

Electronic Correspondence

December 29, 2015

Mr. Mike Bratcher State of New Mexico Oil Conservation Division 811 S. 1st Street Artesia, NM 88210 mike.bratcher@state.nm.us

Corrective Action Plan- 2RP-3363 Re: Memorial Production Operating, Federal R6 Legal: Unit C, Sec 10, T17S, R30E, Eddy County, NM Latitude/Longitude: 32.855446/ -103.952680 Etech Project Number: 416-6681-000 Depth to Groundwater: >300 feet Release Type: Produced Water Contaminants of Concern (COC's) Threshold Levels Chlorides 1,000 mg/kgTPH 5,000 mg/kg Benzene 10 mg/kg50 mg/kg BTEX

Dear Mike:

Etech Environmental & Safety Solutions, Inc. (Etech) is submitting the following corrective action plan on the aforementioned site for your review and approval.

#### Background

On October 28, 2015 a leak was discovered and reported from the Federal R6 flow line. The steel above ground transfer line formed a hole from corrosion causing the release of approximately 5 barrels (bbl.) of crude oil and 15 bbl. of produced water into the pasture. A vacuum truck was dispatched to recover fluid once the spill was discovered; approximately 1 bbl. of crude oil and 3 bbl. of produced water were recovered. An assessment of the site was conducted on November 3, 2015 by Etech personnel. The release flowed south from the transfer line for approximately 160 feet and was approximately 15 feet wide. The impacted area affected approximately 3,550 square feet of surface area.

An initial sampling was conducted of the impacted area on November 3, 2015. Samples were collected from three (3) locations of the impacted area. Note: All of the samples were collected from low areas to present a "worse case" basis. The samples were analyzed for TPH, BTEX and Chlorides. TPH levels ranged from non-detect to 15,500 mg/kg. Benzene levels and BTEX levels were found to be below regulatory levels. Chloride levels ranged from 72.4 to 18,600 mg/kg. Due to the site not being delineated to below 250 mg/kg chlorides and 1,000 mg/kg TPH on initial assessment, the site was further delineated on December 9, 2015 utilizing an air rotary rig. Samples were collected at AH 2 and

AH 3 at 1 foot intervals until field screening levels for chlorides were below 250 mg/kg. Chloride levels were below 250 mg/kg at 19-20 feet below grade at AH 2 and 19-20 feet below grade at AH 3. A copy of the assessment sheet and analytical results are attached.

#### Scope of Work

The corrective action for this site will be to excavate the first four feet below grade at AH 2 and dispose of this material at Lea Land, Inc. landfill. We estimate that approximately 60 cubic yards (CY) of material will be excavated from this area. For the area at AH 3, the first foot of material will be excavated and disposed of. Etech estimates that approximately 25 CY of material will be excavated and disposed of. Approximately 85 CY of material will be disposed of for the project. Following excavation and disposal, the site will be treated with DeSalt Plus and cleansorb to lower chloride and TPH levels below regulatory thresholds. The impacted soil will be treated with DeSalt Plus to lower the chloride and sodium levels in the root zone. We believe this to be the most practicable way to approach this site, due to the depth to groundwater in the area being greater than 300 feet and the soil's sandy content. Therefore, the corrective action goals for this project will be 1,000 mg/kg of chlorides and 5,000 mg/kg of TPH. The particulars for remediation will involve the actions summarized as follows:

- 1. Placement of a one-call for utility location.
- 2. The first four feet of soil will be mechanically excavated around AH 2. The excavated area will then be treated with a mixture of DeSalt and fresh water as well as a microbial agent. The excavated area will then be mechanically tilled to incorporate the amendments.
- 3. The area around AH 3 will be excavated to a depth of 1 foot. The excavated area will then be treated with a mixture of DeSalt and fresh water as well as a microbial agent. The excavated area will then be mechanically tilled to incorporate the amendments.
- 4. The area around AH 1 will be mechanically tilled. The impacted area will then be treated with a mixture of DeSalt and fresh water as well as a microbial agent. The area will then be mechanically tilled to incorporate the amendments.
- 5. All excavated material will be staged on plastic until it is disposed of.
- 6. Once screening determines the remediation objectives have been reached, confirmation samples will be collected to confirm that remediation goals have been reached.
- If the results of analysis indicate that the hydrocarbon or chloride levels are above regulatory threshold levels, additional treatment will be performed until the remediation objectives are met.
- **8.** The site will be seeded with BLM #2. Seeding will take place when the seasonal conditions are conducive to maximizing the potential for seed germination. Actual seeding will be accomplished by broadcast or drilling; whichever is the most practical for the site.

#### **Notifications and Special Conditions**

- 1. The OCD and BLM will be notified prior to the commencement of on-site operations.
- 2. The OCD and BLM will be notified prior to each sampling event to allow the opportunity to witness the sampling events. Splits will be made available if requested.
- 3. Prior to seeding, the OCD and BLM will be notified when the site is closed for final inspection.
- 4. A final report documenting the closure of the site will be submitted along with a final C-141.

Thank you for your assistance on this matter. Should you have any questions, require additional information, or have any additional stipulations for this site, please me at (432) 563-2200 (office) or via email at <u>tim@etechenv.com</u>.

Respectfully:

Tim McMinn

cc: Heather Patterson, NMOCD Division 2 Office Dara Glass, BLM Carlsbad District Office Attachment A Initial C-141

		N	ARTESIA D	SERVATION			
District II     Energy Mine       District III     Oil Co       District III     01 Co       1000 Rio Brazos Road, Aztec, NM 87410     1220 S	e of New Mexico rals and Natural Re nservation Divisio outh St. Francis I ta Fe, NM 87505	on	OCT 28 2015 Form C-14 Revised August 8, 20 Submit Copy of appropriate District Office accordance with 19.15.29 NMA				
Release Notifica		ective A	ction				
NAB1530236164 303900			/	ial Report 📋 Final Repor			
Name of Company Memorial Production Operating LLC	Contact Heathe						
Address 500 Dallas Street Houston TX 77002 Facility Name Federal R #006 (Closest Well)	Facility Type		334				
Surface Owner Mineral Ow		NOTIFIC	APIN	0. 30-015-22018			
	ION OF RELEA	SF	1.00.011	0. 00 010 22010			
	and the second data was not a second data was	t from the	East/West Line	County			
C 10 17S 30E				Eddy			
Latitude_32.854511:	3 Longitude	103.96201	32 (NAD83)				
NATU	RE OF RELEAS	SE Shhir oi	1/ 15bbie pw	1bbl oil/ 3bbls pw			
Type of Release Oil/ Produced Water				Recovered Obbl			
Source of Release Flowline Was Immediate Notice Given?	Date and Hour If YES, To Who	of Occurrent	Date and	Hour of Discovery 3:00 pm			
Yes No Not Requ	Sand I		Bratcher, OCD &	Shelly Tucker/ Art Arias, BLN			
By Whom? Heather Dolphin	Date and Hour			onen ruenen ruenaat ozh			
Was a Watercourse Reached?	If YES, Volume	e Impacting	the Watercourse.				
n/a Describe Cause of Problem and Remedial Action Taken.*							
Describe Cause of Problem and Remedial Action Taken.* njection line developed a hole.	×** =						
n/a Describe Cause of Problem and Remedial Action Taken.* njection line developed a hole. Describe Area Affected and Cleanup Action Taken.* 10ft by 3ft one 12ft BY 17 pool 1/4" deep in the pasture. Will cle I hereby certify that the information given above is true and complete regulations all operators are required to report and/or file certain relea public health or the environment. The acceptance of a C-141 report to should their operations have failed to adequately investigate and reme or the environment. In addition, NMOCD acceptance of a C-141 report	en-up per OCD/ BLN to the best of my know ase notifications and pe by the NMOCD marked ediate contamination th	vledge and u rform correc l as "Final R at pose a thro	nderstand that pur tive actions for rel eport" does not rel eat to ground wate	eases which may endanger ieve the operator of liability r, surface water, human health			
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n/a Describe Cause of Problem and Remedial Action Taken.* njection line developed a hole. Describe Area Affected and Cleanup Action Taken.* 10ft by 3ft one 12ft BY 17 pool 1/4" deep in the pasture. Will cle I hereby certify that the information given above is true and complete regulations all operators are required to report and/or file certain relea public health or the environment. The acceptance of a C-141 report to should their operations have failed to adequately investigate and reme	earl-up per OCD/ BLM to the best of my know ase notifications and pe ediate contamination th ort does not relieve the Approved by Envi	vledge and u rform correct l as "Final R at pose a thr operator of the <u>DIL CON</u> Signed By roomental Signed By roomental Signe	nderstand that pur tive actions for rel eport <sup>a</sup> does not rel eat to ground wate responsibility for c SERVATION Pecialist: Expiration Rules & Guid	eases which may endanger ieve the operator of liability r, surface water, human health compliance with any other DIVISION KATCHESE Date: N/A Attached			

