

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 19, 2020

Heather Shideman

Extraction Oil&Gas

370 17th Street Suite 5300

Denver, CO 80202

RE: BWSE/GWA\_Coyote\_Trails

Work Order # 2007310

Enclosed are the results of analyses for samples received by Summit Scientific on 07/30/20 14:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Muri Premier For Paul Shrewsbury

President



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

Project: BWSE/GWA\_Coyote\_Trails

Project Number: AFE# 17031 Code 961.15 Fac ID 753910

Project Manager: Heather Shideman

**Reported:**  
08/19/20 14:41

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BW_Waste_Connections_Landfill_1830_WCR_5	2007310-01	Water	07/30/20 13:22	07/30/20 14:40

Summit Scientific

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# Summit Scientific

S<sub>2</sub>

2007310

4653 Table Mountain Drive ♦ Golden, Colorado 80403  
303-277-9310 ♦ 303-374-5933

Page 1 of 1

**Client:** Extraction Oil and Gas (XOG) **Report to:** Apex Companies, LLC **Project Manager:** Heather Shideman  
**Address:** 2234 117th Ave, Ste 106 **E-Mail:** Rochelle.Carlisle@apexcos.com, Heather.Shideman@apexcos.com, Kolbi.Olson@apexcos.com  
**City/State/Zip:** Greeley, CO 80634 **cc:** jcarlisle@extractionog.com  
**Phone:** (970) 576-3446 **Project Name:** BWSE/GWA\_Coyote\_Trails  
**Sampler Name:** *Kyle MacDonagh* **Project No.:** AFE # 17031; Code 961.15 **Facility ID** 753910

					Preservative				Matrix				Analysis Requested								Special Instructions	
ID	Field ID / Point of Collection	Date Sampled	Time Sampled	# of containers	HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air-Canister Serial #	Other (Specify)	COGCC 609 minus Isotopes									
1	BW_Waste_Connections_Landfill_1830_WCR_5	2/6/20	1322	13					X				X	X	X					Sample Frequency:		
	NWNW_28_1N_68W																			1SUB		
	Temperature, field:	19.6	°C																			
	pH, field:	8.26	s.u.																			
	Conductivity, field:	244	uS/cm																			
	ORP, field:	251.1	mV																			
	Dissolved Oxygen, field:	4.62	mg/L																			
	Turbidity, field:	1.69	NTU																			
Relinquished by: <i>[Signature]</i> Date/Time: 2/6/20 1440					Received by: <i>[Signature]</i> Date/Time: 07-30-20 14:40					Turn Around Time (Check) 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"/>										Notes:		
Relinquished by: Date/Time:					Received by: Date/Time:					Sample Integrity: Temperature Upon Receipt: 3.6 Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No												

2007310

## Sample Receipt Checklist

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

Client: Apex Companies, LLC Client Project ID: BWSE/GWA @ Coyote TrailsShipped Via: ☒ H.D./P.U./FedEx/UPS/USPS/Other \_\_\_\_\_ Airbill #: \_\_\_\_\_Matrix (check all that apply): ☐ Air ☐ Soil/Solid ☒ Water ☐ Other: \_\_\_\_\_  
(Describe)

Temp (°C)

3.6

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.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H <sub>2</sub> SO <sub>4</sub> , NaOH, HNO <sub>3</sub> , ect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HCl HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub>
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	pH
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Additional Comments (if any):

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

Custodian Printed Name or Initials

Signature of Custodian

Date/Time

07/30/2020



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

Project: BWSE/GWA\_Coyote\_Trails  
Project Number: AFE# 17031 Code 961.15 Fac ID 753910  
Project Manager: Heather Shideman

