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DELINEATION INVESTIGATION REPORT

Triple A Federal #2 Site Release Lea County, New Mexico

December 15, 2016

Prepared for:

Siana Operating LLC 12012 Wickchester Lane, Ste 410 Houston, Texas 77079

Prepared by:

Charger Services, Inc. 3300 N. A Street, Bldg 7 Midland, Texas 79705

Coty Woolf

Environmental Professional

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1.0 EXECUTIVE SUMMARY

This report is submitted to Siana Operating LLC (Siana), by Charger Services, Inc., (Charger), to present the delineation investigation of a crude oil and produced water spill at the Triple A Federal #2 Site, located in Lea County, New Mexico. The spill occurred before March 24, 2016, because of equipment failure. An unknown quantity of oil and produced water were lost at the Site and covering approximately 8,700 sq. ft. of the facility. Zero bbl of oil and water were recovered with unknown total lost.

On March 24, 2016, Charger personnel arrived at the Curry State #5 Site to initiate an investigation into the release. While at the site, Charger personnel collected photo documentation of the incident and established a work plan with Siana field personnel.

On October 11, 2016, Charger personnel delineated the Site. The samples were analyzed for BTEX, TPH, and Chlorides. The laboratory ran samples consecutively until below NMOCD action limits for each sample point.

Remediation recommendations will be submitted in a separate proposal.

2.0 INTRODUCTON

This report is submitted to Siana Operating LLC (Siana), by Charger Services, Inc., (Charger), to present the delineation investigation of a crude oil and produced water spill at the Triple A Federal #2 Site, located in Lea County, New Mexico. The spill occurred before March 24, 2016, because of equipment failure. An unknown quantity of oil and produced water were lost at the Site and covering approximately 8,700 sq. ft. of the facility. Zero bbl of oil and water were recovered with unknown total lost. The geodetic position for the spill is 32°19'1.81"N, 103°27'20.54"W. Figure 1 presents a topographic map. Figure 2 presents an aerial map.

2.1 Setting

The setting is as follows:

- The Site is located approximately 19 miles southwest of Eunice, in Lea County, New Mexico;
- The elevation is approximately 3,380 feet above mean sea level (MSL);
- The topography is slightly undulating and slopes to the east;
- The nearest water well is located about 0.6 miles northeast and is undocumented;
- The closet surface water feature is a playa lake (seasonal) located about 3.1 miles east of the Site;
- Runoff is to the north and east.

3.0 SPILL INVESTIGATION

On March 24, 2016, Charger personnel arrived at the Site to initiate an investigation into the crude oil and produced water release. While at the Site, Charger personnel collected photo documentation of the releases and established a work plan.

On October 11, 2016, Charger personnel used an air rotary drill to collect soil samples at two (2) boring locations. The samples were collected at 2 ft, 5ft, 10 ft, etc. to 100 foot below ground surface (bgs) and analyzed by Permian Basin Environmental Lab, LP, (PBELAB) for total petroleum hydrocarbons (TPH) by method 8015M, BTEX by method 8021B, and Chlorides by method E-300.

The laboratory reported chlorides concentrations above the NMOCD action level of 250 milligrams per kilogram (mg/kg) in samples down to 100 ft bgs In sample SB-1. Table 1 presents a summary of the laboratory analysis. Appendix B presents the laboratory reports.

4.0 RECOMMENDATION

Remediation recommendations will be submitted in a separate proposal.