- 27902-2

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# Attachment B Annotated Aerial Imagery



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Date Assessed:

ed: November 3, 2015

		Assess	ment Result	ts	
Sample I.D.	Depth (ft.)	Chlorides (mg/kg)	TPH (mg/kg)	Benzene (mg/kg)	BTEX (mg/kg)
AH 1	0-1	1860	1520	0.00189	0.13639
AH 1	1-2	72.4	ND	ND	0.0153
AH 1	2-3	75.9	41.9	ND	ND
AH 1	3-4	72.5	58.8	ND	ND
AH 1	4-5	271	264	ND	ND
AH 1	5-6	240	42	ND	ND
AH 1	6-7	287	257	ND	ND
AH 2	0-1	7120	15500	0.0786	46.0086
AH 2	1-2	7930	12400	0.165	30.195
AH 2	2-3	18600	6980	0.0759	15.9549
AH 2	3-4	16500	9840	0.0861	19.8461
AH 3	0-1	2770	8250	0.00602	0.57102
AH 3	1-2	2880	566	ND	0.00907
AH 3	2-3	2410	184	ND	ND

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Federal R6 AH 3	AH
AH 8	AH
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AH2	AH
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Lease Name: Federal R6

Date Assessed:

December 9, 2015

Case No.: 416-6681-000

Environmental a barety solutions, me.	Dute Assessed.	Determiner 5, 2015				
A span	State State	Carlos and the second		Assessm	ient Result	S
	11 and a start	the same manager	Sample I.D.	Depth (ft.)	Chlorides (mg/kg)	TPH (mg/kg)
		- A ANTACY A DE TRANSFORMENT	AH 2	4-5	4010	241
and the second second	and had been the	TO THE REAL OF THE PARTY OF THE	AH 2	5-6	1360	ND
	Northal March 1		AH 2	6-7	2790	ND
	the second	The second se	AH 2	7-8	1960	ND
	and the set	the second stands of the	AH 2	8-9	2430	ND
	and the second	and the second s	AH 2	9-10	3220	NA
and the second to be	Federal	Ro	AH 2	10-11	2790	NA
1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	AN O	and the second second	AH 2	11-12	900	NA
Contract in the second se		al line	AH 2	12-13	1160	NA
A State of the second			AH 2	13-14	1470	NA
	AH2	Town of the State	AH 2	14-15	980	ND
AND		the second of the second of the	AH 2	15-16	520	ND
And the second s			AH 2	16-17	590	ND
	1 200 245		AH 2	17-18	330	ND
	See All one	and the second sec	AH 2	18-19	167	ND
A State of the second s	State of		AH 2	19-20	108	ND
	All and an		AH 3	4-6	1580	NA
1		and the second of the second	AH 3	5-6	2790	NA
State 1 to 1 to 1	· · Care Barris	State and the state of the state of the	AH 3	6-7	2790	NA
	and the second s	and the second second second	AH 3	7-8	980	NA
A CARLES AND A CARLES	the same fit		AH 3	8-9	980	NA
	14 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		AH 3	9-10	590	NA
The second se	P. L. Maria		AH 3	10-11	590	NA
	and the second		AH 3	11-12	670	NA
	a farmer		AH 3	12-13	900	NA
	Mar In	a series and the series of	AH 3	13-14	740	NA
	and the second	and the second	AH 3	14-15	1070	NA
A Marine Brand and a second for	CZ 1227 1 1	ALL THE REAL PROPERTY AND	AH 3	15-16	980	NA
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	and a second second	AH 3	16-17	740	NA NA
and a state of the		all the second share a sould	AH 3	17-18	520	
and a second second second	1 Cinet	3 Port and Carl and Carl and Carl	AH 3	18-19	276	NA
	States of the Road of States		AH 3	19-20	230	NA

Attachment C Photograph Log









## Attachment D Analytical Results

PERMIAN BASIN ENVIRONMENTAL LAB, LP 10014 SCR 1213 Midland, TX 79706



# Analytical Report

## **Prepared for:**

Tim McMinn E Tech Environmental & Safety Solutions, Inc. 13000 West County Road 100 Odessa, TX 79765

> Project: Federal R6 Project Number: 416-6681-000 Location: Memorial

Lab Order Number: 5K06008



NELAP/TCEQ # T104704156-13-3

Report Date: 11/19/15

E Tech Environmental & Safety Solutions, Inc. 13000 West County Road 100 Odessa TX, 79765 Project: Federal R6 Project Number: 416-6681-000 Project Manager: Tim McMinn

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Auger hole 1 0-1'	5K06008-01	Soil	11/04/15 09:45	11-05-2015 16:45
Auger hole 1 1-2'	5K06008-02	Soil	11/04/15 10:00	11-05-2015 16:45
Auger hole 1 2-3'	5K06008-03	Soil	11/04/15 10:15	11-05-2015 16:45
Auger hole 1 3-4'	5K06008-04	Soil	11/04/15 10:30	11-05-2015 16:45
Auger hole 1 4-5'	5K06008-05	Soil	11/04/15 10:50	11-05-2015 16:45
Auger hole 1 5-6'	5K06008-06	Soil	11/04/15 10:55	11-05-2015 16:45
Auger hole 1 6-7'	5K06008-07	Soil	11/04/15 11:10	11-05-2015 16:45
Auger hole 2 0-1'	5K06008-08	Soil	11/04/15 11:15	11-05-2015 16:45
Auger hole 2 1-2'	5K06008-09	Soil	11/04/15 11:25	11-05-2015 16:45
Auger hole 2 2-3'	5K06008-10	Soil	11/04/15 11:30	11-05-2015 16:45
Auger hole 2 3-4'	5K06008-11	Soil	11/04/15 11:40	11-05-2015 16:45
Auger hole 3 0-1'	5K06008-12	Soil	11/04/15 11:50	11-05-2015 16:45
Auger hole 3 1-2'	5K06008-13	Soil	11/04/15 11:55	11-05-2015 16:45
Auger hole 3 2-3'	5K06008-14	Soil	11/04/15 12:00	11-05-2015 16:45

#### Auger hole 1 0-1' 5K06008-01 (Soil)

		01100	000-01 (501	9					
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Peri	nian Basin E	Environmen	tal Lab, I	L.P.				
Organics by GC									
Benzene	0.00189	0.00114	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Toluene	0.0295	0.00227	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Ethylbenzene	0.0251	0.00114	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Xylene (p/m)	0.0404	0.00227	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Xylene (0)	0.0395	0.00114	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		104 %	75-12	25	P5K0606	11/06/15	11/06/15	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		84.6 %	75-12	25	P5K0606	11/06/15	11/06/15	EPA 8021B	
General Chemistry Parameters by EI	PA / Standard Metho	ds							
Chloride	1860	5.68	mg/kg dry	5	P5K1018	11/09/15	11/10/15	EPA 300.0	
% Moisture	12.0	0.1	%	1	P5K0901	11/09/15	11/09/15	% calculation	
Total Petroleum Hydrocarbons C6-C	35 by EPA Method 8	015M							
C6-C12	191	142	mg/kg dry	5	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C12-C28	1170	142	mg/kg dry	5	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C28-C35	156	142	mg/kg dry	5	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: 1-Chlorooctane		87.2 %	70-13	80	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: o-Terphenyl		104 %	70-13	80	P5K0902	11/06/15	11/07/15	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	1520	142	mg/kg dry	5	[CALC]	11/06/15	11/07/15	calc	

#### Permian Basin Environmental Lab, L.P.

E Tech Environmental & Safety Solutions, Inc. 13000 West County Road 100 Odessa TX, 79765		Proj Project Num Project Mana		1-000				Fax: (432) 56	3-2213
		0	r hole 1 1- 008-02 (Soi						
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Perr	nian Basin F	Environmen	tal Lab, l	L <b>.P.</b>				
Organics by GC									
Benzene	ND	0.00115	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Toluene	ND	0.00230	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Ethylbenzene	ND	0.00115	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Xylene (p/m)	0.0153	0.00230	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Xylene (o)	ND	0.00115	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		96.9 %	75-1.	25	P5K0606	11/06/15	11/06/15	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		97.5 %	75-1.	25	P5K0606	11/06/15	11/06/15	EPA 8021B	
<b>General Chemistry Parameters by EPA / S</b>	tandard Metho	ds							
Chloride	72.4	1.15	mg/kg dry	1	P5K1020	11/10/15	11/11/15	EPA 300.0	
% Moisture	13.0	0.1	%	1	P5K0901	11/09/15	11/09/15	% calculation	
Total Petroleum Hydrocarbons C6-C35 by	EPA Method 8	015M							
C6-C12	ND	28.7	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C12-C28	ND	28.7	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C28-C35	ND	28.7	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: 1-Chlorooctane		110 %	70-1.	30	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: o-Terphenyl		139 %	70-1.	30	P5K0902	11/06/15	11/07/15	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	ND	28.7	mg/kg dry	1	[CALC]	11/06/15	11/07/15	calc	

