

May 24, 2018



Blake Ford
Environmental Coordinator
8North
370 17th Street, Suite 5300
Denver, Colorado 80202

Subject: Work Completion Report – Remedial Investigation

FCR MD 1-9,10,15,16 Tank Battery
Remediation Project Number: 10928
Spill/Release Point ID: 453870
SESE, Section 1, T1S-R69W
39.990460, -105.057433
Unincorporated Boulder County, Colorado

Dear Mr. Ford:

Apex Companies LLC (Apex) has prepared this work completion report to document remedial investigation activities conducted in support of closure of a partially buried produced water vessel. These efforts included soil sampling, and field-screening of soils following production equipment removal. This was completed under an approved Form 27- Site Investigation and Remediation Workplan (Remediation Project Number: 10928) with an approved Form 19- Spill/Release Report (Spill/Release Point ID: 453870), both assigned by the Colorado Oil and Gas Conservation Commission (COGCC). This site is incorrectly associated in COGIS database with the Quinby MD 12-69HN (Location ID: 321350) and has not been issued a corrected facility or location ID as of the date of this report.

Remedial Investigation

On January 24, 2018, an Apex Field Coordinator used visual observation and a Photoionization Detector (PID) to field-screen a total of three (3) sidewall samples and one (1) base sample in support of excavation efforts to remove a partially-buried produced-water vessel. Hydrocarbon staining, odor and an elevated PID reading were noted from the north sidewall and characterization sample N01@6.5' was collected. Safe sampling from the east sidewall was not possible during this sampling event. All four collected samples were submitted for laboratory analysis of organic constituents of concern. Preliminary extent of the excavation was 17 feet (17') by 15', with a depth of eight and one-half feet (8.5').

On January 30, 2018, following removal of impacted soil from the excavation, an Apex Field Coordinator used visual observation and a PID to field-screen for potential remaining soil impacts. One (1) base sample and three (3) sidewall samples were collected from the north, west and east sidewalls and submitted for TPH and BTEX analysis. Slight hydrocarbon odor and moderately elevated PID readings were noted from the north wall of the excavation, where characterization sample, N02@6', was collected. The excavation had a final extent of twenty-four feet (24') by twenty-nine feet (29'), with a depth of nine feet (9').

Results

Field-screening and laboratory analysis were used to direct removal of impacted soils, support identification of vertical and horizontal extent, and collect clearance. The sample (N01@6.5'), collected from the northern excavation sidewall, was above allowable limits for TPH. Impacted soil was removed, and sample (N02@6') was subsequently collected to demonstrate clearance at the northern extent of excavation. Laboratory results for samples collected from the final extents of the excavation were within allowable limits for COGCC Table 910-1 constituents of concern (TPH and BTEX). See attached site diagram, laboratory results summary table and laboratory reports for an illustration of sample collection points and findings.

No other indications of soil impacts were noted during the site investigation, and no groundwater was encountered during the remediation project.

Conclusions

Based on field observations and laboratory results, impacted material above COGCC allowable limits was removed and transported for offsite disposal. No further site assessment or remedial activities are 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 970-261-1127.

