



Blake Ford  
Environmental Coordinator  
Extraction Oil and Gas, Inc.  
370 17<sup>th</sup> Street, Suite 5300  
Denver, Colorado 80202

May 17, 2018

**Subject: Work Completion Report – Remedial Investigation**

Stromberger 22-E Pad  
COGCC Location ID: 444315  
SENE, Sec 22, T6N-R67W  
40.474235/-104.870861  
Unincorporated Weld County, Colorado

Dear Mr. Ford:

Apex Companies LLC (Apex) has prepared this work completion report to document remedial investigation activities conducted in response to a hydrocarbon release and application of fire suppressant chemicals at the Stromberger 22-E Pad location (444315) in Unincorporated Weld County. The remedial investigation included field-screening, soil sampling, and excavation oversight. These efforts were completed under an approved Form 19 (Spill/Release Report), Spill/release Point ID number 453622, assigned by the Colorado Oil and Gas Conservation Commission (COGCC).

**Remedial Investigation**

On March 2<sup>nd</sup>, 2018, before any damaged equipment or impacted soils were removed from the facility, an Apex Field Coordinator met on site with Rick Allison, a COGCC Environmental Specialist, and collected three surface soil samples (B01@surface, B02@surface, and B03@0.5') from the most visually impacted area. A photoionization detector (PID) was used to field-screen the soil for volatile organic compounds (VOCs), which measured values between 60 parts per million (ppm) and 508 ppm. Laboratory results confirmed organic constituent concentrations (TPH) above allowable limits at the ground surface. The inorganic constituent, pH, exceeded the allowable range in all three samples.

The excavation of impacted soil began on April 15<sup>th</sup>, 2018, following the removal of equipment. Stained soil in the northern portion of the impacted area was completely removed to a depth of approximately 6 inches below ground surface (bgs), which exposed an underlying concrete pad. The pad was intact and will be removed during reclamation activities at the site, so no soil samples were collected. South of the concrete pad, the excavation was approximately 175 feet by 50 feet

at the widest point, with a depth between 6 inches and 1-foot bgs. On April 16<sup>th</sup>, 2018, an Apex Field Coordinator collected 7 confirmation soil samples (B01@1', B02@1', B03@1', B04@1', B05@1', B06@0.5', and B07@0.5') from the excavated area. PID results for all samples were between 0.5 ppm and 70.5 ppm. Laboratory analysis confirmed the inorganic constituent pH exceeded the allowable threshold in soil samples where the excavation was limited to a depth of 6 inches bgs. On April 17<sup>th</sup>, 2018, the excavation was extended an additional 6 inches bgs, and an Apex Field Coordinator collected two final soil samples to confirm pH exceedances were removed. PID results were less than 1.0 ppm for both samples. Groundwater was not encountered at any time during the investigation. Final excavation dimensions, the location of the concrete pad, and all sample locations are illustrated in the attached site diagram.

## Results

Soil samples were submitted for laboratory analysis of COGCC Table 910-1 constituents of concern (TPH-GRO, TPH-DRO, BTEX, pH, EC, SAR). Additionally, all samples were analyzed for ethylene glycol due to the use of fire suppressant chemicals. Results for soil samples collected from the final base of the excavation were within allowable limits for COGCC Table 910-1 constituents of concern and the Colorado Department of Public Health and Environment (CDPHE) groundwater protection value for ethylene glycol. Laboratory results are attached.

## Conclusions

Based on field observations and laboratory results, impacted soil at the release area was successfully removed using conventional excavation. No further site assessment is recommended at this time.

If you have any questions about this report, onsite activities, or anything else related to this effort, please don't hesitate to contact me at 307-755-3483.

Sincerely,  
Apex Companies, LLC

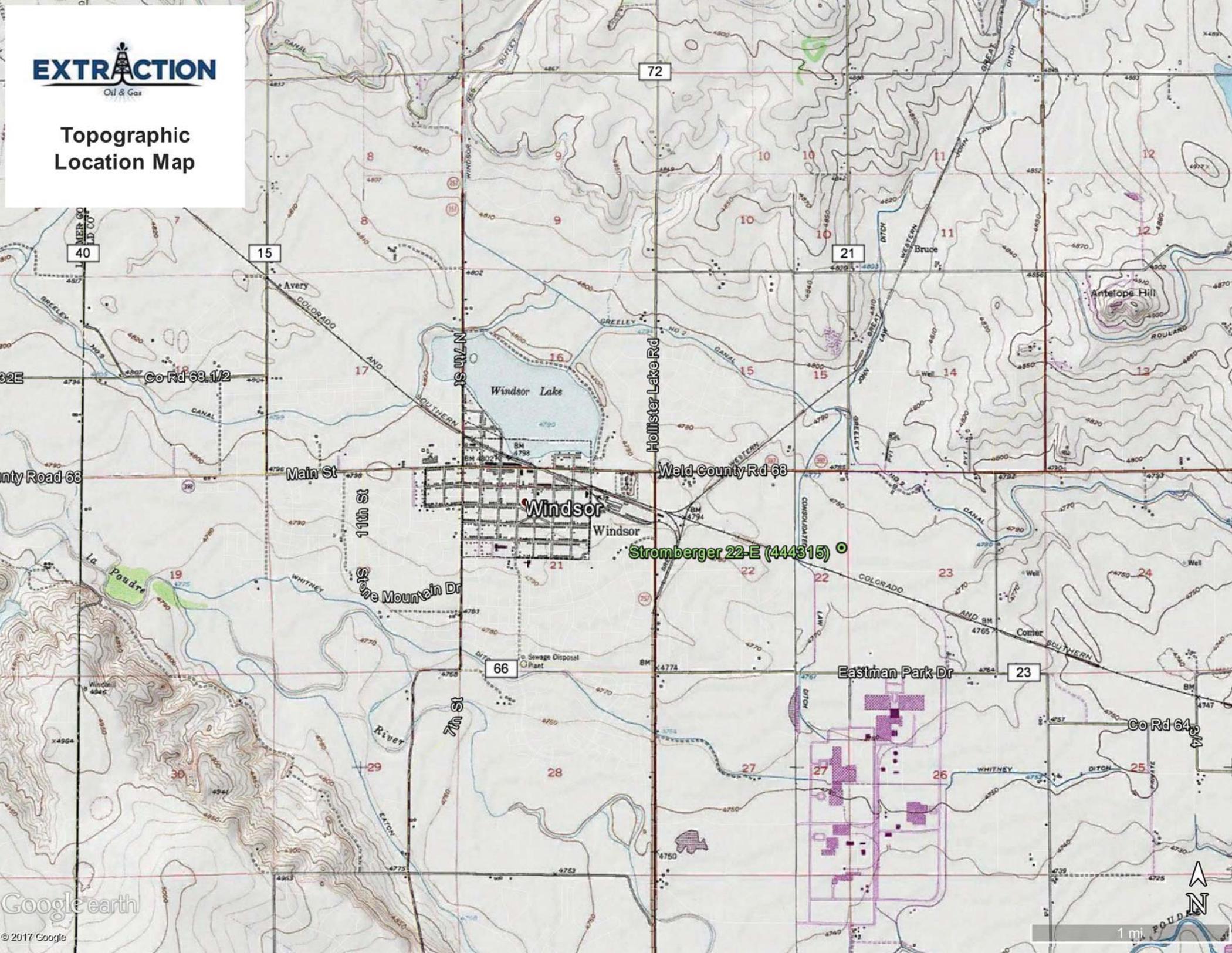


Brian Gibson  
Environmental Scientist

## Attachments:

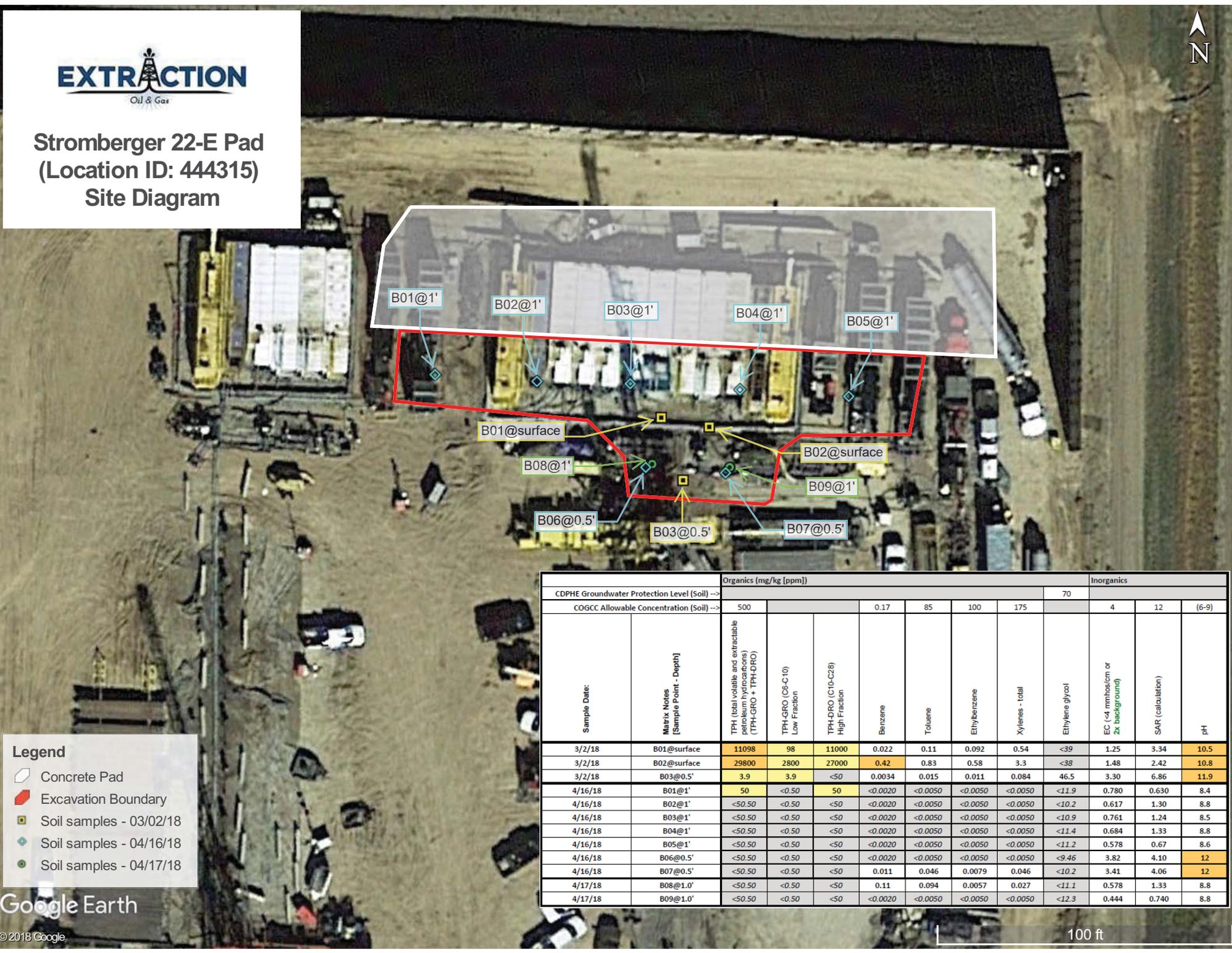
1. Topographic Location Map
2. Site Diagram with Laboratory Results Summary Table
3. Laboratory Reports

**Topographic  
Location Map**





**Stromberger 22-E Pad  
(Location ID: 444315)  
Site Diagram**



- Legend**
- Concrete Pad
  - Excavation Boundary
  - Soil samples - 03/02/18
  - Soil samples - 04/16/18
  - Soil samples - 04/17/18

