

Summit Scientific

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September 08, 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 08/31/17 11:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



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:
09/08/17 09:16

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
East@3'	1708295-01	Soil	08/31/17 15:00	08/31/17 11:00
South@3'	1708295-02	Soil	08/31/17 15:10	08/31/17 11:00
West@3'	1708295-03	Soil	08/31/17 15:20	08/31/17 11:00
North@3'	1708295-04	Soil	08/31/17 15:30	08/31/17 11:00
Base@6.5'	1708295-05	Soil	08/31/17 15:40	08/31/17 11:00

Summit Scientific

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1708295

Sample Receipt Checklist

S2 Work Order: _____

Client: Foundation Energy Client Project ID: SOS 4-4

Shipped Via: P/U Airbill #: _____
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

Cooler ID					
Temp (°C)	9.3				

Thermometer ID: 61857155-K

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

Additional Comments (if any):

⁽¹⁾ 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

8/31/17 1200
Date/Time



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

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

Reported:
 09/08/17 09:16

East@3'
1708295-01 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: **08/31/17 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	1180	11.8	mg/kg dry	1	1709019	09/05/17	09/07/17	EPA 6020/Mod. USDA60 6(2, 3A)	
Magnesium	758	5.90	"	"	"	"	"	"	
Sodium	10400	5.90	"	"	"	"	"	"	
Sodium Adsorption Ratio	58.1		units	"	1709040	09/07/17	09/07/17	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/31/17 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.17	0.100	pH Units	1	1709038	09/06/17	09/06/17	EPA 9045	
% Solids	84.7		%	"	1709018	09/05/17	09/06/17	% calculation	
Specific Conductance (EC)	29.4	0.0100	mmhos/cm	"	1709039	09/06/17	09/07/17	SM 2510B	

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Foundation Energy, LLC
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Project: SOS 4-4
 Project Number: [none]
 Project Manager: Alyssa Beard

Reported:
 09/08/17 09:16

South@3'
1708295-02 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: **08/31/17 15:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	9930	14.3	mg/kg dry	1	1709019	09/05/17	09/07/17	EPA 6020/Mod. USDA60 6(2, 3A)	
Magnesium	287	7.14	"	"	"	"	"	"	
Sodium	5640	7.14	"	"	"	"	"	"	
Sodium Adsorption Ratio	15.2		units	"	1709040	09/07/17	09/07/17	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/31/17 15:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	7.44	0.0100	mmhos/cm	1	1709039	09/06/17	09/07/17	SM 2510B	
% Solids	70.0		%	"	1709018	09/05/17	09/06/17	% calculation	
pH	8.74	0.100	pH Units	"	1709038	09/06/17	09/06/17	EPA 9045	

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Project: SOS 4-4
 Project Number: [none]
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Reported:
 09/08/17 09:16

West@3'
1708295-03 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: **08/31/17 15:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	2580	11.5	mg/kg dry	1	1709019	09/05/17	09/07/17	EPA 6020/Mod. USDA60 6(2, 3A)	
Magnesium	226	5.75	"	"	"	"	"	"	
Sodium	1250	5.75	"	"	"	"	"	"	
Sodium Adsorption Ratio	6.33		units	"	1709040	09/07/17	09/07/17	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/31/17 15:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.09	0.100	pH Units	1	1709038	09/06/17	09/06/17	EPA 9045	
Specific Conductance (EC)	4.53	0.0100	mmhos/cm	"	1709039	09/06/17	09/07/17	SM 2510B	
% Solids	86.9		%	"	1709018	09/05/17	09/06/17	% calculation	

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Project: SOS 4-4
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Reported:
 09/08/17 09:16

North@3'
1708295-04 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: **08/31/17 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	3900	13.1	mg/kg dry	1	1709019	09/05/17	09/07/17	EPA 6020/Mod. USDA60 6(2, 3A)	
Magnesium	257	6.54	"	"	"	"	"	"	
Sodium	8370	6.54	"	"	"	"	"	"	
Sodium Adsorption Ratio	35.1		units	"	1709040	09/07/17	09/07/17	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/31/17 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.42	0.100	pH Units	1	1709038	09/06/17	09/06/17	EPA 9045	
Specific Conductance (EC)	19.0	0.0100	mmhos/cm	"	1709039	09/06/17	09/07/17	SM 2510B	
% Solids	76.5		%	"	1709018	09/05/17	09/06/17	% calculation	

