

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

April 17, 2019

Alyssa Beard  
Foundation Energy  
1801 Broadway, Suite 1500  
Denver, CO 80202  
RE: Federal 23-4

Enclosed are the results of analyses for samples received by Summit Scientific on 04/10/19 16:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large initial "M".

Muri Premer For Ben Shrewsbury  
Laboratory Manager



Foundation Energy  
1801 Broadway, Suite 1500  
Denver CO, 80202

Project: Federal 23-4

Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
04/17/19 13:01

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B @3'	1904147-01	Soil	04/08/19 11:15	04/10/19 16:00
S @2'	1904147-02	Soil	04/08/19 11:10	04/10/19 16:00
W @2'	1904147-03	Soil	04/08/19 11:05	04/10/19 16:00
N @2'	1904147-04	Soil	04/08/19 11:00	04/10/19 16:00
E @2'	1904147-05	Soil	04/08/19 10:55	04/10/19 16:00

Summit Scientific

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1904147

# Summit Scientific

S<sub>2</sub>

4653 Table Mountain Drive ♦ Golden, Colorado 80403  
303-277-9310

Page 1 of 1

Client: Foundation Energy Project Manager: Alyssa Beard  
 Address: 1801 Broadway, Suite 1500 E-Mail: abeard@foundationenergy.com  
 City/State/Zip: Denver, CO 80202  
 Phone: 303.844.2114 720 257 2302 Project Name: Federal 23-4  
 Sampler Name: Alyssa Beard Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested					Special Instructions			
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	GBTEX	DRO	PH	EC		SAR		
1	B@3'	4/8/19	11:15	1						X										
2	S@2'	4/8/19	11:10	1						X										
3	W@2'	4/8/19	11:05	1						X										
4	N@2'	4/8/19	11:00	1						X										
5	E@2'	4/8/19	10:55	1						X										
6																				
7																				
8																				
9																				
10																				

Relinquished by: <u>[Signature]</u>	Date/Time: <u>4/10/19 1600</u>	Received by:	Date/Time:	Turn Around Time (Check)	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:	Same Day <input type="checkbox"/> 72 hours <input type="checkbox"/>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/>	
Relinquished by:	Date/Time:	Received by: <u>[Signature]</u>	Date/Time: <u>4-10-19 1600</u>	48 hours <input type="checkbox"/>	Sample Integrity: Temperature Upon Receipt: <u>5.2</u> on <u>[Signature]</u> Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

**Sample Receipt Checklist**

S2 Work Order 1904147

Client: Foundation Client Project ID: Federal 23-4

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other \_\_\_\_\_ Airbill #: \_\_\_\_\_

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

Temp (°C)	<u>5.2</u>
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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> ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>			<u>on ice</u>
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?			<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.

\_\_\_\_\_  
Custodian Printed Name or Initials

\_\_\_\_\_  
Signature of Custodian

4-10-19 1606  
Date/Time



Foundation Energy  
1801 Broadway, Suite 1500  
Denver CO, 80202

Project: Federal 23-4

Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
04/17/19 13:01

**B @3'**  
**1904147-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/08/19 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1904204	04/12/19	04/13/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/08/19 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		106 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.2 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/08/19 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1904205	04/12/19	04/13/19	EPA 8015M	

Date Sampled: **04/08/19 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		106 %	30-150		"	"	"	"	

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

Date Sampled: **04/08/19 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>2700</b>	11.9	mg/kg dry	1	1904213	04/12/19	04/12/19	EPA 6020B	
<b>Magnesium</b>	<b>1000</b>	5.93	"	"	"	"	"	"	

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Foundation Energy  
1801 Broadway, Suite 1500  
Denver CO, 80202

Project: Federal 23-4

Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
04/17/19 13:01

**B @3'**  
**1904147-01 (Soil)**

**Summit Scientific**

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

<b>Sodium</b>	<b>9.13</b>	5.93	mg/kg dry	1	1904213	04/12/19	04/12/19	EPA 6020B
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**Calculated Analysis**

Date Sampled: **04/08/19 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	ND	0.100	units	1	1904262	04/16/19	04/16/19	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/08/19 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>84.3</b>		%	1	1904165	04/11/19	04/11/19	Calculation	
<b>pH</b>	<b>8.45</b>		pH Units	"	1904242	04/12/19	04/12/19	EPA 9045D	

**Specific Conductance by EPA Method 120.1**

Date Sampled: **04/08/19 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.482</b>	0.0100	mmhos/cm	1	1904243	04/16/19	04/17/19	EPA 120.1	

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Foundation Energy  
1801 Broadway, Suite 1500  
Denver CO, 80202

