

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

February 18, 2020

Maggie Graham

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: Box Elder M1

Work Order #2002084

Enclosed are the results of analyses for samples received by Summit Scientific on 02/12/20 12:25. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, reading "Muri Premier", is displayed on a light purple rectangular background.

Muri Premier For Paul Shrewsbury  
President



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Box Elder M1  
Project Number: 744. 2001-01-319879  
Project Manager: Maggie Graham

**Reported:**  
02/18/20 11:52

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
N01@3	2002084-01	Soil	02/12/20 11:05	02/12/20 12:25
E01@3	2002084-02	Soil	02/12/20 11:07	02/12/20 12:25
W01@3	2002084-03	Soil	02/12/20 11:09	02/12/20 12:25
S01@3	2002084-04	Soil	02/12/20 11:11	02/12/20 12:25
B01@5.5	2002084-05	Soil	02/12/20 11:13	02/12/20 12:25

Summit Scientific

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2007084

Page 1 of 1

Sampler Name: Karin Ambrose

Project Number: 744, 7001-01-319879

[www.s2scientific.com](http://www.s2scientific.com)

COGSC/ CDPHE  
Client Name:  
XOG

# Sample Receipt Checklist

S2 Work Order 2002084

Client: Apex Companies Client Project ID: Box Elder MI

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>4.3°C</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"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>on ice</u>
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 samples with holding times due within 48 hours sample due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>0 day lat</u>
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> ? 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> ? 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.

Eric A  
Custodian Printed Name or Initials

[Signature]  
Signature of Custodian

2-12-2020 12:25  
Date/Time



Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

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**Reported:**  
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**N01@3**  
**2002084-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **02/12/20 11:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>Benzene</b>	<b>0.012</b>	0.0020	mg/kg	1	2002135	02/13/20	02/13/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>0.069</b>	0.0050	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>0.64</b>	0.010	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>22</b>	0.50	"	"	"	"	"	"	

Date Sampled: **02/12/20 11:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		118 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		87.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		149 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **02/12/20 11:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>C10-C28 (DRO)</b>	<b>110</b>	50	mg/kg	1	2002136	02/13/20	02/13/20	EPA 8015M	

Date Sampled: **02/12/20 11:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		95.3 %	30-150		"	"	"	"	

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Project: Box Elder M1  
Project Number: 744. 2001-01-319879  
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**Reported:**  
02/18/20 11:52

**E01@3**  
**2002084-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **02/12/20 11:07**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
<b>Benzene</b>	<b>0.72</b>	0.020	mg/kg	10	2002118	02/12/20	02/12/20	EPA 8260B	
Toluene	ND	0.0050	"	1	"	"	"	"	
<b>Ethylbenzene</b>	<b>0.71</b>	0.050	"	10	"	"	"	"	
<b>Xylenes (total)</b>	<b>3.6</b>	0.10	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>390</b>	5.0	"	"	"	"	"	"	

Date Sampled: **02/12/20 11:07**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		154 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		90.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		137 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **02/12/20 11:07**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
<b>C10-C28 (DRO)</b>	<b>690</b>	50	mg/kg	1	2002119	02/12/20	02/12/20	EPA 8015M	

Date Sampled: **02/12/20 11:07**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		119 %	30-150		"	"	"	"	

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**Reported:**  
02/18/20 11:52

**W01@3**  
**2002084-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **02/12/20 11:09**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	2002135	02/13/20	02/13/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>1.8</b>	0.50	"	"	"	"	"	"	

Date Sampled: **02/12/20 11:09**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **02/12/20 11:09**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
<b>C10-C28 (DRO)</b>	<b>51</b>	50	mg/kg	1	2002136	02/13/20	02/13/20	EPA 8015M	

Date Sampled: **02/12/20 11:09**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		95.8 %	30-150		"	"	"	"	

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**Reported:**  
02/18/20 11:52

**S01@3**  
**2002084-04 (Soil)**

**Summit Scientific**

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

Date Sampled: **02/12/20 11:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2002135	02/13/20	02/13/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **02/12/20 11:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.2 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **02/12/20 11:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2002136	02/13/20	02/13/20	EPA 8015M	

Date Sampled: **02/12/20 11:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		86.4 %	30-150		"	"	"	"	