Sample Date:	Matrix Notes [Sample Point - Depth]	Organics (mg/kg [ppm])							Inorganics			
		CDPHE Groundwater Protection Level (Soil) -->							70			
		COGCC Allowable Concentration (Soil) -->							4 12 (6-9)			
		TPH (total volatiles and extractable polycyclic aromatic hydrocarbons) (TPH-GRO + TPH-DRO)	TPH-GRO (C6-C10) Low Fraction	TPH-DRO (C10-C28) High Fraction	Benzene	Toluene	Ethylbenzene	Xylenes - total	Ethylene glycol	EC (-4 mmhos/cm or 2x background)	SAR (calculation)	pH
3/2/18	B01@surface	11098	98	11000	0.022	0.11	0.092	0.54	<39	1.25	3.34	10.5
3/2/18	B02@surface	29800	2800	27000	0.42	0.83	0.58	3.3	<38	1.48	2.42	10.8
3/2/18	B03@0.5'	3.9	3.9	<50	0.0034	0.015	0.011	0.084	46.5	3.30	6.86	11.9
4/16/18	B01@1'	50	<0.50	50	<0.0020	<0.0050	<0.0050	<0.0050	<11.9	0.780	0.630	8.4
4/16/18	B02@1'	<50.50	<0.50	<50	<0.0020	<0.0050	<0.0050	<0.0050	<10.2	0.617	1.30	8.8
4/16/18	B03@1'	<50.50	<0.50	<50	<0.0020	<0.0050	<0.0050	<0.0050	<10.9	0.761	1.24	8.5
4/16/18	B04@1'	<50.50	<0.50	<50	<0.0020	<0.0050	<0.0050	<0.0050	<11.4	0.684	1.33	8.8
4/16/18	B05@1'	<50.50	<0.50	<50	<0.0020	<0.0050	<0.0050	<0.0050	<11.2	0.578	0.67	8.6
4/16/18	B06@0.5'	<50.50	<0.50	<50	<0.0020	<0.0050	<0.0050	<0.0050	<9.46	3.82	4.10	12
4/16/18	B07@0.5'	<50.50	<0.50	<50	0.011	0.046	0.0079	0.046	<10.2	3.41	4.06	12
4/17/18	B08@1.0'	<50.50	<0.50	<50	0.11	0.094	0.0057	0.027	<11.1	0.578	1.33	8.8
4/17/18	B09@1.0'	<50.50	<0.50	<50	<0.0020	<0.0050	<0.0050	<0.0050	<12.3	0.444	0.740	8.8

Google Earth

100 ft

# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

March 14, 2018

Blake Ford  
Extraction Oil & Gas  
570 17th St. Suite 550  
Denver, CO 80202  
RE: Stromberger 22E Pad

Enclosed are the results of analyses for samples received by Summit Scientific on 03/02/18 15:42. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury  
Laboratory Manager



Extraction Oil & Gas  
570 17th St. Suite 550  
Denver CO, 80202

Project: Stromberger 22E Pad

Project Number: [none]  
Project Manager: Blake Ford

**Reported:**  
03/14/18 08:34

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B01@surface	1803041-01	Soil	03/02/18 09:20	03/02/18 15:42
B02@surface	1803041-02	Soil	03/02/18 09:31	03/02/18 15:42
B03@0.5'	1803041-03	Soil	03/02/18 09:40	03/02/18 15:42

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

# Summit Scientific

1803041

741 Corporate Circle Suite I ♦ Golden, Colorado 80401  
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 1

Client: Extraction Oil & Gas  
Address: 370 17th Street, Suite 5300  
City/State/Zip: Denver, CO 80202  
Phone: 970-778-5956 Fax: \_\_\_\_\_  
Sampler Name: Brian Gibson

Project Manager: Blake Ford  
E-Mail: bford@extractionog.com; bgibson@extractionog.com  
Project Name: Stromberger 22-E Pad  
Project Number: \_\_\_\_\_

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:							Special Instructions					
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	TPH (DRO/GRO)	BTEX	pH, EC, SAR	Ethylene glycol								
B01@surface	3/2/2017	9:20	2		X			X				X	X	X	X								
B02@surface	3/3/2017	9:31	2		X			X				X	X	X	X								
B03@0.5'	3/4/2017	9:40	2		X			X				X	X	X	X								
Relinquished by: <i>[Signature]</i>	Date/Time: <u>3/2/18 1542</u>	Received by: <i>[Signature]</i>	Date/Time: <u>3/2/18 1542</u>	Turn Around Time (Check)				Notes: Sample matrix is road base containing a significant amount of gravel and is saturated from snow melt  <i>On ice</i>															
Relinquished by:	Date/Time:	Received by:	Date/Time:	Same Day	<input type="checkbox"/>	72 Hours	<input type="checkbox"/>								24 Hours	<input type="checkbox"/>	Standard	<input checked="" type="checkbox"/>	48 Hours	<input type="checkbox"/>			
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:	Sample Integrity:											Temperature Upon Receipt: <u>5.3°C</u>								
				Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																			

**Sample Receipt Checklist**

S2 Work Order: 1803041

Client: XOG Client Project ID: Stromberger 22-E Pad

Shipped Via: Hand Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

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

Cooler ID					
Temp (°C)	5.3				

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.	✓			
Were all samples received intact <sup>(1)</sup> ?	✓			
Was adequate sample volume provided <sup>(1)</sup> ?	✓			
If custody seals are present, are they intact <sup>(1)</sup> ?			✓	
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 <sup>(1)</sup> ?	✓			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	✓			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	✓			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>			✓	
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			✓	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			✓	
Record the pH in Comments.			✓	
If dissolved metals are requested, were samples field filtered?			✓	
Additional Comments (if any):				

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 of Initials of Custodian

3/2/18 1550  
Date/Time



Extraction Oil & Gas  
570 17th St. Suite 550  
Denver CO, 80202

Project: Stromberger 22E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
03/14/18 08:34

**B01@surface**  
**1803041-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/02/18 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>11000</b>	50	mg/kg	1	1803054	03/05/18	03/06/18	8015M	

Date Sampled: **03/02/18 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		270 %	30-150		"	"	"	"	S-02

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

Date Sampled: **03/02/18 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>0.022</b>	0.0020	mg/kg	1	1803052	03/05/18	03/06/18	EPA 8260B	
<b>Toluene</b>	<b>0.11</b>	0.0050	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>0.092</b>	0.0050	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>0.54</b>	0.0050	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>98</b>	5.0	"	10	"	"	"	"	

Date Sampled: **03/02/18 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		114 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		91.9 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		189 %	21-167		"	"	"	"	S-02

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

Date Sampled: **03/02/18 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>491</b>	11.2	mg/kg dry	1	1803044	03/05/18	03/05/18	EPA 6020/Mod. USDA60 6(2, 3A)	
<b>Magnesium</b>	<b>55.2</b>	5.58	"	"	"	"	"	"	

Summit Scientific

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Extraction Oil & Gas  
570 17th St. Suite 550  
Denver CO, 80202

Project: Stromberger 22E Pad

Project Number: [none]  
Project Manager: Blake Ford

**Reported:**  
03/14/18 08:34

**B01@surface**  
**1803041-01 (Soil)**

**Summit Scientific**

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium	293	5.58	mg/kg dry	1	1803044	03/05/18	03/05/18	EPA 6020/Mod. USDA60 6(2, 3A)	
Sodium Adsorption Ratio	3.34		units	"	1803096	03/07/18	03/07/18	"	

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

Date Sampled: **03/02/18 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	89.6		%	1	1803045	03/05/18	03/07/18	% calculation	
pH	10.5	0.100	pH Units	"	1803049	03/05/18	03/05/18	EPA 9045	

**Specific Conductance by EPA120.1**

Date Sampled: **03/02/18 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.25	0.0100	mmhos/cm	1	1803047	03/05/18	03/07/18	EPA 120.1	

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Extraction Oil & Gas  
570 17th St. Suite 550  
Denver CO, 80202

Project: Stromberger 22E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
03/14/18 08:34

**B02@surface**  
**1803041-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/02/18 09:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>27000</b>	50	mg/kg	1	1803054	03/05/18	03/06/18	8015M	

Date Sampled: **03/02/18 09:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		3230 %	30-150		"	"	"	"	S-02

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

Date Sampled: **03/02/18 09:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>0.42</b>	0.0020	mg/kg	1	1803052	03/05/18	03/06/18	EPA 8260B	
<b>Toluene</b>	<b>0.83</b>	0.0050	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>0.58</b>	0.0050	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>3.3</b>	0.0050	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>2800</b>	50	"	100	"	"	"	"	

Date Sampled: **03/02/18 09:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		151 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		85.2 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		448 %	21-167		"	"	"	"	S-02

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

Date Sampled: **03/02/18 09:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>632</b>	11.2	mg/kg dry	1	1803044	03/05/18	03/05/18	EPA 6020/Mod. USDA60 6(2, 3A)	
<b>Magnesium</b>	<b>162</b>	5.59	"	"	"	"	"	"	

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Extraction Oil & Gas  
570 17th St. Suite 550  
Denver CO, 80202

Project: Stromberger 22E Pad

Project Number: [none]  
Project Manager: Blake Ford

**Reported:**  
03/14/18 08:34

**B02@surface**  
**1803041-02 (Soil)**

**Summit Scientific**

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium	263	5.59	mg/kg dry	1	1803044	03/05/18	03/05/18	EPA 6020/Mod. USDA60 6(2, 3A)	
Sodium Adsorption Ratio	2.42		units	"	1803096	03/07/18	03/07/18	"	

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

Date Sampled: **03/02/18 09:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	89.4		%	1	1803045	03/05/18	03/07/18	% calculation	
pH	10.8	0.100	pH Units	"	1803049	03/05/18	03/05/18	EPA 9045	

**Specific Conductance by EPA120.1**

Date Sampled: **03/02/18 09:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.48	0.0100	mmhos/cm	1	1803047	03/05/18	03/07/18	EPA 120.1	

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Extraction Oil & Gas  
570 17th St. Suite 550  
Denver CO, 80202

Project: Stromberger 22E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
03/14/18 08:34

**B03@0.5'**  
**1803041-03 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/02/18 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1803054	03/05/18	03/08/18	8015M	

Date Sampled: **03/02/18 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		85.4 %	30-150		"	"	"	"	

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

Date Sampled: **03/02/18 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>0.0034</b>	0.0020	mg/kg	1	1803052	03/05/18	03/07/18	EPA 8260B	
<b>Toluene</b>	<b>0.015</b>	0.0050	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>0.011</b>	0.0050	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>0.084</b>	0.0050	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>3.9</b>	0.50	"	"	"	"	"	"	

Date Sampled: **03/02/18 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		89.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %	21-167		"	"	"	"	

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

Date Sampled: **03/02/18 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>407</b>	11.3	mg/kg dry	1	1803044	03/05/18	03/05/18	EPA 6020/Mod. USDA60 6(2, 3A)	
<b>Magnesium</b>	<b>450</b>	5.67	"	"	"	"	"	"	

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Extraction Oil & Gas  
570 17th St. Suite 550  
Denver CO, 80202

Project: Stromberger 22E Pad

Project Number: [none]  
Project Manager: Blake Ford

**Reported:**  
03/14/18 08:34

**B03@0.5'**  
**1803041-03 (Soil)**

**Summit Scientific**

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium	436	5.67	mg/kg dry	1	1803044	03/05/18	03/05/18	EPA 6020/Mod. USDA60 6(2, 3A)	
Sodium Adsorption Ratio	6.86		units	"	1803096	03/07/18	03/14/18	"	

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

Date Sampled: **03/02/18 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	11.9	0.100	pH Units	1	1803049	03/05/18	03/05/18	EPA 9045	
% Solids	88.1		%	"	1803045	03/05/18	03/07/18	% calculation	

**Specific Conductance by EPA120.1**

Date Sampled: **03/02/18 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	3.30	0.0100	mmhos/cm	1	1803047	03/05/18	03/07/18	EPA 120.1	

Summit Scientific

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Extraction Oil & Gas  
570 17th St. Suite 550  
Denver CO, 80202