Project: Federal 23-4

Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
04/17/19 13:01

**S @2'**  
**1904147-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/08/19 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1904204	04/12/19	04/13/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/08/19 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.0 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/08/19 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1904205	04/12/19	04/13/19	EPA 8015M	

Date Sampled: **04/08/19 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		106 %	30-150		"	"	"	"	

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

Date Sampled: **04/08/19 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>1440</b>	11.3	mg/kg dry	1	1904213	04/12/19	04/12/19	EPA 6020B	
<b>Magnesium</b>	<b>650</b>	5.66	"	"	"	"	"	"	
<b>Sodium</b>	<b>43.6</b>	5.66	"	"	"	"	"	"	

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Foundation Energy  
1801 Broadway, Suite 1500  
Denver CO, 80202

Project: Federal 23-4

Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
04/17/19 13:01

**S @2'**  
**1904147-02 (Soil)**

**Summit Scientific**

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

**Calculated Analysis**

Date Sampled: **04/08/19 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.240	0.100	units	1	1904262	04/16/19	04/16/19	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/08/19 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	88.3		%	1	1904165	04/11/19	04/11/19	Calculation	
pH	8.31		pH Units	"	1904242	04/12/19	04/12/19	EPA 9045D	

**Specific Conductance by EPA Method 120.1**

Date Sampled: **04/08/19 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.736	0.0100	mmhos/cm	1	1904243	04/16/19	04/17/19	EPA 120.1	

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Foundation Energy  
1801 Broadway, Suite 1500  
Denver CO, 80202

Project: Federal 23-4

Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
04/17/19 13:01

**W @2'**  
**1904147-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/08/19 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1904204	04/12/19	04/13/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/08/19 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		110 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.8 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/08/19 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1904205	04/12/19	04/13/19	EPA 8015M	

Date Sampled: **04/08/19 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		116 %	30-150		"	"	"	"	

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

Date Sampled: **04/08/19 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>1500</b>	11.1	mg/kg dry	1	1904213	04/12/19	04/12/19	EPA 6020B	
<b>Magnesium</b>	<b>730</b>	5.54	"	"	"	"	"	"	
<b>Sodium</b>	<b>8.99</b>	5.54	"	"	"	"	"	"	

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Denver CO, 80202

Project: Federal 23-4

Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
04/17/19 13:01

**W @2'**  
**1904147-03 (Soil)**

**Summit Scientific**

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

**Calculated Analysis**

Date Sampled: **04/08/19 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	ND	0.100	units	1	1904262	04/16/19	04/16/19	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/08/19 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>90.2</b>		%	1	1904165	04/11/19	04/11/19	Calculation	
<b>pH</b>	<b>8.66</b>		pH Units	"	1904242	04/12/19	04/12/19	EPA 9045D	

**Specific Conductance by EPA Method 120.1**

Date Sampled: **04/08/19 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.293</b>	0.0100	mmhos/cm	1	1904243	04/16/19	04/17/19	EPA 120.1	

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Foundation Energy  
1801 Broadway, Suite 1500  
Denver CO, 80202

Project: Federal 23-4

Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
04/17/19 13:01

**N @2'**  
**1904147-04 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/08/19 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1904204	04/12/19	04/13/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/08/19 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.3 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/08/19 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1904205	04/12/19	04/13/19	EPA 8015M	

Date Sampled: **04/08/19 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		111 %	30-150		"	"	"	"	

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

Date Sampled: **04/08/19 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>1810</b>	11.4	mg/kg dry	1	1904213	04/12/19	04/12/19	EPA 6020B	
<b>Magnesium</b>	<b>929</b>	5.72	"	"	"	"	"	"	
<b>Sodium</b>	<b>51.4</b>	5.72	"	"	"	"	"	"	

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Foundation Energy  
1801 Broadway, Suite 1500  
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Project: Federal 23-4

Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
04/17/19 13:01

**N @2'**  
**1904147-04 (Soil)**

**Summit Scientific**

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

**Calculated Analysis**

Date Sampled: **04/08/19 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	<b>0.245</b>	0.100	units	1	1904262	04/16/19	04/16/19	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/08/19 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	<b>87.4</b>		%	1	1904165	04/11/19	04/11/19	Calculation	
pH	<b>7.96</b>		pH Units	"	1904242	04/12/19	04/12/19	EPA 9045D	

**Specific Conductance by EPA Method 120.1**

Date Sampled: **04/08/19 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	<b>3.64</b>	0.0100	mmhos/cm	1	1904243	04/16/19	04/17/19	EPA 120.1	

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Foundation Energy  
1801 Broadway, Suite 1500  
Denver CO, 80202