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**Reported:**  
02/18/20 11:52

**B01@5.5**  
**2002084-05 (Soil)**

**Summit Scientific**

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

Date Sampled: **02/12/20 11:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2002118	02/12/20	02/12/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.32	0.0050	"	"	"	"	"	"	
Xylenes (total)	2.2	0.10	"	10	"	"	"	"	
Gasoline Range Hydrocarbons	80	5.0	"	"	"	"	"	"	

Date Sampled: **02/12/20 11:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		83.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		129 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **02/12/20 11:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	3100	50	mg/kg	1	2002119	02/12/20	02/12/20	EPA 8015M	

Date Sampled: **02/12/20 11:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		152 %	30-150		"	"	"	"	S-02

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

Date Sampled: **02/12/20 11:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	1530	11.8	mg/kg dry	1	2002121	02/12/20	02/12/20	EPA 6020B	
Magnesium	567	5.90	"	"	"	"	"	"	
Sodium	807	5.90	"	"	"	"	"	"	

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02/18/20 11:52

**B01@5.5**  
**2002084-05 (Soil)**

**Summit Scientific**

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

**Calculated Analysis**

Date Sampled: **02/12/20 11:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	4.48	0.100	units	1	2002124	02/12/20	02/12/20	Calculation	

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

Date Sampled: **02/12/20 11:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	84.8		%	1	2002122	02/12/20	02/13/20	Calculation	
pH	8.45		pH Units	"	2002113	02/12/20	02/12/20	EPA 9045D	

**Specific Conductance by EPA Method 120.1**

Date Sampled: **02/12/20 11:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.33	0.0100	mmhos/cm	1	2002114	"	02/12/20	EPA 120.1	

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02/18/20 11:52

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

### Summit Scientific

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

#### Batch 2002118 - EPA 5030 Soil MS

##### Blank (2002118-BLK1)

Prepared & Analyzed: 02/12/20

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	0.0433		"	0.0400		108	23-173			
Surrogate: Toluene-d8	0.0404		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0401		"	0.0400		100	21-167			

##### LCS (2002118-BS1)

Prepared & Analyzed: 02/12/20

Benzene	0.0968	0.0020	mg/kg	0.100		96.8	70-130			
Toluene	0.106	0.0050	"	0.100		106	70-130			
Ethylbenzene	0.105	0.0050	"	0.100		105	70-130			
m,p-Xylene	0.190	0.010	"	0.200		94.9	70-130			
o-Xylene	0.100	0.0050	"	0.100		100	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0408		"	0.0400		102	23-173			
Surrogate: Toluene-d8	0.0452		"	0.0400		113	20-170			
Surrogate: 4-Bromofluorobenzene	0.0367		"	0.0400		91.8	21-167			

##### Matrix Spike (2002118-MS1)

Source: 2002083-01

Prepared & Analyzed: 02/12/20

Benzene	0.0961	0.0020	mg/kg	0.100	ND	96.1	70-130			
Toluene	0.105	0.0050	"	0.100	ND	105	70-130			
Ethylbenzene	0.112	0.0050	"	0.100	ND	112	70-130			
m,p-Xylene	0.199	0.010	"	0.200	ND	99.7	70-130			
o-Xylene	0.108	0.0050	"	0.100	ND	108	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0406		"	0.0400		101	23-173			
Surrogate: Toluene-d8	0.0405		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0372		"	0.0400		93.0	21-167			

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**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 2002118 - EPA 5030 Soil MS**

Matrix Spike Dup (2002118-MSD1)			Source: 2002083-01		Prepared & Analyzed: 02/12/20					
Benzene	0.0910	0.0020	mg/kg	0.100	ND	91.0	70-130	5.39	30	
Toluene	0.100	0.0050	"	0.100	ND	100	70-130	4.22	30	
Ethylbenzene	0.108	0.0050	"	0.100	ND	108	70-130	3.36	30	
m,p-Xylene	0.193	0.010	"	0.200	ND	96.3	70-130	3.43	30	
o-Xylene	0.103	0.0050	"	0.100	ND	103	70-130	4.70	30	
<hr/>										
Surrogate: 1,2-Dichloroethane-d4	0.0412		"	0.0400		103	23-173			
Surrogate: Toluene-d8	0.0399		"	0.0400		99.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0385		"	0.0400		96.3	21-167			

