

# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

August 22, 2017

Alyssa Beard  
Foundation Energy, LLC  
15 E 15th St  
Tulsa, OK 74103  
RE: SOS 4-4

Enclosed are the results of analyses for samples received by Summit Scientific on 08/17/17 11:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury For Ben Shrewsbury  
Laboratory Manager



Foundation Energy, LLC  
15 E 15th St  
Tulsa OK, 74103

Project: SOS 4-4  
Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
08/22/17 12:10

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
East Base#6.5'	1708170-01	Soil	08/16/17 08:30	08/17/17 11:15
West Base#6.5'	1708170-02	Soil	08/16/17 08:40	08/17/17 11:15
East@3'	1708170-03	Soil	08/16/17 08:45	08/17/17 11:15
West@3'	1708170-04	Soil	08/16/17 08:50	08/17/17 11:15
South@3'	1708170-05	Soil	08/16/17 08:55	08/17/17 11:15
North@3'	1708170-06	Soil	08/16/17 09:00	08/17/17 11:15

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Foundation Energy, LLC  
15 E 15th St  
Tulsa OK, 74103

Project: SOS 4-4

Project Number: [none]  
Project Manager: Alyssa Beard

Reported:  
08/22/17 12:10

#### Sample Receipt Checklist

S2 Work Order: 1708170  
Client: Foundation Energy Client Project ID: SOS 4-4  
Shipped Via: P/V Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)  
Matrix (check all that apply): ☐ Air ☒ Soil/Solid ☐ Water ☐ Other: \_\_\_\_\_  
(Describe)

Cooler ID					
Temp (°C)	<u>4.0</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.				
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.

Nakita  
Custodian Printed Name

[Signature]  
Signature or Initials of Custodian

8/17/17 1140  
Date/Time



Foundation Energy, LLC  
15 E 15th St  
Tulsa OK, 74103

Project: SOS 4-4  
Project Number: [none]  
Project Manager: Alyssa Beard

Reported:  
08/22/17 12:10

**East Base#6.5'**  
**1708170-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/16/17 08:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1708177	08/18/17	08/19/17	8015M	

Date Sampled: **08/16/17 08:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		93.9 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **08/16/17 08:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1708179	08/18/17	08/19/17	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/16/17 08:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.9 %	21-167		"	"	"	"	

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Foundation Energy, LLC  
15 E 15th St  
Tulsa OK, 74103

Project: SOS 4-4  
Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
08/22/17 12:10

**West Base#6.5'**  
**1708170-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/16/17 08:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1708177	08/18/17	08/19/17	8015M	

Date Sampled: **08/16/17 08:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		96.6 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **08/16/17 08:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1708179	08/18/17	08/19/17	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/16/17 08:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.8 %	21-167		"	"	"	"	

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15 E 15th St  
Tulsa OK, 74103

Project: SOS 4-4  
Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
08/22/17 12:10

**East@3'**  
**1708170-03 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/16/17 08:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1708177	08/18/17	08/19/17	8015M	

Date Sampled: **08/16/17 08:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.9 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **08/16/17 08:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1708179	08/18/17	08/19/17	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/16/17 08:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		119 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.9 %	21-167		"	"	"	"	

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Foundation Energy, LLC  
15 E 15th St  
Tulsa OK, 74103

Project: SOS 4-4  
Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
08/22/17 12:10

**West@3'**  
**1708170-04 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/16/17 08:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1708177	08/18/17	08/19/17	8015M	

Date Sampled: **08/16/17 08:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		94.7 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **08/16/17 08:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1708179	08/18/17	08/19/17	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/16/17 08:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.2 %	21-167		"	"	"	"	

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Foundation Energy, LLC  
15 E 15th St  
Tulsa OK, 74103

Project: SOS 4-4  
Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
08/22/17 12:10

**South@3'**  
**1708170-05 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/16/17 08:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1708177	08/18/17	08/19/17	8015M	

Date Sampled: **08/16/17 08:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		102 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **08/16/17 08:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1708179	08/18/17	08/19/17	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/16/17 08:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.0 %	21-167		"	"	"	"	

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Foundation Energy, LLC  
15 E 15th St  
Tulsa OK, 74103

Project: SOS 4-4  
Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
08/22/17 12:10

**North@3'**  
**1708170-06 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/16/17 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1708177	08/18/17	08/19/17	8015M	

Date Sampled: **08/16/17 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.1 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **08/16/17 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1708179	08/18/17	08/19/17	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/16/17 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		119 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.1 %	21-167		"	"	"	"	

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Foundation Energy, LLC  
15 E 15th St  
Tulsa OK, 74103

Project: SOS 4-4  
Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
08/22/17 12:10