Project: Stromberger 22E Pad

Project Number: [none]  
Project Manager: Blake Ford

**Reported:**  
03/14/18 08:34

**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 1803054 - EPA 3550A**

**Blank (1803054-BLK1)**

Prepared: 03/05/18 Analyzed: 03/06/18

C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	<i>11.4</i>		"	<i>12.5</i>		<i>90.9</i>	<i>30-150</i>				

**LCS (1803054-BS1)**

Prepared: 03/05/18 Analyzed: 03/06/18

C10-C28 (DRO)	347	50	mg/kg	399		86.9	73-134				
<i>Surrogate: o-Terphenyl</i>	<i>12.4</i>		"	<i>12.5</i>		<i>99.0</i>	<i>30-150</i>				

**Matrix Spike (1803054-MS1)**

**Source: 1803032-01**

Prepared: 03/05/18 Analyzed: 03/06/18

C10-C28 (DRO)	373	50	mg/kg	399	19.5	88.6	50-148				
<i>Surrogate: o-Terphenyl</i>	<i>12.3</i>		"	<i>12.5</i>		<i>98.1</i>	<i>30-150</i>				

**Matrix Spike Dup (1803054-MSD1)**

**Source: 1803032-01**

Prepared: 03/05/18 Analyzed: 03/06/18

C10-C28 (DRO)	357	50	mg/kg	399	19.5	84.4	50-148	4.58	20		
<i>Surrogate: o-Terphenyl</i>	<i>12.9</i>		"	<i>12.5</i>		<i>104</i>	<i>30-150</i>				

Summit Scientific

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Extraction Oil & Gas  
570 17th St. Suite 550  
Denver CO, 80202

Project: Stromberger 22E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
03/14/18 08:34

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

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

**Batch 1803052 - EPA 5030 Soil MS**

**Blank (1803052-BLK1)**

Prepared: 03/05/18 Analyzed: 03/06/18

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	"								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0366</i>		<i>"</i>	<i>0.0400</i>		<i>91.5</i>	<i>23-173</i>				
<i>Surrogate: Toluene-d8</i>	<i>0.0403</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>20-170</i>				
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0339</i>		<i>"</i>	<i>0.0400</i>		<i>84.8</i>	<i>21-167</i>				

**LCS (1803052-BS1)**

Prepared: 03/05/18 Analyzed: 03/06/18

Benzene	0.0924	0.0020	mg/kg	0.100		92.4	58-130				
Toluene	0.0899	0.0050	"	0.100		89.9	61-134				
Ethylbenzene	0.0935	0.0050	"	0.0992		94.3	74-139				
m,p-Xylene	0.182	0.010	"	0.200		91.4	73-137				
o-Xylene	0.0947	0.0050	"	0.0980		96.7	73-141				
Xylenes (total)	0.277	0.0050	"				30-150				
Gasoline Range Hydrocarbons	2.11	0.50	"				30-150				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0353</i>		<i>"</i>	<i>0.0400</i>		<i>88.3</i>	<i>23-173</i>				
<i>Surrogate: Toluene-d8</i>	<i>0.0422</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>20-170</i>				
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0327</i>		<i>"</i>	<i>0.0400</i>		<i>81.7</i>	<i>21-167</i>				

**Matrix Spike (1803052-MS1)**

Source: 1803032-01

Prepared: 03/05/18 Analyzed: 03/06/18

Benzene	0.0285	0.0020	mg/kg	0.100	ND	28.5	30-131				QM-07
Toluene	0.0229	0.0050	"	0.100	ND	22.9	30-134				QM-07
Ethylbenzene	0.0149	0.0050	"	0.0992	ND	15.0	22-153				QM-07
m,p-Xylene	0.0560	0.010	"	0.200	ND	28.0	10-159				
o-Xylene	0.0503	0.0050	"	0.0980	ND	51.4	31-151				
Xylenes (total)	0.106	0.0050	"		ND		30-150				
Gasoline Range Hydrocarbons	1.17	0.50	"		0.854		30-150				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0398</i>		<i>"</i>	<i>0.0400</i>		<i>99.4</i>	<i>23-173</i>				
<i>Surrogate: Toluene-d8</i>	<i>0.0396</i>		<i>"</i>	<i>0.0400</i>		<i>98.9</i>	<i>20-170</i>				
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0362</i>		<i>"</i>	<i>0.0400</i>		<i>90.5</i>	<i>21-167</i>				

Summit Scientific

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Extraction Oil & Gas  
570 17th St. Suite 550  
Denver CO, 80202

Project: Stromberger 22E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
03/14/18 08:34

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

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

**Batch 1803052 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1803052-MSD1)</b>	<b>Source: 1803032-01</b>			Prepared: 03/05/18		Analyzed: 03/06/18				
Benzene	0.0329	0.0020	mg/kg	0.100	ND	32.9	30-131	14.5	34	
Toluene	0.0272	0.0050	"	0.100	ND	27.2	30-134	17.2	30	QM-07
Ethylbenzene	0.0177	0.0050	"	0.0992	ND	17.8	22-153	17.1	24	QM-07
m,p-Xylene	0.0585	0.010	"	0.200	ND	29.3	10-159	4.45	68	
o-Xylene	0.0483	0.0050	"	0.0980	ND	49.3	31-151	4.20	38	
Xylenes (total)	0.107	0.0050	"		ND		30-150	0.450	20	
Gasoline Range Hydrocarbons	1.06	0.50	"		0.854		30-150	10.1	20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0392</i>		<i>"</i>	<i>0.0400</i>		<i>98.0</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0398</i>		<i>"</i>	<i>0.0400</i>		<i>99.4</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0352</i>		<i>"</i>	<i>0.0400</i>		<i>88.0</i>	<i>21-167</i>			

Summit Scientific

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Extraction Oil & Gas  
570 17th St. Suite 550  
Denver CO, 80202

Project: Stromberger 22E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
03/14/18 08:34

**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 1803044 - General Preparation**

**Blank (1803044-BLK1)**

Prepared & Analyzed: 03/05/18

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

**LCS (1803044-BS1)**

Prepared & Analyzed: 03/05/18

Calcium	434	10.0	mg/kg wet	500		86.8	82.9-118			
Magnesium	423	5.00	"	500		84.6	77.1-123			
Sodium	418	5.00	"	500		83.6	71-129			

**Duplicate (1803044-DUP1)**

Source: 1802273-01

Prepared & Analyzed: 03/05/18

Calcium	3680	13.9	mg/kg dry		4020			8.80	200	
Magnesium	769	6.97	"		797			3.60	200	
Sodium	219	6.97	"		225			2.80	200	

**Matrix Spike (1803044-MS1)**

Source: 1802273-01

Prepared & Analyzed: 03/05/18

Calcium	4770	13.9	mg/kg dry	697	4020	108	75-125			
Magnesium	1470	6.97	"	697	797	97.1	75-125			
Sodium	757	6.97	"	697	225	76.2	75-125			

**Matrix Spike Dup (1803044-MSD1)**

Source: 1802273-01

Prepared & Analyzed: 03/05/18

Calcium	4760	13.9	mg/kg dry	697	4020	106	75-125	0.290	25	
Magnesium	1460	6.97	"	697	797	95.7	75-125	0.670	25	
Sodium	822	6.97	"	697	225	85.7	75-125	8.33	25	

Summit Scientific

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Extraction Oil & Gas  
 570 17th St. Suite 550  
 Denver CO, 80202

Project: Stromberger 22E Pad

Project Number: [none]  
 Project Manager: Blake Ford

**Reported:**  
 03/14/18 08:34

**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 1803045 - General Preparation**

Duplicate (1803045-DUP1)	Source: 1803005-01			Prepared: 03/05/18		Analyzed: 03/07/18		
% Solids	85.2		%		85.0		0.228	20

**Batch 1803049 - General Preparation**

LCS (1803049-BS1)				Prepared & Analyzed: 03/05/18			
pH	9.17	0.100	pH Units	9.16	100	95-105	
Duplicate (1803049-DUP1)	Source: 1802273-01			Prepared & Analyzed: 03/05/18			
pH	7.52	0.100	pH Units	7.54		0.266	20

Summit Scientific

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Extraction Oil & Gas  
 570 17th St. Suite 550  
 Denver CO, 80202

Project: Stromberger 22E Pad

Project Number: [none]  
 Project Manager: Blake Ford

**Reported:**  
 03/14/18 08:34

**Specific Conductance by EPA120.1 - Quality Control**  
**Summit Scientific**

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

**Batch 1803047 - General Preparation**

<b>Blank (1803047-BLK1)</b>		Prepared: 03/05/18 Analyzed: 03/07/18									
Specific Conductance (EC)	ND	0.0100	mmhos/cm								
<b>LCS (1803047-BS1)</b>		Prepared: 03/05/18 Analyzed: 03/07/18									
Specific Conductance (EC)	0.752	0.0100	mmhos/cm	0.750	100	90-110					
<b>Duplicate (1803047-DUP1)</b>		Source: 1802273-01 Prepared: 03/05/18 Analyzed: 03/07/18									
Specific Conductance (EC)	3.08	0.0100	mmhos/cm		3.08			0.0486	20		

Summit Scientific

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The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

### Summit Scientific

1803041

SGS Job Number: DA3152

Sampling Date: 03/02/18

#### Report to:

Summit Scientific  
741 Corporate Circle Suite J  
Golden, CO 80401  
pshrewsbury@s2scientific.com

ATTN: Paul Shrewsbury

Total number of pages in report: 11



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read "Scott Heideman".

Scott Heideman  
Laboratory Director

Client Service contact: Jen Jorschumb 303-425-6021

Certifications: CO (CO00049), ID (CO00049), NE (NE-OS-06-04), ND (R-027), NJ (CO007), OK (D9942)  
UT (NELAP CO00049), LA (LA150028), TX (T104704511), WY (8TMS-L)

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Test results relate only to samples analyzed.

# Table of Contents

Sections:

1

2

3

4

-1-

<b>Section 1: Sample Summary</b> .....	<b>3</b>
<b>Section 2: Summary of Hits</b> .....	<b>4</b>
<b>Section 3: Sample Results</b> .....	<b>5</b>
<b>3.1:</b> DA3152-1: B01@SURFACE .....	6
<b>3.2:</b> DA3152-2: B02@SURFACE .....	7
<b>3.3:</b> DA3152-3: B02@0.5' .....	8
<b>Section 4: Misc. Forms</b> .....	<b>9</b>
<b>4.1:</b> Chain of Custody .....	10



## Sample Summary

Summit Scientific

Job No: DA3152

1803041

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
DA3152-1	03/02/18	09:20	03/05/18	SO	Soil	B01@SURFACE
DA3152-2	03/02/18	09:31	03/05/18	SO	Soil	B02@SURFACE
DA3152-3	03/02/18	09:40	03/05/18	SO	Soil	B03@0.5'

---

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

## Summary of Hits

**Job Number:** DA3152  
**Account:** Summit Scientific  
**Project:** 1803041  
**Collected:** 03/02/18



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

**DA3152-1**      **B01@SURFACE**

No hits reported in this sample.

**DA3152-2**      **B02@SURFACE**

No hits reported in this sample.