**Batch 2002135 - EPA 5030 Soil MS**

Blank (2002135-BLK1)			Prepared & Analyzed: 02/13/20							
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	"							
<hr/>										
Surrogate: 1,2-Dichloroethane-d4	0.0420		"	0.0400		105	23-173			
Surrogate: Toluene-d8	0.0390		"	0.0400		97.5	20-170			
Surrogate: 4-Bromofluorobenzene	0.0401		"	0.0400		100	21-167			

LCS (2002135-BS1)			Prepared & Analyzed: 02/13/20							
Benzene	0.0776	0.0020	mg/kg	0.100		77.6	70-130			
Toluene	0.0877	0.0050	"	0.100		87.7	70-130			
Ethylbenzene	0.0922	0.0050	"	0.100		92.2	70-130			
m,p-Xylene	0.213	0.010	"	0.200		106	70-130			
o-Xylene	0.0986	0.0050	"	0.100		98.6	70-130			
<hr/>										
Surrogate: 1,2-Dichloroethane-d4	0.0429		"	0.0400		107	23-173			
Surrogate: Toluene-d8	0.0394		"	0.0400		98.6	20-170			
Surrogate: 4-Bromofluorobenzene	0.0401		"	0.0400		100	21-167			

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02/18/20 11:52

**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 2002135 - EPA 5030 Soil MS**

Matrix Spike (2002135-MS1)		Source: 2002084-01			Prepared & Analyzed: 02/13/20					
Benzene	0.0928	0.0020	mg/kg	0.100	0.0117	81.1	70-130			
Toluene	0.0936	0.0050	"	0.100	ND	93.6	70-130			
Ethylbenzene	0.193	0.0050	"	0.100	0.0690	124	70-130			
m,p-Xylene	0.799	0.010	"	0.200	0.625	86.5	70-130			
o-Xylene	0.0968	0.0050	"	0.100	0.0194	77.5	70-130			
Surrogate: 1,2-Dichloroethane-d4		0.0438	"	0.0400		110	23-173			
Surrogate: Toluene-d8		0.0360	"	0.0400		90.0	20-170			
Surrogate: 4-Bromofluorobenzene		0.0480	"	0.0400		120	21-167			
Matrix Spike Dup (2002135-MSD1)		Source: 2002084-01			Prepared & Analyzed: 02/13/20					
Benzene	0.0934	0.0020	mg/kg	0.100	0.0117	81.7	70-130	0.612	30	
Toluene	0.0986	0.0050	"	0.100	ND	98.6	70-130	5.12	30	
Ethylbenzene	0.171	0.0050	"	0.100	0.0690	102	70-130	12.0	30	
m,p-Xylene	0.827	0.010	"	0.200	0.625	101	70-130	3.54	30	
o-Xylene	0.0956	0.0050	"	0.100	0.0194	76.3	70-130	1.22	30	
Surrogate: 1,2-Dichloroethane-d4		0.0432	"	0.0400		108	23-173			
Surrogate: Toluene-d8		0.0372	"	0.0400		92.9	20-170			
Surrogate: 4-Bromofluorobenzene		0.0425	"	0.0400		106	21-167			

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Box Elder M1  
Project Number: 744. 2001-01-319879  
Project Manager: Maggie Graham

