

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 24, 2022

Vince DeCianne
Whiting Oil & Gas
retail
Denver, CO 80215

RE: Emerald 147 Closure
Work Order #2206313

Enclosed are the results of analyses for samples received by Summit Scientific on 06/17/22 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury
President



Whiting Oil & Gas
retail
Denver CO, 80215

Project: Emerald 147 Closure

Project Number: 20221740.001A

Project Manager: Vince DeCianne

Reported:
06/24/22 14:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
20220615_Emerald_147_AOC@4ft	2206313-01	Soil	06/15/22 10:20	06/17/22 16:30
20220615_Emerald_147_WH@2ft	2206313-02	Soil	06/15/22 10:25	06/17/22 16:30

Summit Scientific

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Summit Scientific

S₂

2206313

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

Client: Whiting Oil & Gas

Project Manager: Vince DeCianne

Address: 707 17th Street, Suite 3000

E-Mail: jveith@kleinfelder.com

City/State/Zip: Denver, CO 80202

kyle.waggoner@whiting.com

Phone: 970-309-6553

Project Name: Emerald 147 Closure

Sampler Name: Jordan Veith

Project Number: 20221740.001A

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested						Special Instructions		
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	COGCC Table 915-1	Arsenic, EC, pH, SAR	EC	SAR	pH		Arsenic	
1	20220615 - Emerald 147 - ACCO-47	6/15/22	10:20	3			X			X										
2	20220615 - Emerald 147 - WHD-28	6/15/22	10:25	3			X			X										
3	_____																			
4	_____																			
5	_____																			
6	_____																			
7	_____																			
8	_____																			
9	_____																			
10	_____																			

Joe Veith
6/15/2022

Relinquished by: <i>Joe Veith</i>	Date/Time: 6/15/2022 15:30	Received by:	Date/Time:	Turn Around Time (Check) Same Day ___ 72 hours ___ 24 hours ___ <u>Standard</u> ___ 48 hours	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Temperature	
Relinquished by:	Date/Time:	Received by: <i>MMM</i>	Date/Time: 6/17/22 16:30	Integrity: Upon Receipt: ___ Samples Intact: Yes No	

S₂

S2 Work Order# 2206313

Sample Receipt Checklist

Client: Whiting Client Project ID: Emerald 147 Closure

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

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Matrix (Check all that apply) Air Soil/Solid Water Other

Temp (°C) Thermometer #

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6 °C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met if 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 samples due within 48 hours present?		<input checked="" type="checkbox"/>		
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe ²⁺), Hexavalent Chromium (Cr ⁶⁺ , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen		<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⁾ ? Note the type of preservative in the comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? 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):

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


Custodian Printed Name

6/17/22 16:30
Date/Time



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Denver CO, 80215

Project: Emerald 147 Closure

Project Number: 20221740.001A

Project Manager: Vince DeCianne

Reported:
06/24/22 14:23

20220615_Emerald_147_AOC@4ft
2206313-01 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **06/15/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	1570	0.0604	mg/L dry	1	BFF0613	06/23/22	06/24/22	EPA 6020B	
Magnesium	653	0.0604	"	"	"	"	"	"	
Sodium	134	0.0604	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **06/15/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.717	0.00100	units	1	BFF0644	06/24/22	06/24/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **06/15/22 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	82.8		%	1	BFF0605	06/23/22	06/24/22	Calculation	

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Project Number: 20221740.001A

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Reported:
06/24/22 14:23

20220615_Emerald_147_WH@2ft
2206313-02 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **06/15/22 10:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	1280	0.0567	mg/L dry	1	BFF0613	06/23/22	06/24/22	EPA 6020B	
Magnesium	198	0.0567	"	"	"	"	"	"	
Sodium	135	0.0567	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **06/15/22 10:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	0.927	0.00100	units	1	BFF0644	06/24/22	06/24/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **06/15/22 10:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	88.2		%	1	BFF0605	06/23/22	06/24/22	Calculation	

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Project Number: 20221740.001A

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Reported:
06/24/22 14:23

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control

Summit Scientific

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

Batch BFF0613 - General Preparation

Blank (BFF0613-BLK1)

Prepared: 06/23/22 Analyzed: 06/24/22

Calcium	ND	0.0500	mg/L wet							
Magnesium	ND	0.0500	"							
Sodium	ND	0.0500	"							

LCS (BFF0613-BS1)

Prepared: 06/23/22 Analyzed: 06/24/22

Calcium	514	0.0500	mg/L wet	500	103	70-130				
Magnesium	555	0.0500	"	500	111	70-130				
Sodium	512	0.0500	"	500	102	70-130				

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Reported:

06/24/22 14:23

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

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

Batch BFF0605 - General Preparation

Duplicate (BFF0605-DUP1)

Source: 2206305-01

Prepared: 06/23/22 Analyzed: 06/24/22

% Solids	86.2	%		85.4		0.911	20
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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