**DA3152-3**      **B03@0.5'**

Ethylene Glycol	46.5 J	56	39	mg/kg	SW846 8015B
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Sample Results

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Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b> B01@SURFACE	<b>Date Sampled:</b> 03/02/18
<b>Lab Sample ID:</b> DA3152-1	<b>Date Received:</b> 03/05/18
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 88.7
<b>Method:</b> SW846 8015B	
<b>Project:</b> 1803041	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FG12662.D	1	03/07/18 18:21	RB	n/a	n/a	GFG872
Run #2							

	Initial weight	Final Volume
Run #1	2.0 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
107-21-1	Ethylene Glycol	ND	56	39	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
123-51-3	IsoAmyl Alcohol	89%		47-140%		

---

ND = Not detected	MDL = Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

## Report of Analysis

3.2  
3

<b>Client Sample ID:</b> B02@SURFACE	<b>Date Sampled:</b> 03/02/18
<b>Lab Sample ID:</b> DA3152-2	<b>Date Received:</b> 03/05/18
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 93.0
<b>Method:</b> SW846 8015B	
<b>Project:</b> 1803041	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FG12663.D	1	03/07/18 18:40	RB	n/a	n/a	GFG872
Run #2							

	Initial weight	Final Volume
Run #1	2.0 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
107-21-1	Ethylene Glycol	ND	54	38	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
123-51-3	IsoAmyl Alcohol	92%		47-140%		

---

ND = Not detected	MDL = Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

## Report of Analysis



<b>Client Sample ID:</b> B03@0.5'	<b>Date Sampled:</b> 03/02/18
<b>Lab Sample ID:</b> DA3152-3	<b>Date Received:</b> 03/05/18
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 88.8
<b>Method:</b> SW846 8015B	
<b>Project:</b> 1803041	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FG12664.D	1	03/07/18 18:59	RB	n/a	n/a	GFG872
Run #2							

	Initial weight	Final Volume
Run #1	2.0 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
107-21-1	Ethylene Glycol	46.5	56	39	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
123-51-3	IsoAmyl Alcohol	89%		47-140%

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

Misc. Forms

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Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody



CHAIN OF CUSTODY

4036 Youngfield Street, Wheat Ridge, CO 80033
TEL: 303-425-6021 FAX: 303-425-6854
www.accutest.com

FED-EX Tracking # Bottle Order Control #
Accutest Quote # 114 79 Accutest Job # DA 3152

Client / Reporting Information, Project Information, Requested Analysis (see TEST CODE sheet), Matrix Codes, Collection table with columns for Date, Time, Matrix, # of bottles, and various chemical tests (NOI, NO2, NO3, NH3, PO4, etc.). Includes Turnaround Time and Data Deliverable Information sections.

4.1
4

DA3152: Chain of Custody
Page 1 of 2

## SGS Accutest Sample Receipt Summary

Job Number: DA3152

Client: SUMMIT SCIENTIFIC

Project: 1803041

Date / Time Received: 3/5/2018 2:10:00 PM

Delivery Method:

Airbill #'s: HD

Cooler Temps (Initial/Adjusted): #1: (5.3/5.3):

**Cooler Security**

Y or N

- 1. Custody Seals Present:
- 2. Custody Seals Intact:

- 3. COC Present:
- 4. Smp Dates/Time OK:

Y or N

**Cooler Temperature**

Y or N

- 1. Temp criteria achieved:
- 2. Cooler temp verification: IR Gun;
- 3. Cooler media: Ice (Bag)
- 4. No. Coolers: 1

**Quality Control Preservation**

Y or N

N/A

- 1. Trip Blank present / cooler:
- 2. Trip Blank listed on COC:
- 3. Samples preserved properly:
- 4. VOCs headspace free:

Comments

**Sample Integrity - Documentation**

Y or N

- 1. Sample labels present on bottles:
- 2. Container labeling complete:
- 3. Sample container label / COC agree:

**Sample Integrity - Condition**

Y or N

- 1. Sample recvd within HT:
- 2. All containers accounted for:
- 3. Condition of sample: Intact

**Sample Integrity - Instructions**

Y or N

N/A

- 1. Analysis requested is clear:
- 2. Bottles received for unspecified tests:
- 3. Sufficient volume recvd for analysis:
- 4. Compositing instructions clear:
- 5. Filtering instructions clear:

4.1  
4





Extraction Oil & Gas  
570 17th St. Suite 550  
Denver CO, 80202

Project: Stromberger 22E Pad

Project Number: [none]  
Project Manager: Blake Ford

**Reported:**  
03/14/18 08:34

### 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

# Summit Scientific

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

April 26, 2018

Blake Ford  
Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver, CO 80202  
RE: Stromberger 22-E Pad

Enclosed are the results of analyses for samples received by Summit Scientific on 04/16/18 16:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury  
President / Laboratory Director



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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

**Reported:**  
04/26/18 08:47

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B01@1'	1804237-01	Soil	04/16/18 14:45	04/16/18 16:15
B02@1'	1804237-02	Soil	04/16/18 14:48	04/16/18 16:15
B03@1'	1804237-03	Soil	04/16/18 14:50	04/16/18 16:15
B04@1'	1804237-04	Soil	04/16/18 14:53	04/16/18 16:15
B05@1'	1804237-05	Soil	04/16/18 14:55	04/16/18 16:15
B06@0.5'	1804237-06	Soil	04/16/18 14:59	04/16/18 16:15
B07@0.5'	1804237-07	Soil	04/16/18 15:02	04/16/18 16:15

Summit Scientific

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# Summit Scientific

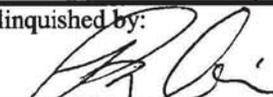
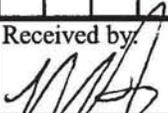
1804237

741 Corporate Circle Suite I ♦ Golden, Colorado 80401  
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 1

Client: Extraction Oil & Gas  
Address: 370 17th Street, Suite 5300  
City/State/Zip: Denver, CO 80202  
Phone: 720-481-2362 Fax: \_\_\_\_\_  
Sampler Name: Brian Gibson

Project Manager: Blake Ford  
E-Mail: bford@extractionog.com; bgibson@extractionog.com  
Project Name: Stromberger 22-E Pad  
Project Number: \_\_\_\_\_

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions		
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	TPH (GRO/DRO)	BTEX	pH, EC, SAR		Ethylene glycol	
B01@1'	4/16/18	1445	1			X			X				X	X	X	X	
B02@1'	↓	1448	↓														
B03@1'	↓	1450	↓														
B04@1'	↓	1453	↓														
B05@1'	↓	1455	↓														
B06@0.5'	↓	1459	↓														
B07@0.5'	↓	1502	↓														
Relinquished by: 				Date/Time: 4/16/18 1615	Received by: 				Date/Time: 4/16/18 1615	Turn Around Time (Check)				Notes:			
Relinquished by:				Date/Time:	Received by:				Date/Time:	Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/>				24 Hours <input type="checkbox"/> Standard <input type="checkbox"/>			
Relinquished by:				Date/Time:	Received in Lab by:				Date/Time:	Sample Integrity:				Temperature Upon Receipt: 11.0°C			
										Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				on ice			

Sample Receipt Checklist

S2 Work Order: 1804237

Client: XOG Client Project ID: Stromberger 22-E Pad

Shipped Via: Hand Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

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

Cooler ID				
Temp (°C)	<u>11.0</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> ? 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"/>			
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 short holding time analytes or samples with HTs 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.

Nakita  
Custodian Printed Name

[Signature]  
Signature or Initials of Custodian

4/16/18 1605  
Date/Time



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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
04/26/18 08:47

**B01@1'**  
**1804237-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/16/18 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804125	04/16/18	04/16/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/16/18 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		82.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.7 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/16/18 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>50</b>	50	mg/kg	1	1804126	"	04/16/18	EPA 8015M	

Date Sampled: **04/16/18 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		96.0 %	30-150		"	"	"	"	

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

Date Sampled: **04/16/18 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>10200</b>	2.50	mg/kg dry	1	1804121	04/16/18	04/17/18	EPA 6020B	
<b>Magnesium</b>	<b>1570</b>	1.00	"	"	"	"	"	"	

Summit Scientific

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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

**Reported:**  
04/26/18 08:47

**B01@1'**  
**1804237-01 (Soil)**

**Summit Scientific**

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

<b>Sodium</b>	<b>259</b>	5.00 mg/kg dry	1	1804121	04/16/18	04/17/18	EPA 6020B
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**Calculated Analysis**

Date Sampled: **04/16/18 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>0.630</b>	0.100	units	1	1804140	04/17/18	04/17/18	Calculation	

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

Date Sampled: **04/16/18 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.780</b>	0.0100	mmhos/cm	1	1804124	04/16/18	04/16/18	EPA 120.1	
<b>% Solids</b>	<b>81.5</b>		%	"	1804122	04/16/18	04/17/18	Calculation	
<b>pH</b>	<b>8.4</b>		pH Units	"	1804123	04/16/18	04/16/18	EPA 9045D	

Summit Scientific

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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
04/26/18 08:47

**B02@1'**  
**1804237-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/16/18 14:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804125	04/16/18	04/16/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/16/18 14:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		84.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.2 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/16/18 14:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804126	"	04/16/18	EPA 8015M	

Date Sampled: **04/16/18 14:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		101 %	30-150		"	"	"	"	

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

Date Sampled: **04/16/18 14:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>9570</b>	2.50	mg/kg dry	1	1804121	04/16/18	04/17/18	EPA 6020B	
<b>Magnesium</b>	<b>1120</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>503</b>	5.00	"	"	"	"	"	"	

Summit Scientific

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

Project: Stromberger 22-E Pad

Project Number: [none]  
 Project Manager: Blake Ford

**Reported:**  
 04/26/18 08:47

**B02@1'**  
**1804237-02 (Soil)**

**Summit Scientific**

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

**Calculated Analysis**

Date Sampled: **04/16/18 14:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.30	0.100	units	1	1804140	04/17/18	04/17/18	Calculation	

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

Date Sampled: **04/16/18 14:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	85.0		%	1	1804122	04/16/18	04/17/18	Calculation	
Specific Conductance (EC)	0.617	0.0100	mmhos/cm	"	1804124	04/16/18	04/16/18	EPA 120.1	
pH	8.8		pH Units	"	1804123	04/16/18	04/16/18	EPA 9045D	

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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
04/26/18 08:47

**B03@1'**  
**1804237-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/16/18 14:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804125	04/16/18	04/16/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/16/18 14:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		85.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.9 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/16/18 14:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804126	"	04/16/18	EPA 8015M	

Date Sampled: **04/16/18 14:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		97.6 %	30-150		"	"	"	"	

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

Date Sampled: **04/16/18 14:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	147	2.50	mg/kg dry	1	1804121	04/16/18	04/17/18	EPA 6020B	
Magnesium	932	1.00	"	"	"	"	"	"	
Sodium	185	5.00	"	"	"	"	"	"	

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

Project: Stromberger 22-E Pad

Project Number: [none]  
 Project Manager: Blake Ford

**Reported:**  
 04/26/18 08:47

**B03@1'**  
**1804237-03 (Soil)**

**Summit Scientific**

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

**Calculated Analysis**

Date Sampled: **04/16/18 14:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>1.24</b>	0.100	units	1	1804140	04/17/18	04/17/18	Calculation	

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

Date Sampled: **04/16/18 14:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>79.9</b>		%	1	1804122	04/16/18	04/17/18	Calculation	
<b>Specific Conductance (EC)</b>	<b>0.761</b>	0.0100	mmhos/cm	"	1804124	04/16/18	04/16/18	EPA 120.1	
<b>pH</b>	<b>8.5</b>		pH Units	"	1804123	04/16/18	04/16/18	EPA 9045D	

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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
04/26/18 08:47

**B04@1'**  
**1804237-04 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/16/18 14:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804125	04/16/18	04/16/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/16/18 14:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		84.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.3 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/16/18 14:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804126	"	04/16/18	EPA 8015M	

Date Sampled: **04/16/18 14:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.6 %	30-150		"	"	"	"	

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

Date Sampled: **04/16/18 14:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>9690</b>	2.50	mg/kg dry	1	1804121	04/16/18	04/17/18	EPA 6020B	
<b>Magnesium</b>	<b>1440</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>532</b>	5.00	"	"	"	"	"	"	

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

Project: Stromberger 22-E Pad

Project Number: [none]  
 Project Manager: Blake Ford

**Reported:**  
 04/26/18 08:47

**B04@1'**  
**1804237-04 (Soil)**

**Summit Scientific**

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

**Calculated Analysis**

Date Sampled: **04/16/18 14:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>1.33</b>	0.100	units	1	1804140	04/17/18	04/17/18	Calculation	

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

Date Sampled: **04/16/18 14:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.684</b>	0.0100	mmhos/cm	1	1804124	04/16/18	04/16/18	EPA 120.1	
<b>% Solids</b>	<b>51.1</b>		%	"	1804122	04/16/18	04/17/18	Calculation	
<b>pH</b>	<b>8.8</b>		pH Units	"	1804123	04/16/18	04/16/18	EPA 9045D	