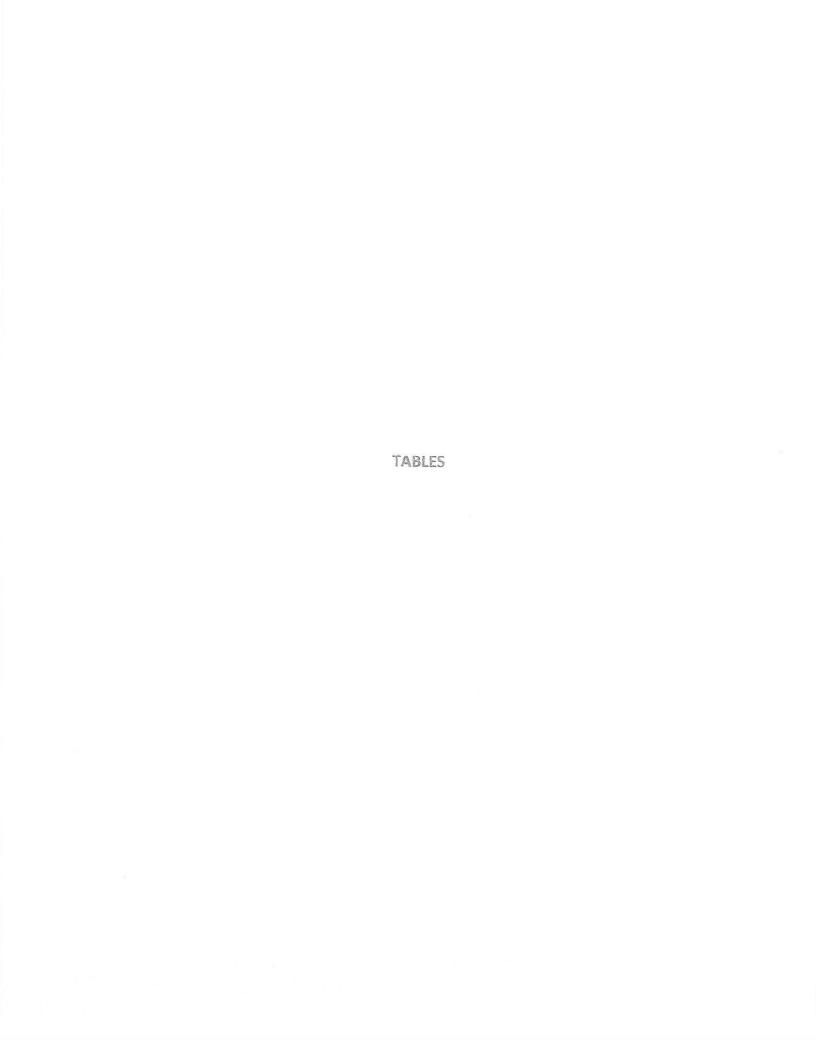


Table 1 Soil Samples Analytical Summary Siana Oil and Gas, Triple A Federal #2 Lea County, New Mexico

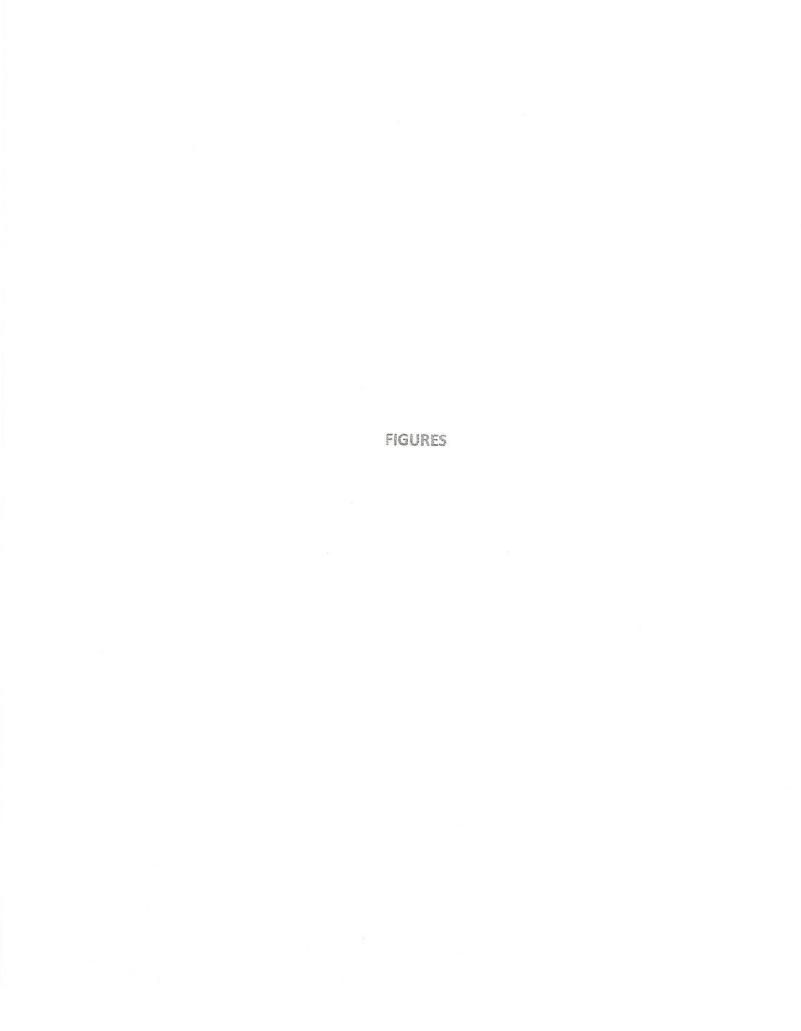
Boring	Depth Feet BGS	Date	Chloride mg/Kg	Benzene mg/kg	Toluene mg/kg	Ethylbenzene mg/kg	Xylene mg/kg	GRO mg/Kg	DRO mg/Kg	Oil mg/Kg	Total TPH mg/Kg
RRAL:											5,000
SB-1	2-3	10/11/2016	27	<0.00111	<0.00222	<0.00111	<0.00222	<27.778	<27.778	<27.778	<27.778
	5 - 6	10/11/2016	274	-	-	-	-	-	-	-	0
	10 - 11	10/11/2016	2,760	-	-	-	-	_			0
	15 - 16	10/11/2016	6,650	-	-	-		-			0
	20 - 21	10/11/2016	5,600	-	-	_	_	_	_	-	0
	25 - 26	10/11/2016	4,220	-	-	_	_	_		-	0
	30 - 31	10/11/2016	4,790			-		_		_	0
	35 - 36	10/11/2016	4,880	-	_	- 1		_	_	_	0
	40 - 41	10/11/2016	7,720	_		_		-	_	_	0
	45 - 46	10/11/2016	6,960		-	-		_	_	_	0
	50 - 51	10/11/2016	6,090	-		_			_	_	0
	55 - 56	10/11/2016	10,800	-	-	_	_		_	_	0
	60 - 61	10/11/2016	12,200	-		-	_		_	_	0
	65 - 66	10/11/2016	17,100	-	_		-	-		10-2	0
	70 - 71	10/11/2016	11,100	-	-		_	-		-	0
	75 - 76	10/11/2016	10,100	_	_		_	_	-		0
	80 - 81	10/11/2016	12,200	-	-						0
	85 - 86	10/11/2016	9,720	-	_		-				0
	90 - 91	10/11/2016	8,230	-	-	_	-		-		0
	95 - 96	10/11/2016	9,770	-	-	1	-		_		0
	100 - 101	10/11/2016	10,600		-	-	-	-		-	0
SB-2	2 - 3	10/11/2016	204	<0.00111	<0.00222	<0.00111	<0.00222	<27.778	<27.778	<27.778	<27.778
	5 - 6	10/11/2016	250	-		_	_	<32.051	<32.051	<32.051	<32.051
	10 - 11	10/11/2016	59		_		_				0
	15 - 16	10/11/2016	141	-	-	-	-	-	-	-	0