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch 1708177 - EPA 3550A**

**Blank (1708177-BLK1)**

Prepared & Analyzed: 08/18/17

C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	13.5		"	12.5		108	30-150			

**LCS (1708177-BS1)**

Prepared & Analyzed: 08/18/17

C10-C28 (DRO)	518	50	mg/kg	499		104	73-134			
Surrogate: o-Terphenyl	12.5		"	12.5		99.6	30-150			

**Matrix Spike (1708177-MS1)**

**Source: 1708161-01**

Prepared & Analyzed: 08/18/17

C10-C28 (DRO)	361	50	mg/kg	499	48.4	62.7	50-148			
Surrogate: o-Terphenyl	8.32		"	12.5		66.6	30-150			

**Matrix Spike Dup (1708177-MSD1)**

**Source: 1708161-01**

Prepared & Analyzed: 08/18/17

C10-C28 (DRO)	495	50	mg/kg	499	48.4	89.4	50-148	31.2	20	QM-07
Surrogate: o-Terphenyl	11.6		"	12.5		92.9	30-150			

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Foundation Energy, LLC  
15 E 15th St  
Tulsa OK, 74103

Project: SOS 4-4  
Project Number: [none]  
Project Manager: Alyssa Beard

Reported:  
08/22/17 12:10

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

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

**Batch 1708179 - EPA 5030 Soil MS**

**Blank (1708179-BLK1)**

Prepared: 08/18/17 Analyzed: 08/19/17

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0411		"	0.0400		103	23-173			
Surrogate: Toluene-d8	0.0399		"	0.0400		99.7	20-170			
Surrogate: 4-Bromofluorobenzene	0.0372		"	0.0400		93.0	21-167			

**LCS (1708179-BS1)**

Prepared: 08/18/17 Analyzed: 08/19/17

Benzene	0.0808	0.0020	mg/kg	0.100		80.8	58-130			
Toluene	0.0993	0.0050	"	0.100		99.3	61-134			
Ethylbenzene	0.114	0.0050	"	0.0992		115	74-139			
m,p-Xylene	0.221	0.010	"	0.200		111	73-137			
o-Xylene	0.106	0.0050	"	0.0980		108	73-141			
Xylenes (total)	0.327	0.0050	"				30-150			
Gasoline Range Hydrocarbons	3.31	0.50	"				30-150			
Surrogate: 1,2-Dichloroethane-d4	0.0416		"	0.0400		104	23-173			
Surrogate: Toluene-d8	0.0389		"	0.0400		97.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0382		"	0.0400		95.4	21-167			

**Matrix Spike (1708179-MS1)**

Source: 1708168-01

Prepared: 08/18/17 Analyzed: 08/19/17

Benzene	0.0807	0.0020	mg/kg	0.100	ND	80.7	30-131			
Toluene	0.0997	0.0050	"	0.100	ND	99.7	30-134			
Ethylbenzene	0.117	0.0050	"	0.0992	ND	118	22-153			
m,p-Xylene	0.222	0.010	"	0.200	ND	111	10-159			
o-Xylene	0.107	0.0050	"	0.0980	ND	110	31-151			
Xylenes (total)	0.329	0.0050	"		ND		30-150			
Gasoline Range Hydrocarbons	3.40	0.50	"		ND		30-150			
Surrogate: 1,2-Dichloroethane-d4	0.0424		"	0.0400		106	23-173			
Surrogate: Toluene-d8	0.0395		"	0.0400		98.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0379		"	0.0400		94.8	21-167			

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15 E 15th St  
Tulsa OK, 74103

Project: SOS 4-4  
Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
08/22/17 12:10

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

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

**Batch 1708179 - EPA 5030 Soil MS**

Matrix Spike Dup (1708179-MSD1)		Source: 1708168-01			Prepared: 08/18/17 Analyzed: 08/19/17					
Benzene	0.0818	0.0020	mg/kg	0.100	ND	81.8	30-131	1.33	34	
Toluene	0.0983	0.0050	"	0.100	ND	98.3	30-134	1.39	30	
Ethylbenzene	0.116	0.0050	"	0.0992	ND	117	22-153	0.955	24	
m,p-Xylene	0.219	0.010	"	0.200	ND	110	10-159	1.22	68	
o-Xylene	0.105	0.0050	"	0.0980	ND	108	31-151	1.83	38	
Xylenes (total)	0.325	0.0050	"		ND		30-150	1.42	20	
Gasoline Range Hydrocarbons	3.53	0.50	"		ND		30-150	3.84	20	
Surrogate: 1,2-Dichloroethane-d4	0.0412		"	0.0400		103	23-173			
Surrogate: Toluene-d8	0.0392		"	0.0400		98.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0380		"	0.0400		94.9	21-167			

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Foundation Energy, LLC  
15 E 15th St  
Tulsa OK, 74103

Project: SOS 4-4  
Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
08/22/17 12:10

### Notes and Definitions

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