E Tech Environmental & Safety Solutions, Inc. 13000 West County Road 100 Odessa TX, 79765		Proj Project Num Project Mana		31-000				Fax: (432) 50	63-2213
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		5K06	008-03 (Soi	I)					
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Per	mian Basin E	Invironmen	ital Lab, l	<b>P</b> .				
Organics by GC									
Benzene	ND	0.00114	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Toluene	ND	0.00227	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Ethylbenzene	ND	0.00114	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Xylene (p/m)	ND	0.00227	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Xylene (o)	ND	0.00114	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		110 %	75-1	25	P5K0606	11/06/15	11/06/15	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		101 %	75-1.	25	P5K0606	11/06/15	11/06/15	EPA 8021B	
General Chemistry Parameters by EPA / Stan	dard Metho	ds							
Chloride	75.9	1.14	mg/kg dry	1	P5K1020	11/10/15	11/11/15	EPA 300.0	
% Moisture	12.0	0.1	%	1	P5K0901	11/09/15	11/09/15	% calculation	
<u>Total Petroleum Hydrocarbons C6-C35 by EP</u>	A Method 8	8015M							
C6-C12	ND	28.4	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C12-C28	41.9	28.4	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C28-C35	ND	28.4	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: 1-Chlorooctane		91.0 %	70-1.	30	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: o-Terphenyl		113 %	70-1.	30	P5K0902	11/06/15	11/07/15	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	41.9	28.4	mg/kg dry	1	[CALC]	11/06/15	11/07/15	calc	

E Tech Environmental & Safety Solutions, Inc. 13000 West County Road 100 Odessa TX, 79765							
Analyte	Result	Batch	Prepared	Analyzed			
	Perr	nian Basin E	Invironme	ntal Lab, I	L.P.		
Organics by GC							
Benzene	ND	0.00108	mg/kg dry	1	P5K0606	11/06/15	11/06/15
Гoluene	ND	0.00215	mg/kg dry	1	P5K0606	11/06/15	11/06/15

ND

ND

ND

General Chemistry Parameters by EPA	A / Standard Methods							
Chloride	72.5	1.08	mg/kg dry	1	P5K1020	11/10/15	11/11/15	EPA 300.0
% Moisture	7.0	0.1	%	1	P5K0901	11/09/15	11/09/15	% calculation
Total Petroleum Hydrocarbons C6-C3	5 by EPA Method 801	5M						
C6-C12	ND	26.9	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M
>C12-C28	58.8	26.9	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M
>C28-C35	ND	26.9	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M
Surrogate: 1-Chlorooctane		87.5 %	70-130		P5K0902	11/06/15	11/07/15	TPH 8015M
Surrogate: o-Terphenyl		107 %	70-130		P5K0902	11/06/15	11/07/15	TPH 8015M
Total Petroleum Hydrocarbon C6-C35	58.8	26.9	mg/kg dry	1	[CALC]	11/06/15	11/07/15	calc

0.00108 mg/kg dry

0.00108 mg/kg dry

mg/kg dry

75-125

75-125

0.00215

107~%

108 %

1

1

1

P5K0606

P5K0606

P5K0606

P5K0606

P5K0606

11/06/15

11/06/15

11/06/15

11/06/15

11/06/15

11/06/15

11/06/15

11/06/15

11/06/15

11/06/15

Ethylbenzene

Xylene (p/m)

Surrogate: 4-Bromofluorobenzene

Surrogate: 1,4-Difluorobenzene

Xylene (o)

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Permian Basin Environmental Lab.

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Notes

Method

EPA 8021B EPA 8021B

EPA 8021B

EPA 8021B

EPA 8021B

EPA 8021B

EPA 8021B

E Tech Environmental & Safety Solutions, Inc. 13000 West County Road 100 Odessa TX, 79765		÷	ect: Federal ber: 416-668 ger: Tim Mc	1-000				Fax: (432) 56	53-2213
			r hole 1 4- 008-05 (Soi						
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Per	mian Basin E	Invironmen	tal Lab, l	L.P.				
Organics by GC									
Benzene	ND	0.00109	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Toluene	ND	0.00217	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Ethylbenzene	ND	0.00109	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Xylene (p/m)	ND	0.00217	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Xylene (o)	ND	0.00109	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		83.7 %	75-12	25	P5K0606	11/06/15	11/06/15	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		101 %	75-12	25	P5K0606	11/06/15	11/06/15	EPA 8021B	
General Chemistry Parameters by EPA / Stan	dard Metho	ods							
Chloride	271	1.09	mg/kg dry	1	P5K1020	11/10/15	11/11/15	EPA 300.0	
% Moisture	8.0	0.1	%	1	P5K0901	11/09/15	11/09/15	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EF	PA Method 8	8015M							
C6-C12	27.2	27.2	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C12-C28	231	27.2	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C28-C35	33.1	27.2	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: 1-Chlorooctane		111 %	70-13	30	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: o-Terphenyl		136 %	70-13	30	P5K0902	11/06/15	11/07/15	TPH 8015M	S-GC
Total Petroleum Hydrocarbon	264	27.2	mg/kg dry	1	[CALC]	11/06/15	11/07/15	calc	

C6-C35

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			r hole 1 5- 008-06 (Soi						
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Per	mian Basin E	Invironmen	tal Lab, l	L.P.				
Organics by GC									
Benzene	ND	0.00109	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Toluene	ND	0.00217	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Ethylbenzene	ND	0.00109	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Xylene (p/m)	ND	0.00217	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Xylene (o)	ND	0.00109	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		94.2 %	75-12	25	P5K0606	11/06/15	11/06/15	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		104 %	75-12	25	P5K0606	11/06/15	11/06/15	EPA 8021B	
General Chemistry Parameters by EPA / Stan	dard Metho	ds							
Chloride	240	1.09	mg/kg dry	1	P5K1020	11/10/15	11/11/15	EPA 300.0	
% Moisture	8.0	0.1	%	1	P5K0901	11/09/15	11/09/15	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EP	A Method 8	8015M							
C6-C12	ND	27.2	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C12-C28	42.0	27.2	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C28-C35	ND	27.2	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: 1-Chlorooctane		102 %	70-13	30	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: o-Terphenyl		126 %	70-13	80	P5K0902	11/06/15	11/07/15	TPH 8015M	
Fotal Petroleum Hydrocarbon	42.0	27.2	mg/kg dry	1	[CALC]	11/06/15	11/07/15	calc	

C6-C35

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		U	r hole 1 6 008-07 (Soi						
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Per	mian Basin F	Environmer	ıtal Lab, I	<b>P.</b>				
Organics by GC									
Benzene	ND	0.00119	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Toluene	ND	0.00238	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Ethylbenzene	ND	0.00119	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Xylene (p/m)	ND	0.00238	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Xylene (o)	ND	0.00119	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		78.9 %	75-1	25	P5K0606	11/06/15	11/06/15	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		134 %	75-1	25	P5K0606	11/06/15	11/06/15	EPA 8021B	S-GC
General Chemistry Parameters by EPA / Stan	dard Metho	ods							
Chloride	287	1.19	mg/kg dry	1	P5K1020	11/10/15	11/11/15	EPA 300.0	
% Moisture	16.0	0.1	%	1	P5K0901	11/09/15	11/09/15	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EP	A Method 8	8015M							
C6-C12	ND	29.8	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C12-C28	223	29.8	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C28-C35	34.2	29.8	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: 1-Chlorooctane		111 %	70-1	30	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: o-Terphenyl		137 %	70-1	30	P5K0902	11/06/15	11/07/15	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	257	29.8	mg/kg dry	1	[CALC]	11/06/15	11/07/15	calc	

