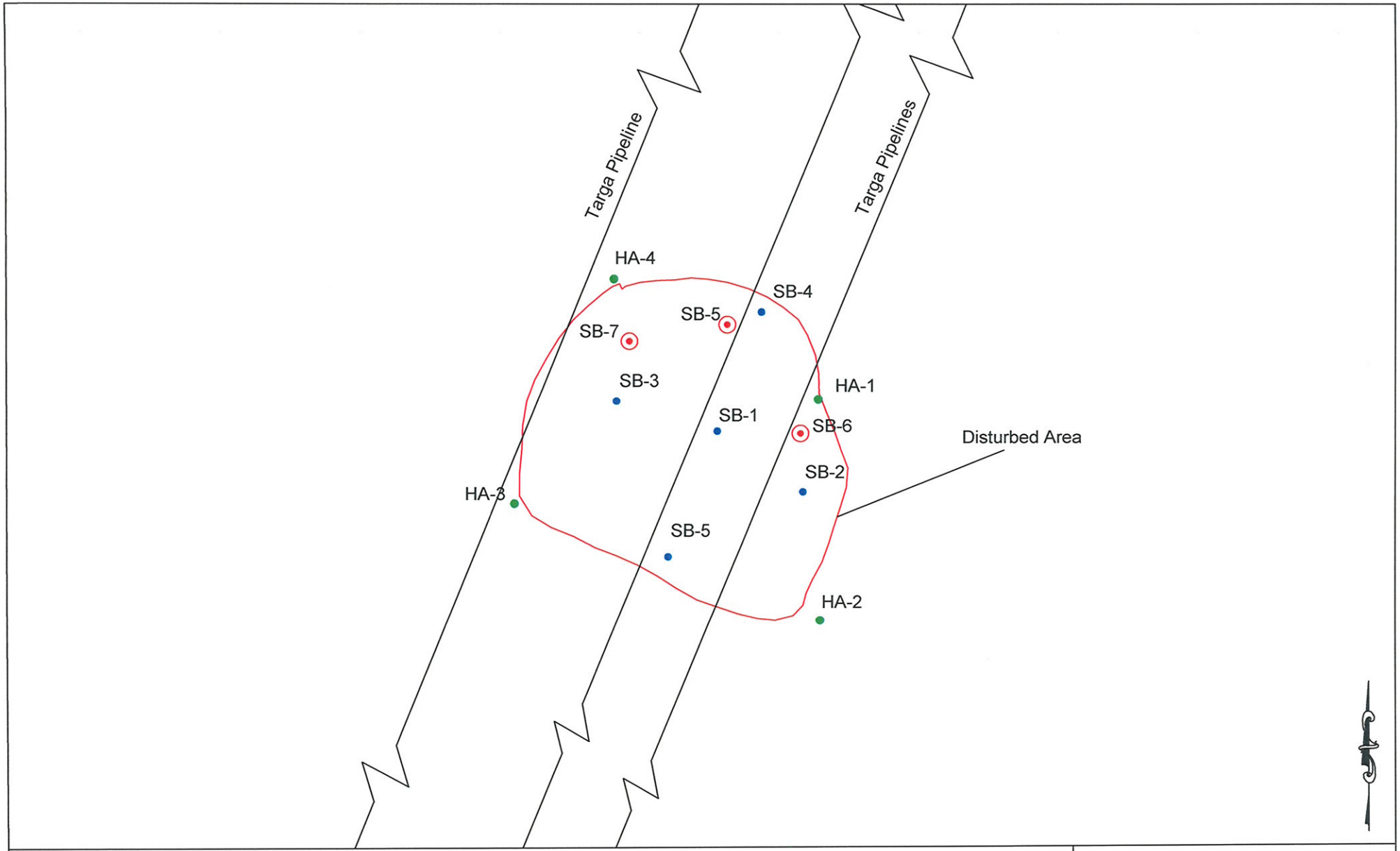


Figure 3 - Site Drawing Showing Soil Sample Locations

8.5" x 11"

Appendix A

Laboratory Reports

Summary Report

Michael Gant
Larson and Associates, Inc.

P. O. Box 50685
Midland, TX 79710

Report Date: June 23, 2016

Work Order: 16061625

Project Name: Epperson 16 Pipeline Release
Project Number: 16-0120-01

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
421963	HA-1	soil	2016-06-16	11:39	2016-06-16
421964	HA-2	soil	2016-06-16	11:42	2016-06-16
421965	HA-3	soil	2016-06-16	11:50	2016-06-16
421966	HA-4	soil	2016-06-16	12:00	2016-06-16

Sample - Field Code		TPH DRO DRO (mg/Kg)		TPH GRO GRO (mg/Kg)
421963 - HA-1		<50.0		<4.00
421964 - HA-2		<50.0		<4.00
421965 - HA-3		<50.0		<4.00
421966 - HA-4		<50.0		<4.00

Sample: 421963 - HA-1

Param	Flag	Result	Units	RL
Chloride		**79.5**	mg/Kg	25
ORO		<50.0	mg/Kg	50

Sample: 421964 - HA-2

Param	Flag	Result	Units	RL
Chloride		<25.0	mg/Kg	25
ORO		<50.0	mg/Kg	50

Sample: 421965 - HA-3

Param	Flag	Result	Units	RL
Chloride		**414**	mg/Kg	25
ORO		<50.0	mg/Kg	50

Sample: 421966 - HA-4

Param	Flag	Result	Units	RL
Chloride		**174**	mg/Kg	25
ORO		<50.0	mg/Kg	50

TRACEANALYSIS, INC.

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

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Michael Gant
Larson and Associates, Inc.

P. O. Box 50685
Midland, TX, 79710

Report Date: June 23, 2016

Work Order: 16061625

Project Name: Epperson 16 Pipeline Release
Project Number: 16-0120-01

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

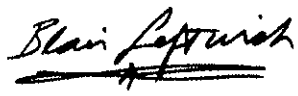
Sample	Description	Matrix	Date Taken	Time Taken	Date Received
421963	HA-1	soil	2016-06-16	11:39	2016-06-16
421964	HA-2	soil	2016-06-16	11:42	2016-06-16
421965	HA-3	soil	2016-06-16	11:50	2016-06-16
421966	HA-4	soil	2016-06-16	12:00	2016-06-16

Notes

- **Work Order 16061625:** straight from the fields, on ice

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.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.



Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Johnny Grindstaff, Operations Manager

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Case Narrative

Samples for project Epperson 16 Pipeline Release were received by TraceAnalysis, Inc. on 2016-06-16 and assigned to work order 16061625. Samples for work order 16061625 were received intact at a temperature of 7.8 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	110994	2016-06-22 at 09:00	130984	2016-06-22 at 09:14
TPH DRO	S 8015 D	110979	2016-06-21 at 15:00	130975	2016-06-22 at 12:31
TPH GRO	S 8015 D	110904	2016-06-17 at 11:02	130904	2016-06-18 at 16:00
TPH ORO	S 8015 D	110979	2016-06-21 at 15:00	130977	2016-06-22 at 12:33

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 16061625 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: 421963 - HA-1

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	130984	Date Analyzed:	2016-06-22	Analyzed By:	RL
Prep Batch:	110994	Sample Preparation:	2016-06-22	Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	**79.5**	mg/Kg	1	25.0

Sample: 421963 - HA-1

Laboratory:	Lubbock				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	130975	Date Analyzed:	2016-06-22	Analyzed By:	HJ
Prep Batch:	110979	Sample Preparation:	2016-06-21	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	19.9	mg/Kg	1	25.0	80	58.2 - 150

Sample: 421963 - HA-1

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	130904	Date Analyzed:	2016-06-18	Analyzed By:	AK
Prep Batch:	110904	Sample Preparation:	2016-06-17	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<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	70 - 130

continued ...

sample continued ...

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)			2.04	mg/Kg	1	2.00	102	70 - 130

Sample: 421963 - HA-1

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130977
Prep Batch: 110979
Analytical Method: S 8015 D
Date Analyzed: 2016-06-22
Sample Preparation: 2016-06-21
Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			20.2	mg/Kg	1	25.0	81	70 - 130
n-Triacontane			22.3	mg/Kg	1	25.0	89	70 - 130

Sample: 421964 - HA-2

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 130984
Prep Batch: 110994
Analytical Method: E 300.0
Date Analyzed: 2016-06-22
Sample Preparation: 2016-06-22
Prep Method: N/A
Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	<25.0	mg/Kg	1	25.0

Sample: 421964 - HA-2

Laboratory: Lubbock
Analysis: TPH DRO
QC Batch: 130975
Prep Batch: 110979
Analytical Method: S 8015 D
Date Analyzed: 2016-06-22
Sample Preparation: 2016-06-21
Prep Method: N/A
Analyzed By: HJ
Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	19.8	mg/Kg	1	25.0	79	58.2 - 150

Sample: 421964 - HA-2

Laboratory: Midland
Analysis: TPH GRO
QC Batch: 130904
Prep Batch: 110904

Analytical Method: S 8015 D
Date Analyzed: 2016-06-18
Sample Preparation: 2016-06-17

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<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	70 - 130
4-Bromofluorobenzene (4-BFB)			2.05	mg/Kg	1	2.00	102	70 - 130

Sample: 421964 - HA-2

Laboratory: Lubbock
Analysis: TPH ORO
QC Batch: 130977
Prep Batch: 110979

Analytical Method: S 8015 D
Date Analyzed: 2016-06-22
Sample Preparation: 2016-06-21

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

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			19.8	mg/Kg	1	25.0	79	70 - 130
n-Triacontane			21.4	mg/Kg	1	25.0	86	70 - 130

Sample: 421965 - HA-3

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 130984
Prep Batch: 110994

Analytical Method: E 300.0
Date Analyzed: 2016-06-22
Sample Preparation: 2016-06-22

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	**414**	mg/Kg	2	25.0

Sample: 421965 - HA-3

Laboratory:	Lubbock				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	130975	Date Analyzed:	2016-06-22	Analyzed By:	HJ
Prep Batch:	110979	Sample Preparation:	2016-06-21	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	19.7	mg/Kg	1	25.0	79	58.2 - 150

Sample: 421965 - HA-3

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	130904	Date Analyzed:	2016-06-18	Analyzed By:	AK
Prep Batch:	110904	Sample Preparation:	2016-06-17	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.91	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			2.05	mg/Kg	1	2.00	102	70 - 130

Sample: 421965 - HA-3

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	130977	Date Analyzed:	2016-06-22	Analyzed By:	HJ
Prep Batch:	110979	Sample Preparation:	2016-06-21	Prepared By:	HJ

continued . . .

sample 421965 continued ...