**Reported:**  
08/19/20 14:41

**BW\_Waste\_Connections\_Landfill\_1830\_WCR\_5**  
**NWNW\_28\_1N\_68W**  
**2007310-01 (Water)**

**Summit Scientific**

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

Date Sampled: **07/30/20 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0010	mg/L	1	2007345	07/31/20	08/04/20	EPA 8260B	
Toluene	ND	0.0010	"	"	"	"	"	"	
Ethylbenzene	ND	0.0010	"	"	"	"	"	"	
m,p-Xylene	ND	0.0020	"	"	"	"	"	"	
o-Xylene	ND	0.0010	"	"	"	"	"	"	
Xylenes (total)	ND	0.0020	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.050	"	"	"	"	"	"	

Date Sampled: **07/30/20 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.3 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/30/20 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	0.100	mg/L	1	2008028	08/05/20	08/05/20	EPA 8015M	

Date Sampled: **07/30/20 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		94.7 %	44.8-129		"	"	"	"	

**Dissolved Gases by RSK-175**

Date Sampled: **07/30/20 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**NWNW\_28\_1N\_68W**  
**2007310-01 (Water)**

**Summit Scientific**

**Dissolved Gases by RSK-175**

Methane	0.097	0.010	mg/L	1	2007333	07/30/20	07/31/20	RSK-175 mod
Ethane	ND	0.010	"	"	"	"	"	"
Propane	ND	0.010	"	"	"	"	"	"

Date Sampled: **07/30/20 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: Ethene		95.6 %	70-130		"	"	"	"	

**Dissolved Metals by EPA Method 200.8**

Date Sampled: **07/30/20 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	8350	50.0	ug/l	1	2008005	08/03/20	08/03/20	EPA 200.8	
Iron	20.8	10.0	"	"	"	"	"	"	
Magnesium	4880	50.0	"	"	"	"	"	"	
Manganese	27.8	1.00	"	"	"	"	"	"	
Potassium	3010	50.0	"	"	"	"	"	"	
Sodium	591000	50.0	"	"	"	"	"	"	
Barium	21.6	1.00	"	"	"	"	"	"	
Boron	482	10.0	"	"	"	"	"	"	
Selenium	ND	1.00	"	"	"	"	"	"	
Strontium	437	10.0	"	"	"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **07/30/20 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromide	0.589	0.200	mg/L	1	2007348	07/31/20	07/31/20	EPA 300.0	
Chloride	39.1	10.0	"	100	"	"	"	"	
Fluoride	2.37	0.200	"	1	"	"	"	"	
Sulfate	422	30.0	"	100	"	"	"	"	
Nitrate as N	ND	0.100	"	1	"	"	"	"	
Nitrite as N	ND	0.100	"	"	"	"	"	"	
Nitrate/Nitrite as N	ND	0.200	"	"	"	"	"	"	

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**NWNW\_28\_1N\_68W**  
**2007310-01 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

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

Date Sampled: **07/30/20 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Total Alkalinity</b>	<b>560</b>	10.0	mg/L as CaCO3	1	2008046	08/06/20	08/06/20	SM2320-B	
<b>Carbonate</b>	<b>60.0</b>	10.0	"	"	"	"	"	"	
<b>Bicarbonate</b>	<b>500</b>	10.0	"	"	"	"	"	"	

**Conventional Chemistry Parameters by APHA/EPA Methods**

Date Sampled: **07/30/20 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Phosphorus - Total</b>	<b>0.0820</b>	0.0500	mg/L	1	2008056	08/06/20	08/06/20	SM4500-P-E	

**Specific Conductance by SM2510B**

Date Sampled: **07/30/20 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>2640</b>	1.00	umhos/cm	1	2007341	07/31/20	07/31/20	SM2510B	

**Total Dissolved Solids by SM2540C**

Date Sampled: **07/30/20 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Total Dissolved Solids</b>	<b>1290</b>	10.0	mg/L	1	2007340	07/31/20	07/31/20	SM2540C	

**pH by SM4500**

Date Sampled: **07/30/20 13:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**NWNW\_28\_1N\_68W**  
**2007310-01 (Water)**