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

## Auger hole 2 0-1'

#### 5K06008-08 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Pern	nian Basin F	Invironmen	ital Lab, l	L <b>.P.</b>				
Organics by GC									
Benzene	0.0786	0.0549	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Toluene	6.18	0.110	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Ethylbenzene	9.35	0.0549	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Xylene (p/m)	20.1	0.110	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Xylene (0)	10.3	0.0549	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		100 %	75-125		P5K1702	11/16/15	11/16/15	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		89.2 %	75-125		P5K1702	11/16/15	11/16/15	EPA 8021B	
General Chemistry Parameters by E	PA / Standard Method	ls							
Chloride	7120	27.5	mg/kg dry	25	P5K1020	11/10/15	11/11/15	EPA 300.0	
% Moisture	9.0	0.1	%	1	P5K0901	11/09/15	11/09/15	% calculation	
<u>Total Petroleum Hydrocarbons C6-C</u>	C35 by EPA Method 80	015M							
C6-C12	3250	275	mg/kg dry	10	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C12-C28	10600	275	mg/kg dry	10	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C28-C35	1580	275	mg/kg dry	10	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: 1-Chlorooctane		117 %	70-1	30	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: o-Terphenyl		108 %	70-1	30	P5K0902	11/06/15	11/07/15	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	15500	275	mg/kg dry	10	[CALC]	11/06/15	11/07/15	calc	

E Tech Environmental & Safety Solutions, Inc. 13000 West County Road 100 Odessa TX, 79765	Project: Federal R6 Project Number: 416-6681-000 Project Manager: Tim McMinn							Fax: (432) 56	53-2213
		U	r hole 2 1 008-09 (So						
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Per	rmian Basin F	Environmei	ıtal Lab, l	L <b>.P.</b>				
Organics by GC									
Benzene	0.165	0.0549	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Toluene	3.44	0.110	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Ethylbenzene	7.36	0.0549	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Xylene (p/m)	13.0	0.110	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Xylene (0)	6.23	0.0549	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		121 %	75-1	25	P5K1702	11/16/15	11/16/15	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		76.2 %	75-1	25	P5K1702	11/16/15	11/16/15	EPA 8021B	
General Chemistry Parameters by EPA / Stan	dard Meth	ods							
Chloride	7930	27.5	mg/kg dry	25	P5K1020	11/10/15	11/11/15	EPA 300.0	
% Moisture	9.0	0.1	%	1	P5K0901	11/09/15	11/09/15	% calculation	
<u>Total Petroleum Hydrocarbons C6-C35 by EP</u>	A Method	8015M							
C6-C12	2710	275	mg/kg dry	10	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C12-C28	8420	275	mg/kg dry	10	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C28-C35	1270	275	mg/kg dry	10	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: 1-Chlorooctane		128 %	70-1	30	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: o-Terphenyl		129 %	70-1	30	P5K0902	11/06/15	11/07/15	TPH 8015M	
Total Petroleum Hydrocarbon	12400	275	mg/kg dry	10	[CALC]	11/06/15	11/07/15	calc	
C6-C35									

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

### Auger hole 2 2-3'

#### 5K06008-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Pern	1ian Basin E	nvironmer	ital Lab, l	L.P.				
Organics by GC									
Benzene	0.0759	0.0617	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Toluene	0.769	0.123	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Ethylbenzene	4.66	0.0617	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Xylene (p/m)	7.40	0.123	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Xylene (o)	3.05	0.0617	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		75.9 %	75-125		P5K1702	11/16/15	11/16/15	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		126 %	75-125		P5K1702	11/16/15	11/16/15	EPA 8021B	S-GC
General Chemistry Parameters by El								ED 1 200 0	
Chloride	18600	61.7	mg/kg dry	50	P5K1020	11/10/15	11/11/15	EPA 300.0	
% Moisture	19.0	0.1	%	1	P5K0901	11/09/15	11/09/15	% calculation	
<u>Total Petroleum Hydrocarbons C6-C</u>	35 by EPA Method 80	015M							
C6-C12	1160	154	mg/kg dry	5	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C12-C28	5070	154	mg/kg dry	5	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C28-C35	751	154	mg/kg dry	5	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: 1-Chlorooctane		140 %	70-1	30	P5K0902	11/06/15	11/07/15	TPH 8015M	S-GC
Surrogate: o-Terphenyl		127 %	70-1	30	P5K0902	11/06/15	11/07/15	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	6980	154	mg/kg dry	5	[CALC]	11/06/15	11/07/15	calc	

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		_	r hole 2–3 008-11 (So						
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Per	mian Basin F	Environmer	ıtal Lab, l	L <b>.P.</b>				
Organics by GC									
Benzene	0.0861	0.0602	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Toluene	1.85	0.120	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Ethylbenzene	6.06	0.0602	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Xylene (p/m)	8.30	0.120	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Xylene (o)	3.55	0.0602	mg/kg dry	50	P5K1702	11/16/15	11/16/15	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		83.1 %	75-1	25	P5K1702	11/16/15	11/16/15	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		113 %	75-1	25	P5K1702	11/16/15	11/16/15	EPA 8021B	
General Chemistry Parameters by EPA / Sta	ndard Metho	ods							
Chloride	16500	60.2	mg/kg dry	50	P5K1020	11/10/15	11/11/15	EPA 300.0	
% Moisture	17.0	0.1	%	1	P5K0901	11/09/15	11/09/15	% calculation	
<u>Total Petroleum Hydrocarbons C6-C35 by E</u>	PA Method 8	8015M							
C6-C12	1520	151	mg/kg dry	5	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C12-C28	7250	151	mg/kg dry	5	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C28-C35	1080	151	mg/kg dry	5	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: 1-Chlorooctane		133 %	70-1	30	P5K0902	11/06/15	11/07/15	TPH 8015M	S-G0
Surrogate: o-Terphenyl		126 %	70-1	30	P5K0902	11/06/15	11/07/15	TPH 8015M	
Total Petroleum Hydrocarbon	9840	151	mg/kg dry	5	[CALC]	11/06/15	11/07/15	calc	
C6-C35									

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

## Auger hole 3 0-1'

#### 5K06008-12 (Soil)

	<b>D</b>	Reporting	<b>T</b> T <b>1</b>	Dilai	D (1	<b>D</b>			<b>N</b> . (
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Perm	nian Basin E	nvironmer	ntal Lab, I	<b>P.</b>				
Organics by GC									
Benzene	0.00602	0.00104	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Toluene	0.129	0.00208	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Ethylbenzene	0.126	0.00104	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Xylene (p/m)	0.208	0.00208	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Xylene (0)	0.102	0.00104	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		117 %	75-125		P5K0606	11/06/15	11/06/15	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		113 %	75-125		P5K0606	11/06/15	11/06/15	EPA 8021B	
General Chemistry Parameters by El	PA / Standard Method	ls							
Chloride	2770	10.4	mg/kg dry	10	P5K1020	11/10/15	11/11/15	EPA 300.0	
% Moisture	4.0	0.1	%	1	P5K0901	11/09/15	11/09/15	% calculation	
<u>Total Petroleum Hydrocarbons C6-C</u>	35 by EPA Method 80	)15M							
C6-C12	666	260	mg/kg dry	10	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C12-C28	6540	260	mg/kg dry	10	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C28-C35	1050	260	mg/kg dry	10	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: 1-Chlorooctane		119 %	70-1	30	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: o-Terphenyl		135 %	70-1	30	P5K0902	11/06/15	11/07/15	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	8250	260	mg/kg dry	10	[CALC]	11/06/15	11/07/15	calc	

E Tech Environmental & Safety Solutions, Inc. 13000 West County Road 100 Odessa TX, 79765		Project: Federal R6 Project Number: 416-6681-000 Project Manager: Tim McMinn						Fax: (432) 56	53-2213
Ouessa 1A, 79703			r hole 3 1						
		5K06	008-13 (So	il)					
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Per	·mian Basin E	nvironmer	ntal Lab, l	<b>P</b> .				
Organics by GC									
Benzene	ND	0.00105	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Foluene 0	.00216	0.00211	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Ethylbenzene 0	.00144	0.00105	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Kylene (p/m)0	.00252	0.00211	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Kylene (o)0	.00295	0.00105	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		106 %	75-1	25	P5K0606	11/06/15	11/06/15	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		105 %	75-1	25	P5K0606	11/06/15	11/06/15	EPA 8021B	
General Chemistry Parameters by EPA / Standa	ard Meth	ods							
Chloride	2880	10.5	mg/kg dry	10	P5K1020	11/10/15	11/11/15	EPA 300.0	
% Moisture	5.0	0.1	%	1	P5K0901	11/09/15	11/09/15	% calculation	
<u>Fotal Petroleum Hydrocarbons C6-C35 by EPA</u>	Method	8015M							
C6-C12	33.2	26.3	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C12-C28	434	26.3	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M	
>C28-C35	99.4	26.3	mg/kg dry	1	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: 1-Chlorooctane		111 %	70-1	30	P5K0902	11/06/15	11/07/15	TPH 8015M	
Surrogate: o-Terphenyl		137 %	70-1	30	P5K0902	11/06/15	11/07/15	TPH 8015M	S-G
Fotal Petroleum Hydrocarbon C6-C35	566	26.3	mg/kg dry	1	[CALC]	11/06/15	11/07/15	calc	