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			20.3	mg/Kg	1	25.0	81	70 - 130
n-Triacontane			22.0	mg/Kg	1	25.0	88	70 - 130

Sample: 421966 - HA-4

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	130984	Date Analyzed:	2016-06-22	Analyzed By:	RL
Prep Batch:	110994	Sample Preparation:	2016-06-22	Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,4,6	**174**	mg/Kg	1	25.0

Sample: 421966 - HA-4

Laboratory:	Lubbock				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	130975	Date Analyzed:	2016-06-22	Analyzed By:	HJ
Prep Batch:	110979	Sample Preparation:	2016-06-21	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3,4	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	21.2	mg/Kg	1	25.0	85	58.2 - 150

Sample: 421966 - HA-4

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	130904	Date Analyzed:	2016-06-18	Analyzed By:	AK
Prep Batch:	110904	Sample Preparation:	2016-06-17	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	5	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.92	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			2.01	mg/Kg	1	2.00	100	70 - 130

Sample: 421966 - HA-4

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	130977	Date Analyzed:	2016-06-22	Analyzed By:	HJ
Prep Batch:	110979	Sample Preparation:	2016-06-21	Prepared By:	HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			21.6	mg/Kg	1	25.0	86	70 - 130
n-Triacontane			22.6	mg/Kg	1	25.0	90	70 - 130

Method Blanks

Method Blank (1) QC Batch: 130904

QC Batch: 130904 Date Analyzed: 2016-06-18 Analyzed By: AK
Prep Batch: 110904 QC Preparation: 2016-06-17 Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		5	<1.76	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.76	mg/Kg	1	2.00	88	70 - 130
4-Bromofluorobenzene (4-BFB)			1.60	mg/Kg	1	2.00	80	70 - 130

Method Blank (1) QC Batch: 130975

QC Batch: 130975 Date Analyzed: 2016-06-22 Analyzed By: HJ
Prep Batch: 110979 QC Preparation: 2016-06-21 Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1,2,3,4	<8.47	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		3	23.0	mg/Kg	1	25.0	92	58.2 - 150

Method Blank (1) QC Batch: 130977

QC Batch: 130977 Date Analyzed: 2016-06-22 Analyzed By: HJ
Prep Batch: 110979 QC Preparation: 2016-06-21 Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
ORO			<7.48	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			23.0	mg/Kg	1	25.0	92	70 - 130
n-Triacontane			24.8	mg/Kg	1	25.0	99	70 - 130

Method Blank (1) QC Batch: 130984

QC Batch:	130984	Date Analyzed:	2016-06-22	Analyzed By:	RL
Prep Batch:	110994	QC Preparation:	2016-06-22	Prepared By:	RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		3.4.6	<4.44	mg/Kg	25

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 130904
Prep Batch: 110904
Date Analyzed: 2016-06-18
QC Preparation: 2016-06-17
Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		5	19.2	mg/Kg	1	20.0	<1.76	96	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		5	19.0	mg/Kg	1	20.0	<1.76	95	70 - 130	1	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)	1.76	1.76	mg/Kg	1	2.00	88	88	70 - 130
4-Bromofluorobenzene (4-BFB)	1.80	1.80	mg/Kg	1	2.00	90	90	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 130975
Prep Batch: 110979
Date Analyzed: 2016-06-22
QC Preparation: 2016-06-21
Analyzed By: HJ
Prepared By: HJ

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	461	mg/Kg	1	500	<8.47	92	68.5 - 136

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	486	mg/Kg	1	500	<8.47	97	68.5 - 136	5	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	3	21.4	22.2	mg/Kg	1	25.0	86	89	58.2 - 150

Laboratory Control Spike (LCS-1)

QC Batch: 130977
Prep Batch: 110979
Date Analyzed: 2016-06-22
QC Preparation: 2016-06-21
Analyzed By: HJ
Prepared By: HJ

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	21.4	22.2	mg/Kg	1	25.0	86	89	70 - 130
n-Triacontane	21.0	21.4	mg/Kg	1	25.0	84	86	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 130984
Prep Batch: 110994
Date Analyzed: 2016-06-22
QC Preparation: 2016-06-22
Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,6	233	mg/Kg	1	250	<4.44	93	90 - 110

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		3,4,6	238	mg/Kg	1	250	<4.44	95	90 - 110	2	20

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

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 421966

QC Batch: 130904
Prep Batch: 110904

Date Analyzed: 2016-06-18
QC Preparation: 2016-06-17

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		5	14.6	mg/Kg	1	20.0	<1.76	73	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		5	15.8	mg/Kg	1	20.0	<1.76	79	70 - 130	8	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)	1.81	1.80	mg/Kg	1	2	90	90	70 - 130
4-Bromofluorobenzene (4-BFB)	2.11	2.00	mg/Kg	1	2	106	100	70 - 130

Matrix Spike (xMS-1) Spiked Sample: 422088

QC Batch: 130975
Prep Batch: 110979

Date Analyzed: 2016-06-22
QC Preparation: 2016-06-21

Analyzed By: HJ
Prepared By: HJ

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3,4	557	mg/Kg	1	500	<8.47	111	49.3 - 138

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3,4	565	mg/Kg	1	500	<8.47	113	49.3 - 138	1	20

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

Surrogate		MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	3	26.2	26.8	mg/Kg	1	25	105	107	58.2 - 150

Matrix Spike (xMS-1) Spiked Sample: 422088

QC Batch: 130977
Prep Batch: 110979
Date Analyzed: 2016-06-22
QC Preparation: 2016-06-21
Analyzed By: HJ
Prepared By: HJ

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	26.8	24.7	mg/Kg	1	25	107	99	70 - 130
n-Triacontane	26.4	24.4	mg/Kg	1	25	106	98	70 - 130

Matrix Spike (MS-1) Spiked Sample: 421966

QC Batch: 130984
Prep Batch: 110994
Date Analyzed: 2016-06-22
QC Preparation: 2016-06-22
Analyzed By: RL
Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,4,6	412	mg/Kg	1	250	174	95	80 - 120

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,4,6	415	mg/Kg	1	250	174	96	80 - 120	1	20

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

Calibration Standards

Standard (CCV-1)

QC Batch: 130904 Date Analyzed: 2016-06-18 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.891	89	80 - 120	2016-06-18

Standard (CCV-2)

QC Batch: 130904 Date Analyzed: 2016-06-18 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		5	mg/Kg	1.00	0.832	83	80 - 120	2016-06-18

Standard (CCV-1)

QC Batch: 130975 Date Analyzed: 2016-06-22 Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	500	466	93	80 - 120	2016-06-22

Standard (CCV-2)

QC Batch: 130975 Date Analyzed: 2016-06-22 Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3,4	mg/Kg	500	473	95	80 - 120	2016-06-22

Standard (CCV-1)

QC Batch: 130984 Date Analyzed: 2016-06-22 Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,6	mg/Kg	25.0	23.4	94	90 - 110	2016-06-22

Standard (CCV-2)

QC Batch: 130984 Date Analyzed: 2016-06-22 Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,4,6	mg/Kg	25.0	24.4	98	90 - 110	2016-06-22

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	L-A-B	L2418	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-16-12	Lubbock
5	NELAP	T104704392-14-8	Midland
6		2015-066	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.

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.

WO#: 16061625

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants

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

Data Reported to:

DATE: 6/16/2016 PAGE 1 OF 1

PO #: _____ LAB WORK ORDER #: 16061625

PROJECT LOCATION OR NAME: Epperson 16 Pipeline

LAI PROJECT #: 16-ODO-01 COLLECTOR: Michael Gant

TRRP report? ☐ Yes ☐ No

TIME ZONE: Time zone/State:

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

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES: BTEX ☐ MTBE ☐	TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐	GASOLINE MOD 8015	DIESEL - MOD 8015	VOC 8260 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐	8081 PESTICIDES ☐ 8151 HERBICIDES ☐	8082 PCBS ☐	TCLP - METALS (RCRA) ☐ TCLP VOC ☐	TCLP - PEST ☐ HERB ☐ Semi-VOC ☐	TOTAL METALS (RCRA) ☐ OTHER LIST ☐	LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐	RCI ☐ TOX ☐ FLASHPOINT ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	pH ☐ HEXAVALENT CHROMIUM ☐	EXPLOSIVES ☐ PECHLORATE ☐	CHLORIDE ANIONS ☐ ALKALINITY ☐	300.0	FIELD NOTES
HA-1		6/16	11:39	S	1				X		X	X															X		421963
HA-2		6/16	11:42	S	1				X		X	X															X		421964
HA-3		6/16	11:50	S	1				X		X	X															X		421965
HA-4		6/16	12:00	S	1				X		X	X															X		421966
TOTAL																													

RELINQUISHED BY:(Signature) DATE/TIME 6/16/16 4:22 RECEIVED BY: (Signature) 6-16-16 4:27

RELINQUISHED BY:(Signature) DATE/TIME 6/16/16 6:30 RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature) 8:45

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

LABORATORY USE ONLY:
RECEIVING TEMP: IR-1 THERM #: 7.8
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL # ZS ZT 664612
☑ HAND DELIVERED 4.0/4.4

from the fields

AJ

Summary Report

Michael Gant
Larson and Associates, Inc.

P. O. Box 50685
Midland, TX 79710

Report Date: July 15, 2016

Work Order: 16070823

Project Name: Epperson 16" Pipeline Site 2
Project Number: 16-0120-02

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
423761	SB-1-1	soil	2016-07-05	12:15	2016-07-08
423762	SB-1-2	soil	2016-07-05	12:17	2016-07-08
423763	SB-1-3	soil	2016-07-05	12:20	2016-07-08
423764	SB-2-1	soil	2016-07-05	12:35	2016-07-08
423765	SB-2-2	soil	2016-07-05	12:35	2016-07-08
423766	SB-3-3	soil	2016-07-05	12:30	2016-07-08
423767	SB-3-2	soil	2016-07-05	12:30	2016-07-08
423768	SB-3-1	soil	2016-07-05	12:30	2016-07-08
423769	SB-4-1	soil	2016-07-05	12:22	2016-07-08
423770	SB-4-2	soil	2016-07-05	12:22	2016-07-08
423771	SB-4-3	soil	2016-07-05	12:22	2016-07-08
423772	SB-4-4	soil	2016-07-05	12:22	2016-07-08

Sample - Field Code	TPH DRO DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
423761 - SB-1-1	<50.0	<4.24
423762 - SB-1-2	<50.0	<4.24
423763 - SB-1-3	<50.0	<4.24
423764 - SB-2-1	<50.0	<4.24
423765 - SB-2-2	<50.0	<4.24
423766 - SB-3-3	<50.0	<4.24
423767 - SB-3-2	<50.0	<4.24
423768 - SB-3-1	<50.0	<4.24
423769 - SB-4-1	<50.0	<4.24
423770 - SB-4-2	<50.0	<4.24
423771 - SB-4-3	<50.0	<4.24
423772 - SB-4-4	<50.0	<4.24

Sample: 423761 - SB-1-1

Param	Flag	Result	Units	RL
Chloride		**173**	mg/Kg	25
ORO		<50.0	mg/Kg	50

Sample: 423762 - SB-1-2

Param	Flag	Result	Units	RL
Chloride	Qs	**742**	mg/Kg	25
ORO		<50.0	mg/Kg	50

Sample: 423763 - SB-1-3

Param	Flag	Result	Units	RL
Chloride		**438**	mg/Kg	25
ORO	Qs	<50.0	mg/Kg	50

Sample: 423764 - SB-2-1

Param	Flag	Result	Units	RL
Chloride		**72.2**	mg/Kg	25
ORO		<50.0	mg/Kg	50

Sample: 423765 - SB-2-2

Param	Flag	Result	Units	RL
Chloride		**508**	mg/Kg	25
ORO		<50.0	mg/Kg	50

Sample: 423766 - SB-3-3

Param	Flag	Result	Units	RL
Chloride		**222**	mg/Kg	25
ORO		<50.0	mg/Kg	50

Sample: 423767 - SB-3-2

Param	Flag	Result	Units	RL
Chloride		**255**	mg/Kg	25
ORO		<50.0	mg/Kg	50

Sample: 423768 - SB-3-1

Param	Flag	Result	Units	RL
Chloride		<25.0	mg/Kg	25
ORO		<50.0	mg/Kg	50

Sample: 423769 - SB-4-1

Param	Flag	Result	Units	RL
Chloride		**193**	mg/Kg	25
ORO		<50.0	mg/Kg	50

Sample: 423770 - SB-4-2

Param	Flag	Result	Units	RL
Chloride		**658**	mg/Kg	25
ORO		<50.0	mg/Kg	50

Sample: 423771 - SB-4-3

Param	Flag	Result	Units	RL
Chloride		**732**	mg/Kg	25
ORO		<50.0	mg/Kg	50

Sample: 423772 - SB-4-4

Param	Flag	Result	Units	RL
Chloride		**131**	mg/Kg	25
ORO		<50.0	mg/Kg	50

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Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Michael Gant
Larson and Associates, Inc.

P. O. Box 50685
Midland, TX, 79710

Report Date: July 15, 2016

Work Order: 16070823

Project Name: Epperson 16" Pipeline Site 2
Project Number: 16-0120-02

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
423761	SB-1-1	soil	2016-07-05	12:15	2016-07-08
423762	SB-1-2	soil	2016-07-05	12:17	2016-07-08
423763	SB-1-3	soil	2016-07-05	12:20	2016-07-08
423764	SB-2-1	soil	2016-07-05	12:35	2016-07-08
423765	SB-2-2	soil	2016-07-05	12:35	2016-07-08
423766	SB-3-3	soil	2016-07-05	12:30	2016-07-08
423767	SB-3-2	soil	2016-07-05	12:30	2016-07-08
423768	SB-3-1	soil	2016-07-05	12:30	2016-07-08
423769	SB-4-1	soil	2016-07-05	12:22	2016-07-08
423770	SB-4-2	soil	2016-07-05	12:22	2016-07-08
423771	SB-4-3	soil	2016-07-05	12:22	2016-07-08
423772	SB-4-4	soil	2016-07-05	12:22	2016-07-08

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.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company,

sampler, contacts and any special remarks.