Sincerely,
Apex Companies, LLC



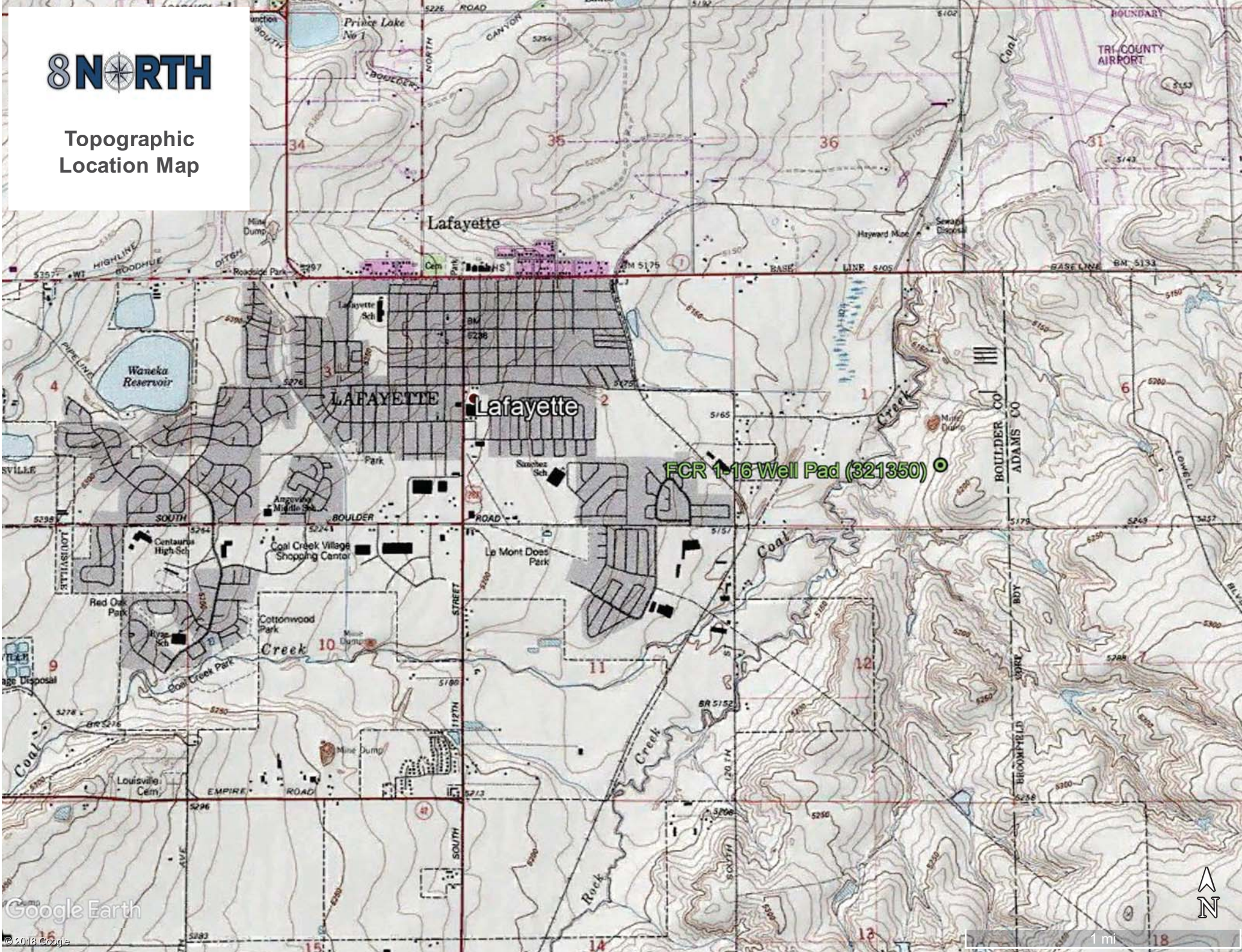
Chris Hines
Project Manager

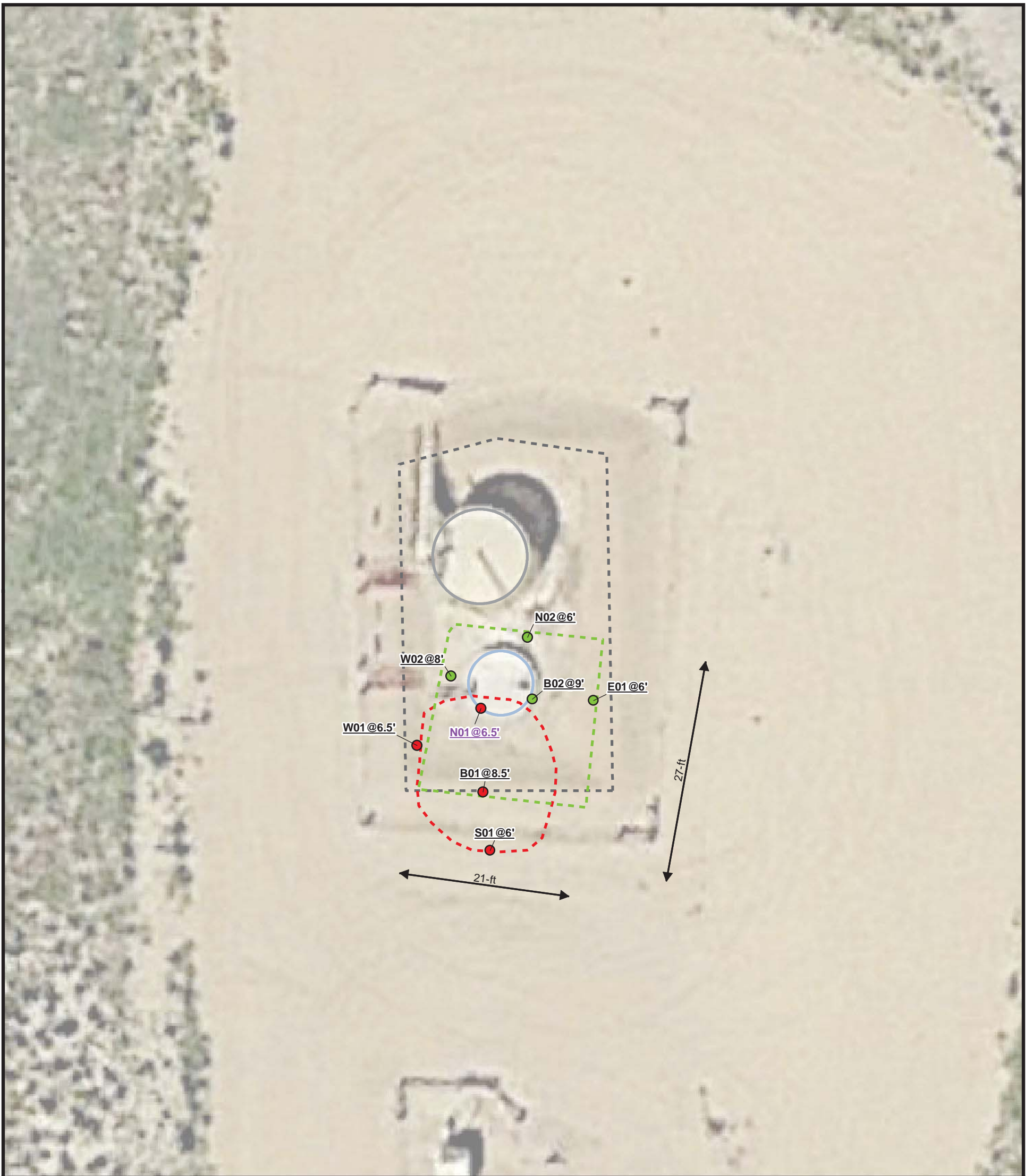
Attachments:

1. Topographic Location Map
2. Site Diagram
3. Laboratory Results Summary Table
4. Laboratory Report

8 NORTH

Topographic Location Map





8North, LLC
FCR MD 1-9,10,15,16
Tank Battery
COGCC Location ID: 321350
Site Diagram

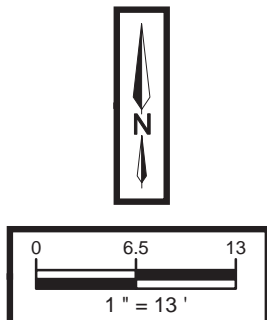
Legal Description: NESE, Sec 1, T1S R69W
 County: Boulder
 Land Use: Cropland
 Topography: 3-9% Slopes
 Run-Off Risk: High
 Soil Type: Renohill silty clay loam
 Receiving Waters: Coal Creek



- Soil Sample (1/24/2018)
- Soil Sample (1/30/2018)
- Excavation Extent (1/24/2018)
- Excavation Extent (1/30/2018)
- Former Crude Oil Tank
- Former Sump
- Former Secondary Containment

Sample ID	Latitude NAD83	Longitude NAD83
B01@8.5'	39.990420	-105.057411
S01@6'	39.990401	-105.057408
N01@6.5'	39.990448	-105.057412
W01@6.5'	39.990436	-105.057440
B02@9'	39.990452	-105.057390
N02@6'	39.990472	-105.057392
E01@6'	39.990451	-105.057363
W02@8'	39.990459	-105.057425

* Sample ID in Purple font indicates a lab exceedance.



		SOIL SAMPLE RESULTS						
COGCC Allowable Concentration -->		Organic Compounds in Soil (mg/kg [ppm])						
		500			0.17	85	100	175
Sample Date:	Matrix Notes (Sample Point - Depth)	TPH (total volatile and extractable petroleum hydrocarbons) (TPH-GRO + TPH-DRO)	TPH-GRO (C6-C10) Low Fraction	TPH-DRO (C10-C36) High Fraction	Benzene	Toluene	Ethylbenzene	Xylenes - total
1/24/18	B01@8.5'	470	20	450	0.01	0.13	0.044	0.58
1/24/18	S01@6'	72	19	53	<0.0020	<0.0020	0.009	0.023
1/24/18	N01@6.5'	2660	1900	760	0.047	0.79	0.3	59
1/24/18	W01@6.5'	64	10	54	<0.0020	0.01	0.0052	0.069
1/30/18	B02@9'	<0.5	<0.5	<50	<0.0020	<0.0020	<0.0050	<0.0050
1/30/18	N02@6'	84.5	7.5	77	0.0043	0.031	0.0084	0.19
1/30/18	E01@6'	3.8	3.8	<50	<0.0020	<0.0020	<0.0050	<0.0050
1/30/18	W02@8'	1.5	1.5	<50	<0.0020	<0.0020	<0.0050	0.0072

Spatial data collected for this project was acquired using a GPS with submeter accuracy. Illustration discrepancies may be present in this diagram due to the inherent limitations of data accuracy for both project data and the underlying aerial imagery. For consistency in data representation and adherence to spatial data correction results, illustrated data is not corrected to fit with the aerial imagery or other collected data points.