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

## Auger hole 3 2-3'

#### 5K06008-14 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Pern	1ian Basin E	nvironmen	ital Lab, l	L.P.				
Organics by GC									
Benzene	ND	0.00108	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Toluene	ND	0.00215	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Ethylbenzene	ND	0.00108	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Xylene (p/m)	ND	0.00215	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Xylene (o)	ND	0.00108	mg/kg dry	1	P5K0606	11/06/15	11/06/15	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		96.5 %	75-125		P5K0606	11/06/15	11/06/15	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		135 %	75-125		P5K0606	11/06/15	11/06/15	EPA 8021B	S-GC
General Chemistry Parameters by EF	PA / Standard Method	ls							
Chloride	2410	10.8	mg/kg dry	10	P5K1020	11/10/15	11/11/15	EPA 300.0	
% Moisture	7.0	0.1	%	1	P5K0901	11/09/15	11/09/15	% calculation	
Total Petroleum Hydrocarbons C6-C	35 by EPA Method 80	015M							
C6-C12	ND	26.9	mg/kg dry	1	P5K0903	11/06/15	11/07/15	TPH 8015M	
>C12-C28	184	26.9	mg/kg dry	1	P5K0903	11/06/15	11/07/15	TPH 8015M	
>C28-C35	ND	26.9	mg/kg dry	1	P5K0903	11/06/15	11/07/15	TPH 8015M	
Surrogate: 1-Chlorooctane		113 %	70-1	30	P5K0903	11/06/15	11/07/15	TPH 8015M	
Surrogate: o-Terphenyl		139 %	70-1	30	P5K0903	11/06/15	11/07/15	TPH 8015M	S-GC
Total Petroleum Hydrocarbon C6-C35	184	26.9	mg/kg dry	1	[CALC]	11/06/15	11/07/15	calc	

#### **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 P5K0606 - General Preparation	(GC)									
Blank (P5K0606-BLK1)				Prepared &	Analyzed:	11/06/15				
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	0.0481		"	0.0500		96.2	75-125			
Surrogate: 4-Bromofluorobenzene	0.0626		"	0.0500		125	75-125			
LCS (P5K0606-BS1)				Prepared &	Analyzed:	11/06/15				
Benzene	0.0752	0.00100	mg/kg wet	0.100		75.2	70-130			
Toluene	0.0887	0.00200	"	0.100		88.7	70-130			
Ethylbenzene	0.101	0.00100	"	0.100		101	70-130			
Xylene (p/m)	0.173	0.00200	"	0.200		86.6	70-130			
Xylene (o)	0.0928	0.00100	"	0.100		92.8	70-130			
Surrogate: 4-Bromofluorobenzene	0.0684		"	0.0500		137	75-125			S-G
Surrogate: 1,4-Difluorobenzene	0.0580		"	0.0500		116	75-125			
LCS Dup (P5K0606-BSD1)				Prepared &	Analyzed:	11/06/15				
Benzene	0.0750	0.00100	mg/kg wet	0.100		75.0	70-130	0.240	20	
Toluene	0.0869	0.00200	"	0.100		86.9	70-130	2.06	20	
Ethylbenzene	0.0965	0.00100	"	0.100		96.5	70-130	4.73	20	
Xylene (p/m)	0.165	0.00200	"	0.200		82.4	70-130	4.90	20	
Xylene (o)	0.0873	0.00100	"	0.100		87.3	70-130	6.15	20	
Surrogate: 1,4-Difluorobenzene	0.0595		"	0.0500		119	75-125			
Surrogate: 4-Bromofluorobenzene	0.0650		"	0.0500		130	75-125			S-G
Batch P5K1702 - General Preparation	(GC)									
Blank (P5K1702-BLK1)				Prepared &	Analyzed:	11/16/15				
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: 4-Bromofluorobenzene	0.0488		"	0.0500		97.6	75-125			
Surrogate: 1,4-Difluorobenzene	0.0606		"	0.0500		121	75-125			

Permian Basin Environmental Lab, L.P.

#### **Organics by GC - Quality Control**

#### Permian Basin Environmental Lab, L.P.

Analyte Batch P5K1702 - General Prepara	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (P5K1702-BS1)				Prepared &	Analyzed:	11/16/15				
Benzene	0.0978	0.00100	mg/kg wet				70-130			
Toluene	0.109	0.00200	"				70-130			
Ethylbenzene	0.110	0.00100	"				70-130			
Xylene (p/m)	0.210	0.00200	"				70-130			
Xylene (o)	0.107	0.00100	"				70-130			

Surrogate: 4-Bromofluorobenzene	0.0516		"	0.0500	103	75-125		
Surrogate: 1,4-Difluorobenzene	0.0659		"	0.0500	132	75-125		S-GC
LCS Dup (P5K1702-BSD1)				Prepared & Anal	yzed: 11/16/15			
Benzene	0.0926	0.00100	mg/kg wet			70-130	20	
Toluene	0.107	0.00200	"			70-130	20	
Ethylbenzene	0.104	0.00100	"			70-130	20	
Xylene (p/m)	0.206	0.00200	"			70-130	20	
Xylene (o)	0.107	0.00100	"			70-130	20	
Surrogate: 1,4-Difluorobenzene	0.0694		"	0.0500	139	75-125		S-GC
Surrogate: 4-Bromofluorobenzene	0.0525		"	0.0500	105	75-125		

#### 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 P5K0901 - % Solids										
Blank (P5K0901-BLK1)				Prepared &	k Analyzed	: 11/09/15				
% Moisture	ND	0.1	%							
Duplicate (P5K0901-DUP1)	Sou	rce: 5K06005	-01	Prepared &	Analyzed	: 11/09/15				
% Moisture	5.0	0.1	%		5.0			0.00	20	
Duplicate (P5K0901-DUP2)	Sou	rce: 5K06006	-01	Prepared &	k Analyzed	: 11/09/15				
% Moisture	3.0	0.1	%		2.0			40.0	20	
Batch P5K1018 - *** DEFAULT PREP ***										
Blank (P5K1018-BLK1)				Prepared:	11/09/15 A	nalyzed: 11	/10/15			
Chloride	ND	1.00	mg/kg wet							
LCS (P5K1018-BS1)				Prepared:	11/09/15 A	nalyzed: 11	/10/15			
Chloride	92.9	1.00	mg/kg wet	100		92.9	80-120			
LCS Dup (P5K1018-BSD1)				Prepared:	11/09/15 A	nalyzed: 11	/10/15			
Chloride	91.8	1.00	mg/kg wet	100		91.8	80-120	1.22	20	
Duplicate (P5K1018-DUP1)	Sou	rce: 5K06002	-01	Prepared:	11/09/15 A	nalyzed: 11	/10/15			
Chloride	1590	5.68	mg/kg dry		1590			0.136	20	
Duplicate (P5K1018-DUP2)	Sou	rce: 5K06006	-01	Prepared:	11/09/15 A	nalyzed: 11	/10/15			
Chloride	1160	5.10	mg/kg dry		1160			0.259	20	
Batch P5K1020 - *** DEFAULT PREP ***										
Blank (P5K1020-BLK1)				Prepared &	Analyzed	: 11/10/15				
Chloride	ND	1.00	mg/kg wet							

#### 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 P5K1020 - *** DEFAULT PREP ***										
LCS (P5K1020-BS1)				Prepared &	x Analyze	d: 11/10/15				
Chloride	93.1	1.00	mg/kg wet	100		93.1	80-120			
LCS Dup (P5K1020-BSD1)				Prepared &	z Analyze	d: 11/10/15				
Chloride	94.8	1.00	mg/kg wet	100		94.8	80-120	1.77	20	
Duplicate (P5K1020-DUP1)	Sour	ce: 5K06008	8-03	Prepared:	1/10/15	Analyzed: 11	/11/15			
Chloride	75.4	1.14	mg/kg dry		75.9			0.676	20	
Duplicate (P5K1020-DUP2)	Sour	ce: 5K05003	8-01	Prepared: 1	1/10/15	Analyzed: 11	/11/15			
Chloride	41.2	1.18	mg/kg dry		41.0			0.486	20	
Matrix Spike (P5K1020-MS1)	Sour	ce: 5K06008	8-03	Prepared:	1/10/15	Analyzed: 11	/11/15			
Chloride	201	1.14	mg/kg dry	142	75.9	88.1	80-120			