This report consists of a total of 39 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Johnny Grindstaff, Operations Manager

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Case Narrative

Samples for project Epperson 16" Pipeline Site 2 were received by TraceAnalysis, Inc. on 2016-07-08 and assigned to work order 16070823. Samples for work order 16070823 were received intact at a temperature of 4.6 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	111403	2016-07-13 at 12:00	131482	2016-07-14 at 08:28
Chloride (IC)	E 300.0	111403	2016-07-13 at 12:00	131495	2016-07-14 at 13:05
Chloride (IC)	E 300.0	111438	2016-07-14 at 13:00	131496	2016-07-14 at 17:52
TPH DRO	S 8015 D	111363	2016-07-12 at 14:00	131410	2016-07-13 at 09:59
TPH DRO	S 8015 D	111364	2016-07-12 at 15:00	131412	2016-07-13 at 10:03
TPH GRO	S 8015 D	111315	2016-07-08 at 15:00	131369	2016-07-12 at 07:07
TPH GRO	S 8015 D	111323	2016-07-08 at 15:00	131432	2016-07-14 at 09:49
TPH ORO	S 8015 D	111363	2016-07-12 at 14:00	131411	2016-07-13 at 10:02
TPH ORO	S 8015 D	111364	2016-07-12 at 15:00	131413	2016-07-13 at 10:05

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 16070823 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: 423761 - SB-1-1

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	131495	Date Analyzed:	2016-07-14	Analyzed By:	RL
Prep Batch:	111403	Sample Preparation:	2016-07-13	Prepared By:	RL

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride		3,5	**173**	mg/Kg	1	25.0

Sample: 423761 - SB-1-1

Laboratory:	Lubbock				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131410	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111363	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	U	1,2,3	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			26.7	mg/Kg	1	25.0	107	58.2 - 150

Sample: 423761 - SB-1-1

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	131369	Date Analyzed:	2016-07-12	Analyzed By:	AK
Prep Batch:	111315	Sample Preparation:	2016-07-08	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	U	4	<4.24	mg/Kg	1.06	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.16	mg/Kg	1.06	2.00	108	70 - 130

continued ...

sample continued ...

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)			2.10	mg/Kg	1.06	2.00	105	70 - 130

Sample: 423761 - SB-1-1

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131411	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111363	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			26.7	mg/Kg	1	25.0	107	70 - 130
n-Triacontane			31.7	mg/Kg	1	25.0	127	70 - 130

Sample: 423762 - SB-1-2

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	131482	Date Analyzed:	2016-07-14	Analyzed By:	RL
Prep Batch:	111403	Sample Preparation:	2016-07-13	Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	Qn	3,5	**742**	mg/Kg	5	25.0

Sample: 423762 - SB-1-2

Laboratory:	Lubbock				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131410	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111363	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			28.0	mg/Kg	1	25.0	112	58.2 - 150

Sample: 423762 - SB-1-2

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	131369	Date Analyzed:	2016-07-12	Analyzed By:	AK
Prep Batch:	111315	Sample Preparation:	2016-07-08	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	4	<4.24	mg/Kg	1.06	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.12	mg/Kg	1.06	2.00	106	70 - 130
4-Bromofluorobenzene (4-BFB)			2.10	mg/Kg	1.06	2.00	105	70 - 130

Sample: 423762 - SB-1-2

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131411	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111363	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			28.0	mg/Kg	1	25.0	112	70 - 130
n-Triacontane			26.6	mg/Kg	1	25.0	106	70 - 130

Sample: 423763 - SB-1-3

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	131495	Date Analyzed:	2016-07-14	Analyzed By:	RL
Prep Batch:	111403	Sample Preparation:	2016-07-13	Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,5	**438**	mg/Kg	10	25.0

Sample: 423763 - SB-1-3

Laboratory:	Lubbock				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131412	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			30.2	mg/Kg	1	25.0	121	58.2 - 150

Sample: 423763 - SB-1-3

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	131432	Date Analyzed:	2016-07-14	Analyzed By:	AK
Prep Batch:	111323	Sample Preparation:	2016-07-08	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	4	<4.24	mg/Kg	1.06	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.13	mg/Kg	1.06	2.00	106	70 - 130
4-Bromofluorobenzene (4-BFB)			2.20	mg/Kg	1.06	2.00	110	70 - 130

Sample: 423763 - SB-1-3

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131413	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

continued ...

sample 423763 continued ...

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	Qx,U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			30.2	mg/Kg	1	25.0	121	70 - 130
n-Triacontane			29.8	mg/Kg	1	25.0	119	70 - 130

Sample: 423764 - SB-2-1

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	131495	Date Analyzed:	2016-07-14	Analyzed By:	RL
Prep Batch:	111403	Sample Preparation:	2016-07-13	Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,5	**72.2**	mg/Kg	1	25.0

Sample: 423764 - SB-2-1

Laboratory:	Lubbock				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131412	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			33.8	mg/Kg	1	25.0	135	58.2 - 150

Sample: 423764 - SB-2-1

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	131432	Date Analyzed:	2016-07-14	Analyzed By:	AK
Prep Batch:	111323	Sample Preparation:	2016-07-08	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	4	<4.24	mg/Kg	1.06	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.19	mg/Kg	1.06	2.00	110	70 - 130
4-Bromofluorobenzene (4-BFB)			2.17	mg/Kg	1.06	2.00	108	70 - 130

Sample: 423764 - SB-2-1

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131413	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			31.9	mg/Kg	1	25.0	128	70 - 130
n-Triacontane			30.4	mg/Kg	1	25.0	122	70 - 130

Sample: 423765 - SB-2-2

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	131495	Date Analyzed:	2016-07-14	Analyzed By:	RL
Prep Batch:	111403	Sample Preparation:	2016-07-13	Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,5	**508**	mg/Kg	5	25.0

Sample: 423765 - SB-2-2

Laboratory:	Lubbock				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131412	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			28.0	mg/Kg	1	25.0	112	58.2 - 150

Sample: 423765 - SB-2-2

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	131432	Date Analyzed:	2016-07-14	Analyzed By:	AK
Prep Batch:	111323	Sample Preparation:	2016-07-08	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	4	<4.24	mg/Kg	1.06	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.24	mg/Kg	1.06	2.00	112	70 - 130
4-Bromofluorobenzene (4-BFB)			2.19	mg/Kg	1.06	2.00	110	70 - 130

Sample: 423765 - SB-2-2

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131413	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			28.0	mg/Kg	1	25.0	112	70 - 130

continued ...

sample continued ...

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			26.5	mg/Kg	1	25.0	106	70 - 130

Sample: 423766 - SB-3-3

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	131495	Date Analyzed:	2016-07-14	Analyzed By:	RL
Prep Batch:	111403	Sample Preparation:	2016-07-13	Prepared By:	RL

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
Chloride		3,5	**222**	mg/Kg	2	25.0

Sample: 423766 - SB-3-3

Laboratory:	Lubbock				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131412	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
DRO	U	1,2,3	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			32.4	mg/Kg	1	25.0	130	58.2 - 150

Sample: 423766 - SB-3-3

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	131432	Date Analyzed:	2016-07-14	Analyzed By:	AK
Prep Batch:	111323	Sample Preparation:	2016-07-08	Prepared By:	AK

Parameter	Flag	Cert	Result	RL Units	Dilution	RL
GRO	U	4	<4.24	mg/Kg	1.06	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.24	mg/Kg	1.06	2.00	112	70 - 130
4-Bromofluorobenzene (4-BFB)			2.22	mg/Kg	1.06	2.00	111	70 - 130

Sample: 423766 - SB-3-3

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131413	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			30.5	mg/Kg	1	25.0	122	70 - 130
n-Triacontane			29.5	mg/Kg	1	25.0	118	70 - 130

Sample: 423767 - SB-3-2

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	131496	Date Analyzed:	2016-07-14	Analyzed By:	RL
Prep Batch:	111438	Sample Preparation:	2016-07-14	Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,5	**255**	mg/Kg	2	25.0

Sample: 423767 - SB-3-2

Laboratory:	Lubbock				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131412	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			33.6	mg/Kg	1	25.0	134	58.2 - 150

Sample: 423767 - SB-3-2

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	131432	Date Analyzed:	2016-07-14	Analyzed By:	AK
Prep Batch:	111323	Sample Preparation:	2016-07-08	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	4	<4.24	mg/Kg	1.06	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.36	mg/Kg	1.06	2.00	118	70 - 130
4-Bromofluorobenzene (4-BFB)			2.36	mg/Kg	1.06	2.00	118	70 - 130

Sample: 423767 - SB-3-2

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131413	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			31.7	mg/Kg	1	25.0	127	70 - 130
n-Triacontane			30.0	mg/Kg	1	25.0	120	70 - 130

Sample: 423768 - SB-3-1

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	131496	Date Analyzed:	2016-07-14	Analyzed By:	RL
Prep Batch:	111438	Sample Preparation:	2016-07-14	Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,5	<25.0	mg/Kg	1	25.0

Sample: 423768 - SB-3-1

Laboratory:	Lubbock				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131412	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			28.2	mg/Kg	1	25.0	113	58.2 - 150

Sample: 423768 - SB-3-1

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	131432	Date Analyzed:	2016-07-14	Analyzed By:	AK
Prep Batch:	111323	Sample Preparation:	2016-07-08	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	4	<4.24	mg/Kg	1.06	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.13	mg/Kg	1.06	2.00	106	70 - 130
4-Bromofluorobenzene (4-BFB)			2.02	mg/Kg	1.06	2.00	101	70 - 130

Sample: 423768 - SB-3-1

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131413	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

continued ...

sample 423768 continued ...

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			28.2	mg/Kg	1	25.0	113	70 - 130
n-Triacontane			32.2	mg/Kg	1	25.0	129	70 - 130

Sample: 423769 - SB-4-1

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	131496	Date Analyzed:	2016-07-14	Analyzed By:	RL
Prep Batch:	111438	Sample Preparation:	2016-07-14	Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,5	**193**	mg/Kg	2	25.0

Sample: 423769 - SB-4-1

Laboratory:	Lubbock				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131412	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			25.8	mg/Kg	1	25.0	103	58.2 - 150

Sample: 423769 - SB-4-1

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	131432	Date Analyzed:	2016-07-14	Analyzed By:	AK
Prep Batch:	111323	Sample Preparation:	2016-07-08	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	4	<4.24	mg/Kg	1.06	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.14	mg/Kg	1.06	2.00	107	70 - 130
4-Bromofluorobenzene (4-BFB)			2.03	mg/Kg	1.06	2.00	102	70 - 130

Sample: 423769 - SB-4-1

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131413	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			25.8	mg/Kg	1	25.0	103	70 - 130
n-Triacontane			24.1	mg/Kg	1	25.0	96	70 - 130

Sample: 423770 - SB-4-2

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	131496	Date Analyzed:	2016-07-14	Analyzed By:	RL
Prep Batch:	111438	Sample Preparation:	2016-07-14	Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,5	**658**	mg/Kg	5	25.0

Sample: 423770 - SB-4-2

Laboratory:	Lubbock				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131412	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			31.2	mg/Kg	1	25.0	125	58.2 - 150

Sample: 423770 - SB-4-2

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	131432	Date Analyzed:	2016-07-14	Analyzed By:	AK
Prep Batch:	111323	Sample Preparation:	2016-07-08	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	4	<4.24	mg/Kg	1.06	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.18	mg/Kg	1.06	2.00	109	70 - 130
4-Bromofluorobenzene (4-BFB)			2.14	mg/Kg	1.06	2.00	107	70 - 130

Sample: 423770 - SB-4-2

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131413	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			31.2	mg/Kg	1	25.0	125	70 - 130

continued . . .

sample continued . . .