COGCC Allowable Concentration (Soil) -->			500	0.17	85	100	175
Location	Sample Date:	Matrix Notes [Sample Point - Depth]	TPH (total volatile and extractable petroleum hydrocarbons) (TPH-GRO + TPH-DRO)	Benzene	Toluene	Ethylbenzene	Xylenes - total
FCR MD 1-9, 10, 15, 16	1/24/18	B01@8.5'	470	0.01	0.13	0.044	0.58
FCR MD 1-9, 10, 15, 16	1/24/18	S01@6'	72	<0.0020	<0.0020	0.009	0.023
FCR MD 1-9, 10, 15, 16	1/24/18	N01@6.5'	2660	0.047	0.79	0.3	59
FCR MD 1-9, 10, 15, 16	1/24/18	W01@6.5'	64	<0.0020	0.01	0.0052	0.069
FCR MD 1-9, 10, 15, 16	1/30/18	B02@9'	<0.5	<0.0020	<0.0020	<0.0050	<0.0050
FCR MD 1-9, 10, 15, 16	1/30/18	N02@6'	84.5	0.0043	0.031	0.0084	0.19
FCR MD 1-9, 10, 15, 16	1/30/18	E01@6'	3.8	<0.0020	<0.0020	<0.0050	<0.0050
FCR MD 1-9, 10, 15, 16	1/30/18	W02@8'	1.5	<0.0020	<0.0020	<0.0050	0.0072

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

January 25, 2018

Chris Hines

Extraction Oil & Gas

570 17th St. Suite 550

Denver, CO 80202

RE: FCR MD 1-9, 10, 15, 16

Enclosed are the results of analyses for samples received by Summit Scientific on 01/24/18 14:10. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Paul Shrewsbury', is displayed within a light gray rectangular box.

Paul Shrewsbury For Ben Shrewsbury
Laboratory Manager



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

Project: FCR MD 1-9, 10, 15, 16

Project Number: [none]
Project Manager: Chris Hines

Reported:
01/25/18 11:49

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B01@8.5'	1801260-01	Soil	01/24/18 12:13	01/24/18 14:10
S01@6'	1801260-02	Soil	01/24/18 12:15	01/24/18 14:10
N01@6.5'	1801260-03	Soil	01/24/18 12:18	01/24/18 14:10
W01@6.5'	1801260-04	Soil	01/24/18 12:23	01/24/18 14:10

Summit Scientific

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

Project: FCR MD 1-9, 10, 15, 16

Project Number: [none]
Project Manager: Chris Hines

Reported:
01/25/18 11:49

Summit Scientific

741 Corporate Circle Suite 1 • Golden, Colorado 80401 1801260
303-277-9310 • 303-374-5933 Fax

Page 1 of 1

Client: 8 North
Address: 370 17th St. suite 5300
City/State/Zip: DENVER, CO 80202
Phone: 970 778 6950 Fax:
Sampler Name: Kennedy Whalen

Project Manager: Chris Hines - 970-261-1127
E-Mail: chhines@extractionof.com, DenverRemediation@ApexCos.
Project Name: FCR MD 1-9, 10, 15, 16 on microsoft.c
Project Number: FCR MD 1-9, 10, 15, 16

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative			Matrix		Analyze For:				Special Instructions
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	TPH (DEQ/GRD)	
B01@8.5'	1/24/18	1213	1			X		X			X	X	
S01@6'		1215	1										
N01@6.5'		1218	1										
W01@10.5'		1223	1										
Relinquished by: <u>[Signature]</u> Date/Time: <u>1/24/18 14:10</u>				Received by: <u>[Signature]</u> Date/Time: <u>1-24-18 14:10</u>				Turn Around Time (Check)				Notes:	
Relinquished by:				Received by:				Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/>					
Relinquished by:				Received by:				24 Hours <input type="checkbox"/> Standard <input type="checkbox"/>					
Relinquished by:				Received in Lab by:				48 Hours <input type="checkbox"/>				Sample Integrity:	
Relinquished by:				Received in Lab by:				Temperature Upon Receipt: <u>5.6</u>					
Relinquished by:				Received in Lab by:				Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					

www.s2scientific.com

Summit Scientific

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S₂

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

Project: FCR MD 1-9, 10, 15, 16

Project Number: [none]
Project Manager: Chris Hines

Reported:
01/25/18 11:49

Sample Receipt Checklist

S2 Work Order: 1801260
Client: 8 North Client Project ID: FCR MD 1-9, 10, 15, 16
Shipped Via: H.D. on ice Airbill #: _____
(UPS, FedEx, Hand Delivered, Pick-up, etc.)
Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

Cooler ID				
Temp (°C)	<u>5.6</u>			

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C ⁽¹⁾ ?				
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>			
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<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 ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

Muri P. HA 1-24-18 16:45
Custodian Printed Name Signature or Initials of Custodian Date/Time



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

Project: FCR MD 1-9, 10, 15, 16

Project Number: [none]
Project Manager: Chris Hines

Reported:
01/25/18 11:49

B01@8.5'
1801260-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/18 12:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	450	50	mg/kg	1	1801264	01/24/18	01/25/18	8015M	

Date Sampled: **01/24/18 12:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		122 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/18 12:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.010	0.0020	mg/kg	1	1801263	01/24/18	01/25/18	EPA 8260B	
Toluene	0.13	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.044	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.58	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	20	0.50	"	"	"	"	"	"	

Date Sampled: **01/24/18 12:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		92.2 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		101 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		145 %	21-167		"	"	"	"	