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

#### Permian Basin Environmental Lab, L.P.

Australia	Dervit	Reporting	11	Spike	Source	0/DEC	%REC	DDD	RPD	Natar
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch P5K0902 - TX 1005										
Blank (P5K0902-BLK1)				Prepared: 1	1/06/15 A	nalyzed: 11	/07/15			
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	92.0		"	100		92.0	70-130			
Surrogate: o-Terphenyl	55.6		"	50.0		111	70-130			
LCS (P5K0902-BS1)				Prepared: 1	1/06/15 A	nalyzed: 11	/07/15			
C6-C12	850	25.0	mg/kg wet	1000		85.0	75-125			
>C12-C28	831	25.0	"	1000		83.1	75-125			
Surrogate: 1-Chlorooctane	101		"	100		101	70-130			
Surrogate: o-Terphenyl	46.8		"	50.0		93.6	70-130			
LCS Dup (P5K0902-BSD1)				Prepared:	1/06/15 A	nalyzed: 11	/07/15			
C6-C12	885	25.0	mg/kg wet	1000		88.5	75-125	4.09	20	
>C12-C28	867	25.0	"	1000		86.7	75-125	4.17	20	
Surrogate: 1-Chlorooctane	105		"	100		105	70-130			
Surrogate: o-Terphenyl	49.1		"	50.0		98.2	70-130			
Duplicate (P5K0902-DUP1)	Sou	rce: 5K06008	8-07	Prepared:	1/06/15 A	nalyzed: 11	/07/15			
C6-C12	28.4	29.8	mg/kg dry		25.4			11.0	20	
>C12-C28	207	29.8	"		223			7.59	20	
Surrogate: 1-Chlorooctane	137		"	119		115	70-130			
Surrogate: o-Terphenyl	84.2		"	59.5		141	70-130			S-G
Batch P5K0903 - TX 1005										
Blank (P5K0903-BLK1)				Prepared:	1/06/15 A	nalyzed: 11	/07/15			
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	104		"	100		104	70-130			
Surrogate: o-Terphenyl	62.4		"	50.0		125	70-130			

#### Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - 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 P5K0903 - TX 1005										
LCS (P5K0903-BS1)				Prepared: 1	11/06/15 A	nalyzed: 11	/07/15			
C6-C12	1020	25.0	mg/kg wet	1000		102	75-125			
>C12-C28	1030	25.0	"	1000		103	75-125			
Surrogate: 1-Chlorooctane	120		"	100		120	70-130			
Surrogate: o-Terphenyl	56.6		"	50.0		113	70-130			
LCS Dup (P5K0903-BSD1)				Prepared:	11/06/15 A	nalyzed: 11	/07/15			
C6-C12	1040	25.0	mg/kg wet	1000		104	75-125	1.75	20	
>C12-C28	1050	25.0	"	1000		105	75-125	1.68	20	
Surrogate: 1-Chlorooctane	124		"	100		124	70-130			
Surrogate: o-Terphenyl	58.2		"	50.0		116	70-130			
Duplicate (P5K0903-DUP1)	Sou	Source: 5K06008-14 Prepared: 11/06/15 Analyzed: 11/07/15								
C6-C12	21.4	26.9	mg/kg dry		19.8			7.71	20	
>C12-C28	180	26.9	"		184			2.01	20	
Surrogate: 1-Chlorooctane	124		"	108		115	70-130			
Surrogate: o-Terphenyl	76.8		"	53.8		143	70-130			S-

#### **Notes and Definitions**

S-GC	Surrogate recovery outside of control limit	s. The data was accepted based on v	alid recovery of the remaining surrogate.

- 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

Report Approved By:

Dup Duplicate

Sun Barron

Date: 11/19/2015

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.

Permian Basin Environmental Lab, L.P.

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		Rand											C HOVE 3	NW 2	FIELD CODE	1007			432-563-2200	Midland/TX/79708	P.O. Box 8469	Etech Environmental & Safety Solutions, Inc.	TIM		Etech Environmental & Safety Solutions, Inc.	
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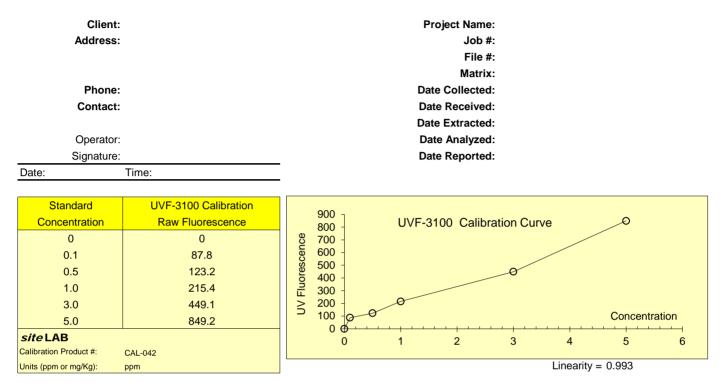
		Quan	tab Chlo	ride l'est	Strip Anal	lysis Sheet
Date:	12/17/2015	Client:	Memorial			
Site:	Federal R 6			Pro	ject Number:	416-6681-000
Technican:	BB			Strip Lo	t Number(s):	
Sample ID		Titrator Range	Dilution	Test Strip Result (ppm)	Final Result (ppm)	Notations
AH 2 4-5	5		10	401.0	4010.00	
AH 2 5-6			10	136.0	1360.00	
AH 2 6-7			10	279.0	2790.00	
AH 2 7-8			10	196.0	1960.00	
AH 2 8-9			10	243.0	2430.00	
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Site:	Federal r6			Pro	ject Number:	416-6681
Technican:				Strip Lo	ot Number(s):	
Sample ID		Titrator Range	Dilution	Test Strip Result (ppm)	Final Result (ppm)	Notations
AH 2 9-	10		10	322.0	3220.00	
AH 2 10	-11		10	279.0	2790.00	
AH 2 11	1-12		10	90.0	900.00	
AH 2 12	2-13		10	116.0	1160.00	
AH 2 13	3-14		10	147.0	1470.00	
AH 2 14	4-15		10	98.0	980.00	
AH 2 15	5-16		10	52.0	520.00	
AH 2 16	6-17		10	59.0	590.00	
AH 2 17	7-18		10	33.0	330.00	
AH 2 18	3-19		10	BDL	#VALUE!	
AH 2 19	-20		10	BDL	#VALUE!	
			10			
			10			
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Date:	12/17/2015	Client:	Memorial			
Site:	Federal R6			Pro	ject Number:	416-6681-000
Technican:	BB			Strip Lo	t Number(s):	
Sample ID		Titrator Range	Dilution	Test Strip Result (ppm)	Final Result (ppm)	Notations
AH 3 4-6	6		10	158.0	1580.00	
AH 3 5-6			10	279.0	2790.00	
AH 3 6-7			10	279.0	2790.00	
AH 3 7-8	3		10	98.0	980.00	
AH 3 8-9	9		10	98.0	980.00	
AH 3 9-1	0		10	59.0	590.00	
AH 3 10-	11		10	59.0	590.00	
	-12		10	67.0	670.00	
AH 3 12	-13		10	90.0	900.00	
AH 3 13-	14		10	74.0	740.00	
AH 3 14	-15		10	107.0	1070.00	
AH 3 15	-16		10	98.0	980.00	
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		Quan	tab Chio	ride l'est	Strip Ana	lysis Sheet
Date:	12/18/2015	Client:	Memorial			
Site:	Federal R6			Pro	ject Number:	416-6681-000
Technican:				Strip Lo	ot Number(s):	
Sample ID		Titrator Range	Dilution	Test Strip Result (ppm)	Final Result (ppm)	Notations
AH 3 16-1	17		10	74.0	740.00	
AH 3 17-1	18		10	52.0	520.00	
AH 3 18-	19		10	BDL	#VALUE!	
AH 3 19-	20		10	BDL	#VALUE!	
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# Extended Diesel Range Organic Hydrocarbons Analysis Report *site* LAB® EDRO C10-C40 Aromatics in Soil, Sediment & Water



UVF Run#:	Sample ID & Description	UVF Raw Fluorescence	Test Sample Concentration (ppm)	Dilution Factor	Test Result:
12	AH 2 14-15	-0.42	0	1,000	Concentration Too Low (ND
13	AH 2 15-16	-2.21	-0.003	1,000	Concentration Too Low (ND
14	AH 2 16-17	34.55	0.039	1,000	Concentration Too Low (ND
15	AH 2 17-18	-0.52	0	1,000	Concentration Too Low (ND
16	AH 2 18-19	-0.11	0	1,000	Concentration Too Low (ND
17	AH 2 19-20	-2.33	-0.003	1,000	Concentration Too Low (ND
18	AH 2 4-5	100.30	0.241	1,000	241.0 ppm
19	AH 2 5-6	3.78	0.004	1,000	Concentration Too Low (ND
20	AH 2 6-7	4.22	0.005	1,000	Concentration Too Low (ND
21	AH 2 7-8	-10.27	-0.012	1,000	Concentration Too Low (ND
22	AH 2 8-9	2.93	0.003	1,000	Concentration Too Low (ND
12		1.00	1	1	1.0 ppm
13		1.00	1	1	1.0 ppm
14		1.00	1	1	1.0 ppm
15		1.00	1	1	1.0 ppm
16		1.00	1	1	1.0 ppm
17		1.00	1	1	1.0 ppm
18		1.00	1	1	1.0 ppm
19		1.00	1	1	1.0 ppm
20		1.00	1	1	1.0 ppm