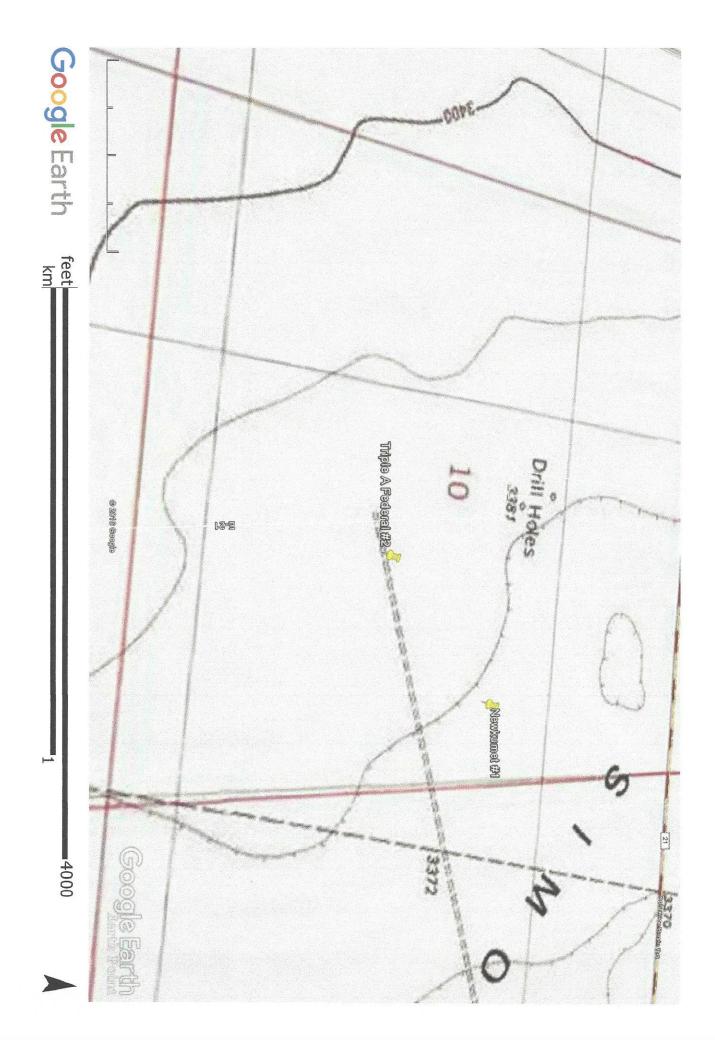
Notes: Analysis performed by Prmian Basin Environmental Lab, Midland, Texas

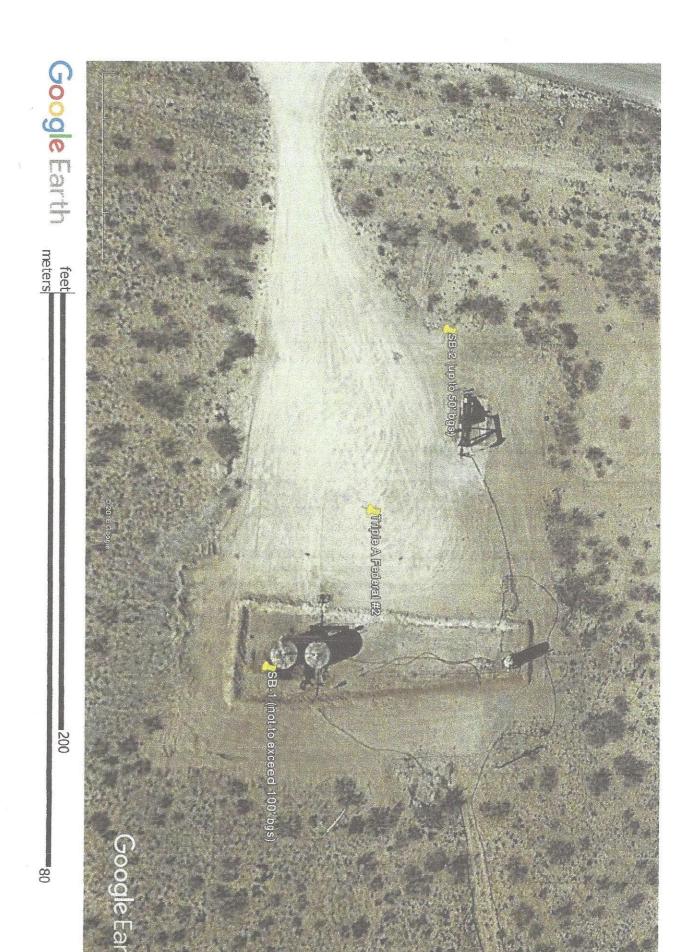
Samples analyzed via EPA method SW-8015M (TPH) and SW-300 (chloride).