Summit Scientific

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

Project: FCR MD 1-9, 10, 15, 16

Project Number: [none]
Project Manager: Chris Hines

Reported:
01/25/18 11:49

S01@6'
1801260-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/18 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	53	50	mg/kg	1	1801264	01/24/18	01/25/18	8015M	

Date Sampled: **01/24/18 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		94.2 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/18 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1801263	01/24/18	01/25/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.0090	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.023	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	19	0.50	"	"	"	"	"	"	

Date Sampled: **01/24/18 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		82.2 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		93.4 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		126 %	21-167		"	"	"	"	

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

Project: FCR MD 1-9, 10, 15, 16

Project Number: [none]
Project Manager: Chris Hines

Reported:
01/25/18 11:49

N01@6.5'
1801260-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/18 12:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	760	50	mg/kg	1	1801264	01/24/18	01/25/18	8015M	

Date Sampled: **01/24/18 12:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		115 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/18 12:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.047	0.0020	mg/kg	1	1801263	01/24/18	01/25/18	EPA 8260B	
Toluene	0.79	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.30	0.0050	"	"	"	"	"	"	
Xylenes (total)	59	0.050	"	10	"	"	"	"	E
Gasoline Range Hydrocarbons	1900	5.0	"	"	"	"	"	"	E

Date Sampled: **01/24/18 12:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		93.5 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		96.0 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		219 %	21-167		"	"	"	"	S-02

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

Project: FCR MD 1-9, 10, 15, 16

Project Number: [none]
Project Manager: Chris Hines

Reported:
01/25/18 11:49

W01@6.5'
1801260-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/18 12:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	54	50	mg/kg	1	1801264	01/24/18	01/25/18	8015M	

Date Sampled: **01/24/18 12:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		94.1 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/18 12:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1801263	01/24/18	01/25/18	EPA 8260B	
Toluene	0.010	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.0052	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.069	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	10	0.50	"	"	"	"	"	"	

Date Sampled: **01/24/18 12:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		88.2 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		97.4 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		92.5 %	21-167		"	"	"	"	

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

Project: FCR MD 1-9, 10, 15, 16

Project Number: [none]
Project Manager: Chris Hines

Reported:
01/25/18 11:49

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 1801264 - EPA 3550A

Blank (1801264-BLK1)

Prepared: 01/24/18 Analyzed: 01/25/18

C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	12.6		"	12.5		101	30-150				

LCS (1801264-BS1)

Prepared: 01/24/18 Analyzed: 01/25/18

C10-C28 (DRO)	519	50	mg/kg	499		104	73-134				
<i>Surrogate: o-Terphenyl</i>	13.1		"	12.5		105	30-150				

Matrix Spike (1801264-MS1)

Source: 1801254-01

Prepared: 01/24/18 Analyzed: 01/25/18

C10-C28 (DRO)	494	50	mg/kg	499	10.2	96.9	50-148				
<i>Surrogate: o-Terphenyl</i>	14.5		"	12.5		116	30-150				

Matrix Spike Dup (1801264-MSD1)

Source: 1801254-01

Prepared: 01/24/18 Analyzed: 01/25/18

C10-C28 (DRO)	589	50	mg/kg	499	10.2	116	50-148	17.6	20		
<i>Surrogate: o-Terphenyl</i>	15.3		"	12.5		122	30-150				

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Project: FCR MD 1-9, 10, 15, 16

Project Number: [none]
Project Manager: Chris Hines

Reported:
01/25/18 11:49

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 1801263 - EPA 5030 Soil MS

Blank (1801263-BLK1)

Prepared: 01/24/18 Analyzed: 01/25/18

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>0.0399</i>		<i>"</i>	<i>0.0400</i>		<i>99.8</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0418</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0382</i>		<i>"</i>	<i>0.0400</i>		<i>95.6</i>	<i>21-167</i>			

LCS (1801263-BS1)

Prepared: 01/24/18 Analyzed: 01/25/18

Benzene	0.125	0.0020	mg/kg	0.100		125	58-130			
Toluene	0.122	0.0050	"	0.100		122	61-134			
Ethylbenzene	0.132	0.0050	"	0.0992		133	74-139			
m,p-Xylene	0.255	0.010	"	0.200		128	73-137			
o-Xylene	0.121	0.0050	"	0.0980		124	73-141			
Xylenes (total)	0.376	0.0050	"				30-150			
Gasoline Range Hydrocarbons	3.13	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0397</i>		<i>"</i>	<i>0.0400</i>		<i>99.3</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0418</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0381</i>		<i>"</i>	<i>0.0400</i>		<i>95.3</i>	<i>21-167</i>			

Matrix Spike (1801263-MS1)