PERMIAN BASIN ENVIRONMENTAL LAB, LP 10014 SCR 1213 Midland, TX 79706



# Analytical Report

## **Prepared for:**

Tim McMinn E Tech Environmental & Safety Solutions, Inc. 13000 West County Road 100 Odessa, TX 79765

> Project: Federal R6 Project Number: 416-6681-000 Location: Memorial

Lab Order Number: 5L22001



NELAP/TCEQ # T104704156-13-3

Report Date: 12/30/15

### Project: Federal R6 Project Number: 416-6681-000 Project Manager: Tim McMinn

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Auger Hole 2 18'-19'	5L22001-01	Soil	12/17/15 14:10	12-22-2015 10:00
Auger Hole 2 19'-20'	5L22001-02	Soil	12/17/15 14:15	12-22-2015 10:00

## Auger Hole 2 18'-19'

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes			
Permian Basin Environmental Lab, L.P.												
<b>General Chemistry Parameters</b>	by EPA / Standard Methods											
Chloride	167	1.08	mg/kg dry	1	P5L2302	12/23/15	12/23/15	EPA 300.0				
% Moisture	7.0	0.1	%	1	P5L2301	12/23/15	12/23/15	% calculation				

Permian Basin Environmental Lab, L.P.

E Tech Environmental & Safety Solutions, Inc. 13000 West County Road 100 Odessa TX, 79765		Proj Project Numl Project Manaş		81-000				Fax: (432) 56	53-2213				
Auger Hole 2 19'-20' 5L22001-02 (Soil)													
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes				
	Permian Basin Environmental Lab, L.P.												
General Chemistry Parameters by EPA / Stan	dard Method	S											
Chloride	108	1.06	mg/kg dry	1	P5L2302	12/23/15	12/23/15	EPA 300.0					
% Moisture	6.0	0.1	%	1	P5L2301	12/23/15	12/23/15	% calculation					

#### 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 P5L2301 - % Solids										
Blank (P5L2301-BLK1)				Prepared &	Analyzed:	12/23/15				
% Moisture	ND	0.1	%							
Duplicate (P5L2301-DUP1)	Sou	rce: 5L21003-	03	Prepared &	Analyzed:	12/23/15				
% Moisture	4.0	0.1	%		5.0			22.2	20	
Duplicate (P5L2301-DUP2)	Sou	rce: 5L22008-	04	Prepared &	Analyzed:	12/23/15				
% Moisture	14.0	0.1	%		14.0			0.00	20	
Duplicate (P5L2301-DUP3)	Sou	rce: 5L22011-	04	Prepared &	Analyzed:	12/23/15				
% Moisture	5.0	0.1	%	-	5.0			0.00	20	
Batch P5L2302 - *** DEFAULT PREP ***										
Dawn 1512502 - DEFAULT I KEI										
Blank (P5L2302-BLK1)				Prepared &	Analyzed:	12/23/15				
	ND	1.00	mg/kg wet	Prepared &	Analyzed:	12/23/15				
Blank (P5L2302-BLK1)	ND	1.00	mg/kg wet	Prepared &						
Blank (P5L2302-BLK1) Chloride LCS (P5L2302-BS1)	ND 236		mg/kg wet	Prepared &			80-120			
Blank (P5L2302-BLK1) Chloride LCS (P5L2302-BS1)				Prepared &	Analyzed:	12/23/15 118	80-120			
Blank (P5L2302-BLK1) Chloride LCS (P5L2302-BS1) Chloride		1.00		Prepared & 200 Prepared &	Analyzed:	12/23/15 118	80-120	0.868	20	
Blank (P5L2302-BLK1) Chloride LCS (P5L2302-BS1) Chloride LCS Dup (P5L2302-BSD1)	236	1.00	mg/kg wet	Prepared & 200 Prepared &	Analyzed:	12/23/15 118 12/23/15 117		0.868	20	
Blank (P5L2302-BLK1) Chloride LCS (P5L2302-BS1) Chloride LCS Dup (P5L2302-BSD1) Chloride Duplicate (P5L2302-DUP1)	236	1.00 1.00 rce: 5L22001-	mg/kg wet	Prepared & 200 Prepared & 200	Analyzed:	12/23/15 118 12/23/15 117		0.868	20	
Blank (P5L2302-BLK1)           Chloride           LCS (P5L2302-BS1)           Chloride           LCS Dup (P5L2302-BSD1)           Chloride	236 234 Sour ND	1.00 1.00 rce: 5L22001-	mg/kg wet mg/kg wet 01 mg/kg dry	Prepared & 200 Prepared & 200	Analyzed: Analyzed: Analyzed: 167	12/23/15 118 12/23/15 117 12/23/15		0.868		

#### **Notes and Definitions**

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:

un Barron

12/30/2015 Date:

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.

Permian Basin Environmental Lab, L.P.

		Reinquerga by: Date Ran 122715		Special Instructions:									NL I U	TUN PROPER HOLE I	LAB # (lab use only)		LAB: SPL-Lafayette, LA	Sampler Signature:	Telephone No: <u>432-563-2200</u>	City/State/Zip: Midland/TX/79708	Company Address: P.O. Box 8469	Company Name Etech Environmental & Safety Solutions, Inc	Project Manager: Tim MC	Etech Environmental & Safety Solutions, Inc.
E C	Time	I (): C											92		Beginning Depth							ty Soluti	min	tions
The second	Received by:											•	20 11.17.15	9 12.17-15	Ending Depth Date Sampled							ons, Inc.	2D	, Inc.
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PERMIAN BASIN ENVIRONMENTAL LAB, LP 10014 SCR 1213 Midland, TX 79706



# Analytical Report

## **Prepared for:**

Tim McMinn E Tech Environmental & Safety Solutions, Inc. 13000 West County Road 100 Odessa, TX 79765

> Project: Federal R6 Project Number: 416-6681-000 Location: Memorial

Lab Order Number: 5L22004



NELAP/TCEQ # T104704156-13-3

Report Date: 12/30/15

E Tech Environmental & Safety Solutions, Inc. 13000 West County Road 100 Odessa TX, 79765

#### Project: Federal R6 Project Number: 416-6681-000 Project Manager: Tim McMinn

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Auger Hole 2 6'-7'	5L22004-01	Soil	12/18/15 08:50	12-22-2015 10:00
Auger Hole 2 7'-8'	5L22004-02	Soil	12/18/15 08:55	12-22-2015 10:00

## Auger Hole 2 6'-7'

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
	Perm	ian Basin E	Environmer	ital Lab, l	L <b>.P.</b>				
General Chemistry Parameters by EPA / St	andard Method	S							
% Moisture	17.0	0.1	%	1	P5L2301	12/23/15	12/23/15	% calculation	
Total Petroleum Hydrocarbons C6-C35 by	EPA Method 80	15M							
C6-C12	ND	30.1	mg/kg dry	1	P5L2306	12/22/15	12/22/15	TPH 8015M	
>C12-C28	ND	30.1	mg/kg dry	1	P5L2306	12/22/15	12/22/15	TPH 8015M	
>C28-C35	ND	30.1	mg/kg dry	1	P5L2306	12/22/15	12/22/15	TPH 8015M	
Surrogate: 1-Chlorooctane		106 %	70-1	30	P5L2306	12/22/15	12/22/15	TPH 8015M	
Surrogate: o-Terphenyl		124 %	70-1	30	P5L2306	12/22/15	12/22/15	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	30.1	mg/kg dry	1	[CALC]	12/22/15	12/22/15	calc	

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

#### Project: Federal R6 Project Number: 416-6681-000 Project Manager: Tim McMinn

## Auger Hole 2 7'-8'

## 5L22004-02 (Soil)

		D (							
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Analyte	Kesuit	Liiiit	Units	Dilution	Baten	riepaieu	Allalyzeu	Wiethod	INDICS
	Perm	ian Basin F	Invironme	ital Lab, I	L.P.				
General Chemistry Parameters by EPA /	Standard Method	8							
% Moisture	12.0	0.1	%	1	P5L2301	12/23/15	12/23/15	% calculation	
Total Petroleum Hydrocarbons C6-C35 b	y EPA Method 80	15M							
C6-C12	ND	28.4	mg/kg dry	1	P5L2306	12/22/15	12/22/15	TPH 8015M	
>C12-C28	ND	28.4	mg/kg dry	1	P5L2306	12/22/15	12/22/15	TPH 8015M	
>C28-C35	ND	28.4	mg/kg dry	1	P5L2306	12/22/15	12/22/15	TPH 8015M	
Surrogate: 1-Chlorooctane		103 %	70-1	30	P5L2306	12/22/15	12/22/15	TPH 8015M	
Surrogate: o-Terphenyl		117 %	70-1	30	P5L2306	12/22/15	12/22/15	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	28.4	mg/kg dry	1	[CALC]	12/22/15	12/22/15	calc	