Depth measurements are in feet below ground surface (bgs).

All concentrations are in milligrams per kilogram (mg/Kg) equivalent to parts per million (ppm).









Site Name:

Siana Triple A Fed #2

Job Number: Driller: Drill Method:

Latitude:

16-0401 Scarborough Drilling

Air Rotary 32°19'1.81"N Location:

Lea County, NM

Boring ID: Date: SB-1 10/11/2016

Geologist: Longitude: A. Pachlhofer 103°27'20.54"W

Depth	Time	PID (ppm)	USCS	Munsell Color	Description
Surface					
2	9:50	0.0	СН	Medium brown/slight red	Organic silt & clays/top soil with angular cobbles of caliche
5	9:55	0.0	SM	Pinkish brown	Sand with fines/silts & clays/fine ground caliche
10	10:00	0.0	SM	Light orange	Medium sized sand/25% - 40% fines/silts & clays
15	10:05	0.0	SM	Light orange to tan	Medium sized sand/25% - 40% fines/silts & clays
20	10:10	0.0	SM	Light orange to tan	Medium sized sand/25% - 40% fines/silts & clays
25	10:15	0.0	SP	Orange to light orange	Medium to fine sand/little to no silts or clays
30	10:20	0.0	SP	Orange to light orange	Medium to fine sand/little to no silts or clays
35	10:25	0.0	SP	Orange to light orange	Medium to fine sand/little to no silts or clays
40	10:30	0.0	SP	Orange to light orange	Medium to fine sand/little to no silts or clays
45	10:35	0.0	SP	Orange to light orange	Medium to fine sand/little to no silts or clays
50	10:40	0.0	SP	Lighter orange	Medium to fine sand/little to no silts or clays
55	10:45	0.0	SP	Lighter orange	Medium to fine sand/little to no silts or clays
60	10:50	0.0	SP	Lighter orange	Fine sand/little to no silts or clays
65	11:00	0.0	SP	Light orange to tan	Medium sand/well sorted
70	11:05	0.0	SP	Light orange to tan	Medium sand/well sorted
75	11:10	0.0	SP	Light orange to tan	Medium sand/well sorted
80	11:15	0.0	SP	Light orange to tan	Medium sand/well sorted
85	11:20	0.0	SP	Lighter orange	Medium sand with pebbles/may be trash from surface
90	11:25	0.0	SP	Light orange to tan	Medium sand with pebbles/may be trash from surface
95	11:30	0.0	SP	Light orange to tan	Fine sand/little to no silts or clays
100	11:35	0.0	SP	Light orange to tan	Fine sand/little to no silts or clays

Site Name: Siana Triple A Fed #2 Location: Lea County, NM Job Number: 16-0401 Boring ID: SB-2 Driller: Scarborough Drilling Date: 10/11/2016 Air Rotary Drill Method: Geologist: A. Pachlhofer Latitude: 32°19'1.81"N Longitude: 103°27'20.54"W

Depth	Time	PID (ppm)	USCS	Munsell Color	Description
Surface					
2	12:00	0.0	СН	Medium brown/slight red	Organic silt & clays/top soil with angular cobbles of caliche
5	12:05	0.0	SM	Pinkish brown	Sand with fines/silts & clays/fine ground caliche
10	12:10	0.0	SM	Light orange	Medium sized sand/25% - 40% fines/silts & clays
15	12:15	0.0	SM	Light orange to tan	Medium sized sand/25% - 40% fines/silts & clays



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



Analytical Report

Prepared for:

Coty Woolf Charger Services P.O. Box 53070 Midland, TX 79710

Project: Triple A Fed #2
Project Number: [none]
Location:

Lab Order Number: 6J17004



NELAP/TCEQ # T104704156-16-6

Report Date: 11/02/16

Charger Services P.O. Box 53070 Midland TX, 79710 Project: Triple A Fed #2

Project Number: [none]
Project Manager: Coty Woolf

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB-1 (2)	6J17004-01	Soil	10/11/16 09:50	10-14-2016 16:18
SB-1 (5)	6J17004-02	Soil	10/11/16 09:55	10-14-2016 16:18
SB-1 (10)	6J17004-03	Soil	10/11/16 10:00	10-14-2016 16:18
SB-1 (15)	6J17004-04	Soil	10/11/16 10:05	10-14-2016 16:18
SB-1 (20)	6J17004-05	Soil	10/11/16 10:10	10-14-2016 16:18
SB-1 (25)	6J17004-06	Soil	10/11/16 10:15	10-14-2016 16:18
SB-1 (30)	6J17004-07	Soil	10/11/16 10:20	10-14-2016 16:18
SB-1 (35)	6J17004-08	Soil	10/11/16 10:25	10-14-2016 16:18
SB-1 (40)	6J17004-09	Soil	10/11/16 10:30	10-14-2016 16:18
SB-1 (45)	6J17004-10	Soil	10/11/16 10:35	10-14-2016 16:18
SB-1 (50)	6J17004-11	Soil	10/11/16 10:40	10-14-2016 16:18
SB-1 (55)	6J17004-12	Soil	10/11/16 10:45	10-14-2016 16:18
SB-1 (60)	6J17004-13	Soil	10/11/16 10:50	10-14-2016 16:18
SB-1 (65)	6J17004-14	Soil	10/11/16 11:00	10-14-2016 16:18
SB-1 (70)	6J17004-15	Soil	10/11/16 11:05	10-14-2016 16:18
SB-1 (75)	6J17004-16	Soil	10/11/16 11:10	10-14-2016 16:18
SB-1 (80)	6J17004-17	Soil	10/11/16 11:15	10-14-2016 16:18
SB-1 (85)	6J17004-18	Soil	10/11/16 11:20	10-14-2016 16:18
SB-1 (90)	6J17004-19	Soil	10/11/16 11:25	10-14-2016 16:18
SB-1 (95)	6J17004-20	Soil	10/11/16 11:30	10-14-2016 16:18
SB-1 (100)	6J17004-21	Soil	10/11/16 11:35	10-14-2016 16:18
SB-2 (2)	6J17004-22	Soil	10/11/16 12:00	10-14-2016 16:18
SB-2 (5)	6J17004-23	Soil	10/11/16 12:05	10-14-2016 16:18
SB-2 (10)	6J17004-24	Soil	10/11/16 12:10	10-14-2016 16:18
SB-2 (15)	6J17004-25	Soil	10/11/16 12:15	10-14-2016 16:18