Project: Federal 23-4

Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
04/17/19 13:01

**E @2'**  
**1904147-05 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/08/19 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1904204	04/12/19	04/13/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>11</b>	<b>0.50</b>	"	"	"	"	"	"	

Date Sampled: **04/08/19 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		173 %	21-167		"	"	"	"	S-02

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/08/19 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>540</b>	<b>50</b>	<b>mg/kg</b>	<b>1</b>	<b>1904205</b>	<b>04/12/19</b>	<b>04/13/19</b>	<b>EPA 8015M</b>	

Date Sampled: **04/08/19 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		106 %	30-150		"	"	"	"	

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

Date Sampled: **04/08/19 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>2950</b>	<b>11.4</b>	<b>mg/kg dry</b>	<b>1</b>	<b>1904213</b>	<b>04/12/19</b>	<b>04/12/19</b>	<b>EPA 6020B</b>	
<b>Magnesium</b>	<b>1380</b>	<b>5.70</b>	<b>"</b>	<b>"</b>	<b>"</b>	<b>"</b>	<b>"</b>	<b>"</b>	
<b>Sodium</b>	<b>193</b>	<b>5.70</b>	<b>"</b>	<b>"</b>	<b>"</b>	<b>"</b>	<b>"</b>	<b>"</b>	

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Foundation Energy  
1801 Broadway, Suite 1500  
Denver CO, 80202

Project: Federal 23-4

Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
04/17/19 13:01

**E @2'**  
**1904147-05 (Soil)**

**Summit Scientific**

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

**Calculated Analysis**

Date Sampled: **04/08/19 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.735	0.100	units	1	1904262	04/16/19	04/16/19	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/08/19 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	87.8		%	1	1904165	04/11/19	04/11/19	Calculation	
pH	7.63		pH Units	"	1904242	04/12/19	04/12/19	EPA 9045D	

**Specific Conductance by EPA Method 120.1**

Date Sampled: **04/08/19 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	3.87	0.0100	mmhos/cm	1	1904243	04/16/19	04/17/19	EPA 120.1	

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Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
04/17/19 13:01

### Volatile Organic Compounds by EPA Method 8260B - Quality Control

#### Summit Scientific

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

#### Batch 1904204 - EPA 5030 Soil MS

##### Blank (1904204-BLK1)

Prepared: 04/12/19 Analyzed: 04/13/19

Benzene	ND	0.0020	mg/kg								
Toluene	ND	0.0050	"								
Ethylbenzene	ND	0.0050	"								
Xylenes (total)	ND	0.010	"								
Gasoline Range Hydrocarbons	ND	0.50	"								
Surrogate: 1,2-Dichloroethane-d4	0.0403		"	0.0400		101	23-173				
Surrogate: Toluene-d8	0.0373		"	0.0400		93.2	20-170				
Surrogate: 4-Bromofluorobenzene	0.0395		"	0.0400		98.7	21-167				

##### LCS (1904204-BS1)

Prepared: 04/12/19 Analyzed: 04/13/19

Benzene	0.147	0.0020	mg/kg	0.150		98.0	70-130				
Toluene	0.167	0.0050	"	0.150		112	70-130				
Ethylbenzene	0.146	0.0050	"	0.150		97.1	70-130				
m,p-Xylene	0.292	0.010	"	0.300		97.5	70-130				
o-Xylene	0.136	0.0050	"	0.150		90.4	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0434		"	0.0400		108	23-173				
Surrogate: Toluene-d8	0.0457		"	0.0400		114	20-170				
Surrogate: 4-Bromofluorobenzene	0.0389		"	0.0400		97.4	21-167				

##### Matrix Spike (1904204-MS1)

Source: 1904147-01

Prepared: 04/12/19 Analyzed: 04/13/19

Benzene	0.136	0.0020	mg/kg	0.150	ND	90.8	70-130				
Toluene	0.160	0.0050	"	0.150	ND	106	70-130				
Ethylbenzene	0.148	0.0050	"	0.150	ND	99.0	70-130				
m,p-Xylene	0.293	0.010	"	0.300	ND	97.7	70-130				
o-Xylene	0.136	0.0050	"	0.150	ND	90.4	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0424		"	0.0400		106	23-173				
Surrogate: Toluene-d8	0.0435		"	0.0400		109	20-170				
Surrogate: 4-Bromofluorobenzene	0.0389		"	0.0400		97.2	21-167				