Summit Scientific

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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
04/26/18 08:47

**B05@1'**  
**1804237-05 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/16/18 14:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804125	04/16/18	04/16/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/16/18 14:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		84.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.2 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/16/18 14:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804126	"	04/17/18	EPA 8015M	

Date Sampled: **04/16/18 14:55**

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

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

Date Sampled: **04/16/18 14:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>7760</b>	2.50	mg/kg dry	1	1804121	04/16/18	04/17/18	EPA 6020B	
<b>Magnesium</b>	<b>1290</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>241</b>	5.00	"	"	"	"	"	"	

Summit Scientific

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

Project: Stromberger 22-E Pad

Project Number: [none]  
 Project Manager: Blake Ford

**Reported:**  
 04/26/18 08:47

**B05@1'**  
**1804237-05 (Soil)**

**Summit Scientific**

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

**Calculated Analysis**

Date Sampled: **04/16/18 14:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	<b>0.670</b>	0.100	units	1	1804140	04/17/18	04/17/18	Calculation	

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

Date Sampled: **04/16/18 14:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	<b>80.7</b>		%	1	1804122	04/16/18	04/17/18	Calculation	
Specific Conductance (EC)	<b>0.578</b>	0.0100	mmhos/cm	"	1804124	04/16/18	04/16/18	EPA 120.1	
pH	<b>8.6</b>		pH Units	"	1804123	04/16/18	04/16/18	EPA 9045D	

Summit Scientific

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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
04/26/18 08:47

**B06@0.5'**  
**1804237-06 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/16/18 14:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804125	04/16/18	04/17/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/16/18 14:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		78.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.6 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/16/18 14:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804126	"	04/17/18	EPA 8015M	

Date Sampled: **04/16/18 14:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		97.6 %	30-150		"	"	"	"	

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

Date Sampled: **04/16/18 14:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>5640</b>	2.50	mg/kg dry	1	1804121	04/16/18	04/17/18	EPA 6020B	
<b>Magnesium</b>	<b>586</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>1210</b>	5.00	"	"	"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



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

Project: Stromberger 22-E Pad

Project Number: [none]  
 Project Manager: Blake Ford

**Reported:**  
 04/26/18 08:47

**B06@0.5'**  
**1804237-06 (Soil)**

**Summit Scientific**

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

**Calculated Analysis**

Date Sampled: **04/16/18 14:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	4.10	0.100	units	1	1804140	04/17/18	04/17/18	Calculation	

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

Date Sampled: **04/16/18 14:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	88.0		%	1	1804122	04/16/18	04/17/18	Calculation	
Specific Conductance (EC)	3.82	0.0100	mmhos/cm	"	1804124	04/16/18	04/16/18	EPA 120.1	
pH	12		pH Units	"	1804123	04/16/18	04/16/18	EPA 9045D	

Summit Scientific

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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
04/26/18 08:47

**B07@0.5'**  
**1804237-07 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/16/18 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>0.011</b>	0.0020	mg/kg	1	1804125	04/16/18	04/16/18	EPA 8260B	
<b>Toluene</b>	<b>0.046</b>	0.0050	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>0.0079</b>	0.0050	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>0.046</b>	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/16/18 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		83.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.9 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/16/18 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804126	"	04/17/18	EPA 8015M	

Date Sampled: **04/16/18 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		98.2 %	30-150		"	"	"	"	

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

Date Sampled: **04/16/18 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>6350</b>	2.50	mg/kg dry	1	1804121	04/16/18	04/17/18	EPA 6020B	
<b>Magnesium</b>	<b>654</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>1270</b>	5.00	"	"	"	"	"	"	

Summit Scientific

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

Project: Stromberger 22-E Pad

Project Number: [none]  
 Project Manager: Blake Ford

**Reported:**  
 04/26/18 08:47

**B07@0.5'**  
**1804237-07 (Soil)**

**Summit Scientific**

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

**Calculated Analysis**

Date Sampled: **04/16/18 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	4.06	0.100	units	1	1804140	04/17/18	04/17/18	Calculation	

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

Date Sampled: **04/16/18 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	86.4		%	1	1804122	04/16/18	04/17/18	Calculation	
Specific Conductance (EC)	3.41	0.0100	mmhos/cm	"	1804124	04/16/18	04/16/18	EPA 120.1	
pH	12		pH Units	"	1804123	04/16/18	04/16/18	EPA 9045D	

Summit Scientific

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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
04/26/18 08:47

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

**Summit Scientific**

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

**Batch 1804125 - EPA 5030 Soil MS**

**Blank (1804125-BLK1)**

Prepared & Analyzed: 04/16/18

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	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0436</i>		<i>"</i>	<i>0.0396</i>		<i>110</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0380</i>		<i>"</i>	<i>0.0400</i>		<i>94.9</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0389</i>		<i>"</i>	<i>0.0400</i>		<i>97.4</i>	<i>21-167</i>			

**LCS (1804125-BS1)**

Prepared & Analyzed: 04/16/18

Benzene	0.0739	0.0020	mg/kg	0.100		73.9	61-139			
Toluene	0.0894	0.0050	"	0.100		89.4	64-132			
Ethylbenzene	0.103	0.0050	"	0.100		103	68.7-135			
m,p-Xylene	0.200	0.010	"	0.200		99.8	70.4-129			
o-Xylene	0.102	0.0050	"	0.100		102	66.9-126			
Gasoline Range Hydrocarbons	2.63	0.50	"				0-200			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0442</i>		<i>"</i>	<i>0.0396</i>		<i>112</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0385</i>		<i>"</i>	<i>0.0400</i>		<i>96.2</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0385</i>		<i>"</i>	<i>0.0400</i>		<i>96.2</i>	<i>21-167</i>			

**Matrix Spike (1804125-MS1)**

Source: 1804238-01

Prepared & Analyzed: 04/16/18

Benzene	0.0759	0.0020	mg/kg	0.100	ND	75.9	42.9-137			
Toluene	0.0894	0.0050	"	0.100	ND	89.4	42.6-130			
Ethylbenzene	0.102	0.0050	"	0.100	ND	102	39-133			
m,p-Xylene	0.202	0.010	"	0.200	ND	101	34.7-134			
o-Xylene	0.102	0.0050	"	0.100	ND	102	41.3-126			
Gasoline Range Hydrocarbons	2.63	0.50	"		ND		0-200			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0464</i>		<i>"</i>	<i>0.0396</i>		<i>117</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0386</i>		<i>"</i>	<i>0.0400</i>		<i>96.6</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0391</i>		<i>"</i>	<i>0.0400</i>		<i>97.8</i>	<i>21-167</i>			

Summit Scientific

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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
04/26/18 08:47

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

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

**Batch 1804125 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1804125-MSD1)</b>	<b>Source: 1804238-01</b>			Prepared: 04/16/18		Analyzed: 04/17/18			
Benzene	0.0751	0.0020	mg/kg	0.100	ND	75.1	42.9-137	1.03	17.9
Toluene	0.0863	0.0050	"	0.100	ND	86.3	42.6-130	3.48	11.9
Ethylbenzene	0.103	0.0050	"	0.100	ND	103	39-133	0.876	30
m,p-Xylene	0.201	0.010	"	0.200	ND	100	34.7-134	0.358	30
o-Xylene	0.102	0.0050	"	0.100	ND	102	41.3-126	0.177	30
Gasoline Range Hydrocarbons	2.78	0.50	"		ND		0-200	5.28	200
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0458</i>		<i>"</i>	<i>0.0396</i>		<i>116</i>	<i>23-173</i>		
<i>Surrogate: Toluene-d8</i>	<i>0.0381</i>		<i>"</i>	<i>0.0400</i>		<i>95.2</i>	<i>20-170</i>		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0388</i>		<i>"</i>	<i>0.0400</i>		<i>96.9</i>	<i>21-167</i>		

Summit Scientific

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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

**Reported:**  
04/26/18 08:47

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

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

**Batch 1804126 - EPA 3550A**

<b>Blank (1804126-BLK1)</b>		Prepared: 04/16/18 Analyzed: 04/17/18								
C10-C28 (DRO)	ND	50	mg/kg							
<b>LCS (1804126-BS1)</b>		Prepared: 04/16/18 Analyzed: 04/17/18								
C10-C28 (DRO)	489	50	mg/kg	500	15.9	90.1	77.8-133			
<b>Matrix Spike (1804126-MS1)</b>		<b>Source: 1804238-01</b>		Prepared: 04/16/18 Analyzed: 04/17/18						
C10-C28 (DRO)	466	50	mg/kg	500	15.9	90.1	77.8-133			
<b>Matrix Spike Dup (1804126-MSD1)</b>		<b>Source: 1804238-01</b>		Prepared: 04/16/18 Analyzed: 04/17/18						
C10-C28 (DRO)	489	50	mg/kg	500	15.9	94.5	77.8-133	4.62	8.48	

Summit Scientific

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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
04/26/18 08:47

**Soluble Nutrients by EPA 6020/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 1804121 - General Preparation**

**Blank (1804121-BLK1)**

Prepared: 04/16/18 Analyzed: 04/17/18

Calcium	ND	2.50	mg/kg wet						
Magnesium	ND	1.00	"						
Sodium	ND	5.00	"						

**LCS (1804121-BS1)**

Prepared: 04/16/18 Analyzed: 04/17/18

Calcium	1120	2.50	mg/kg wet	1000		112	70-130		
Magnesium	1180	1.00	"	1000		118	70-130		
Sodium	1220	5.00	"	1000		122	70-130		

**Duplicate (1804121-DUP1)**

Source: 1804237-01

Prepared: 04/16/18 Analyzed: 04/17/18

Calcium	11100	2.50	mg/kg dry		10200			8.55	20
Magnesium	1670	1.00	"		1570			5.79	20
Sodium	260	5.00	"		259			0.300	20

**Matrix Spike (1804121-MS1)**

Source: 1804237-01

Prepared: 04/16/18 Analyzed: 04/17/18

Calcium	11600	2.50	mg/kg dry	1230	10200	111	70-130		
Magnesium	2800	1.00	"	1230	1570	100	70-130		
Sodium	1680	5.00	"	1230	259	116	70-130		

**Matrix Spike Dup (1804121-MSD1)**

Source: 1804237-01

Prepared: 04/16/18 Analyzed: 04/17/18

Calcium	11600	2.50	mg/kg dry	1230	10200	110	70-130	0.0979	25
Magnesium	2900	1.00	"	1230	1570	108	70-130	3.55	25
Sodium	1670	5.00	"	1230	259	115	70-130	0.866	25

Summit Scientific

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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

**Reported:**  
04/26/18 08:47

**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		

**Batch 1804122 - General Preparation**

<b>Duplicate (1804122-DUP1)</b>	<b>Source: 1804237-01</b>			Prepared: 04/16/18 Analyzed: 04/17/18						
% Solids	80.6		%		81.5			1.11	20	

**Batch 1804123 - General Preparation**

<b>Duplicate (1804123-DUP1)</b>	<b>Source: 1804237-01</b>			Prepared & Analyzed: 04/16/18						
pH	8.4		pH Units		8.4			0.237	20	

**Batch 1804124 - General Preparation**

<b>Blank (1804124-BLK1)</b>				Prepared & Analyzed: 04/16/18						
Specific Conductance (EC)	ND	0.0100	mmhos/cm							

<b>LCS (1804124-BS1)</b>				Prepared & Analyzed: 04/16/18						
Specific Conductance (EC)	0.750	0.0100	mmhos/cm				80-120			

<b>Duplicate (1804124-DUP1)</b>	<b>Source: 1804237-01</b>			Prepared & Analyzed: 04/16/18						
Specific Conductance (EC)	0.758	0.0100	mmhos/cm		0.780			2.93	20	

Summit Scientific

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**Summit Scientific**  
Paul Shrewsbury  
4653 Table Mountain Dr  
Golden, CO 80403

**RE: 1804237**  
**Work Order Number: 1804285**

April 18, 2018

**Attention Paul Shrewsbury:**

Fremont Analytical, Inc. received 7 sample(s) on 4/18/2018 for the analyses presented in the following report.