Source: 1801254-01

Prepared: 01/24/18 Analyzed: 01/25/18

Benzene	0.128	0.0020	mg/kg	0.100	ND	128	30-131			
Toluene	0.127	0.0050	"	0.100	ND	127	30-134			
Ethylbenzene	0.138	0.0050	"	0.0992	ND	139	22-153			
m,p-Xylene	0.267	0.010	"	0.200	ND	134	10-159			
o-Xylene	0.125	0.0050	"	0.0980	ND	127	31-151			
Xylenes (total)	0.392	0.0050	"		ND		30-150			
Gasoline Range Hydrocarbons	3.21	0.50	"		ND		30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0401</i>		<i>"</i>	<i>0.0400</i>		<i>100</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>0.0382</i>		<i>"</i>	<i>0.0400</i>		<i>95.6</i>	<i>21-167</i>			

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

Project: FCR MD 1-9, 10, 15, 16

Project Number: [none]
 Project Manager: Chris Hines

Reported:
 01/25/18 11:49

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 1801263 - EPA 5030 Soil MS

Matrix Spike Dup (1801263-MSD1)	Source: 1801254-01			Prepared: 01/24/18		Analyzed: 01/25/18			
Benzene	0.128	0.0020	mg/kg	0.100	ND	128	30-131	0.773	34
Toluene	0.128	0.0050	"	0.100	ND	128	30-134	0.825	30
Ethylbenzene	0.138	0.0050	"	0.0992	ND	139	22-153	0.131	24
m,p-Xylene	0.265	0.010	"	0.200	ND	133	10-159	0.744	68
o-Xylene	0.126	0.0050	"	0.0980	ND	128	31-151	0.864	38
Xylenes (total)	0.391	0.0050	"		ND		30-150	0.230	20
Gasoline Range Hydrocarbons	3.20	0.50	"		ND		30-150	0.259	20
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0404</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>23-173</i>		
<i>Surrogate: Toluene-d8</i>	<i>0.0424</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>20-170</i>		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0379</i>		<i>"</i>	<i>0.0400</i>		<i>94.7</i>	<i>21-167</i>		

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

Project: FCR MD 1-9, 10, 15, 16

Project Number: [none]
Project Manager: Chris Hines

Reported:
01/25/18 11:49

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.
- E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
- 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

January 31, 2018

Chris Hines

Extraction Oil & Gas

570 17th St. Suite 550

Denver, CO 80202

RE: FCR MD 1-9, 10, 15, 16

Enclosed are the results of analyses for samples received by Summit Scientific on 01/30/18 16:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Paul Shrewsbury', is displayed within a light gray rectangular box.

Paul Shrewsbury For Ben Shrewsbury
Laboratory Manager



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

Project: FCR MD 1-9, 10, 15, 16

Project Number: 746.1702.01
Project Manager: Chris Hines

Reported:
01/31/18 06:36

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B02@9'	1801317-01	Soil	01/30/18 12:08	01/30/18 16:00
N02@6'	1801317-02	Soil	01/30/18 12:10	01/30/18 16:00
E01@6'	1801317-03	Soil	01/30/18 12:12	01/30/18 16:00
W02@8'	1801317-04	Soil	01/30/18 12:16	01/30/18 16:00

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

Project: FCR MD 1-9, 10, 15, 16

Project Number: 746.1702.01
Project Manager: Chris Hines

Reported:
01/31/18 06:36

1801317

Summit Scientific

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

Page 1 of 1

Client: Extraction Oil & Gas- Blake Ford
Address: 370 17th Street, Suite 5300
City/State/Zip: Denver, Colorado 80202
Phone: 970.778.5956 Fax:
Sampler Name: Ryan Finley

Project Manager: Chris Hines-970.261.1127
E-Mail: BFord@extractionog.com, DenverRemediation@ApexCos.onmicrosoft.com
Project Name: FCR-MD 1-9, 10, 15, 16
Project Number: 746, 1702, 01

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative			Matrix			Analyze For:				Special Instructions	
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	TPH (DEO+GPO)	BTEX		RUSH
B02@9'	1/30/18	1208	2		X			X				X	X	X	Report per Paul, Call Chris Hines with Questions.
N02@6'	↓	1210	↓									X	X		
E01@6'	↓	1212	↓									X	X		
W02@8'	↓	1216	↓									X	X		
Relinquished by: Ryan Finley		Date/Time: 1/30/18 1430	Received by: MD		Date/Time: 1/30/18 1600	Turn Around Time (Check)			Notes:						
Relinquished by:		Date/Time:	Received by:		Date/Time:	Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/>			FOR APEX USE ONLY						
Relinquished by:		Date/Time:	Received by:		Date/Time:	24 Hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/>			circle applicable regulating agency						
Relinquished by:		Date/Time:	Received in Lab by:		Date/Time:	48 Hours <input type="checkbox"/>			COGCC/CDPHE						
Relinquished by:		Date/Time:	Received in Lab by:		Date/Time:	Sample Integrity:			Temperature Upon Receipt: 10.3°C						
Relinquished by:		Date/Time:	Received in Lab by:		Date/Time:	Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			on ice						

www.s2scientific.com

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
 570 17th St. Suite 550
 Denver CO, 80202