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane			30.2	mg/Kg	1	25.0	121	70 - 130

Sample: 423771 - SB-4-3

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	131496	Date Analyzed:	2016-07-14	Analyzed By:	RL
Prep Batch:	111438	Sample Preparation:	2016-07-14	Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,5	**732**	mg/Kg	10	25.0

Sample: 423771 - SB-4-3

Laboratory:	Lubbock				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131412	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			29.0	mg/Kg	1	25.0	116	58.2 - 150

Sample: 423771 - SB-4-3

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	131432	Date Analyzed:	2016-07-14	Analyzed By:	AK
Prep Batch:	111323	Sample Preparation:	2016-07-08	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	4	<4.24	mg/Kg	1.06	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.13	mg/Kg	1.06	2.00	106	70 - 130
4-Bromofluorobenzene (4-BFB)			2.06	mg/Kg	1.06	2.00	103	70 - 130

Sample: 423771 - SB-4-3

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131413	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			29.0	mg/Kg	1	25.0	116	70 - 130
n-Triacontane			28.0	mg/Kg	1	25.0	112	70 - 130

Sample: 423772 - SB-4-4

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	131495	Date Analyzed:	2016-07-14	Analyzed By:	RL
Prep Batch:	111403	Sample Preparation:	2016-07-13	Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,5	**131**	mg/Kg	5	25.0

Sample: 423772 - SB-4-4

Laboratory:	Lubbock				
Analysis:	TPH DRO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131412	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	U	1,2,3	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			28.4	mg/Kg	1	25.0	114	58.2 - 150

Sample: 423772 - SB-4-4

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	131432	Date Analyzed:	2016-07-14	Analyzed By:	AK
Prep Batch:	111323	Sample Preparation:	2016-07-08	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	4	<4.24	mg/Kg	1.06	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.22	mg/Kg	1.06	2.00	111	70 - 130
4-Bromofluorobenzene (4-BFB)			2.19	mg/Kg	1.06	2.00	110	70 - 130

Sample: 423772 - SB-4-4

Laboratory:	Lubbock				
Analysis:	TPH ORO	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	131413	Date Analyzed:	2016-07-13	Analyzed By:	HJ
Prep Batch:	111364	Sample Preparation:	2016-07-12	Prepared By:	HJ

Parameter	Flag	Cert	MDL Result	MQL Result	PQL Result	RL Result	Units	Dilution	MDL	MQL	PQL	RL
ORO	U		<7.48	<50.0	<50.0	<50.0	mg/Kg	1	7.48	50.0	50.0	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			28.4	mg/Kg	1	25.0	114	70 - 130
n-Triacontane			29.0	mg/Kg	1	25.0	116	70 - 130

Method Blanks

Method Blank (1) QC Batch: 131369

QC Batch: 131369 Date Analyzed: 2016-07-12 Analyzed By: AK
Prep Batch: 111315 QC Preparation: 2016-07-08 Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		4	<1.86	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.08	mg/Kg	1.06	2.00	104	70 - 130
4-Bromofluorobenzene (4-BFB)			1.81	mg/Kg	1.06	2.00	90	70 - 130

Method Blank (1) QC Batch: 131410

QC Batch: 131410 Date Analyzed: 2016-07-13 Analyzed By: HJ
Prep Batch: 111363 QC Preparation: 2016-07-12 Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1,2,3	<8.47	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			26.8	mg/Kg	1	25.0	107	58.2 - 150

Method Blank (1) QC Batch: 131411

QC Batch: 131411 Date Analyzed: 2016-07-13 Analyzed By: HJ
Prep Batch: 111363 QC Preparation: 2016-07-12 Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
ORO			<7.48	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			26.8	mg/Kg	1	25.0	107	70 - 130
n-Triacontane			27.1	mg/Kg	1	25.0	108	70 - 130

Method Blank (1) QC Batch: 131412

QC Batch: 131412 Date Analyzed: 2016-07-13 Analyzed By: HJ
Prep Batch: 111364 QC Preparation: 2016-07-12 Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1,2,3	<8.47	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			28.7	mg/Kg	1	25.0	115	58.2 - 150

Method Blank (1) QC Batch: 131413

QC Batch: 131413 Date Analyzed: 2016-07-13 Analyzed By: HJ
Prep Batch: 111364 QC Preparation: 2016-07-12 Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
ORO			<7.48	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			28.7	mg/Kg	1	25.0	115	70 - 130
n-Triacontane			27.6	mg/Kg	1	25.0	110	70 - 130

Method Blank (1) QC Batch: 131432

QC Batch: 131432 Date Analyzed: 2016-07-14 Analyzed By: AK
Prep Batch: 111323 QC Preparation: 2016-07-08 Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		4	<1.86	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.17	mg/Kg	1.06	2.00	108	70 - 130
4-Bromofluorobenzene (4-BFB)			1.81	mg/Kg	1.06	2.00	90	70 - 130

Method Blank (1) QC Batch: 131482

QC Batch: 131482 Date Analyzed: 2016-07-14 Analyzed By: RL
Prep Batch: 111403 QC Preparation: 2016-07-13 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		3,5	<4.44	mg/Kg	25

Method Blank (1) QC Batch: 131495

QC Batch: 131495 Date Analyzed: 2016-07-14 Analyzed By: RL
Prep Batch: 111403 QC Preparation: 2016-07-13 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		3,5	<4.44	mg/Kg	25

Method Blank (1) QC Batch: 131496

QC Batch: 131496 Date Analyzed: 2016-07-14 Analyzed By: RL
Prep Batch: 111438 QC Preparation: 2016-07-14 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		3,5	<4.44	mg/Kg	25

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 131369
Prep Batch: 111315
Date Analyzed: 2016-07-12
QC Preparation: 2016-07-08
Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		4	24.1	mg/Kg	1.06	20.0	<1.86	120	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		4	24.9	mg/Kg	1.06	20.0	<1.86	124	70 - 130	3	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.13	2.13	mg/Kg	1.06	2.00	106	106	70 - 130
4-Bromofluorobenzene (4-BFB)	2.06	2.08	mg/Kg	1.06	2.00	103	104	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 131410
Prep Batch: 111363
Date Analyzed: 2016-07-13
QC Preparation: 2016-07-12
Analyzed By: HJ
Prepared By: HJ

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3	610	mg/Kg	1	500	<8.47	122	68.5 - 136

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3	606	mg/Kg	1	500	<8.47	121	68.5 - 136	1	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	33.2	34.8	mg/Kg	1	25.0	133	139	58.2 - 150

Laboratory Control Spike (LCS-1)

QC Batch: 131411 | Date Analyzed: 2016-07-13 | Analyzed By: HJ
Prep Batch: 111363 | QC Preparation: 2016-07-12 | Prepared By: HJ

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	31.9	32.1	mg/Kg	1	25.0	128	128	70 - 130
n-Triacontane	24.5	24.1	mg/Kg	1	25.0	98	96	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 131412 | Date Analyzed: 2016-07-13 | Analyzed By: HJ
Prep Batch: 111364 | QC Preparation: 2016-07-12 | Prepared By: HJ

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3	583	mg/Kg	1	500	<8.47	117	68.5 - 136

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3	593	mg/Kg	1	500	<8.47	119	68.5 - 136	2	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	34.2	33.8	mg/Kg	1	25.0	137	135	58.2 - 150

Laboratory Control Spike (LCS-1)

QC Batch: 131413 | Date Analyzed: 2016-07-13 | Analyzed By: HJ
Prep Batch: 111364 | QC Preparation: 2016-07-12 | Prepared By: HJ

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	30.8	31.0	mg/Kg	1	25.0	123	124	70 - 130
n-Triacontane	25.0	23.2	mg/Kg	1	25.0	100	93	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 131432 | Date Analyzed: 2016-07-14 | Analyzed By: AK
Prep Batch: 111323 | QC Preparation: 2016-07-08 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		4	21.2	mg/Kg	1.06	20.0	<1.86	106	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		4	21.3	mg/Kg	1.06	20.0	<1.86	106	70 - 130	1	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.10	2.15	mg/Kg	1.06	2.00	105	108	70 - 130
4-Bromofluorobenzene (4-BFB)	2.01	2.04	mg/Kg	1.06	2.00	100	102	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 131482 | Date Analyzed: 2016-07-14 | Analyzed By: RL
Prep Batch: 111403 | QC Preparation: 2016-07-13 | Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,5	233	mg/Kg	1	250	<4.44	93	90 - 110

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		3,5	228	mg/Kg	1	250	<4.44	91	90 - 110	2	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 131495 | Date Analyzed: 2016-07-14 | Analyzed By: RL
Prep Batch: 111403 | QC Preparation: 2016-07-13 | Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3.5	239	mg/Kg	1	250	<4.44	96	90 - 110

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		3.5	245	mg/Kg	1	250	<4.44	98	90 - 110	2	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 131496
Prep Batch: 111438

Date Analyzed: 2016-07-14
QC Preparation: 2016-07-14

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3.5	235	mg/Kg	1	250	<4.44	94	90 - 110

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		3.5	235	mg/Kg	1	250	<4.44	94	90 - 110	0	20

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

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 423749

QC Batch: 131369
Prep Batch: 111315
Date Analyzed: 2016-07-12
QC Preparation: 2016-07-08
Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		4	19.8	mg/Kg	1.06	20.0	<1.86	99	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		4	22.2	mg/Kg	1.06	20.0	<1.86	111	70 - 130	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
Trifluorotoluene (TFT)	2.04	2.05	mg/Kg	1.06	2	102	102	70 - 130
4-Bromofluorobenzene (4-BFB)	2.21	2.20	mg/Kg	1.06	2	110	110	70 - 130

Matrix Spike (MS-1) Spiked Sample: 423743

QC Batch: 131410
Prep Batch: 111363
Date Analyzed: 2016-07-13
QC Preparation: 2016-07-12
Analyzed By: HJ
Prepared By: HJ

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3	605	mg/Kg	1	500	<8.47	121	49.3 - 138

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3	585	mg/Kg	1	500	<8.47	117	49.3 - 138	3	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	36.3	36.7	mg/Kg	1	25	145	147	58.2 - 150

Matrix Spike (MS-1) Spiked Sample: 423743

QC Batch: 131411 Date Analyzed: 2016-07-13 Analyzed By: HJ
Prep Batch: 111363 QC Preparation: 2016-07-12 Prepared By: HJ

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	29.9	29.5	mg/Kg	1	25	120	118	70 - 130
n-Triacontane	24.5	25.2	mg/Kg	1	25	98	101	70 - 130

Matrix Spike (MS-1) Spiked Sample: 423763

QC Batch: 131412 Date Analyzed: 2016-07-13 Analyzed By: HJ
Prep Batch: 111364 QC Preparation: 2016-07-12 Prepared By: HJ

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1,2,3	415	mg/Kg	1	500	<8.47	83	49.3 - 138

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1,2,3	385	mg/Kg	1	500	<8.47	77	49.3 - 138	8	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	31.0	29.5	mg/Kg	1	25	124	118	58.2 - 150

Matrix Spike (MS-1) Spiked Sample: 423763

QC Batch: 131413 Date Analyzed: 2016-07-13 Analyzed By: HJ
Prep Batch: 111364 QC Preparation: 2016-07-12 Prepared By: HJ

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	31.0	29.5	mg/Kg	1	25	124	118	70 - 130
n-Triacontane	27.5	26.7	mg/Kg	1	25	110	107	70 - 130

Matrix Spike (MS-1) Spiked Sample: 423773

QC Batch: 131432 Date Analyzed: 2016-07-14 Analyzed By: AK
Prep Batch: 111323 QC Preparation: 2016-07-08 Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		4	18.0	mg/Kg	1.06	20.0	<1.86	90	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		4	20.9	mg/Kg	1.06	20.0	<1.86	104	70 - 130	15	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.15	2.17	mg/Kg	1.06	2	108	108	70 - 130
4-Bromofluorobenzene (4-BFB)	2.29	2.38	mg/Kg	1.06	2	114	119	70 - 130

Matrix Spike (MS-1) Spiked Sample: 423762

QC Batch: 131482 Date Analyzed: 2016-07-14 Analyzed By: RL
Prep Batch: 111403 QC Preparation: 2016-07-13 Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,5	956	mg/Kg	5	250	742	86	80 - 120