Fax: (432) 695-6247

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (2) 6J17004-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Pern	nian Basin F	Environmen	tal Lab, l	P.	-			
Organics by GC									
Benzene	ND	0.00111	mg/kg dry	1	P6J1907	10/19/16	10/19/16	EPA 8021B	
Toluene	ND	0.00222	mg/kg dry	1	P6J1907	10/19/16	10/19/16	EPA 8021B	
Ethylbenzene	ND	0.00111	mg/kg dry	1	P6J1907	10/19/16	10/19/16	EPA 8021B	
Xylene (p/m)	ND	0.00222	mg/kg dry	1	P6J1907	10/19/16	10/19/16	EPA 8021B	
Xylene (o)	ND	0.00111	mg/kg dry	1	P6J1907	10/19/16	10/19/16	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		89.5 %	75-12	5	P6J1907	10/19/16	10/19/16	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		74.5 %	75-12	5	P6J1907	10/19/16	10/19/16	EPA 8021B	S-GC
C6-C12	ND	27.778	mg/kg dry	1	P6J1808	10/15/16	10/18/16	TX 1005	
>C12-C28	ND	27.778	mg/kg dry	1	P6J1808	10/15/16	10/18/16	TX 1005	
>C28-C35	ND	27.778	mg/kg dry	1	P6J1808	10/15/16	10/18/16	TX 1005	
Surrogate: 1-Chlorooctane		90.1 %	70-13	0	P6J1808	10/15/16	10/18/16	TX 1005	
Surrogate: o-Terphenyl		94.8 %	70-13	0	P6J1808	10/15/16	10/18/16	TX 1005	
Total Hydrocarbon nC6-nC35	ND	27.778	mg/kg dry	1	[CALC]	10/15/16	10/18/16	[CALC]	
General Chemistry Parameters by El	PA / Standard Method	s							
Chloride	26.5	1.11	mg/kg dry	1	P6J1702	10/17/16	10/18/16	EPA 300.0	
% Moisture	10.0	0.1	%	1	P6J1804	10/18/16	10/18/16	% calculation	

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (5) 6J17004-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	
	Permia	n Basin E	Environme	ntal Lab, l	L .P.					
Organics by GC										
C6-C12	ND	28.409	mg/kg dry	1	P6J1808	10/15/16	10/18/16	TX 1005		
>C12-C28	ND	28.409	mg/kg dry	1	P6J1808	10/15/16	10/18/16	TX 1005		
>C28-C35	ND	28.409	mg/kg dry	1	P6J1808	10/15/16	10/18/16	TX 1005		
Surrogate: 1-Chlorooctane		89.9 %	70-1	30	P6J1808	10/15/16	10/18/16	TX 1005		
Surrogate: o-Terphenyl		94.6 %	70-1	30	P6J1808	10/15/16	10/18/16	TX 1005		
Total Hydrocarbon nC6-nC35	ND	28.409	mg/kg dry	1	[CALC]	10/15/16	10/18/16	[CALC]		
General Chemistry Parameters by El	General Chemistry Parameters by EPA / Standard Methods									
Chloride	274	1.14	mg/kg dry	1	P6J1702	10/17/16	10/18/16	EPA 300.0		
% Moisture	12.0	0.1	%	1	P6J1804	10/18/16	10/18/16	% calculation		

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (10) 6J17004-03 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	2760	11.5 mg/kg dry	10	P6J1702	10/17/16	10/18/16	EPA 300.0
% Moisture	13.0	0.1 %	1	P6J1804	10/18/16	10/18/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (15) 6J17004-04 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	6650	27.5 mg/kg dry	25	P6J1702	10/17/16	10/18/16	EPA 300.0
% Moisture	9.0	0.1 %	1	P6J1804	10/18/16	10/18/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (20) 6J17004-05 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	5600	27.8 mg/kg dry	25	P6K0105	11/01/16	11/02/16	EPA 300.0
% Moisture	10.0	0.1 %	1	P6K0104	11/01/16	11/01/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (25) 6J17004-06 (Soil)

									I .
		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	4220	27.8 mg/kg dry	25	P6K0105	11/01/16	11/02/16	EPA 300.0
% Moisture	10.0	0.1 %	1	P6K0104	11/01/16	11/01/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (30) 6J17004-07 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	4790	26.9 mg/kg dry	25	P6K0105	11/01/16	11/02/16	EPA 300.0
% Moisture	7.0	0.1 %	1	P6K0104	11/01/16	11/01/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (35) 6J17004-08 (Soil)