**Summit Scientific**

**pH by SM4500**

pH	8.30	1.00	pH Units	1	2008011	07/30/20	08/03/20	SM4500-H+ B
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**Biological Activity Reaction Test**

Date Sampled: **07/30/20 13:22**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Iron Related Bacteria	35000	25.0	CFU/ml	1	2007350	07/31/20	08/06/20	BART	
Sulfate Reducing Bacteria	6000	200	"	"	"	"	"	"	
Slime Forming Bacteria	13000	500	"	"	"	"	"	"	

**Field Data**

Date Sampled: **07/30/20 13:22**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Specific Conductance (EC)	2441		uS/cm	1	2007335	07/30/20	07/30/20	Field Method	
Temperature	19.6		Degrees C	"	"	"	"	"	
Oxidation/Reduction Potential	251.1		mv	"	"	"	"	"	
Dissolved Oxygen	4.62		mg/L	"	"	"	"	"	
Turbidity	1.69		NTU	"	"	"	"	"	
pH	8.26		SU	"	"	"	"	"	

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**Reported:**  
08/19/20 14:41

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

### Summit Scientific

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

#### Batch 2007345 - EPA 5030 Water MS

##### Blank (2007345-BLK1)

Prepared: 07/31/20 Analyzed: 08/03/20

Benzene	ND	0.0010	mg/L							
Toluene	ND	0.0010	"							
Ethylbenzene	ND	0.0010	"							
m,p-Xylene	ND	0.0020	"							
o-Xylene	ND	0.0010	"							
Xylenes (total)	ND	0.0020	"							
Gasoline Range Hydrocarbons	ND	0.050	"							
Surrogate: 1,2-Dichloroethane-d4	0.0133		"	0.0133		100	23-173			
Surrogate: Toluene-d8	0.0134		"	0.0133		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0134		"	0.0133		100	21-167			

##### LCS (2007345-BS1)

Prepared: 07/31/20 Analyzed: 08/03/20

Benzene	0.0486	0.0010	mg/L	0.0500		97.3	51-132			
Toluene	0.0457	0.0010	"	0.0500		91.5	51-138			
Ethylbenzene	0.0538	0.0010	"	0.0500		108	58-146			
m,p-Xylene	0.0920	0.0020	"	0.100		92.0	57-144			
o-Xylene	0.0451	0.0010	"	0.0500		90.1	53-146			
Surrogate: 1,2-Dichloroethane-d4	0.0134		"	0.0133		100	23-173			
Surrogate: Toluene-d8	0.0136		"	0.0133		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0132		"	0.0133		99.2	21-167			

##### Matrix Spike (2007345-MS1)

Source: 2007285-01

Prepared: 07/31/20 Analyzed: 08/03/20

Benzene	0.0471	0.0010	mg/L	0.0500	ND	94.3	34-141			
Toluene	0.0442	0.0010	"	0.0500	ND	88.3	27-151			
Ethylbenzene	0.0534	0.0010	"	0.0500	ND	107	29-160			
m,p-Xylene	0.0908	0.0020	"	0.100	ND	90.8	20-166			
o-Xylene	0.0437	0.0010	"	0.0500	ND	87.3	33-159			
Surrogate: 1,2-Dichloroethane-d4	0.0120		"	0.0133		90.1	23-173			
Surrogate: Toluene-d8	0.0135		"	0.0133		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0132		"	0.0133		98.9	21-167			

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Project Manager: Heather Shideman

**Reported:**  
08/19/20 14:41

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

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

**Batch 2007345 - EPA 5030 Water MS**

Matrix Spike Dup (2007345-MSD1)		Source: 2007285-01			Prepared: 07/31/20 Analyzed: 08/03/20					
Benzene	0.0491	0.0010	mg/L	0.0500	ND	98.1	34-141	4.01	32	
Toluene	0.0459	0.0010	"	0.0500	ND	91.8	27-151	3.84	25	
Ethylbenzene	0.0557	0.0010	"	0.0500	ND	111	29-160	4.07	50	
m,p-Xylene	0.0955	0.0020	"	0.100	ND	95.5	20-166	5.07	36	
o-Xylene	0.0459	0.0010	"	0.0500	ND	91.8	33-159	4.98	26	
Surrogate: 1,2-Dichloroethane-d4	0.0120		"	0.0133		90.2	23-173			
Surrogate: Toluene-d8	0.0135		"	0.0133		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0132		"	0.0133		99.2	21-167			