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	Qs	Qs	3,5 1090	mg/Kg	5	250	742	139	80 - 120	13	20

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

Matrix Spike (MS-1) Spiked Sample: 423772

QC Batch: 131495 Date Analyzed: 2016-07-14 Analyzed By: RL
Prep Batch: 111403 QC Preparation: 2016-07-13 Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3.5	412	mg/Kg	5	250	131	112	80 - 120

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3.5	358	mg/Kg	5	250	131	91	80 - 120	14	20

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

Matrix Spike (MS-1) Spiked Sample: 424178

QC Batch: 131496
Prep Batch: 111438

Date Analyzed: 2016-07-14
QC Preparation: 2016-07-14

Analyzed By: RL
Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3.5	240	mg/Kg	1	250	15	90	80 - 120

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3.5	236	mg/Kg	1	250	15	88	80 - 120	2	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: 131369 Date Analyzed: 2016-07-12 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		4	mg/Kg	1.00	1.05	105	80 - 120	2016-07-12

Standard (CCV-3)

QC Batch: 131369 Date Analyzed: 2016-07-12 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		4	mg/Kg	1.00	1.08	108	80 - 120	2016-07-12

Standard (CCV-1)

QC Batch: 131410 Date Analyzed: 2016-07-13 Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3	mg/Kg	500	600	120	80 - 120	2016-07-13

Standard (CCV-2)

QC Batch: 131410 Date Analyzed: 2016-07-13 Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3	mg/Kg	500	513	103	80 - 120	2016-07-13

Standard (CCV-1)

QC Batch: 131412 Date Analyzed: 2016-07-13 Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3	mg/Kg	500	513	103	80 - 120	2016-07-13

Standard (CCV-2)

QC Batch: 131412 Date Analyzed: 2016-07-13 Analyzed By: HJ

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1,2,3	mg/Kg	500	569	114	80 - 120	2016-07-13

Standard (CCV-1)

QC Batch: 131432 Date Analyzed: 2016-07-14 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		4	mg/Kg	1.00	1.10	110	80 - 120	2016-07-14

Standard (CCV-2)

QC Batch: 131432 Date Analyzed: 2016-07-14 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		4	mg/Kg	1.00	1.09	109	80 - 120	2016-07-14

Standard (CCV-3)

QC Batch: 131432 Date Analyzed: 2016-07-14 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		4	mg/Kg	1.00	1.04	104	80 - 120	2016-07-14

Standard (CCV-1)

QC Batch: 131482 Date Analyzed: 2016-07-14 Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,5	mg/Kg	25.0	24.2	97	90 - 110	2016-07-14

Standard (CCV-2)

QC Batch: 131482 Date Analyzed: 2016-07-14 Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,5	mg/Kg	25.0	24.5	98	90 - 110	2016-07-14

Standard (CCV-1)

QC Batch: 131495 Date Analyzed: 2016-07-14 Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,5	mg/Kg	25.0	24.1	96	90 - 110	2016-07-14

Standard (CCV-2)

QC Batch: 131495 Date Analyzed: 2016-07-14 Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,5	mg/Kg	25.0	25.0	100	90 - 110	2016-07-14

Standard (CCV-1)

QC Batch: 131496 Date Analyzed: 2016-07-14 Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,5	mg/Kg	25.0	25.0	100	90 - 110	2016-07-14

Standard (CCV-2)

QC Batch: 131496 Date Analyzed: 2016-07-14 Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,5	mg/Kg	25.0	24.3	97	90 - 110	2016-07-14

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	L-A-B	L2418	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	NELAP	T104704219-16-12	Lubbock
4	NELAP	T104704392-14-8	Midland
5		2015-066	Lubbock

Standard Flags

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

F	Description
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.

WO#: 16070823

CHAIN-OF-CUSTODY

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

Data Reported to:

DATE: 7/8/2016 PAGE 1 OF 1

PO #: LAB WORK ORDER #:

PROJECT LOCATION OR NAME: Epperson 16" Site 2

LAI PROJECT #: 16-0120-02 COLLECTOR: Michael Gant

TRRP report? ☐ Yes ☐ No

TIME ZONE: Time zone/State: MST/NM

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

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES: BTEX ☐ MTBE ☐ TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐	GASOLINE MOD 8015 ☒	DIESEL - MOD 8015 ☒	VOC 8260 ☐	SVOC 8270 ☐	8081 PESTICIDES ☐	8082 PCBS ☐	TCLP - METALS (RCRA) ☐	TCLP - PEST ☐	TOTAL METALS (RCRA) ☐	LEAD - TOTAL ☐	RCI ☐	TDS ☐	pH ☐	EXPLOSIVES ☐	CHLORIDE ☒ (300.0)	FIELD NOTES
SB-1-1		7/5	12:15	S	1				X		X	X														X	63761
SB-1-2			12:17		1				X		X	X														X	762
SB-1-3			12:20		1				X		X	X														X	763
SB-2-1			12:35		1				X		X	X														X	764
SB-2-2			12:35		1				X		X	X														X	765
SB-3-3			12:30		1				X		X	X														X	766
SB-3-2			12:30		1				X		X	X														X	767
SB-3-1			12:30		1				X		X	X														X	768
SB-4-1			12:22		1				X		X	X														X	769
SB-4-2			12:22		1				X		X	X														X	770
SB-4-3			12:22		1				X		X	X														X	771
SB-4-4			12:22		1				X		X	X														X	772
TOTAL																											

RELINQUISHED BY:(Signature) DATE/TIME 7/8 11:18 RECEIVED BY: (Signature) 7/8 11:18

RELINQUISHED BY:(Signature) DATE/TIME 7/8/16 1236 RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME 7/12/16 3:9/43 RECEIVED BY: (Signature) Brenda Ward

TURN AROUND TIME

NORMAL ☐
1 DAY ☐
2 DAY ☐
OTHER ☒ 3 day

LABORATORY USE ONLY:

RECEIVING TEMP: 4.6 THERM #: IR-1

CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED

☐ CARRIER BILL # LS ZT930116

☐ HAND DELIVERED

Summary Report

Michael Gant
Larson and Associates, Inc.

P. O. Box 50685
Midland, TX 79710

Report Date: November 2, 2016

Work Order: 16102109

Project Name: Epperson16 Site 2
Project Number: 16-0120-02

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
430555	S-2-6	soil	2016-10-20	10:45	2016-10-21
430556	S-2-8	soil	2016-10-20	10:48	2016-10-21
430557	S-2-10	soil	2016-10-20	10:56	2016-10-21
430558	S-2-12	soil	2016-10-20	11:05	2016-10-21
430559	S-2-14	soil	2016-10-20	11:10	2016-10-21
430560	S-2-16	soil	2016-10-20	11:20	2016-10-21

Sample: 430555 - S-2-6

Param	Flag	Result	Units	RL
Chloride		**64.7**	mg/Kg	25

Sample: 430556 - S-2-8

Param	Flag	Result	Units	RL
Chloride		<25.0	mg/Kg	25

Sample: 430557 - S-2-10

Param	Flag	Result	Units	RL
Chloride		<25.0	mg/Kg	25

Sample: 430558 - S-2-12

Param	Flag	Result	Units	RL
Chloride		**28.0**	mg/Kg	25

Sample: 430559 - S-2-14

Param	Flag	Result	Units	RL
Chloride		<25.0	mg/Kg	25

Sample: 430560 - S-2-16

Param	Flag	Result	Units	RL
Chloride		<25.0	mg/Kg	25

TRACEANALYSIS, INC.

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200 East Sunset Road, Suite E El Paso, Texas 79922 915-585-3443 FAX 915-585-4944
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Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Michael Gant
Larson and Associates, Inc.

P. O. Box 50685
Midland, TX, 79710

Report Date: November 2, 2016

Work Order: 16102109

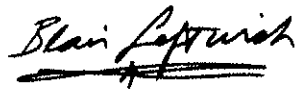
Project Name: Epperson16 Site 2
Project Number: 16-0120-02

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
430555	S-2-6	soil	2016-10-20	10:45	2016-10-21
430556	S-2-8	soil	2016-10-20	10:48	2016-10-21
430557	S-2-10	soil	2016-10-20	10:56	2016-10-21
430558	S-2-12	soil	2016-10-20	11:05	2016-10-21
430559	S-2-14	soil	2016-10-20	11:10	2016-10-21
430560	S-2-16	soil	2016-10-20	11:20	2016-10-21

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.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.



Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Johnny Grindstaff, Operations Manager

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Case Narrative

Samples for project Epperson16 Site 2 were received by TraceAnalysis, Inc. on 2016-10-21 and assigned to work order 16102109. Samples for work order 16102109 were received intact at a temperature of -4.4 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	113264	2016-10-31 at 12:00	133622	2016-11-01 at 12:37

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 16102109 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: 430555 - S-2-6

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	133622	Date Analyzed:	2016-11-01	Analyzed By:	RL
Prep Batch:	113264	Sample Preparation:	2016-10-31	Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,5	**64.7**	mg/Kg	1	25.0

Sample: 430556 - S-2-8

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	133622	Date Analyzed:	2016-11-01	Analyzed By:	RL
Prep Batch:	113264	Sample Preparation:	2016-10-31	Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,5	<25.0	mg/Kg	1	25.0

Sample: 430557 - S-2-10

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	133622	Date Analyzed:	2016-11-01	Analyzed By:	RL
Prep Batch:	113264	Sample Preparation:	2016-10-31	Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,5	<25.0	mg/Kg	1	25.0

Sample: 430558 - S-2-12

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	133622	Date Analyzed:	2016-11-01	Analyzed By:	RL
Prep Batch:	113264	Sample Preparation:	2016-10-31	Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,5	**28.0**	mg/Kg	1	25.0

Sample: 430559 - S-2-14

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	133622	Date Analyzed:	2016-11-01	Analyzed By:	RL
Prep Batch:	113264	Sample Preparation:	2016-10-31	Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,5	<25.0	mg/Kg	1	25.0

Sample: 430560 - S-2-16

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	133622	Date Analyzed:	2016-11-01	Analyzed By:	RL
Prep Batch:	113264	Sample Preparation:	2016-10-31	Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		3,5	<25.0	mg/Kg	1	25.0

Method Blanks

Method Blank (1) QC Batch: 133622

QC Batch:	133622	Date Analyzed:	2016-11-01	Analyzed By:	RL
Prep Batch:	113264	QC Preparation:	2016-10-31	Prepared By:	RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		3.5	<4.44	mg/Kg	25

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 133622
Prep Batch: 113264

Date Analyzed: 2016-11-01
QC Preparation: 2016-10-31

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3.5	255	mg/Kg	1	250	<4.44	102	90 - 110

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		3.5	256	mg/Kg	1	250	<4.44	102	90 - 110	0	20

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

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 430560

QC Batch: 133622
Prep Batch: 113264

Date Analyzed: 2016-11-01
QC Preparation: 2016-10-31

Analyzed By: RL
Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		3,5	275	mg/Kg	1	250	24.3	100	80 - 120

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		3,5	278	mg/Kg	1	250	24.3	101	80 - 120	1	20

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

Calibration Standards

Standard (CCV-1)

QC Batch: 133622 Date Analyzed: 2016-11-01 Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,5	mg/Kg	25.0	27.2	109	90 - 110	2016-11-01

Standard (CCV-2)

QC Batch: 133622 Date Analyzed: 2016-11-01 Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		3,5	mg/Kg	25.0	26.6	106	90 - 110	2016-11-01

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	L-A-B	L2418	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	NELAP	T104704219-16-13	Lubbock
4	NELAP	T104704392-14-8	Midland
5		2015-066	Lubbock

Standard Flags

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

F	Description
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.