**Reported:**  
02/18/20 11:52

**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 2002119 - EPA 3550A**

**Blank (2002119-BLK1)**

Prepared & Analyzed: 02/12/20

C10-C28 (DRO) ND 50 mg/kg

**LCS (2002119-BS1)**

Prepared & Analyzed: 02/12/20

C10-C28 (DRO) 532 50 mg/kg 500 106 70-130

**Matrix Spike (2002119-MS1)**

Source: 2002083-01

Prepared & Analyzed: 02/12/20

C10-C28 (DRO) 463 50 mg/kg 500 ND 92.7 70-130

**Matrix Spike Dup (2002119-MSD1)**

Source: 2002083-01

Prepared & Analyzed: 02/12/20

C10-C28 (DRO) 467 50 mg/kg 500 ND 93.4 70-130 0.817 20

**Batch 2002136 - EPA 3550A**

**Blank (2002136-BLK1)**

Prepared & Analyzed: 02/13/20

C10-C28 (DRO) ND 50 mg/kg

**LCS (2002136-BS1)**

Prepared & Analyzed: 02/13/20

C10-C28 (DRO) 570 50 mg/kg 500 114 70-130

**Matrix Spike (2002136-MS1)**

Source: 2002084-01

Prepared & Analyzed: 02/13/20

C10-C28 (DRO) 937 50 mg/kg 500 112 165 70-130 QM-07

**Matrix Spike Dup (2002136-MSD1)**

Source: 2002084-01

Prepared & Analyzed: 02/13/20

C10-C28 (DRO) 500 50 mg/kg 500 112 77.6 70-130 60.7 20 QM-07

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Box Elder M1  
Project Number: 744. 2001-01-319879  
Project Manager: Maggie Graham

**Reported:**  
02/18/20 11:52

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

**Summit Scientific**

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

**Batch 2002121 - General Preparation**

**Blank (2002121-BLK1)**

Prepared & Analyzed: 02/12/20

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

**LCS (2002121-BS1)**

Prepared & Analyzed: 02/12/20

Calcium	491	10.0	mg/kg wet	500	98.3	70-130
Magnesium	544	5.00	"	500	109	70-130
Sodium	498	5.00	"	500	99.6	70-130

**Duplicate (2002121-DUP1)**

Source: 2002084-05

Prepared & Analyzed: 02/12/20

Calcium	1790	11.8	mg/kg dry	1530	15.5	20
Magnesium	585	5.90	"	567	3.22	20
Sodium	811	5.90	"	807	0.535	20

**Matrix Spike (2002121-MS1)**

Source: 2002084-05

Prepared & Analyzed: 02/12/20

Calcium	2260	11.8	mg/kg dry	590	1530	124	70-130
Magnesium	987	5.90	"	590	567	71.3	70-130
Sodium	1330	5.90	"	590	807	87.9	70-130

**Matrix Spike Dup (2002121-MSD1)**

Source: 2002084-05

Prepared & Analyzed: 02/12/20

Calcium	2100	11.8	mg/kg dry	590	1530	97.1	70-130	7.17	25
Magnesium	992	5.90	"	590	567	72.1	70-130	0.488	25
Sodium	1290	5.90	"	590	807	82.2	70-130	2.58	25

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Box Elder M1  
Project Number: 744. 2001-01-319879  
Project Manager: Maggie Graham

**Reported:**  
02/18/20 11:52

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

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

**Batch 2002113 - General Preparation**

**LCS (2002113-BS1)**

Prepared & Analyzed: 02/12/20

pH	9.20		pH Units	9.18	100	95-105
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**Duplicate (2002113-DUP1)**

Source: 2002083-01

Prepared & Analyzed: 02/12/20

pH	8.79		pH Units	8.81	0.227	20
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**Batch 2002122 - General Preparation**

**Duplicate (2002122-DUP1)**

Source: 2002084-05

Prepared: 02/12/20 Analyzed: 02/13/20

% Solids	86.9		%	84.8	2.45	20
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Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Box Elder M1  
Project Number: 744. 2001-01-319879  
Project Manager: Maggie Graham

**Reported:**  
02/18/20 11:52

**Specific Conductance by EPA Method 120.1 - Quality Control**  
**Summit Scientific**

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

**Batch 2002114 - General Preparation**

**Blank (2002114-BLK1)**

Prepared & Analyzed: 02/12/20

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (2002114-BS1)**

Prepared & Analyzed: 02/12/20

Specific Conductance (EC) 0.780 0.0100 mmhos/cm 0.750 104 90-110

**Duplicate (2002114-DUP1)**

**Source: 2002083-01**

Prepared & Analyzed: 02/12/20

Specific Conductance (EC) 0.948 0.0100 mmhos/cm 0.958 0.997 20

Summit Scientific

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Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver CO, 80202

Project: Box Elder M1  
Project Number: 744. 2001-01-319879  
Project Manager: Maggie Graham

**Reported:**  
02/18/20 11:52

### 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.

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