Project: FCR MD 1-9, 10, 15, 16

Project Number: 746.1702.01
 Project Manager: Chris Hines

Reported:
 01/31/18 06:36

Sample Receipt Checklist

S2 Work Order: 1801317
 Client: XOG Client Project ID: FCR-MD 1,9,10,15,16
 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)	10.3				

Thermometer ID: 61857155-K

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

Nakita
 Custodian Printed Name

[Signature]
 Signature or Initials of Custodian

1/30/18 1600
 Date/Time

[Signature]



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

Project: FCR MD 1-9, 10, 15, 16

Project Number: 746.1702.01
Project Manager: Chris Hines

Reported:
01/31/18 06:36

B01@8.
5' 05256-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by '05/

Date Sampled: **05-20-18 51:0'**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801307	01/30/18	01/31/18	8015M	

Date Sampled: **05-20-18 51:0'**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>µroSatego-Terphenyl</i>		105.2	30-150		"	"	"	"	

3 volatile CrDanic RomOunds by EPV g etpod '1A0B

Date Sampled: **05-20-18 51:0'**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1801313	01/30/18	01/30/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05-20-18 51:0'**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>µroSateg 1D-4 ichloroethane-d8</i>		91.2	: 3-173		"	"	"	"	
<i>µroSateg Toluene-d,</i>		93.62	: 0-170		"	"	"	"	
<i>µroSateg 8-Bromofluorobenzene</i>		9.02	: 1-167		"	"	"	"	

Summit Scientific

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

Project: FCR MD 1-9, 10, 15, 16

Project Number: 746.1702.01
Project Manager: Chris Hines

Reported:
01/31/18 06:36

MD1@A
5' 05256-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by '05/

Date Sampled: **05-20-18 51:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R50-R1' (h z C)	66	50	mg/kg	1	1801307	01/30/18	01/31/18	8015M	

Date Sampled: **05-20-18 51:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% <i>n</i> roSatego-Terphenyl		107.2	30-150		"	"	"	"	

3 volatile CrDanic RomOunds by EPV g etpod '1A0B

Date Sampled: **05-20-18 51:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BenCene	0.002	0.0020	mg/kg	1	1801313	01/30/18	01/30/18	EPA 8260B	
9oluene	0.0025	0.0050	"	"	"	"	"	"	
EtpylbenCene	0.001	0.0050	"	"	"	"	"	"	
Nylenes (total)	0.0058	0.0050	"	"	"	"	"	"	
7 asoline z anDe Hydrocarbons	0.006	0.50	"	"	"	"	"	"	

Date Sampled: **05-20-18 51:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% <i>n</i> roSateg ID-4 ichloroethane-d8		0.02	3-173		"	"	"	"	
% <i>n</i> roSateg Toluene-d,		97.02	0-170		"	"	"	"	
% <i>n</i> roSateg 8-Bromofluorobenzene		103.2	1-167		"	"	"	"	

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

Project: FCR MD 1-9, 10, 15, 16

Project Number: 746.1702.01
Project Manager: Chris Hines

Reported:
01/31/18 06:36

E05@A
5' 05256-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by '05/

Date Sampled: **05-20-18 51:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801307	01/30/18	01/31/18	8015M	

Date Sampled: **05-20-18 51:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>n</i> -Tridecane		110	2	30-150	"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05-20-18 51:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1801313	01/30/18	01/30/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
7 aliphatic Aromatic Hydrocarbons	2T	0.50	"	"	"	"	"	"	

Date Sampled: **05-20-18 51:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>n</i> -Dodecane		9	2	3-173	"	"	"	"	
<i>n</i> -Toluene-d ₈		96	2	0-170	"	"	"	"	
<i>n</i> -Bromofluorobenzene		100	2	1-167	"	"	"	"	

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

Project: FCR MD 1-9, 10, 15, 16

Project Number: 746.1702.01
Project Manager: Chris Hines

Reported:
01/31/18 06:36

W01@' .
5' 05256-0X(Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by ' 05/

Date Sampled: **05-20-18 51:5A**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801307	01/30/18	01/31/18	8015M	

Date Sampled: **05-20-18 51:5A**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>%uroSatego-Terphenyl</i>		108.2	30-150		"	"	"	"	

3 volatile CrDanic RomOunds by EPV g etpod ' 1A0B

Date Sampled: **05-20-18 51:5A**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1801313	01/30/18	01/30/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Nylenes (total)	0.0061	0.0050	"	"	"	"	"	"	
7 asoline z anDe Hydrocarbons	5T	0.50	"	"	"	"	"	"	

Date Sampled: **05-20-18 51:5A**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>%uroSateg 1D-4 ichloroethane-d8</i>		90.1.2	: 3-173		"	"	"	"	
<i>%uroSateg Toluene-d,</i>		98.7.2	: 0-170		"	"	"	"	
<i>%uroSateg 8-Bromofluorobenzene</i>		95.6.2	: 1-167		"	"	"	"	