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Project Manager: Heather Shideman

**Reported:**  
08/19/20 14:41

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

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

**Batch 2008028 - EPA 3520B**

**Blank (2008028-BLK1)**

Prepared & Analyzed: 08/05/20

C10-C28 (DRO) ND 0.100 mg/L

Surrogate: o-Terphenyl 0.0218 " 0.0250 87.4 44.8-129

**LCS (2008028-BS1)**

Prepared & Analyzed: 08/05/20

C10-C28 (DRO) 0.776 0.100 mg/L 1.00 77.6 70-130

Surrogate: o-Terphenyl 0.0240 " 0.0250 96.0 44.8-129

**LCS Dup (2008028-BSD1)**

Prepared & Analyzed: 08/05/20

C10-C28 (DRO) 0.813 0.100 mg/L 1.00 81.3 70-130 4.59 200

Surrogate: o-Terphenyl 0.0234 " 0.0250 93.4 44.8-129

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**Reported:**  
08/19/20 14:41

**Dissolved Gases by RSK-175 - Quality Control**  
**Summit Scientific**

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

**Batch 2007333 - GC**

**Blank (2007333-BLK1)**

Prepared: 07/30/20 Analyzed: 07/31/20

Methane	ND	0.010	mg/L							
Ethane	ND	0.010	"							
Propane	ND	0.010	"							
Surrogate: Ethene	0.0354		"	0.0364		97.3	70-130			

**LCS (2007333-BS1)**

Prepared: 07/30/20 Analyzed: 07/31/20

Methane	0.031	0.010	mg/L	0.0428		72.3	70-130			
Ethane	0.084	0.010	"	0.0798		105	70-130			
Propane	0.12	0.010	"	0.139		86.2	70-130			
Surrogate: Ethene	0.0746		"	0.0728		102	70-130			

**Duplicate (2007333-DUP1)**

Source: 2007248-01

Prepared: 07/30/20 Analyzed: 07/31/20

Methane	0.48	0.10	mg/L		ND				30	
Ethane	ND	0.010	"		ND				30	
Propane	ND	0.010	"		ND				30	
Surrogate: Ethene	0.0355		"	0.0364		97.5	70-130			

**Matrix Spike (2007333-MS1)**

Source: 2007248-01

Prepared: 07/30/20 Analyzed: 07/31/20

Methane	0.50	0.10	mg/L	0.0428	ND	NR	70-130			QM-05
Ethane	0.11	0.010	"	0.0798	ND	132	70-130			QM-05
Propane	0.15	0.010	"	0.139	ND	109	70-130			
Surrogate: Ethene	0.0926		"	0.0728		127	70-130			

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**Dissolved Metals by EPA Method 200.8 - Quality Control**  
**Summit Scientific**

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

**Batch 2008005 - EPA 200.8**

**Blank (2008005-BLK1)**

Prepared & Analyzed: 08/03/20

Calcium	ND	50.0	ug/l
Iron	ND	10.0	"
Magnesium	ND	50.0	"
Manganese	ND	1.00	"
Potassium	ND	50.0	"
Sodium	ND	50.0	"
Barium	ND	1.00	"
Boron	ND	10.0	"
Selenium	ND	1.00	"
Strontium	ND	10.0	"