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

**Summit Scientific**

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

**Batch 1904204 - EPA 5030 Soil MS**

**Matrix Spike Dup (1904204-MSD1)**

Source: 1904147-01

Prepared: 04/12/19 Analyzed: 04/13/19

Benzene	0.140	0.0020	mg/kg	0.150	ND	93.3	70-130	2.78	30	
Toluene	0.172	0.0050	"	0.150	ND	115	70-130	7.44	30	
Ethylbenzene	0.152	0.0050	"	0.150	ND	101	70-130	2.47	30	
m,p-Xylene	0.302	0.010	"	0.300	ND	101	70-130	3.04	30	
o-Xylene	0.139	0.0050	"	0.150	ND	92.7	70-130	2.45	30	
Surrogate: 1,2-Dichloroethane-d4	0.0424		"	0.0400		106	23-173			
Surrogate: Toluene-d8	0.0471		"	0.0400		118	20-170			
Surrogate: 4-Bromofluorobenzene	0.0389		"	0.0400		97.2	21-167			

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**Reported:**  
 04/17/19 13:01

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

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

**Batch 1904205 - EPA 3550A**

**Blank (1904205-BLK1)**

Prepared: 04/12/19 Analyzed: 04/13/19

C10-C28 (DRO) ND 50 mg/kg

**LCS (1904205-BS1)**

Prepared: 04/12/19 Analyzed: 04/13/19

C10-C28 (DRO) 548 50 mg/kg 500 110 70-130

**Matrix Spike (1904205-MS1)**

**Source: 1904146-01**

Prepared: 04/12/19 Analyzed: 04/13/19

C10-C28 (DRO) 507 50 mg/kg 500 35.7 94.3 70-130

**Matrix Spike Dup (1904205-MSD1)**

**Source: 1904146-01**

Prepared: 04/12/19 Analyzed: 04/13/19

C10-C28 (DRO) 511 50 mg/kg 500 35.7 95.1 70-130 0.792 20

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

**Summit Scientific**

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

**Batch 1904213 - General Preparation**

**Blank (1904213-BLK1)**

Prepared & Analyzed: 04/12/19

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

**LCS (1904213-BS1)**

Prepared & Analyzed: 04/12/19

Calcium	500	10.0	mg/kg wet	500	100	70-130			
Magnesium	532	5.00	"	500	106	70-130			
Sodium	527	5.00	"	500	105	70-130			

**Duplicate (1904213-DUP1)**

Source: 1904147-01

Prepared & Analyzed: 04/12/19

Calcium	2270	11.9	mg/kg dry	2700			17.3	20
Magnesium	841	5.93	"	1000			17.6	20
Sodium	7.65	5.93	"	9.13			17.7	20

**Matrix Spike (1904213-MS1)**

Source: 1904147-01

Prepared & Analyzed: 04/12/19

Calcium	3450	11.9	mg/kg dry	593	2700	126	70-130	
Magnesium	1540	5.93	"	593	1000	90.8	70-130	
Sodium	587	5.93	"	593	9.13	97.5	70-130	

**Matrix Spike Dup (1904213-MSD1)**

Source: 1904147-01

Prepared & Analyzed: 04/12/19

Calcium	3420	11.9	mg/kg dry	593	2700	122	70-130	0.713	25
Magnesium	1570	5.93	"	593	1000	95.0	70-130	1.59	25
Sodium	577	5.93	"	593	9.13	95.8	70-130	1.75	25

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

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

**Batch 1904165 - General Preparation**

<b>Duplicate (1904165-DUP1)</b>		<b>Source: 1904135-01</b>			<b>Prepared &amp; Analyzed: 04/11/19</b>				
% Solids	82.1		%		82.3		0.239	20	

**Batch 1904242 - General Preparation**

<b>LCS (1904242-BS1)</b>					<b>Prepared &amp; Analyzed: 04/12/19</b>			
pH	9.37		pH Units	9.23		102	95-105	
<b>Duplicate (1904242-DUP1)</b>		<b>Source: 1904142-01</b>			<b>Prepared &amp; Analyzed: 04/12/19</b>			
pH	8.89		pH Units	8.84		0.564	20	

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Project: Federal 23-4

Project Number: [none]  
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**Reported:**  
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**Specific Conductance by EPA Method 120.1 - Quality Control**  
**Summit Scientific**

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

**Batch 1904243 - General Preparation**

**Blank (1904243-BLK1)**

Prepared: 04/16/19 Analyzed: 04/17/19

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (1904243-BS1)**

Prepared: 04/16/19 Analyzed: 04/17/19

Specific Conductance (EC) 0.769 0.0100 mmhos/cm 0.750 103 90-110

**Duplicate (1904243-DUP1)**

**Source: 1904142-01**

Prepared: 04/16/19 Analyzed: 04/17/19

Specific Conductance (EC) 0.529 0.0100 mmhos/cm 0.624 16.4 20

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Project: Federal 23-4

Project Number: [none]  
Project Manager: Alyssa Beard

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04/17/19 13:01

### Notes and Definitions

- S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
- 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