									1
		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	4880	26.3 mg/kg dry	25	P6K0105	11/01/16	11/02/16	EPA 300.0
% Moisture	5.0	0.1 %	1	P6K0104	11/01/16	11/01/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (40) 6J17004-09 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	7720	28.1 mg/kg dry	25	P6K0105	11/01/16	11/02/16	EPA 300.0
% Moisture	11.0	0.1 %	1	P6K0104	11/01/16	11/01/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (45) 6J17004-10 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	6960	27.5 mg/kg dry	25	P6K0105	11/01/16	11/02/16	EPA 300.0
% Moisture	9.0	0.1 %	1	P6K0104	11/01/16	11/01/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (50) 6J17004-11 (Soil)

									1
		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	6090	27.5 mg/kg dry	25	P6K0105	11/01/16	11/02/16	EPA 300.0
% Moisture	9.0	0.1 %	1	P6K0104	11/01/16	11/01/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (55) 6J17004-12 (Soil)

									I .
		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	10800	57.5 mg/kg dry	50	P6K0105	11/01/16	11/02/16	EPA 300.0
% Moisture	13.0	0.1 %	1	P6K0104	11/01/16	11/01/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (60) 6J17004-13 (Soil)

									I .
		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	12200	53.8 mg/kg dry	50	P6K0105	11/01/16	11/02/16	EPA 300.0
% Moisture	7.0	0.1 %	1	P6K0104	11/01/16	11/01/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (65) 6J17004-14 (Soil)

									I .
		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	17100	54.9 mg/kg dry	50	P6K0105	11/01/16	11/02/16	EPA 300.0
% Moisture	9.0	0.1 %	1	P6K0104	11/01/16	11/01/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (70) 6J17004-15 (Soil)

									I .
		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	11100	60.2 mg/kg dry	50	P6K0105	11/01/16	11/02/16	EPA 300.0
% Moisture	17.0	0.1 %	1	P6K0104	11/01/16	11/01/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (75) 6J17004-16 (Soil)

									1
		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	10100	52.1 mg/kg dry	50	P6K0105	11/01/16	11/02/16	EPA 300.0
% Moisture	4.0	0.1 %	1	P6K0104	11/01/16	11/01/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (80) 6J17004-17 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	12200	64.9 mg/kg dry	50	P6K0105	11/01/16	11/02/16	EPA 300.0
% Moisture	23.0	0.1 %	1	P6K0104	11/01/16	11/01/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (85) 6J17004-18 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	9720	52.1 mg/kg dry	50	P6K0105	11/01/16	11/02/16	EPA 300.0
% Moisture	4.0	0.1 %	1	P6K0104	11/01/16	11/01/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (90) 6J17004-19 (Soil)

									I .
		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	8230	26.3 mg/kg dry	25	P6K0105	11/01/16	11/02/16	EPA 300.0
% Moisture	5.0	0.1 %	1	P6K0104	11/01/16	11/01/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (95) 6J17004-20 (Soil)

									1
		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	9770	53.2 mg/kg dry	50	P6K0105	11/01/16	11/02/16	EPA 300.0
% Moisture	6.0	0.1 %	1	P6K0104	11/01/16	11/01/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-1 (100) 6J17004-21 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

Chloride	10600	34.2 mg/kg dry	25	P6K0105	11/01/16	11/02/16	EPA 300.0
% Moisture	27.0	0.1 %	1	P6K0104	11/01/16	11/01/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-2 (2) 6J17004-22 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Perm	nian Basin E	Environme	ıtal Lab, I	P.				
Organics by GC									
Benzene	ND	0.00111	mg/kg dry	1	P6J1907	10/19/16	10/19/16	EPA 8021B	
Toluene	ND	0.00222	mg/kg dry	1	P6J1907	10/19/16	10/19/16	EPA 8021B	
Ethylbenzene	ND	0.00111	mg/kg dry	1	P6J1907	10/19/16	10/19/16	EPA 8021B	
Xylene (p/m)	ND	0.00222	mg/kg dry	1	P6J1907	10/19/16	10/19/16	EPA 8021B	
Xylene (o)	ND	0.00111	mg/kg dry	1	P6J1907	10/19/16	10/19/16	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		83.6 %	75-1	25	P6J1907	10/19/16	10/19/16	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		75.2 %	75-1	25	P6J1907	10/19/16	10/19/16	EPA 8021B	
C6-C12	ND	27.778	mg/kg dry	1	P6J1808	10/15/16	10/18/16	TX 1005	
>C12-C28	ND	27.778	mg/kg dry	1	P6J1808	10/15/16	10/18/16	TX 1005	
>C28-C35	ND	27.778	mg/kg dry	1	P6J1808	10/15/16	10/18/16	TX 1005	
Surrogate: 1-Chlorooctane		92.0 %	70-1	30	P6J1808	10/15/16	10/18/16	TX 1005	
Surrogate: o-Terphenyl		97.6 %	70-1	30	P6J1808	10/15/16	10/18/16	TX 1005	
Total Hydrocarbon nC6-nC35	ND	27.778	mg/kg dry	1	[CALC]	10/15/16	10/18/16	[CALC]	
General Chemistry Parameters by EI	PA / Standard Method	s							
Chloride	204	1.11	mg/kg dry	1	P6J1702	10/17/16	10/18/16	EPA 300.0	
% Moisture	10.0	0.1	%	1	P6J1804	10/18/16	10/18/16	% calculation	