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

Project: FCR MD 1-9, 10, 15, 16

Project Number: 746.1702.01
Project Manager: Chris Hines

Reported:
01/31/18 06:36

**Extractable Petroleum Hydrocarbons by ' 05/ - Quality Rontrol
Summit Scientific**

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

Batcp 5' 05206 - EPV 2// 0V

Blank (5' 05206-BLK5)

Prepared & Analyzed: 01/30/18

C10-C28 (DRO)	ND	50	mg/kg								
<i>%urroSatego-Terphenyl</i>	<i>1:.6</i>		<i>"</i>	<i>1:.5</i>		<i>101</i>	<i>30-150</i>				

LRS (5' 05206-B55)

Prepared & Analyzed: 01/30/18

C10-C28 (DRO)	493	50	mg/kg	499		98.9	73-134				
<i>%urroSatego-Terphenyl</i>	<i>9.63</i>		<i>"</i>	<i>1:.5</i>		<i>77.0</i>	<i>30-150</i>				

g atrix SOke (5' 05206-g S5)

Source: 5' 0520' -0X

Prepared & Analyzed: 01/30/18

C10-C28 (DRO)	574	50	mg/kg	499	11.8	113	50-148				
<i>%urroSatego-Terphenyl</i>	<i>15.9</i>		<i>"</i>	<i>1:.5</i>		<i>1: 7</i>	<i>30-150</i>				

g atrix SOke h uO(5' 05206-g Sh 5)

Source: 5' 0520' -0X

Prepared & Analyzed: 01/30/18

C10-C28 (DRO)	561	50	mg/kg	499	11.8	110	50-148	2.30		20	
<i>%urroSatego-Terphenyl</i>	<i>13.6</i>		<i>"</i>	<i>1:.5</i>		<i>109</i>	<i>30-150</i>				

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

Project: FCR MD 1-9, 10, 15, 16

Project Number: 746.1702.01
Project Manager: Chris Hines

Reported:
01/31/18 06:36

3 volatile CrDanic RomBounds by EPV g etpod ' 1A0B - Quality Rontrol
Summit Scientific

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

Batcp 5' 05252 - EPV / 020 Soil g S

Blank (5' 05252-BLK5)

Prepared & Analyzed: 01/30/18

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>%urroSateg 1D-4 ichloroethane-d8</i>	0.0399		"	0.0800		99.7	: 3-173			
<i>%urroSateg Toluene-d,</i>	0.0398		"	0.0800		9.5	: 0-170			
<i>%urroSateg 8-Bromofluorobenzene</i>	0.080,		"	0.0800		10:	: 1-167			

LRS (5' 05252-B55)

Prepared & Analyzed: 01/30/18

Benzene	0.115	0.0020	mg/kg	0.100		115	58-130			
Toluene	0.123	0.0050	"	0.100		123	61-134			
Ethylbenzene	0.134	0.0050	"	0.0992		135	74-139			
m,p-Xylene	0.259	0.010	"	0.200		130	73-137			
o-Xylene	0.125	0.0050	"	0.0980		128	73-141			
Xylenes (total)	0.384	0.0050	"				30-150			
Gasoline Range Hydrocarbons	3.11	0.50	"				30-150			
<i>%urroSateg 1D-4 ichloroethane-d8</i>	0.08:		"	0.0800		106	: 3-173			
<i>%urroSateg Toluene-d,</i>	0.0399		"	0.0800		99.,	: 0-170			
<i>%urroSateg 8-Bromofluorobenzene</i>	0.080,		"	0.0800		10:	: 1-167			

g atrix SOIke (5' 05252-g S5)

Source: 5' 0525A-05

Prepared & Analyzed: 01/30/18

Benzene	0.117	0.0020	mg/kg	0.100	ND	117	30-131			
Toluene	0.124	0.0050	"	0.100	ND	124	30-134			
Ethylbenzene	0.136	0.0050	"	0.0992	ND	137	22-153			
m,p-Xylene	0.264	0.010	"	0.200	0.00354	131	10-159			
o-Xylene	0.126	0.0050	"	0.0980	ND	129	31-151			
Xylenes (total)	0.390	0.0050	"		ND		30-150			
Gasoline Range Hydrocarbons	3.17	0.50	"		ND		30-150			
<i>%urroSateg 1D-4 ichloroethane-d8</i>	0.08: 8		"	0.0800		106	: 3-173			
<i>%urroSateg Toluene-d,</i>	0.0801		"	0.0800		100	: 0-170			
<i>%urroSateg 8-Bromofluorobenzene</i>	0.039,		"	0.0800		99.5	: 1-167			

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
570 17th St. Suite 550
Denver CO, 80202

Project: FCR MD 1-9, 10, 15, 16

Project Number: 746.1702.01
Project Manager: Chris Hines

Reported:
01/31/18 06:36

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