***Glycols by SW8015***  
***Sample Moisture (Percent Moisture)***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Chelsea Ward  
Project Manager

**CC:**  
Ben Shrewsbury

---

**CLIENT:** Summit Scientific  
**Project:** 1804237  
**Work Order:** 1804285

---

**Work Order Sample Summary**

---

<b>Lab Sample ID</b>	<b>Client Sample ID</b>	<b>Date/Time Collected</b>	<b>Date/Time Received</b>
1804285-001	B01@1'	04/16/2018 2:45 PM	04/18/2018 9:46 AM
1804285-002	B02@1'	04/16/2018 2:48 PM	04/18/2018 9:46 AM
1804285-003	B03@1'	04/16/2018 2:50 PM	04/18/2018 9:46 AM
1804285-004	B04@1'	04/16/2018 2:53 PM	04/18/2018 9:46 AM
1804285-005	B05@1'	04/16/2018 2:55 PM	04/18/2018 9:46 AM
1804285-006	B06@0.5'	04/16/2018 2:59 PM	04/18/2018 9:46 AM
1804285-007	B07@0.5'	04/16/2018 3:02 PM	04/18/2018 9:46 AM

**CLIENT:** Summit Scientific

**Project:** 1804237

---

**I. SAMPLE RECEIPT:**

Samples receipt information is recorded on the attached Sample Receipt Checklist.

**II. GENERAL REPORTING COMMENTS:**

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

**III. ANALYSES AND EXCEPTIONS:**

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.



Qualifiers:

- \* - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



**CLIENT:** Summit Scientific  
**Project:** 1804237

**Lab ID:** 1804285-001

**Collection Date:** 4/16/2018 2:45:00 PM

**Client Sample ID:** B01@1'

**Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Glycols by SW8015**

Batch ID: 20433 Analyst: SB

Ethylene glycol	ND	11.9		mg/Kg-dry	1	4/18/2018 11:59:17 AM
Surr: 2,4,6-Tribromophenol	93.0	50.1 - 124		%Rec	1	4/18/2018 11:59:17 AM

**Sample Moisture (Percent Moisture)**

Batch ID: R42963 Analyst: NG

Percent Moisture	17.5	0.500		wt%	1	4/18/2018 2:35:48 PM
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**Lab ID:** 1804285-002

**Collection Date:** 4/16/2018 2:48:00 PM

**Client Sample ID:** B02@1'

**Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Glycols by SW8015**

Batch ID: 20433 Analyst: SB

Ethylene glycol	ND	10.2		mg/Kg-dry	1	4/18/2018 12:38:11 PM
Surr: 2,4,6-Tribromophenol	86.4	50.1 - 124		%Rec	1	4/18/2018 12:38:11 PM

**Sample Moisture (Percent Moisture)**

Batch ID: R42963 Analyst: NG

Percent Moisture	12.3	0.500		wt%	1	4/18/2018 2:35:48 PM
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**CLIENT:** Summit Scientific

**Project:** 1804237

**Lab ID:** 1804285-003

**Collection Date:** 4/16/2018 2:50:00 PM

**Client Sample ID:** B03@1'

**Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Glycols by SW8015**

Batch ID: 20433 Analyst: SB

Ethylene glycol	ND	10.9		mg/Kg-dry	1	4/18/2018 1:03:53 PM
Surr: 2,4,6-Tribromophenol	89.2	50.1 - 124		%Rec	1	4/18/2018 1:03:53 PM

**Sample Moisture (Percent Moisture)**

Batch ID: R42963 Analyst: NG

Percent Moisture	18.2	0.500		wt%	1	4/18/2018 2:35:48 PM
------------------	------	-------	--	-----	---	----------------------

**Lab ID:** 1804285-004

**Collection Date:** 4/16/2018 2:53:00 PM

**Client Sample ID:** B04@1'

**Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Glycols by SW8015**

Batch ID: 20433 Analyst: SB

Ethylene glycol	ND	11.4		mg/Kg-dry	1	4/18/2018 1:42:41 PM
Surr: 2,4,6-Tribromophenol	95.9	50.1 - 124		%Rec	1	4/18/2018 1:42:41 PM

**Sample Moisture (Percent Moisture)**

Batch ID: R42963 Analyst: NG

Percent Moisture	18.2	0.500		wt%	1	4/18/2018 2:35:48 PM
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**CLIENT:** Summit Scientific  
**Project:** 1804237

**Lab ID:** 1804285-005

**Collection Date:** 4/16/2018 2:55:00 PM

**Client Sample ID:** B05@1'

**Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Glycols by SW8015**

Batch ID: 20433 Analyst: SB

Ethylene glycol	ND	11.2		mg/Kg-dry	1	4/18/2018 2:09:04 PM
Surr: 2,4,6-Tribromophenol	88.5	50.1 - 124		%Rec	1	4/18/2018 2:09:04 PM

**Sample Moisture (Percent Moisture)**

Batch ID: R42963 Analyst: NG

Percent Moisture	17.7	0.500		wt%	1	4/18/2018 2:35:48 PM
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**Lab ID:** 1804285-006

**Collection Date:** 4/16/2018 2:59:00 PM

**Client Sample ID:** B06@0.5'

**Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Glycols by SW8015**

Batch ID: 20433 Analyst: SB

Ethylene glycol	ND	9.46		mg/Kg-dry	1	4/18/2018 2:34:51 PM
Surr: 2,4,6-Tribromophenol	69.6	50.1 - 124		%Rec	1	4/18/2018 2:34:51 PM

**Sample Moisture (Percent Moisture)**

Batch ID: R42963 Analyst: NG

Percent Moisture	7.44	0.500		wt%	1	4/18/2018 2:35:48 PM
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**CLIENT:** Summit Scientific  
**Project:** 1804237

**Lab ID:** 1804285-007

**Collection Date:** 4/16/2018 3:02:00 PM

**Client Sample ID:** B07@0.5'

**Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Glycols by SW8015**

Batch ID: 20433 Analyst: SB

Ethylene glycol	ND	10.2		mg/Kg-dry	1	4/18/2018 2:47:55 PM
Surr: 2,4,6-Tribromophenol	86.1	50.1 - 124		%Rec	1	4/18/2018 2:47:55 PM

**Sample Moisture (Percent Moisture)**

Batch ID: R42963 Analyst: NG

Percent Moisture	12.4	0.500		wt%	1	4/18/2018 2:35:48 PM
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Work Order: 1804285  
 CLIENT: Summit Scientific  
 Project: 1804237

**QC SUMMARY REPORT**  
**Glycols by SW8015**

Sample ID <b>MB-20433</b>	SampType: <b>MBLK</b>	Units: <b>mg/Kg</b>				Prep Date: <b>4/18/2018</b>	RunNo: <b>42968</b>				
Client ID: <b>MBLKS</b>	Batch ID: <b>20433</b>					Analysis Date: <b>4/18/2018</b>	SeqNo: <b>830432</b>				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Ethylene glycol	ND	10.0									
Surr: 2,4,6-Tribromophenol	39.8		32.00		124	50.1	124				

Sample ID <b>1804285-002ADUP</b>	SampType: <b>DUP</b>	Units: <b>mg/Kg-dry</b>				Prep Date: <b>4/18/2018</b>	RunNo: <b>42968</b>				
Client ID: <b>B02@1'</b>	Batch ID: <b>20433</b>					Analysis Date: <b>4/18/2018</b>	SeqNo: <b>830425</b>				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Ethylene glycol	ND	10.8						0		30	
Surr: 2,4,6-Tribromophenol	36.1		34.55		105	50.1	124		0		

Sample ID <b>1804285-001AMS</b>	SampType: <b>MS</b>	Units: <b>mg/Kg-dry</b>				Prep Date: <b>4/18/2018</b>	RunNo: <b>42968</b>				
Client ID: <b>B01@1'</b>	Batch ID: <b>20433</b>					Analysis Date: <b>4/18/2018</b>	SeqNo: <b>830422</b>				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Ethylene glycol	135	10.6	211.4	0	63.8	36.1	144				
Surr: 2,4,6-Tribromophenol	33.8		33.83		99.9	50.1	124				

Sample ID <b>1804285-001AMSD</b>	SampType: <b>MSD</b>	Units: <b>mg/Kg-dry</b>				Prep Date: <b>4/18/2018</b>	RunNo: <b>42968</b>				
Client ID: <b>B01@1'</b>	Batch ID: <b>20433</b>					Analysis Date: <b>4/18/2018</b>	SeqNo: <b>830423</b>				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Ethylene glycol	159	10.0	200.6	0	79.2	36.1	144	134.9	16.2	30	
Surr: 2,4,6-Tribromophenol	33.8		32.09		105	50.1	124		0		

Sample ID <b>LCS-20433</b>	SampType: <b>LCS</b>	Units: <b>mg/Kg</b>				Prep Date: <b>4/18/2018</b>	RunNo: <b>42968</b>				
Client ID: <b>LCSS</b>	Batch ID: <b>20433</b>					Analysis Date: <b>4/18/2018</b>	SeqNo: <b>830434</b>				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Ethylene glycol	217	10.0	200.0	0	109	54.1	143				
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**Work Order:** 1804285  
**CLIENT:** Summit Scientific  
**Project:** 1804237

**QC SUMMARY REPORT**  
**Glycols by SW8015**

Sample ID <b>LCS-20433</b>	SampType: <b>LCS</b>	Units: <b>mg/Kg</b>	Prep Date: <b>4/18/2018</b>	RunNo: <b>42968</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>20433</b>	Analysis Date: <b>4/18/2018</b>	SeqNo: <b>830434</b>								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Surr: 2,4,6-Tribromophenol	44.7		32.00		140	50.1	124				S
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**NOTES:**

S - Outlying surrogate recovery(ies) observed.

**Work Order:** 1804285  
**CLIENT:** Summit Scientific  
**Project:** 1804237

**QC SUMMARY REPORT**  
**Sample Moisture (Percent Moisture)**

Sample ID	1804285-001ADUP	SampType:	DUP	Units:	wt%	Prep Date:	4/18/2018	RunNo:	42963		
Client ID:	B01@1'	Batch ID:	R42963			Analysis Date:	4/18/2018	SeqNo:	830239		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	17.5	0.500						17.45	0.202	20	

Client Name: **SUMSCI**

 Work Order Number: **1804285**

 Logged by: **Brianna Barnes**

 Date Received: **4/18/2018 9:46:00 AM**
**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present
2. How was the sample delivered? FedEx

**Log In**

3. Coolers are present? Yes  No  NA
4. Shipping container/cooler in good condition? Yes  No
5. Custody Seals present on shipping container/cooler?  
(Refer to comments for Custody Seals not intact) Yes  No  Not Required
6. Was an attempt made to cool the samples? Yes  No  NA
7. Were all items received at a temperature of >0°C to 10.0°C\* Yes  No  NA
- Please refer to item information.**
8. Sample(s) in proper container(s)? Yes  No
9. Sufficient sample volume for indicated test(s)? Yes  No
10. Are samples properly preserved? Yes  No
11. Was preservative added to bottles? Yes  No  NA
12. Is there headspace in the VOA vials? Yes  No  NA
13. Did all samples containers arrive in good condition(unbroken)? Yes  No
14. Does paperwork match bottle labels? Yes  No
15. Are matrices correctly identified on Chain of Custody? Yes  No
16. Is it clear what analyses were requested? Yes  No
17. Were all holding times able to be met? Yes  No

**Special Handling (if applicable)**

18. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	<input type="text"/>	Date	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

**Item Information**

Item #	Temp °C
Cooler	14.3
Sample	13.5

\* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C



**Fremont**  
Analytical

3600 Fremont Ave. N.  
Seattle, WA 98103  
Tel: 206-352-3790  
Fax: 206-352-7178

### Chain of Custody Record & Laboratory Services Agreement

Date: 04/17/18 Page: 1 of 1  
Project Name: 1804237

Laboratory Project No (Internal): 1804237  
Special Remarks:

Client: Summit Scientific  
Address: 741 Corporate Circle, Suite J  
City, State, Zip: Golden, CO. 80401  
Telephone: 303-277-9310

Project No:  
Collected by:  
Location:  
Report To (PM):  
PM Email: bshrewsbury@ss2scientific.com, pshrewsbury@ss2scientific.com

Sample Disposal:  Return to client  Disposal by lab (after 30 days)

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	Comments
1 B01@1'	04/16/18	14:45	S ✓	Phthalate Glucids
2 B02@1'	04/16/18	14:48	S ✓	
3 B03@1'	04/16/18	14:50	S ✓	
4 B04@1'	04/16/18	14:53	S ✓	
5 B05@1'	04/16/18	14:55	S ✓	
6 B06@0.5'	04/16/18	14:59	S ✓	
7 B07@0.5'	04/16/18	15:02	S ✓	
8				
9				
10				

\*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water  
 \*\*Metals (Circle):  Nitrate  Nitrite  Chloride  Sulfate  Bromide  Phosphate  Fluoride  Nitrate-Nitrite  
 \*\*\*Anions (Circle):  Nitrate  Nitrite  Chloride  Sulfate  Bromide  Phosphate  Fluoride  Nitrate-Nitrite

Individual: \_\_\_\_\_  
 I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above and that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.  
 Relinquished: \_\_\_\_\_ Date/Time: 4/17/18 1230  
 Received: \_\_\_\_\_ Date/Time: 4/18/18 0946  
 Turn-around Time:  Standard  3 Day  2 Day  Same Day (Specify)



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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

**Reported:**  
04/26/18 08:47

### 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

# Summit Scientific

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

April 26, 2018

Blake Ford  
Extraction Oil&Gas  
370 17th Street Suite 5300  
Denver, CO 80202  
RE: Stromberger 22-E Pad

Enclosed are the results of analyses for samples received by Summit Scientific on 04/17/18 15:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury  
President / Laboratory Director



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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

**Reported:**  
04/26/18 08:49

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B08@1.0'	1804253-01	Soil	04/17/18 13:50	04/17/18 15:15
B09@1.0'	1804253-02	Soil	04/17/18 13:55	04/17/18 15:15

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

1804253

# Summit Scientific

741 Corporate Circle Suite I ♦ Golden, Colorado 80401  
303-277-9310 ♦ 303-374-5933 Fax

Client: Extraction Oil & Gas  
 Address: 370 17th Street, Suite 5300  
 City/State/Zip: Denver, CO 80202  
 Phone: 720-481-2362 Fax: \_\_\_\_\_  
 Sampler Name: Brian Gibson

Project Manager: Blake Ford  
 E-Mail: bford@extractionog.com; bgibson@extractionog.com  
 Project Name: Stromberger 22-E Pad  
 Project Number: \_\_\_\_\_

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:						Special Instructions					
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	TPH (GRO/DRO)	BTEX	pH, EC, SAR	Ethylene glycol							
B08@1.0'	4/19/2018	1350	1			X		X				X	X	X	X							
B09@1.0'	4/19/2018	1355	1			X		X				X	X	X	X							
Relinquished by: <u>[Signature]</u> Date/Time: <u>4/17/19 1515</u>				Received by: <u>[Signature]</u> Date/Time: <u>4/17/18 1515</u>				Turn Around Time (Check)						Notes:  <u>on ice</u>								
Relinquished by:				Received by:				Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/>														
Relinquished by:				Received in Lab by:				24 Hours <input type="checkbox"/> Standard <input type="checkbox"/>														
Relinquished by:				Received in Lab by:				48 Hours <input type="checkbox"/>						Sample Integrity:								
Date/Time:				Date/Time:				Temperature Upon Receipt: <u>5.6°C</u>						Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								

1804253

Sample Receipt Checklist

S2 Work Order: \_\_\_\_\_

Client: XOG

Client Project ID: Stromberger 22-E Pad

Shipped Via: Hand  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: \_\_\_\_\_

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

Cooler ID					
Temp (°C)	5.6				

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.	✓			
Were all samples received intact <sup>(1)</sup> ?	✓			
Was adequate sample volume provided <sup>(1)</sup> ?	✓			
If custody seals are present, are they intact <sup>(1)</sup> ?			✓	
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 <sup>(1)</sup> ?	✓			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	✓			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	✓			
For volatiles in water – is there headspace present? <b>if yes, contact client and note in narrative.</b>			✓	
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			✓	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			✓	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			✓	

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

4/17/18 1515  
Date/Time



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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
04/26/18 08:49

**B08@1.0'**  
**1804253-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/17/18 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>0.11</b>	0.0020	mg/kg	1	1804142	04/17/18	04/17/18	EPA 8260B	
<b>Toluene</b>	<b>0.094</b>	0.0050	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>0.0057</b>	0.0050	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>0.027</b>	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/17/18 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/17/18 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804143	04/17/18	04/18/18	EPA 8015M	

Date Sampled: **04/17/18 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		98.6 %	30-150		"	"	"	"	

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

Date Sampled: **04/17/18 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>3100</b>	2.50	mg/kg dry	1	1804121	04/17/18	04/17/18	EPA 6020B	
<b>Magnesium</b>	<b>1880</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>380</b>	5.00	"	"	"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



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

Project: Stromberger 22-E Pad

Project Number: [none]  
 Project Manager: Blake Ford

**Reported:**  
 04/26/18 08:49

**B08@1.0'**  
**1804253-01 (Soil)**

**Summit Scientific**

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

**Calculated Analysis**

Date Sampled: **04/17/18 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>1.33</b>	0.100	units	1	1804146	04/18/18	04/18/18	Calculation	

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

Date Sampled: **04/17/18 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.578</b>	0.0100	mmhos/cm	1	1804138	04/17/18	04/17/18	EPA 120.1	
<b>% Solids</b>	<b>83.3</b>		%	"	1804145	04/17/18	04/18/18	Calculation	
<b>pH</b>	<b>8.8</b>		pH Units	"	1804144	04/17/18	04/17/18	EPA 9045D	

Summit Scientific

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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
04/26/18 08:49

**B09@1.0'**  
**1804253-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/17/18 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804142	04/17/18	04/17/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/17/18 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.9 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/17/18 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804143	04/17/18	04/18/18	EPA 8015M	

Date Sampled: **04/17/18 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		96.3 %	30-150		"	"	"	"	

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

Date Sampled: **04/17/18 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>2520</b>	2.50	mg/kg dry	1	1804121	04/17/18	04/17/18	EPA 6020B	
<b>Magnesium</b>	<b>1520</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>190</b>	5.00	"	"	"	"	"	"	

Summit Scientific

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

Project: Stromberger 22-E Pad

Project Number: [none]  
 Project Manager: Blake Ford

**Reported:**  
 04/26/18 08:49

**B09@1.0'**  
**1804253-02 (Soil)**

**Summit Scientific**

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

**Calculated Analysis**

Date Sampled: **04/17/18 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>0.740</b>	0.100	units	1	1804146	04/18/18	04/18/18	Calculation	

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

Date Sampled: **04/17/18 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.444</b>	0.0100	mmhos/cm	1	1804138	04/17/18	04/17/18	EPA 120.1	
<b>% Solids</b>	<b>83.1</b>		%	"	1804145	04/17/18	04/18/18	Calculation	
<b>pH</b>	<b>8.8</b>		pH Units	"	1804144	04/17/18	04/17/18	EPA 9045D	

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
04/26/18 08:49

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

#### Summit Scientific

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

#### Batch 1804142 - EPA 5030 Soil MS

##### Blank (1804142-BLK1)

Prepared: 04/17/18 Analyzed: 04/18/18

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	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0425</i>		<i>"</i>	<i>0.0396</i>		<i>107</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0379</i>		<i>"</i>	<i>0.0400</i>		<i>94.8</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0388</i>		<i>"</i>	<i>0.0400</i>		<i>97.1</i>	<i>21-167</i>			

##### LCS (1804142-BS1)

Prepared: 04/17/18 Analyzed: 04/18/18

Benzene	0.0747	0.0020	mg/kg	0.100		74.7	61-139			
Toluene	0.0895	0.0050	"	0.100		89.5	64-132			
Ethylbenzene	0.103	0.0050	"	0.100		103	68.7-135			
m,p-Xylene	0.199	0.010	"	0.200		99.7	70.4-129			
o-Xylene	0.103	0.0050	"	0.100		103	66.9-126			
Gasoline Range Hydrocarbons	2.66	0.50	"				0-200			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0431</i>		<i>"</i>	<i>0.0396</i>		<i>109</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0382</i>		<i>"</i>	<i>0.0400</i>		<i>95.5</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0386</i>		<i>"</i>	<i>0.0400</i>		<i>96.6</i>	<i>21-167</i>			

##### Matrix Spike (1804142-MS1)

Source: 1804251-01

Prepared: 04/17/18 Analyzed: 04/18/18

Benzene	0.0759	0.0020	mg/kg	0.100	ND	75.9	42.9-137			
Toluene	0.0897	0.0050	"	0.100	ND	89.7	42.6-130			
Ethylbenzene	0.103	0.0050	"	0.100	ND	103	39-133			
m,p-Xylene	0.205	0.010	"	0.200	ND	103	34.7-134			
o-Xylene	0.103	0.0050	"	0.100	ND	103	41.3-126			
Gasoline Range Hydrocarbons	2.66	0.50	"		0.00504		0-200			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0454</i>		<i>"</i>	<i>0.0396</i>		<i>115</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0388</i>		<i>"</i>	<i>0.0400</i>		<i>97.0</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0395</i>		<i>"</i>	<i>0.0400</i>		<i>98.8</i>	<i>21-167</i>			

Summit Scientific

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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
04/26/18 08:49

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

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

**Batch 1804142 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1804142-MSD1)</b>	<b>Source: 1804251-01</b>			Prepared: 04/17/18	Analyzed: 04/18/18						
Benzene	0.0767	0.0020	mg/kg	0.100	ND	76.7	42.9-137	1.06	17.9		
Toluene	0.0903	0.0050	"	0.100	ND	90.3	42.6-130	0.600	11.9		
Ethylbenzene	0.106	0.0050	"	0.100	ND	106	39-133	2.96	30		
m,p-Xylene	0.208	0.010	"	0.200	ND	104	34.7-134	1.13	30		
o-Xylene	0.102	0.0050	"	0.100	ND	102	41.3-126	1.18	30		
Gasoline Range Hydrocarbons	2.74	0.50	"		0.00504		0-200	2.88	200		
Surrogate: 1,2-Dichloroethane-d4	0.0442		"	0.0396		112	23-173				
Surrogate: Toluene-d8	0.0382		"	0.0400		95.6	20-170				
Surrogate: 4-Bromofluorobenzene	0.0386		"	0.0400		96.5	21-167				

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



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

Project: Stromberger 22-E Pad

Project Number: [none]  
 Project Manager: Blake Ford

**Reported:**  
 04/26/18 08:49

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

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

**Batch 1804143 - EPA 3550A**

<b>Blank (1804143-BLK1)</b>					Prepared: 04/17/18 Analyzed: 04/18/18					
C10-C28 (DRO)	ND	50	mg/kg							
<b>LCS (1804143-BS1)</b>					Prepared: 04/17/18 Analyzed: 04/18/18					
C10-C28 (DRO)	473	50	mg/kg	500	35.3	93.7	81.4-129			
<b>Matrix Spike (1804143-MS1)</b>					Source: 1804251-01 Prepared: 04/17/18 Analyzed: 04/18/18					
C10-C28 (DRO)	504	50	mg/kg	500	35.3	93.7	77.8-133			
<b>Matrix Spike Dup (1804143-MSD1)</b>					Source: 1804251-01 Prepared: 04/17/18 Analyzed: 04/18/18					
C10-C28 (DRO)	475	50	mg/kg	500	35.3	88.0	77.8-133	5.82	8.48	