160102109

CHAIN-OF-CUSTODY

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

Data Reported to:

DATE: 10/21/2016 PAGE 1 OF 1

PO #: _____ LAB WORK ORDER #: _____

PROJECT LOCATION OR NAME: Epperson 16 Site 2

LAI PROJECT #: 16-0120-02 COLLECTOR: Michael Gant

TRRP report? ☐ Yes ☐ No

TIME ZONE: Time zone/State: MST / NM

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

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES: BTEX ☐ MTBE ☐	TRPH 418.1 ☐	TPH 1005 ☐	TPH 1006 ☐	GASOLINE MOD 8015 ☐	DIESEL - MOD 8015 ☐	VOC 8260 ☐	SVOC 8270 ☐	PAH 8270 ☐	HOLDPAH ☐	8081 PESTICIDES ☐	8082 PCBS ☐	8151 HERBICIDES ☐	TCLP - METALS (RCRA) ☐	TCLP VOC ☐	TCLP - PEST ☐	HERB ☐	Semi-VOC ☐	TOTAL METALS (RCRA) ☐	OTHER LIST ☐	LEAD - TOTAL ☐	D.W. 200.8 ☐	TCLP ☐	RCI ☐	TOX ☐	FLASHPOINT ☐	TDS ☐	TSS ☐	% MOISTURE ☐	CYANIDE ☐	pH ☐	HEXAVALENT CHROMIUM ☐	EXPLOSIVES ☐	PECHLORATE ☐	CHLORIDE ☐	ANIONS ☐	ALKALINITY ☐	300.0	FIELD NOTES
S-2-6		10/20	10:45	S	1				X																															X				430555
S-2-8		10/20	10:48	S	1				X																															X				556
S-2-10		10/20	10:56	S	1				X																															X				557
S-2-12		10/20	11:05	S	1				X																															X				558
S-2-14		10/20	11:10	S	1				X																															X				559
S-2-16		10/20	11:20	S	1				X																															X				560
TOTAL																																												

RELINQUISHED BY:(Signature) Michael Gant DATE/TIME 10/21/16 11:02 RECEIVED BY: (Signature) Crystal Munoz

RELINQUISHED BY:(Signature) K Callahan 10-21-16 15:30 RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME 10/25/16 RECEIVED BY: (Signature) Brenda Ward

TRACE LS 243184192 3.9/4.0

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

LABORATORY USE ONLY:
RECEIVING TEMP: -1.4 THERM #: _____
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL # _____
☐ HAND DELIVERED

PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701

PBELAB

Analytical Report

Prepared for:

Mark Larson
Larson & Associates, Inc.
P.O. Box 50685
Midland, TX 79710

Project: Epperson Site 2
Project Number: 16-0120-02
Location: New Mexico

Lab Order Number: 7B10002

NELAP/TCEQ # T104704156-16-6

Report Date: 02/20/17

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Epperson Site 2
Project Number: 16-0120-02
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB-5 0'	7B10002-01	Soil	02/09/17 10:22	02-10-2017 09:30
SB-5 5'	7B10002-02	Soil	02/09/17 10:32	02-10-2017 09:30
SB-5 15'	7B10002-04	Soil	02/09/17 10:40	02-10-2017 09:30
SB-5 25'	7B10002-06	Soil	02/09/17 10:46	02-10-2017 09:30
SB-6 0'	7B10002-07	Soil	02/09/17 11:05	02-10-2017 09:30
SB-6 5'	7B10002-08	Soil	02/09/17 11:13	02-10-2017 09:30
SB-6 15'	7B10002-10	Soil	02/09/17 11:19	02-10-2017 09:30
SB-6 25'	7B10002-12	Soil	02/09/17 11:23	02-10-2017 09:30
SB-7 0'	7B10002-13	Soil	02/09/17 11:30	02-10-2017 09:30
SB-7 5'	7B10002-14	Soil	02/09/17 11:44	02-10-2017 09:30
SB-7 15'	7B10002-16	Soil	02/09/17 11:53	02-10-2017 09:30
SB-7 25'	7B10002-18	Soil	02/09/17 11:59	02-10-2017 09:30

SB-5 0'

7B10002-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**44.2**	1.06	mg/kg dry	1	P7B1504	02/15/17	02/16/17	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P7B1308	02/13/17	02/13/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.6	mg/kg dry	1	P7B1604	02/15/17	02/15/17	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P7B1604	02/15/17	02/15/17	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P7B1604	02/15/17	02/15/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*95.8 %*	*70-130*		*P7B1604*	*02/15/17*	*02/15/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*115 %*	*70-130*		*P7B1604*	*02/15/17*	*02/15/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	02/15/17	02/15/17	calc	

SB-5 5'

7B10002-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**12.3**	1.06	mg/kg dry	1	P7B1013	02/10/17	02/13/17	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P7B1308	02/13/17	02/13/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.6	mg/kg dry	1	P7B1403	02/10/17	02/10/17	TPH 8015M	
>C12-C28	ND	26.6	mg/kg dry	1	P7B1403	02/10/17	02/10/17	TPH 8015M	
>C28-C35	ND	26.6	mg/kg dry	1	P7B1403	02/10/17	02/10/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*95.8 %*	*70-130*		*P7B1403*	*02/10/17*	*02/10/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*102 %*	*70-130*		*P7B1403*	*02/10/17*	*02/10/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.6	mg/kg dry	1	[CALC]	02/10/17	02/10/17	calc	

SB-5 15'

7B10002-04 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**3.85**	1.08	mg/kg dry	1	P7B1013	02/10/17	02/13/17	EPA 300.0	
% Moisture	**7.0**	0.1	%	1	P7B1308	02/13/17	02/13/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.9	mg/kg dry	1	P7B1403	02/10/17	02/10/17	TPH 8015M	
>C12-C28	ND	26.9	mg/kg dry	1	P7B1403	02/10/17	02/10/17	TPH 8015M	
>C28-C35	ND	26.9	mg/kg dry	1	P7B1403	02/10/17	02/10/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*95.4 %*	*70-130*		*P7B1403*	*02/10/17*	*02/10/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*102 %*	*70-130*		*P7B1403*	*02/10/17*	*02/10/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.9	mg/kg dry	1	[CALC]	02/10/17	02/10/17	calc	

Larson & Associates, Inc.	Project: Epperson Site 2	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 16-0120-02	
Midland TX, 79710	Project Manager: Mark Larson	

SB-5 25'

7B10002-06 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**4.11**	1.04	mg/kg dry	1	P7B1013	02/10/17	02/13/17	EPA 300.0	
% Moisture	**4.0**	0.1	%	1	P7B1308	02/13/17	02/13/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.0	mg/kg dry	1	P7B1403	02/10/17	02/10/17	TPH 8015M	
>C12-C28	ND	26.0	mg/kg dry	1	P7B1403	02/10/17	02/10/17	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P7B1403	02/10/17	02/10/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*94.8 %*	*70-130*		*P7B1403*	*02/10/17*	*02/10/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*102 %*	*70-130*		*P7B1403*	*02/10/17*	*02/10/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.0	mg/kg dry	1	[CALC]	02/10/17	02/10/17	calc	

SB-6 0'

7B10002-07 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**16.1**	1.11	mg/kg dry	1	P7B1504	02/15/17	02/16/17	EPA 300.0	
% Moisture	**10.0**	0.1	%	1	P7B1308	02/13/17	02/13/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.8	mg/kg dry	1	P7B1604	02/15/17	02/15/17	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P7B1604	02/15/17	02/15/17	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P7B1604	02/15/17	02/15/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*89.5 %*	*70-130*		*P7B1604*	*02/15/17*	*02/15/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*99.4 %*	*70-130*		*P7B1604*	*02/15/17*	*02/15/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	02/15/17	02/15/17	calc	

Larson & Associates, Inc.	Project: Epperson Site 2	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 16-0120-02	
Midland TX, 79710	Project Manager: Mark Larson	

SB-6 5'

7B10002-08 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**646**	1.10	mg/kg dry	1	P7B1013	02/10/17	02/13/17	EPA 300.0	
% Moisture	**9.0**	0.1	%	1	P7B1308	02/13/17	02/13/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.5	mg/kg dry	1	P7B1403	02/10/17	02/10/17	TPH 8015M	
>C12-C28	ND	27.5	mg/kg dry	1	P7B1403	02/10/17	02/10/17	TPH 8015M	
>C28-C35	ND	27.5	mg/kg dry	1	P7B1403	02/10/17	02/10/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*95.6 %*	*70-130*		*P7B1403*	*02/10/17*	*02/10/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*103 %*	*70-130*		*P7B1403*	*02/10/17*	*02/10/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	27.5	mg/kg dry	1	[CALC]	02/10/17	02/10/17	calc	

Larson & Associates, Inc.	Project: Epperson Site 2	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 16-0120-02	
Midland TX, 79710	Project Manager: Mark Larson	

SB-6 15'

7B10002-10 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**7.28**	1.04	mg/kg dry	1	P7B1013	02/10/17	02/13/17	EPA 300.0	
% Moisture	**4.0**	0.1	%	1	P7B1308	02/13/17	02/13/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.0	mg/kg dry	1	P7B1403	02/10/17	02/10/17	TPH 8015M	
>C12-C28	ND	26.0	mg/kg dry	1	P7B1403	02/10/17	02/10/17	TPH 8015M	
>C28-C35	ND	26.0	mg/kg dry	1	P7B1403	02/10/17	02/10/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*93.7 %*	*70-130*		*P7B1403*	*02/10/17*	*02/10/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*101 %*	*70-130*		*P7B1403*	*02/10/17*	*02/10/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.0	mg/kg dry	1	[CALC]	02/10/17	02/10/17	calc	

Larson & Associates, Inc.	Project: Epperson Site 2	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 16-0120-02	
Midland TX, 79710	Project Manager: Mark Larson	

SB-6 25'

7B10002-12 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**5.51**	1.05	mg/kg dry	1	P7B1013	02/10/17	02/13/17	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P7B1308	02/13/17	02/13/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.3	mg/kg dry	1	P7B1403	02/10/17	02/10/17	TPH 8015M	
>C12-C28	ND	26.3	mg/kg dry	1	P7B1403	02/10/17	02/10/17	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P7B1403	02/10/17	02/10/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*94.3 %*	*70-130*		*P7B1403*	*02/10/17*	*02/10/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*102 %*	*70-130*		*P7B1403*	*02/10/17*	*02/10/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	02/10/17	02/10/17	calc	

Larson & Associates, Inc.	Project: Epperson Site 2	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 16-0120-02	
Midland TX, 79710	Project Manager: Mark Larson	

SB-7 0'

7B10002-13 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**65.8**	1.01	mg/kg dry	1	P7B1504	02/15/17	02/16/17	EPA 300.0	
% Moisture	**1.0**	0.1	%	1	P7B1308	02/13/17	02/13/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	25.3	mg/kg dry	1	P7B1604	02/15/17	02/15/17	TPH 8015M	
>C12-C28	ND	25.3	mg/kg dry	1	P7B1604	02/15/17	02/15/17	TPH 8015M	
>C28-C35	ND	25.3	mg/kg dry	1	P7B1604	02/15/17	02/15/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*89.8 %*	*70-130*		*P7B1604*	*02/15/17*	*02/15/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*100 %*	*70-130*		*P7B1604*	*02/15/17*	*02/15/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	25.3	mg/kg dry	1	[CALC]	02/15/17	02/15/17	calc	

Larson & Associates, Inc.	Project: Epperson Site 2	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 16-0120-02	
Midland TX, 79710	Project Manager: Mark Larson	

SB-7 5'

7B10002-14 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**360**	1.11	mg/kg dry	1	P7B1013	02/10/17	02/13/17	EPA 300.0	
% Moisture	**10.0**	0.1	%	1	P7B1308	02/13/17	02/13/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.8	mg/kg dry	1	P7B1403	02/10/17	02/11/17	TPH 8015M	
>C12-C28	ND	27.8	mg/kg dry	1	P7B1403	02/10/17	02/11/17	TPH 8015M	
>C28-C35	ND	27.8	mg/kg dry	1	P7B1403	02/10/17	02/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*90.7 %*	*70-130*		*P7B1403*	*02/10/17*	*02/11/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*99.5 %*	*70-130*		*P7B1403*	*02/10/17*	*02/11/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	27.8	mg/kg dry	1	[CALC]	02/10/17	02/11/17	calc	

Larson & Associates, Inc.	Project: Epperson Site 2	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 16-0120-02	
Midland TX, 79710	Project Manager: Mark Larson	

SB-7 15'