**LCS (2008005-BS1)**

Prepared & Analyzed: 08/03/20

Calcium	5530	50.0	ug/l	5000	111	85-115
Iron	5130	10.0	"	5000	103	85-115
Magnesium	5530	50.0	"	5000	111	85-115
Manganese	529	1.00	"	500	106	85-115
Potassium	5500	50.0	"	5000	110	85-115
Sodium	5360	50.0	"	5000	107	85-115
Barium	513	1.00	"	500	103	85-115
Boron	2560	10.0	"	2500	102	85-115
Selenium	47.7	1.00	"	50.0	95.4	85-115
Strontium	522	10.0	"	500	104	85-115

**Duplicate (2008005-DUP1)**

Source: 2007287-01

Prepared & Analyzed: 08/03/20

Calcium	188000	50.0	ug/l	202000	7.03	20
Iron	6.52	10.0	"	7.00	7.10	20
Magnesium	24900	50.0	"	27000	8.32	20
Manganese	6.63	1.00	"	6.91	4.19	20
Potassium	9220	50.0	"	10000	8.31	20
Sodium	65300	50.0	"	70800	8.06	20
Barium	328	1.00	"	353	7.47	20
Boron	77.2	10.0	"	91.8	17.4	20
Selenium	9.87	1.00	"	10.6	7.43	20
Strontium	1780	10.0	"	1920	7.73	20

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

Project: BWSE/GWA\_Coyote\_Trails

Project Number: AFE# 17031 Code 961.15 Fac ID 753910

Project Manager: Heather Shideman

**Reported:**  
08/19/20 14:41

### Dissolved Metals by EPA Method 200.8 - Quality Control

#### Summit Scientific

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

#### Batch 2008005 - EPA 200.8

Matrix Spike (2008005-MS1)		Source: 2007287-01			Prepared & Analyzed: 08/03/20					
Calcium	207000	50.0	ug/l	5000	202000	103	70-130			
Iron	5250	10.0	"	5000	7.00	105	70-130			
Magnesium	30900	50.0	"	5000	27000	78.6	70-130			
Manganese	544	1.00	"	500	6.91	107	70-130			
Potassium	14000	50.0	"	5000	10000	79.7	70-130			
Sodium	74700	50.0	"	5000	70800	77.9	70-130			
Barium	855	1.00	"	500	353	100	70-130			
Boron	2520	10.0	"	2500	91.8	97.1	70-130			
Selenium	60.6	1.00	"	50.0	10.6	100	70-130			
Strontium	2320	10.0	"	500	1920	79.3	70-130			

Matrix Spike Dup (2008005-MSD1)		Source: 2007287-01			Prepared & Analyzed: 08/03/20					
Calcium	207000	50.0	ug/l	5000	202000	105	70-130	0.0460	25	
Iron	5340	10.0	"	5000	7.00	107	70-130	1.81	25	
Magnesium	31100	50.0	"	5000	27000	82.0	70-130	0.557	25	
Manganese	546	1.00	"	500	6.91	108	70-130	0.257	25	
Potassium	14400	50.0	"	5000	10000	88.6	70-130	3.11	25	
Sodium	74500	50.0	"	5000	70800	74.3	70-130	0.245	25	
Barium	863	1.00	"	500	353	102	70-130	0.958	25	
Boron	2610	10.0	"	2500	91.8	101	70-130	3.56	25	
Selenium	63.0	1.00	"	50.0	10.6	105	70-130	3.80	25	
Strontium	2370	10.0	"	500	1920	90.0	70-130	2.28	25	

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

Project: BWSE/GWA\_Coyote\_Trails  
Project Number: AFE# 17031 Code 961.15 Fac ID 753910  
Project Manager: Heather Shideman

**Reported:**  
08/19/20 14:41

**Anions by EPA Method 300.0 - Quality Control**  
**Summit Scientific**

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

**Batch 2007348 - General Preparation**

**Blank (2007348-BLK1)**

Prepared & Analyzed: 07/31/20

Bromide	ND	0.200	mg/L
Chloride	ND	0.100	"
Fluoride	ND	0.200	"
Sulfate	ND	0.300	"
Nitrate as N	ND	0.100	"
Nitrite as N	ND	0.100	"
Nitrate/Nitrite as N	ND	0.200	"