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-2 (5) 6J17004-23 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Permi	an Basin I	Environme	ntal Lab, l	L.P.				
Organics by GC									
C6-C12	ND	32.051	mg/kg dry	1	P6J1808	10/15/16	10/18/16	TX 1005	
>C12-C28	ND	32.051	mg/kg dry	1	P6J1808	10/15/16	10/18/16	TX 1005	
>C28-C35	ND	32.051	mg/kg dry	1	P6J1808	10/15/16	10/18/16	TX 1005	
Surrogate: 1-Chlorooctane		96.0 %	70-1	30	P6J1808	10/15/16	10/18/16	TX 1005	
Surrogate: o-Terphenyl		99.6 %	70-1	30	P6J1808	10/15/16	10/18/16	TX 1005	
Total Hydrocarbon nC6-nC35	ND	32.051	mg/kg dry	1	[CALC]	10/15/16	10/18/16	[CALC]	
General Chemistry Parameters by E	PA / Standard Methods								
Chloride	250	1.28	mg/kg dry	1	P6J1702	10/17/16	10/18/16	EPA 300.0	
% Moisture	22.0	0.1	%	1	P6J1804	10/18/16	10/18/16	% calculation	

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-2 (10) 6J17004-24 (Soil)

									I .
		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	59.0	1.11 mg/kg dry	1	P6J1702	10/17/16	10/18/16	EPA 300.0
% Moisture	10.0	0.1 %	1	P6J1804	10/18/16	10/18/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

SB-2 (15) 6J17004-25 (Soil)

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Chloride	141	1.15 mg/kg dry	1	P6J1702	10/17/16	10/18/16	EPA 300.0
% Moisture	13.0	0.1 %	1	P6J1804	10/18/16	10/18/16	% calculation

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

Organics by GC - 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 P6J1808 - General Preparation	n (GC)									
Blank (P6J1808-BLK1)				Prepared: 1	0/15/16 A	nalyzed: 10	/18/16			
C6-C12	ND	25.000	mg/kg wet							
>C12-C28	ND	25.000	"							
>C28-C35	ND	25.000	"							
Surrogate: 1-Chlorooctane	101		"	100		101	70-130			
Surrogate: o-Terphenyl	53.7		"	50.0		107	70-130			
LCS (P6J1808-BS1)				Prepared: 1	0/15/16 A	nalyzed: 10	/18/16			
C6-C12	998	25.000	mg/kg wet	1000		99.8	75-125			
>C12-C28	928	25.000	"	1000		92.8	75-125			
Surrogate: 1-Chlorooctane	118		"	100		118	70-130			
Surrogate: o-Terphenyl	51.1		"	50.0		102	70-130			
LCS Dup (P6J1808-BSD1)				Prepared: 1	0/15/16 A	nalyzed: 10	/18/16			
C6-C12	957	25.000	mg/kg wet	1000		95.7	75-125	4.14	20	
>C12-C28	867	25.000	"	1000		86.7	75-125	6.84	20	
Surrogate: 1-Chlorooctane	113		"	100		113	70-130			
Surrogate: o-Terphenyl	49.6		"	50.0		99.3	70-130			
Batch P6J1907 - General Preparation	n (GC)									
Blank (P6J1907-BLK1)				Prepared &	: Analyzed:	10/19/16				
Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00200	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 1,4-Difluorobenzene	0.0638		"	0.0800		79.7	75-125			
Surrogate: 4-Bromofluorobenzene	0.0766		"	0.0800		95.7	75-125			

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

Organics by GC - 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 P6J1907 - General Preparation (GC)										
LCS (P6J1907-BS1)				Prepared &	Analyzed:	10/19/16				
Benzene	0.0903	0.00100	mg/kg wet	0.100		90.3	70-130			
Toluene	0.0887	0.00200	"	0.100		88.7	70-130			
Ethylbenzene	0.119	0.00100	"	0.100		119	70-130			
Xylene (p/m)	0.223	0.00200	"	0.200		112	70-130			
Xylene (o)	0.107	0.00100	"	0.100		107	70-130			
Surrogate: 1,4-Difluorobenzene	0.0693		"	0.0800		86.6	75-125			
Surrogate: 4-Bromofluorobenzene	0.0726		"	0.0800		90.7	75-125			
LCS Dup (P6J1907-BSD1)				Prepared &	Analyzed:	10/19/16				
Benzene	0.0936	0.00100	mg/kg wet	0.100		93.6	70-130	3.64	20	
Toluene	0.0944	0.00200	"	0.100		94.4	70-130	6.21	20	
Ethylbenzene	0.104	0.00100	"	0.100		104	70-130	13.1	20	
Xylene (p/m)	0.212	0.00200	"	0.200		106	70-130	5.16	20	
Xylene (o)	0.116	0.00100	"	0.100		116	70-130	8.18	20	
Surrogate: 1,4-Difluorobenzene	0.0688		"	0.0800		86.0	75-125			
Surrogate: 4-Bromofluorobenzene	0.0777		"	0.0800		97.1	75-125			
Matrix Spike (P6J1907-MS1)	Sou	rce: 6J17004	-01	Prepared &	Analyzed:	10/19/16				
Benzene	0.0715	0.00111	mg/kg dry	0.111	ND	64.4	80-120			QM-07
Toluene	0.0720	0.00222	"	0.111	ND	64.8	80-120			QM-07
Ethylbenzene	0.105	0.00111	"	0.111	ND	94.4	80-120			
Xylene (p/m)	0.187	0.00222	"	0.222	ND	84.1	80-120			
Xylene (o)	0.0923	0.00111	"	0.111	ND	83.1	80-120			
Surrogate: 4-Bromofluorobenzene	0.0879		"	0.0889		98.8	75-125			
Surrogate: 1,4-Difluorobenzene	0.0707		"	0.0889		79.5	75-125			

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

General Chemistry Parameters by EPA / Standard Methods - Quality Control Permian Basin Environmental Lab, L.P.