7B10002-16 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**12.0**	0.1	%	1	P7B1308	02/13/17	02/13/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.4	mg/kg dry	1	P7B1403	02/10/17	02/11/17	TPH 8015M	
>C12-C28	ND	28.4	mg/kg dry	1	P7B1403	02/10/17	02/11/17	TPH 8015M	
>C28-C35	ND	28.4	mg/kg dry	1	P7B1403	02/10/17	02/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*94.6 %*	*70-130*		*P7B1403*	*02/10/17*	*02/11/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*102 %*	*70-130*		*P7B1403*	*02/10/17*	*02/11/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.4	mg/kg dry	1	[CALC]	02/10/17	02/11/17	calc	

Larson & Associates, Inc.	Project: Epperson Site 2	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 16-0120-02	
Midland TX, 79710	Project Manager: Mark Larson	

SB-7 25'

7B10002-18 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
% Moisture	**5.0**	0.1	%	1	P7B1308	02/13/17	02/13/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	26.3	mg/kg dry	1	P7B1403	02/10/17	02/11/17	TPH 8015M	
>C12-C28	ND	26.3	mg/kg dry	1	P7B1403	02/10/17	02/11/17	TPH 8015M	
>C28-C35	ND	26.3	mg/kg dry	1	P7B1403	02/10/17	02/11/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*94.4 %*	*70-130*		*P7B1403*	*02/10/17*	*02/11/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*102 %*	*70-130*		*P7B1403*	*02/10/17*	*02/11/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	26.3	mg/kg dry	1	[CALC]	02/10/17	02/11/17	calc	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7B1013 - * DEFAULT PREP *** **										
Blank (P7B1013-BLK1)				Prepared: 02/10/17 Analyzed: 02/13/17						
Chloride	ND	1.00	mg/kg wet							
LCS (P7B1013-BS1)				Prepared: 02/10/17 Analyzed: 02/13/17						
Chloride	409	1.00	mg/kg wet	400		102	80-120			
LCS Dup (P7B1013-BSD1)				Prepared: 02/10/17 Analyzed: 02/13/17						
Chloride	455	1.00	mg/kg wet	400		114	80-120	10.6	20	
Duplicate (P7B1013-DUP1)		Source: 7B10003-01		Prepared: 02/10/17 Analyzed: 02/13/17						
Chloride	19200	66.7	mg/kg dry		18900			1.67	20	
Duplicate (P7B1013-DUP2)		Source: 7B10004-01		Prepared: 02/10/17 Analyzed: 02/13/17						
Chloride	774	1.10	mg/kg dry		767			0.896	20	
Matrix Spike (P7B1013-MS1)		Source: 7B10003-01		Prepared: 02/10/17 Analyzed: 02/13/17						
Chloride	21000	66.7	mg/kg dry	1330	18900	154	80-120			QM-07
Batch P7B1308 - * DEFAULT PREP *** **										
Blank (P7B1308-BLK1)				Prepared & Analyzed: 02/13/17						
% Moisture	ND	0.1	%							
Duplicate (P7B1308-DUP1)		Source: 7B10001-26		Prepared & Analyzed: 02/13/17						
% Moisture	3.0	0.1	%		3.0			0.00	20	
Duplicate (P7B1308-DUP2)		Source: 7B10002-12		Prepared & Analyzed: 02/13/17						
% Moisture	5.0	0.1	%		5.0			0.00	20	

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P.O. Box 50685
Midland TX, 79710

Project: Epperson Site 2
Project Number: 16-0120-02
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7B1504 - * DEFAULT PREP *** **										
Blank (P7B1504-BLK1)				Prepared: 02/15/17 Analyzed: 02/16/17						
Chloride	ND	1.00	mg/kg wet							
LCS (P7B1504-BS1)				Prepared: 02/15/17 Analyzed: 02/16/17						
Chloride	398	1.00	mg/kg wet	400		99.4	80-120			
LCS Dup (P7B1504-BSD1)				Prepared: 02/15/17 Analyzed: 02/16/17						
Chloride	414	1.00	mg/kg wet	400		104	80-120	4.06	20	
Duplicate (P7B1504-DUP1)		**Source: 7B10001-01**		Prepared: 02/15/17 Analyzed: 02/16/17						
Chloride	2960	27.2	mg/kg dry		2970			0.275	20	
Duplicate (P7B1504-DUP2)		**Source: 7B10001-17**		Prepared: 02/15/17 Analyzed: 02/16/17						
Chloride	8.65	1.04	mg/kg dry		8.55			1.09	20	
Matrix Spike (P7B1504-MS1)		**Source: 7B10001-01**		Prepared: 02/15/17 Analyzed: 02/16/17						
Chloride	4290	27.2	mg/kg dry	1090	2970	121	80-120			

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Project: Epperson Site 2
Project Number: 16-0120-02
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7B1403 - TX 1005										
Blank (P7B1403-BLK1)				Prepared & Analyzed: 02/10/17						
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	*89.8*		"	*100*		*89.8*	*70-130*			
Surrogate: o-Terphenyl	*50.0*		"	*50.0*		*100*	*70-130*			
LCS (P7B1403-BS1)				Prepared & Analyzed: 02/10/17						
C6-C12	806	25.0	mg/kg wet	1000		80.6	75-125			
>C12-C28	858	25.0	"	1000		85.8	75-125			
Surrogate: 1-Chlorooctane	*114*		"	*100*		*114*	*70-130*			
Surrogate: o-Terphenyl	*46.8*		"	*50.0*		*93.5*	*70-130*			
LCS Dup (P7B1403-BSD1)				Prepared & Analyzed: 02/10/17						
C6-C12	793	25.0	mg/kg wet	1000		79.3	75-125	1.67	20	
>C12-C28	784	25.0	"	1000		78.4	75-125	9.09	20	
Surrogate: 1-Chlorooctane	*105*		"	*100*		*105*	*70-130*			
Surrogate: o-Terphenyl	*40.8*		"	*50.0*		*81.5*	*70-130*			
Matrix Spike (P7B1403-MS1)	**Source: 7B10002-18**			Prepared: 02/10/17 Analyzed: 02/11/17						
C6-C12	846	26.3	mg/kg dry	1050	ND	80.3	75-125			
>C12-C28	889	26.3	"	1050	ND	84.5	75-125			
Surrogate: 1-Chlorooctane	*130*		"	*105*		*123*	*70-130*			
Surrogate: o-Terphenyl	*54.5*		"	*52.6*		*104*	*70-130*			
Matrix Spike Dup (P7B1403-MSD1)	**Source: 7B10002-18**			Prepared: 02/10/17 Analyzed: 02/11/17						
C6-C12	854	26.3	mg/kg dry	1050	ND	81.1	75-125	0.921	20	
>C12-C28	872	26.3	"	1050	ND	82.9	75-125	1.90	20	
Surrogate: 1-Chlorooctane	*120*		"	*105*		*114*	*70-130*			
Surrogate: o-Terphenyl	*56.1*		"	*52.6*		*107*	*70-130*			

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Epperson Site 2
Project Number: 16-0120-02
Project Manager: Mark Larson

Fax: (432) 687-0456

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7B1604 - TX 1005										
Blank (P7B1604-BLK1)				Prepared & Analyzed: 02/15/17						
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	*79.6*		"	*100*		*79.6*	*70-130*			
Surrogate: o-Terphenyl	*44.8*		"	*50.0*		*89.7*	*70-130*			
LCS (P7B1604-BS1)				Prepared & Analyzed: 02/15/17						
C6-C12	1110	25.0	mg/kg wet	1000		111	75-125			
>C12-C28	1060	25.0	"	1000		106	75-125			
Surrogate: 1-Chlorooctane	*105*		"	*100*		*105*	*70-130*			
Surrogate: o-Terphenyl	*48.5*		"	*50.0*		*97.0*	*70-130*			
LCS Dup (P7B1604-BSD1)				Prepared & Analyzed: 02/15/17						
C6-C12	1110	25.0	mg/kg wet	1000		111	75-125	0.465	20	
>C12-C28	1060	25.0	"	1000		106	75-125	0.339	20	
Surrogate: 1-Chlorooctane	*97.9*		"	*100*		*97.9*	*70-130*			
Surrogate: o-Terphenyl	*45.2*		"	*50.0*		*90.3*	*70-130*			
Duplicate (P7B1604-DUP1)	**Source: 7B10002-13**			Prepared & Analyzed: 02/15/17						
C6-C12	ND	25.3	mg/kg dry		ND				20	
>C12-C28	ND	25.3	"		ND				20	
Surrogate: 1-Chlorooctane	*96.3*		"	*101*		*95.3*	*70-130*			
Surrogate: o-Terphenyl	*54.2*		"	*50.5*		*107*	*70-130*			

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Epperson Site 2
Project Number: 16-0120-02
Project Manager: Mark Larson

Fax: (432) 687-0456

Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
BULK	Samples received in Bulk soil containers
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: _____ Date: 2/20/2017

Brent Barron, Laboratory Director/Technical Director

7B10002

CHAIN-OF-CUSTOD

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

DATE: 2-10-17 PAGE 1 OF 2

PO #: _____ LAB WORK ORDER #: _____

PROJECT LOCATION OR NAME: Eppers Site 2

LAI PROJECT #: 16-0120-02 COLLECTOR: Travis Williams

Data Reported to:

TRRP report? ☐ Yes ☑ No

TIME ZONE: Time zone/State: NM

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

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☑ MTBE ☐ | TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☐ | DIESEL - MOD 8015 ☐ C-28-35 | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☑ ANIONS ☐ ALKALINITY ☐ | 300 | 1664

	Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl	HNO_3	H_2SO_4 NaOH	ICE	UNPRESERVED	FIELD NOTES
1	SB-1 0'		2-9-17	10:22	S	1				X		
2	5'			10:32								
3	10'			10:36								
4	15'			10:40								
5	20'			10:42								
6	25'			10:46								
7	SB-2 0'			11:05								
8	5'			11:13								
9	10'			11:17								
10	15'			11:19								
11	20'			11:21								
12	25'			11:23								
13	SB-3 0'			11:30								
14	5'			11:44								
15	10'			11:47								
	TOTAL											

RELINQUISHED BY:(Signature) DATE/TIME 9:30 2-10-17 RECEIVED BY: (Signature)

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

RELINQUISHED BY:(Signature) DATE/TIME 9:30 RECEIVED BY: (Signature)

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

LABORATORY USE ONLY:
RECEIVING TEMP: -0.2 THERM #: _____
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL # _____
☑ HAND DELIVERED

CHAIN-OF-CUSTOD

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

DATE: 2-10-17 PAGE 2 OF 2

PO #: _____ LAB WORK ORDER #: _____

PROJECT LOCATION OR NAME: Epperson site 2

LAI PROJECT #: 16-0120-02 COLLECTOR: Travis Williams

Data Reported to:

TRRP report? ☐ Yes ☑ No

TIME ZONE: Time zone/State: NM

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

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☑ MTBE ☐ | TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☑ | DIESEL - MOD 8015 ☑ | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☑ ANIONS ☐ ALKALINITY ☐ | 300 | HOLD | FIELD NOTES

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl	HNO_3	H_2SO_4 NaOH	ICE	UNPRESERVED	BTEX	MTBE	TRPH 418.1	TPH 1005	TPH 1006	GASOLINE MOD 8015	DIESEL - MOD 8015	VOC 8260	SVOC 8270	PAH 8270	HOLDPAH	8081 PESTICIDES	8151 HERBICIDES	8082 PCBS	TCLP - METALS (RCRA)	TCLP VOC	TCLP - PEST	HERB	TOTAL METALS (RCRA)	Semi-VOC	LEAD - TOTAL	OTHER LIST	D.W. 200.8	RCI	TCLP	TOX	TDS	TSS	FLASHPOINT	pH	% MOISTURE	HEXAVALENT CHROMIUM	CYANIDE	EXPLOSIVES	PECHLORATE	CHLORIDE	ANIONS	300	ALKALINITY	HOLD	FIELD NOTES
SB-3 15'		2-9-17	11:53	S	1				✓				✓			✓	✓																																			
20'		↓	11:55	↓	↓				↓																																								✓	
25'		↓	11:59	↓	↓				↓				✓			✓	✓																																			
TOTAL																																																		