**LCS (2007348-BS1)**

Prepared & Analyzed: 07/31/20

Bromide	10.6	0.200	mg/L	10.0	106	90-110
Chloride	3.31	0.100	"	3.00	110	90-110
Fluoride	2.12	0.200	"	2.00	106	90-110
Sulfate	16.2	0.300	"	15.0	108	90-110
Nitrate as N	3.21	0.100	"	3.00	107	90-110
Nitrite as N	3.19	0.100	"	3.00	106	90-110

**Duplicate (2007348-DUP1)**

Source: 2007310-01

Prepared & Analyzed: 07/31/20

Bromide	0.572	0.200	mg/L	0.589	2.93	20	QM-02
Chloride	75.2	0.100	"	39.1	63.1	20	
Fluoride	2.37	0.200	"	2.37	0.00	20	
Sulfate	ND	0.300	"	422		20	
Nitrate as N	0.0240	0.100	"	0.0250	4.08	20	
Nitrite as N	ND	0.100	"	ND		20	
Nitrate/Nitrite as N	ND	0.200	"	0.0250		20	

**Matrix Spike (2007348-MS1)**

Source: 2007310-01

Prepared & Analyzed: 07/31/20

Bromide	12.1	0.200	mg/L	10.0	0.589	115	80-120	QM-02
Chloride	75.7	0.100	"	3.00	39.1	NR	80-120	
Fluoride	4.20	0.200	"	2.00	2.37	91.7	80-120	
Sulfate	ND	0.300	"	15.0	422	NR	80-120	QM-02
Nitrate as N	3.52	0.100	"	3.00	0.0250	116	80-120	
Nitrite as N	2.41	0.100	"	3.00	ND	80.4	80-120	

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Extraction Oil&Gas  
370 17th Street Suite 5300  
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Project: BWSE/GWA\_Coyote\_Trails  
Project Number: AFE# 17031 Code 961.15 Fac ID 753910  
Project Manager: Heather Shideman

**Reported:**  
08/19/20 14:41

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

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

**Batch 2008046 - General Preparation**

**Blank (2008046-BLK1)**

Prepared & Analyzed: 08/06/20

Total Alkalinity	ND	10.0	mg/L as CaCO3
Carbonate	ND	10.0	"
Bicarbonate	ND	10.0	"

**LCS (2008046-BS1)**

Prepared & Analyzed: 08/06/20

Total Alkalinity	110	10.0	mg/L as CaCO3	100	110	80-120
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**Duplicate (2008046-DUP1)**

Source: 2007310-01

Prepared & Analyzed: 08/06/20

Total Alkalinity	560	10.0	mg/L as CaCO3	560	0.00	20
Carbonate	60.0	10.0	"	60.0	0.00	20
Bicarbonate	500	10.0	"	500	0.00	20

**Matrix Spike (2008046-MS1)**

Source: 2007310-01

Prepared & Analyzed: 08/06/20

Total Alkalinity	650	10.0	mg/L as CaCO3	100	560	90.0	70-130
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**Matrix Spike Dup (2008046-MSD1)**

Source: 2007310-01

Prepared & Analyzed: 08/06/20

Total Alkalinity	650	10.0	mg/L as CaCO3	100	560	90.0	70-130	0.00	20
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Summit Scientific