Summit Scientific

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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

Reported:  
04/26/18 08:49

**Soluble Nutrients by EPA 6020/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 1804121 - General Preparation**

**Blank (1804121-BLK1)**

Prepared: 04/16/18 Analyzed: 04/17/18

Calcium	ND	2.50	mg/kg wet						
Magnesium	ND	1.00	"						
Sodium	ND	5.00	"						

**LCS (1804121-BS1)**

Prepared: 04/16/18 Analyzed: 04/17/18

Calcium	1120	2.50	mg/kg wet	1000		112	70-130		
Magnesium	1180	1.00	"	1000		118	70-130		
Sodium	1220	5.00	"	1000		122	70-130		

**Duplicate (1804121-DUP1)**

Source: 1804237-01

Prepared: 04/16/18 Analyzed: 04/17/18

Calcium	11100	2.50	mg/kg dry		10200			8.55	20
Magnesium	1670	1.00	"		1570			5.79	20
Sodium	260	5.00	"		259			0.300	20

**Matrix Spike (1804121-MS1)**

Source: 1804237-01

Prepared: 04/16/18 Analyzed: 04/17/18

Calcium	11600	2.50	mg/kg dry	1230	10200	111	70-130		
Magnesium	2800	1.00	"	1230	1570	100	70-130		
Sodium	1680	5.00	"	1230	259	116	70-130		

**Matrix Spike Dup (1804121-MSD1)**

Source: 1804237-01

Prepared: 04/16/18 Analyzed: 04/17/18

Calcium	11600	2.50	mg/kg dry	1230	10200	110	70-130	0.0979	25
Magnesium	2900	1.00	"	1230	1570	108	70-130	3.55	25
Sodium	1670	5.00	"	1230	259	115	70-130	0.866	25

Summit Scientific

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

Project: Stromberger 22-E Pad

Project Number: [none]  
 Project Manager: Blake Ford

**Reported:**  
 04/26/18 08:49

**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 1804138 - General Preparation**

<b>Duplicate (1804138-DUP1)</b>	<b>Source: 1804250-01</b>		<b>Prepared &amp; Analyzed: 04/17/18</b>								
Specific Conductance (EC)	5.36	0.0100	mmhos/cm		5.35				0.187	20	

**Batch 1804144 - General Preparation**

<b>Duplicate (1804144-DUP1)</b>	<b>Source: 1804250-01</b>		<b>Prepared &amp; Analyzed: 04/17/18</b>								
pH	8.4		pH Units		8.3				0.240	20	

**Batch 1804145 - General Preparation**

<b>Duplicate (1804145-DUP1)</b>	<b>Source: 1804166-01</b>		<b>Prepared: 04/17/18 Analyzed: 04/18/18</b>								
% Solids	88.1		%		91.0				3.24	20	

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



**Summit Scientific**  
Paul Shrewsbury  
4653 Table Mountain Dr  
Golden, CO 80403

**RE: 1804253**  
**Work Order Number: 1804317**

April 19, 2018

**Attention Paul Shrewsbury:**

Fremont Analytical, Inc. received 2 sample(s) on 4/19/2018 for the analyses presented in the following report.

***Glycols by SW8015***  
***Sample Moisture (Percent Moisture)***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Chelsea Ward  
Project Manager

**CC:**  
Ben Shrewsbury



Date: 04/19/2018

---

**CLIENT:** Summit Scientific  
**Project:** 1804253  
**Work Order:** 1804317

## Work Order Sample Summary

---

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1804317-001	B08@1.0'	04/17/2018 1:50 PM	04/19/2018 10:43 AM
1804317-002	B09@1.0'	04/17/2018 1:55 PM	04/19/2018 10:43 AM

---

**CLIENT:** Summit Scientific

**Project:** 1804253

---

**I. SAMPLE RECEIPT:**

Samples receipt information is recorded on the attached Sample Receipt Checklist.

**II. GENERAL REPORTING COMMENTS:**

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

**III. ANALYSES AND EXCEPTIONS:**

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

### Qualifiers:

- \* - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

### Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



**CLIENT:** Summit Scientific  
**Project:** 1804253

**Lab ID:** 1804317-001

**Collection Date:** 4/17/2018 1:50:00 PM

**Client Sample ID:** B08@1.0'

**Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Glycols by SW8015**

Batch ID: 20447 Analyst: SB

Ethylene glycol	ND	11.1		mg/Kg-dry	1	4/19/2018 12:39:56 PM
Surr: 2,4,6-Tribromophenol	95.9	50.1 - 124		%Rec	1	4/19/2018 12:39:56 PM

**Sample Moisture (Percent Moisture)**

Batch ID: R42990 Analyst: NG

Percent Moisture	16.3	0.500		wt%	1	4/19/2018 3:40:02 PM
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**Lab ID:** 1804317-002

**Collection Date:** 4/17/2018 1:55:00 PM

**Client Sample ID:** B09@1.0'

**Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Glycols by SW8015**

Batch ID: 20447 Analyst: SB

Ethylene glycol	ND	12.3		mg/Kg-dry	1	4/19/2018 1:32:02 PM
Surr: 2,4,6-Tribromophenol	85.2	50.1 - 124		%Rec	1	4/19/2018 1:32:02 PM

**Sample Moisture (Percent Moisture)**

Batch ID: R42990 Analyst: NG

Percent Moisture	19.1	0.500		wt%	1	4/19/2018 3:40:02 PM
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**Work Order:** 1804317  
**CLIENT:** Summit Scientific  
**Project:** 1804253

**QC SUMMARY REPORT**  
**Glycols by SW8015**

Sample ID <b>MB-20447</b>	SampType: <b>MBLK</b>	Units: <b>mg/Kg</b>				Prep Date: <b>4/19/2018</b>	RunNo: <b>42989</b>				
Client ID: <b>MBLKS</b>	Batch ID: <b>20447</b>					Analysis Date: <b>4/19/2018</b>	SeqNo: <b>830967</b>				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Ethylene glycol	ND	10.0									
Surr: 2,4,6-Tribromophenol	39.0		32.00		122	50.1	124				

Sample ID <b>1804317-001ADUP</b>	SampType: <b>DUP</b>	Units: <b>mg/Kg-dry</b>				Prep Date: <b>4/19/2018</b>	RunNo: <b>42989</b>				
Client ID: <b>B08@1.0'</b>	Batch ID: <b>20447</b>					Analysis Date: <b>4/19/2018</b>	SeqNo: <b>830960</b>				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Ethylene glycol	ND	11.1						0		30	
Surr: 2,4,6-Tribromophenol	33.9		35.39		95.9	50.1	124		0		

Sample ID <b>1804317-001AMS</b>	SampType: <b>MS</b>	Units: <b>mg/Kg-dry</b>				Prep Date: <b>4/19/2018</b>	RunNo: <b>42989</b>				
Client ID: <b>B08@1.0'</b>	Batch ID: <b>20447</b>					Analysis Date: <b>4/19/2018</b>	SeqNo: <b>830961</b>				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Ethylene glycol	284	11.0	220.8	0	129	36.1	144				
Surr: 2,4,6-Tribromophenol	38.7		35.32		110	50.1	124				

Sample ID <b>1804317-001AMSD</b>	SampType: <b>MSD</b>	Units: <b>mg/Kg-dry</b>				Prep Date: <b>4/19/2018</b>	RunNo: <b>42989</b>				
Client ID: <b>B08@1.0'</b>	Batch ID: <b>20447</b>					Analysis Date: <b>4/19/2018</b>	SeqNo: <b>830962</b>				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Ethylene glycol	166	11.1	221.6	0	75.1	36.1	144	284.3	52.3	30	R
Surr: 2,4,6-Tribromophenol	32.8		35.45		92.5	50.1	124		0		

**NOTES:**

R - High RPD observed, spike recoveries are within range.



**Work Order:** 1804317  
**CLIENT:** Summit Scientific  
**Project:** 1804253

**QC SUMMARY REPORT**  
**Glycols by SW8015**

Sample ID <b>LCS-20447</b>	SampType: <b>LCS</b>	Units: <b>mg/Kg</b>		Prep Date: <b>4/19/2018</b>	RunNo: <b>42989</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>20447</b>			Analysis Date: <b>4/19/2018</b>	SeqNo: <b>830966</b>						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene glycol	190	10.0	200.0	0	95.2	54.1	143				
Surr: 2,4,6-Tribromophenol	30.0		32.00		93.7	50.1	124				



**Work Order:** 1804317  
**CLIENT:** Summit Scientific  
**Project:** 1804253

**QC SUMMARY REPORT**  
**Sample Moisture (Percent Moisture)**

Sample ID <b>1804317-001ADUP</b>	SampType: <b>DUP</b>	Units: <b>wt%</b>	Prep Date: <b>4/19/2018</b>	RunNo: <b>42990</b>							
Client ID: <b>B08@1.0'</b>	Batch ID: <b>R42990</b>		Analysis Date: <b>4/19/2018</b>	SeqNo: <b>830970</b>							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	14.9	0.500						16.27	8.51	20	

Client Name: **SUMSCI**

 Work Order Number: **1804317**

 Logged by: **Brianna Barnes**

 Date Received: **4/19/2018 10:43:00 AM**

### Chain of Custody

1. Is Chain of Custody complete? Yes  No  Not Present
2. How was the sample delivered? FedEx

### Log In

3. Coolers are present? Yes  No  NA
4. Shipping container/cooler in good condition? Yes  No
5. Custody Seals present on shipping container/cooler?  
(Refer to comments for Custody Seals not intact) Yes  No  Not Required
6. Was an attempt made to cool the samples? Yes  No  NA
7. Were all items received at a temperature of >0°C to 10.0°C\* Yes  No  NA
- Please refer to item information.**
8. Sample(s) in proper container(s)? Yes  No
9. Sufficient sample volume for indicated test(s)? Yes  No
10. Are samples properly preserved? Yes  No
11. Was preservative added to bottles? Yes  No  NA
12. Is there headspace in the VOA vials? Yes  No  NA
13. Did all samples containers arrive in good condition(unbroken)? Yes  No
14. Does paperwork match bottle labels? Yes  No
15. Are matrices correctly identified on Chain of Custody? Yes  No
16. Is it clear what analyses were requested? Yes  No
17. Were all holding times able to be met? Yes  No

### Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	<input type="text"/>	Date	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

### Item Information

Item #	Temp °C
Cooler	15.5
Sample	10.6

\* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C



3600 Fremont Ave N.  
Seattle, WA 98103  
Tel: 206-352-3790  
Fax: 206-352-7178

### Chain of Custody Record & Laboratory Services Agreement

Date: 04/18/18 Page: 1 of 1  
Project Name: 1804253

Laboratory Project No (Internal): 1804217  
Special Remarks:

Client: Summit Scientific

Project No:

Address: 741 Corporate Circle, Suite J

Collected by:

City, State, Zip: Golden, CO, 80401

Location:

Telephone: 303-277-9310

Report To (PM):

Sample Disposal:  Return to client  Disposal by lab (after 30 days)

Fax:

PM Email:

bshrewsbury@ss2scientific.com, pshrewsbury@ss2scientific.com

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	Comments
1 B08@1.0'	04/17/18	13:50	S	✓
2 B09@1.0'	04/17/18	13:55	S	✓
3				
4				
5				
6				
7				
8				
9				
10				

\*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

\*\*Metals (Circle):

\*\*\*Anions (Circle):  Nitrate  Nitrite  Chloride  Sulfate  Bromide  O-Phosphate  Fluoride  Nitrate-Nitrite

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above and that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished Date/Time 4/18/18 1345

Received Date/Time 4/19/18 1043

Relinquished

Received

Date/Time

Date/Time

x

x

Turn-around Time:

Standard  
 3 Day  
 2 Day  
 Next Day  
 Same Day (specify)



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

Project: Stromberger 22-E Pad

Project Number: [none]  
Project Manager: Blake Ford

**Reported:**  
04/26/18 08:49

### 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