RELINQUISHED BY:(Signature) _____ DATE/TIME 9:30 2-10-17 RECEIVED BY: (Signature) _____

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

RELINQUISHED BY:(Signature) _____ DATE/TIME 9:30 RECEIVED BY: (Signature) _____

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

LABORATORY USE ONLY:
RECEIVING TEMP: -0.2 THERM #: _____
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL # _____
☑ HAND DELIVERED

Appendix B

Boring Logs

BORING RECORD

Start: 10:22
Finish: 10:46

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	PID READING (PPM X 1)	SAMPLE NUMBER	SAMPLE PID READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS BACKGROUND PID READING
	0	Topsoil - Very Fine - Fine Silt w/ Sand, 7.5YR, 3/3, Dark Brown	SM				.6		0	10:22
	5	Fine- Very Fine Sand & Silt w/ Caliche, Poorly Graded, 7.5YR, 7/3, Pink	SM				1.4		5	10:32
	10	Fine - Very Fine Sand & Silt w/ Caliche, Poorly Graded, 7.5YR, 8/4, Pink	SM				2.3		10	10:36
	15	Fine Arkosic Sandstone, Poorly Graded, 7.5YR, 7/4, Pink	SP				1.4		15	10:40
	20	Fine Arkosic Sand Stone, Poorly Graded, 7.5YR, 7/4	SP				1.5		20	10:42
	25	Fine Arkosic Sand Stone, Poory Graded, 7.5YR, 7/4, Pink	SP				4.6		25	10:46
		TD: 25								
	30									
	35									
	40									

SOIL : _____ PPM
SOIL : _____ PPM

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
L LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : 16-0120-02
HOLE DIAMETER : 5.5
LOCATION : Lea County, NM
LAI GEOLOGIST : T. Williams
DRILLING CONTRACTOR : Scarbrough Drilling
DRILLING METHOD : Rotary

Larson & Associates, Inc.
Environmental Consultants

DRILL DATE : 2-9-2017
BORING NUMBER : SB-5

BORING RECORD

Start: 11:05
Finish: 11:23

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	PID READING (PPM X 1)	SAMPLE NUMBER	SAMPLE PID READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS BACKGROUND PID READING
	0	Topsoil - Very Fine - Fine Sand & Silt, Poorly Graded, 7.5YR, 3/3, Dark Brown	SM				.3		0	11:05
	5	Fine- Very Fine Sand & Silt w/ Caliche, Poorly Graded, 7.5YR, 8/3	SP				.5		5	11:13
	10	Fine- Very Fine Sand w/ Caliche, Poorly Graded, 7.5YR, 8/3	SP				7.6		10	11:17
	15	Fine Arkosic Sandstone, Poorly Graded, 7.5YR, 7/4	SP				1.4		15	11:19
	20	Fine Arkosic Sandstone, Poorly Graded, 7.5YR, 7/4	SP				.8		20	11:21
	25	Fine Arkosic Sandstone, Poorly Graded, 7.5YR, 7/3	SP				1.1		25	11:23
		TD: 25'								
	30									
	35									
	40									

SOIL : _____ PPM
SOIL : _____ PPM

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
L LABORATORY TEST LOCATION
\+ PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 2-9-2017

BORING NUMBER : SB-6

JOB NUMBER : 16-0120-02
HOLE DIAMETER : 5.5
LOCATION : Lea County, NM
LAI GEOLOGIST : T. Williams
DRILLING CONTRACTOR : Scarbrough Drilling
DRILLING METHOD : Rotary

BORING RECORD

Start: 11:30
Finish: 11:59

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	PID READING (PPM X 1)	SAMPLE NUMBER	SAMPLE PID READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS BACKGROUND PID READING
	0	Topsoil - Very Fine - Fine Sand & Silt, Poorly Graded, 7.5YR, 3/3, Dark Brown	SM				.3		0	11:30
	5	Topsoil - Fine - Fine Sand w/ Caliche, 7.5YR, 3/3, Poorly Graded, Dark Brown	SP				.3		5	11:44
	10	Fine Arkosic Sandstone, Poorly Graded, 7.5YR, 5/8, Reddish Yellow	SP				3.9		10	11:49
	15	Fine Arkosic Sandstone w/ Clay, Poorly Graded, 7.5YR, 7/6, Reddish Yellow	SC				25		15	11:53
	20	Fine Arkosic Sandstone, Poorly Graded, 7.5YR, 6/8, Reddish Yellow	SP				1.0		20	11:55
	25	Fine Arkosic Sandstone, Poorly Graded, 7.5YR, 8/4, Pink	SP				6.1		25	11:59
	30									
	35									
	40									

BACKGROUND PID READING
SOIL : _____ PPM
SOIL : _____ PPM

- ONE CONTINUOUS AUGER SAMPLER
- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- WATER TABLE (24 HRS)
- WATER TABLE (TIME OF BORING)
- L — LABORATORY TEST LOCATION
- \+ — PENETROMETER (TONS/ SQ. FT)
- NR — NO RECOVERY

JOB NUMBER : 16-0120-02
HOLE DIAMETER : 5.5
LOCATION : Lea County, NM
LAI GEOLOGIST : T. Williams
DRILLING CONTRACTOR : Scarbrough Drilling
DRILLING METHOD : Rotary

Larson & Associates, Inc.
Environmental Consultants

DRILL DATE : 2-9-2017

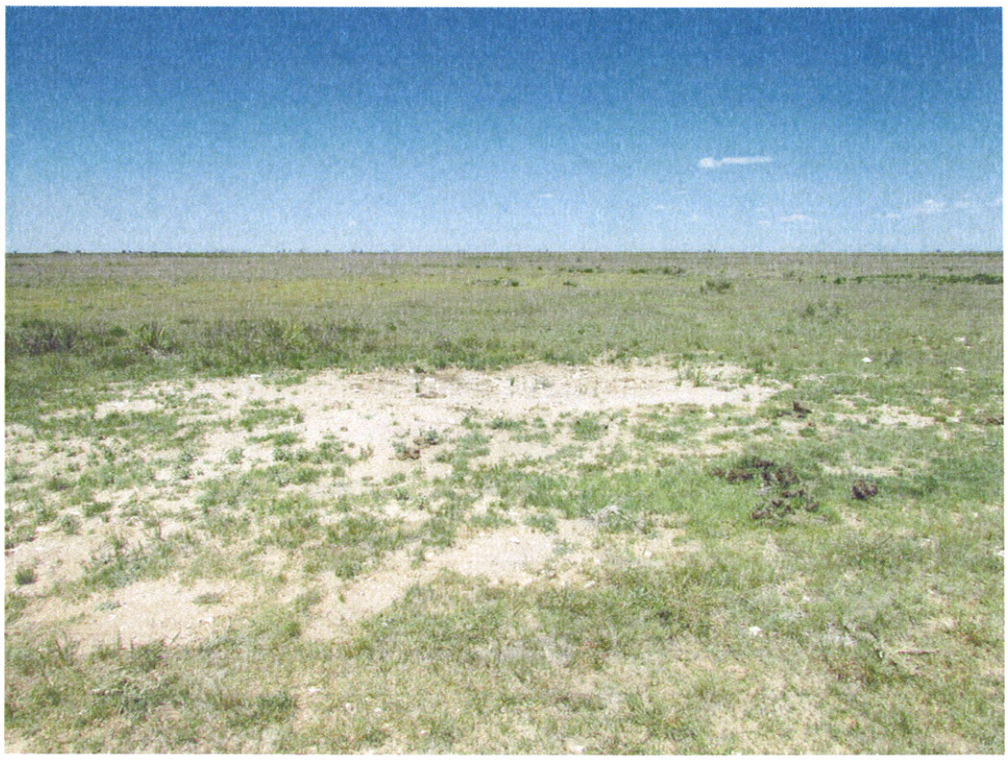
BORING NUMBER : SB-7

Appendix C

Photographs

PHOTOGRAPHS

Epperson 16" Site #2 Viewing South, May 28, 2016



Epperson 16" Site #2 Viewing West, May 28, 2016

PHOTOGRAPHS

Epperson 16" Site #2 Viewing East, May 28, 2016

Epperson 16" Site #2 Viewing South, February 2, 2017

Appendix D

Initial C-141 and Final C-141

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Targa Midstream Services, LLC	Contact: Ralph England, Saunders Field Supervisor
Address: P.O. Box 1689, Lovington, NM 88269	Telephone No.: (575) 396-3221Ext. 224
Facility Name: Epperson 16" Pipeline (Release Site #2)	Facility Type: Natural Gas Pipeline

Surface Owner: Ricky Pierce	Mineral Owner	Lease No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	24	11 S	33 E	2,250	South	900	West	Lea

Latitude: N33° 20" 49.1352" **Longitude: W103° 34' 29.0172"**

NATURE OF RELEASE

Type of Release: Natural Gas Liquids	Volume of Release: Unknown	Volume Recovered: None
Source of Release: Pipeline Leak	Date and Hour of Occurrence: Unknown	Date and Hour of Discovery: May 2016
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

RECEIVED
By Olivia Yu at 1:10 pm, Mar 31, 2017

Describe Cause of Problem and Remedial Action Taken.* Hole developed in 16 inch steel pipe due to external corrosion. Pipeline was shut-in repair leak and placed back into service. Larson & Associates, Inc. contracted to delineate and remediate soil impacted from natural gas liquids.

Describe Area Affected and Cleanup Action Taken.* Affected soil area measures about 45 x 50 feet. Soil samples collected to delineate release vertically and horizontally. Will remediate to RRALs.

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: Ralph England	OIL CONSERVATION DIVISION
Printed Name: Ralph England	Approved by District Supervisor:
Title: Saunders Field Supervisor	Approval Date: 3/31/2017 Expiration Date:
E-mail Address: REngland@targaresources.com	Conditions of Approval: see attached directive Attached ☑
Date: 03-29-2017 Phone: (575) 396-3221Ext. 224	

* Attach Additional Sheets If Necessary

1RP-4665 fOY1709044496 nOY1709047454

pOY1709047905

Operator/Responsible Party,

The OCD has received the form C-141 you provided on _3/29/2017_ regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number __1R-_4665_ has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

> *The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC.* [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District _1_ office in __Hobbs____ on or before _4/31/2017_. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.

- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.

- Nominal detection limits for field and laboratory analyses must be provided.

- Composite sampling is not generally allowed.

- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

•Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

• If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

• Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold
OCD Environmental Bureau Chief
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505-476-3465
jim.griswold@state.nm.us

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Form C-141
Revised October 10, 2003

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☐ Initial Report ☒ Final Report

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Facility Name: Epperson 16" Pipeline (Release Site #2)	Facility Type: Natural Gas Pipeline

Surface Owner: Ricky Pierce	Mineral Owner	Lease No.

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Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	24	11S	33E	2,250	South	900	West	Lea

Latitude: N33° 20" 49.1352" **Longitude: W103° 34' 29.0172"**

NATURE OF RELEASE

Type of Release: Natural Gas Liquids	Volume of Release: Unknown	Volume Recovered: None
Source of Release: Pipeline Leak	Date and Hour of Occurrence: Unknown	Date and Hour of Discovery: May 2016
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.* Hole developed in 16 inch steel pipe due to external corrosion. Pipeline was shut-in repair leak and placed back into service. Larson & Associates, Inc. contracted to delineate and remediate soil impacted from natural gas liquids.

Describe Area Affected and Cleanup Action Taken.* Affected soil area measures about 45 x 50 feet. TPH was below EPA SW-846 Method 8015 reporting limits (<26.6 mg/Kg to <50 mg/Kg) for TPH. Chloride was delineated vertically to 250 mg/Kg. No further action is requested for 1RP-4665.

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: Ralph England

Printed Name: Ralph England

Title: Saunders Field Supervisor

E-mail Address: REngland@targaresources.com

Date: 04-03-2017 Phone: (575) 396-3221Ext. 224

OIL CONSERVATION DIVISION

Approved by District Supervisor:

Approval Date: Expiration Date:

Conditions of Approval: Attached ☐

* Attach Additional Sheets If Necessary