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

Project: BWSE/GWA\_Coyote\_Trails

Project Number: AFE# 17031 Code 961.15 Fac ID 753910

Project Manager: Heather Shideman

**Reported:**  
08/19/20 14:41

**Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control**  
**Summit Scientific**

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

**Batch 2008056 - General Preparation**

**Blank (2008056-BLK1)**

Prepared & Analyzed: 08/06/20

Phosphorus - Total ND 0.0500 mg/L

**LCS (2008056-BS1)**

Prepared & Analyzed: 08/06/20

Phosphorus - Total 1.01 0.0500 mg/L 1.00 101 80-120

**Duplicate (2008056-DUP1)**

**Source: 2007310-01**

Prepared & Analyzed: 08/06/20

Phosphorus - Total 0.0850 0.0500 mg/L 0.0820 3.59 20

**Matrix Spike (2008056-MS1)**

**Source: 2007310-01**

Prepared & Analyzed: 08/06/20

Phosphorus - Total 1.02 0.0500 mg/L 1.00 0.0820 93.5 70-130

**Matrix Spike Dup (2008056-MSD1)**

**Source: 2007310-01**

Prepared & Analyzed: 08/06/20

Phosphorus - Total 1.06 0.0500 mg/L 1.00 0.0820 97.9 70-130 4.23 20

Summit Scientific

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370 17th Street Suite 5300  
Denver CO, 80202

Project: BWSE/GWA\_Coyote\_Trails

Project Number: AFE# 17031 Code 961.15 Fac ID 753910

Project Manager: Heather Shideman

**Reported:**  
08/19/20 14:41

### Specific Conductance by SM2510B - Quality Control

#### Summit Scientific

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

#### Batch 2007341 - General Preparation

##### Blank (2007341-BLK1)

Prepared & Analyzed: 07/31/20

Specific Conductance (EC) ND 1.00 umhos/cm

##### Duplicate (2007341-DUP1)

Source: 2007310-01

Prepared & Analyzed: 07/31/20

Specific Conductance (EC) 2630 1.00 umhos/cm 2640 0.0380 20

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370 17th Street Suite 5300  
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Project: BWSE/GWA\_Coyote\_Trails

Project Number: AFE# 17031 Code 961.15 Fac ID 753910

Project Manager: Heather Shideman

**Reported:**  
08/19/20 14:41

### Total Dissolved Solids by SM2540C - Quality Control

#### Summit Scientific

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

#### Batch 2007340 - General Preparation

##### Blank (2007340-BLK1)

Prepared & Analyzed: 07/31/20

Total Dissolved Solids ND 10.0 mg/L

##### Duplicate (2007340-DUP1)

Source: 2007305-01

Prepared & Analyzed: 07/31/20

Total Dissolved Solids 41.4 10.0 mg/L 41.3 0.0967 20

Summit Scientific

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Project: BWSE/GWA\_Coyote\_Trails

Project Number: AFE# 17031 Code 961.15 Fac ID 753910

Project Manager: Heather Shideman

**Reported:**  
08/19/20 14:41

### pH by SM4500 - Quality Control

#### Summit Scientific

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

#### Batch 2008011 - General Preparation

##### LCS (2008011-BS1)

Prepared: 07/30/20 Analyzed: 08/03/20

pH	9.21	1.00	pH Units	9.18	100	90-110
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##### Duplicate (2008011-DUP1)

Source: 2007312-01

Prepared: 07/30/20 Analyzed: 08/03/20

pH	7.67	1.00	pH Units	7.69	0.260	20
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370 17th Street Suite 5300  
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Project: BWSE/GWA\_Coyote\_Trails

Project Number: AFE# 17031 Code 961.15 Fac ID 753910

Project Manager: Heather Shideman

**Reported:**  
08/19/20 14:41

### Biological Activity Reaction Test - Quality Control

#### Summit Scientific

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

#### Batch 2007350 - General Preparation

##### Blank (2007350-BLK1)

Prepared: 07/31/20 Analyzed: 08/06/20

Iron Related Bacteria	ND	25.0	CFU/ml
Sulfate Reducing Bacteria	ND	200	"
Slime Forming Bacteria	ND	500	"

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Project: BWSE/GWA\_Coyote\_Trails

Project Number: AFE# 17031 Code 961.15 Fac ID 753910

Project Manager: Heather Shideman

**Reported:**  
08/19/20 14:41

### Notes and Definitions

QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The associated LCS and/or LCSD were within acceptance limits, therefore the data are considered valid.
QM-02	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
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