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Project: SOS 4-4
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Reported:
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Base@6.5'
1708295-05 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: **08/31/17 15:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	1110	13.5	mg/kg dry	1	1709019	09/05/17	09/07/17	EPA 6020/Mod. USDA60 6(2, 3A)	
Magnesium	148	6.74	"	"	"	"	"	"	
Sodium	902	6.74	"	"	"	"	"	"	
Sodium Adsorption Ratio	6.75		units	"	1709040	09/07/17	09/07/17	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/31/17 15:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	9.50	0.100	pH Units	1	1709038	09/06/17	09/06/17	EPA 9045	
Specific Conductance (EC)	2.23	0.0100	mmhos/cm	"	1709039	09/06/17	09/07/17	SM 2510B	
% Solids	74.2		%	"	1709018	09/05/17	09/06/17	% calculation	

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Project: SOS 4-4

Project Number: [none]
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Reported:
 09/08/17 09:16

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis - Quality Control

Summit Scientific

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

Batch 1709019 - General Preparation

Blank (1709019-BLK1)

Prepared: 09/05/17 Analyzed: 09/06/17

Calcium	ND	10.0	mg/kg wet							
Magnesium	ND	5.00	"							
Sodium	ND	5.00	"							

LCS (1709019-BS1)

Prepared: 09/05/17 Analyzed: 09/06/17

Calcium	500	10.0	mg/kg wet	500	100	82.9-118				
Magnesium	526	5.00	"	500	105	77.1-123				
Sodium	491	5.00	"	500	98.3	71-129				

Duplicate (1709019-DUP1)

Source: 1708285-01

Prepared: 09/05/17 Analyzed: 09/07/17

Calcium	1180	12.5	mg/kg dry		1230			3.90	200	
Magnesium	196	6.27	"		221			11.7	200	
Sodium	832	6.27	"		827			0.664	200	

Matrix Spike (1709019-MS1)

Source: 1708285-01

Prepared: 09/05/17 Analyzed: 09/07/17

Calcium	1750	12.5	mg/kg dry	627	1230	82.8	75-125			
Magnesium	841	6.27	"	627	221	98.9	75-125			
Sodium	1370	6.27	"	627	827	86.0	75-125			

Matrix Spike Dup (1709019-MSD1)

Source: 1708285-01

Prepared: 09/05/17 Analyzed: 09/07/17

Calcium	1740	12.5	mg/kg dry	627	1230	81.6	75-125	0.459	25	
Magnesium	882	6.27	"	627	221	105	75-125	4.78	25	
Sodium	1410	6.27	"	627	827	93.1	75-125	3.19	25	

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Reported:
 09/08/17 09:16

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control
Summit Scientific

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

Batch 1709018 - General Preparation

Duplicate (1709018-DUP1)	Source: 1708285-01			Prepared: 09/05/17		Analyzed: 09/06/17				
% Solids	77.9		%		79.7			2.28	20	

Batch 1709038 - General Preparation

LCS (1709038-BS1)				Prepared & Analyzed: 09/06/17						
pH	9.22	0.100	pH Units	9.16		101	95-105			
Duplicate (1709038-DUP1)	Source: 1708281-01			Prepared & Analyzed: 09/05/17						
pH	8.51	0.100	pH Units	8.49				0.235	20	

Batch 1709039 - General Preparation

Blank (1709039-BLK1)				Prepared: 09/06/17		Analyzed: 09/07/17				
Specific Conductance (EC)	ND	0.0100	mmhos/cm							
LCS (1709039-BS1)				Prepared: 09/06/17		Analyzed: 09/07/17				
Specific Conductance (EC)	0.750	0.0100	mmhos/cm	0.750		100	90-110			
Duplicate (1709039-DUP1)	Source: 1708281-01			Prepared: 09/06/17		Analyzed: 09/07/17				
Specific Conductance (EC)	0.297	0.0100	mmhos/cm	0.297				0.0505	20	

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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