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch P6J1702 - *** DEFAULT PREP ***										
Blank (P6J1702-BLK1)				Prepared:	10/17/16 A	nalyzed: 10	0/18/16			
Chloride	ND	1.00	mg/kg wet							
LCS (P6J1702-BS1)				Prepared:	10/17/16 A	nalyzed: 10	0/18/16			
Chloride	400	1.00	mg/kg wet	400		99.9	80-120			
LCS Dup (P6J1702-BSD1)				Prepared:	10/17/16 A	nalyzed: 10	0/18/16			
Chloride	398	1.00	mg/kg wet	400	·	99.6	80-120	0.313	20	
Duplicate (P6J1702-DUP1)	Sour	rce: 6J17002	-01	Prepared:	10/17/16 A	nalyzed: 10	0/18/16			
Chloride	935	11.1	mg/kg dry		940			0.569	20	
Duplicate (P6J1702-DUP2)	Sour	rce: 6J17004	-25	Prepared:	10/17/16 A	nalyzed: 10	0/18/16			
Chloride	141	1.15	mg/kg dry		141			0.0163	20	
Matrix Spike (P6J1702-MS1)	Sou	rce: 6J17002	-01	Prepared:	10/17/16 A	nalyzed: 10	0/18/16			
Chloride	1540	11.1	mg/kg dry	556	940	108	80-120			
Batch P6J1804 - *** DEFAULT PREP ***										
Blank (P6J1804-BLK1)				Prepared &	k Analyzed:	10/18/16				
% Moisture	ND	0.1	%							
Duplicate (P6J1804-DUP1)	Sour	rce: 6J17004	-25	Prepared &	k Analyzed:	10/18/16				
% Moisture	13.0	0.1	%		13.0			0.00	20	
Duplicate (P6J1804-DUP2)	Sou	rce: 6J17009	-05	Prepared &	k Analyzed:	10/18/16				
% Moisture	ND	0.1	%		ND				20	

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

General Chemistry Parameters by EPA / Standard Methods - Quality Control Permian Basin Environmental Lab, L.P.

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch P6J1804 - *** DEFAULT PREP ***										
Duplicate (P6J1804-DUP3)	Sour	ce: 6J17013-	04	Prepared &	Analyzed:	10/18/16				
% Moisture	ND	0.1	%		8.0			200	20	
Batch P6K0104 - *** DEFAULT PREP ***										
Blank (P6K0104-BLK1)				Prepared &	Analyzed:	11/01/16				
% Moisture	ND	0.1	%							
Duplicate (P6K0104-DUP1)	Sour	ce: 6J31008-	02	Prepared &	z Analyzed:	11/01/16				
% Moisture	2.0	0.1	%		3.0			40.0	20	
Duplicate (P6K0104-DUP2)	Sour	ce: 6J20003-	13	Prepared &	Analyzed:	11/01/16				
% Moisture	2.0	0.1	%		1.0			66.7	20	
Batch P6K0105 - *** DEFAULT PREP ***										
Blank (P6K0105-BLK1)				Prepared: 1	11/01/16 A	nalyzed: 11	/02/16			
Chloride	ND	1.00	mg/kg wet							
LCS (P6K0105-BS1)				Prepared: 1	11/01/16 A	nalyzed: 11	/02/16			
Chloride	404	1.00	mg/kg wet	400		101	80-120			
Duplicate (P6K0105-DUP1)	Sour	ce: 6K01001	-01	Prepared: 1	11/01/16 A	nalyzed: 11	/02/16			
Chloride	5.61	1.01	mg/kg dry		5.39			3.86	20	
Duplicate (P6K0105-DUP2)	Sour	ce: 6J17004-	14	Prepared: 1	11/01/16 A	nalyzed: 11	/02/16			
Chloride	17100	54.9	mg/kg dry		17100			0.0483	20	

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

General Chemistry Parameters by EPA / Standard Methods - Quality Control Permian Basin Environmental Lab, L.P.

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch P6K0105 - *** DEFAULT PREP ***

Matrix Spike (P6K0105-MS1)	Source	e: 6K01001-01	Prepared: 1	1/01/16 A	nalyzed: 11	/02/16	
Chloride	843	1.01 mg/kg dry	1010	5.39	82.9	80-120	

P.O. Box 53070 Project Number: [none]
Midland TX, 79710 Project Manager: Coty Woolf

Notes and Definitions

S-GC Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS

recovery.

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

	Drew	Darron			
Report Approved By:			Date:	11/2/2016	

Brent Barron, Laboratory Director/Technical Director

This material is intended only for the use of the individual (s) or entity to whom it is addressed, and may contain information that is privileged and confidential.

If you have received this material in error, please notify us immediately at 432-686-7235.

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