### Permian Basin Environmental Lab, L.P.

#### 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 P5L2301 - % Solids										
Blank (P5L2301-BLK1)				Prepared &	Analyzed:	12/23/15				
% Moisture	ND	0.1	%							
Duplicate (P5L2301-DUP1)	Sourc	e: 5L21003-0.	3	Prepared &	Analyzed:	12/23/15				
% Moisture	4.0	0.1	%		5.0			22.2	20	
Duplicate (P5L2301-DUP2)	Sourc	e: 5L22008-04	4	Prepared &	Analyzed:	12/23/15				
% Moisture	14.0	0.1	%		14.0			0.00	20	
Duplicate (P5L2301-DUP3)	Sourc	e: 5L22011-04	4	Prepared &	Analyzed:	12/23/15				
% Moisture	5.0	0.1	%		5.0			0.00	20	

### Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - 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 P5L2306 - TX 1005										
Blank (P5L2306-BLK1)				Prepared &	Analyzed:	12/22/15				
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	86.4		"	100		86.4	70-130			
Surrogate: o-Terphenyl	48.0		"	50.0		96.1	70-130			
LCS (P5L2306-BS1)				Prepared &	Analyzed:	12/22/15				
C6-C12	912	25.0	mg/kg wet	1000		91.2	75-125			
>C12-C28	907	25.0	"	1000		90.7	75-125			
Surrogate: 1-Chlorooctane	108		"	100		108	70-130			
Surrogate: o-Terphenyl	45.6		"	50.0		91.3	70-130			
LCS Dup (P5L2306-BSD1)				Prepared &	Analyzed:	12/22/15				
C6-C12	907	25.0	mg/kg wet	1000		90.7	75-125	0.562	20	
>C12-C28	881	25.0	"	1000		88.1	75-125	2.88	20	
Surrogate: 1-Chlorooctane	106		"	100		106	70-130			
Surrogate: o-Terphenyl	45.2		"	50.0		90.4	70-130			
Matrix Spike (P5L2306-MS1)	Sour	ce: 5L21003	6-03	Prepared &	Analyzed:	12/22/15				
C6-C12	936	26.3	mg/kg dry	1050	35.6	85.5	75-125			
>C12-C28	1590	26.3	"	1050	1010	55.7	75-125			QM-0
Surrogate: 1-Chlorooctane	112		"	105		107	70-130			
Surrogate: o-Terphenyl	49.6		"	52.6		94.2	70-130			
Matrix Spike Dup (P5L2306-MSD1)	Sour	ce: 5L21003	6-03	Prepared &	Analyzed:	12/22/15				
C6-C12	1000	26.3	mg/kg dry	1050	35.6	91.6	75-125	6.88	20	
>C12-C28	1760	26.3	"	1050	1010	71.0	75-125	24.3	20	QM-0
Surrogate: 1-Chlorooctane	117		"	105		111	70-130			
Surrogate: o-Terphenyl	52.6		"	52.6		100	70-130			

Permian Basin Environmental Lab, L.P.

#### **Notes and Definitions**

- QM-05 The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
   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

Sun Barron Report Approved By:

12/30/2015

Date:

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.

Permian Basin Environmental Lab, L.P.

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PERMIAN BASIN ENVIRONMENTAL LAB, LP 10014 SCR 1213 Midland, TX 79706



# Analytical Report

## **Prepared for:**

Tim McMinn E Tech Environmental & Safety Solutions, Inc. 13000 West County Road 100 Odessa, TX 79765

> Project: Federal R6 Project Number: 416-6681-000 Location: Memorial

Lab Order Number: 5L22002



NELAP/TCEQ # T104704156-13-3

Report Date: 12/30/15

E Tech Environmental & Safety Solutions, Inc. 13000 West County Road 100 Odessa TX, 79765

#### Project: Federal R6 Project Number: 416-6681-000 Project Manager: Tim McMinn

Fax: (432) 563-2213

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Auger Hole 3 18'-19'	5L22002-01	Soil	12/16/15 16:10	12-22-2015 10:00
Auger Hole 3 19'-20'	5L22002-02	Soil	12/16/15 16:15	12-22-2015 10:00

## Auger Hole 3 18'-19'

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes						
	Permian Basin Environmental Lab, L.P.														
<b>General Chemistry Parameters</b>	General Chemistry Parameters by EPA / Standard Methods														
Chloride	276	1.02	mg/kg dry	1	P5L2302	12/23/15	12/23/15	EPA 300.0							
% Moisture	2.0	0.1	%	1	P5L2301	12/23/15	12/23/15	% calculation							

Permian Basin Environmental Lab, L.P.

E Tech Environmental & Safety Solutions, Inc. 13000 West County Road 100 Odessa TX, 79765	3000 West County Road 100Project Number: 416-6681-000														
	Auger Hole 3 19'-20' 5L22002-02 (Soil)														
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes						
	Perm	ian Basin E	nvironme	ntal Lab, I	L.P.										
General Chemistry Parameters by EPA / Stan	dard Method	S													
Chloride	230	1.03	mg/kg dry	1	P5L2302	12/23/15	12/23/15	EPA 300.0							
% Moisture	3.0	0.1	%	1	P5L2301	12/23/15	12/23/15	% calculation							

#### 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 P5L2301 - % Solids										
Blank (P5L2301-BLK1)				Prepared &	Analyzed:	12/23/15				
% Moisture	ND	0.1	%							
Duplicate (P5L2301-DUP1)	Sou	rce: 5L21003-	03	Prepared &	Analyzed:	12/23/15				
% Moisture	4.0	0.1	%		5.0			22.2	20	
Duplicate (P5L2301-DUP2)	Sou	rce: 5L22008-	04	Prepared &	Analyzed:	12/23/15				
% Moisture	14.0	0.1	%		14.0			0.00	20	
Duplicate (P5L2301-DUP3)	Sou	rce: 5L22011-	04	Prepared &	Analyzed:	12/23/15				
% Moisture	5.0	0.1	%	5.0				0.00	20	
Batch P5L2302 - *** DEFAULT PREP ***										
Batch P5L2302 - *** DEFAULT PREP *** Blank (P5L2302-BLK1)				Prepared &	z Analyzed:	12/23/15				
Blank (P5L2302-BLK1)	ND	1.00	mg/kg wet	Prepared &	z Analyzed:	12/23/15				
Blank (P5L2302-BLK1) Chloride	ND	1.00	mg/kg wet	Prepared &						
Blank (P5L2302-BLK1) Chloride LCS (P5L2302-BS1)	ND 236		mg/kg wet				80-120			
				Prepared &	z Analyzed:	12/23/15 118	80-120			
Blank (P5L2302-BLK1) Chloride LCS (P5L2302-BS1) Chloride LCS Dup (P5L2302-BSD1)		1.00		Prepared & 200	z Analyzed:	12/23/15 118	80-120	0.868	20	
Blank (P5L2302-BLK1) Chloride LCS (P5L2302-BS1) Chloride	236	1.00	mg/kg wet	Prepared & 200 Prepared & 200	z Analyzed:	12/23/15 118 12/23/15 117		0.868	20	
Blank (P5L2302-BLK1)           Chloride           LCS (P5L2302-BS1)           Chloride           LCS Dup (P5L2302-BSD1)           Chloride	236	1.00 1.00 rce: 5L22001-	mg/kg wet	Prepared & 200 Prepared & 200	z Analyzed: z Analyzed:	12/23/15 118 12/23/15 117		0.868	20	
Blank (P5L2302-BLK1) Chloride LCS (P5L2302-BS1) Chloride LCS Dup (P5L2302-BSD1) Chloride Duplicate (P5L2302-DUP1)	236 234 <b>Sou</b> ND	1.00 1.00 rce: 5L22001-	mg/kg wet mg/kg wet 01 mg/kg dry	Prepared & 200 Prepared & 200	z Analyzed: z Analyzed: z Analyzed: 167	12/23/15 118 12/23/15 117 12/23/15		0.868		

#### **Notes and Definitions**

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:

un Barron

12/30/2015 Date:

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.

Permian Basin Environmental Lab, L.P.

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