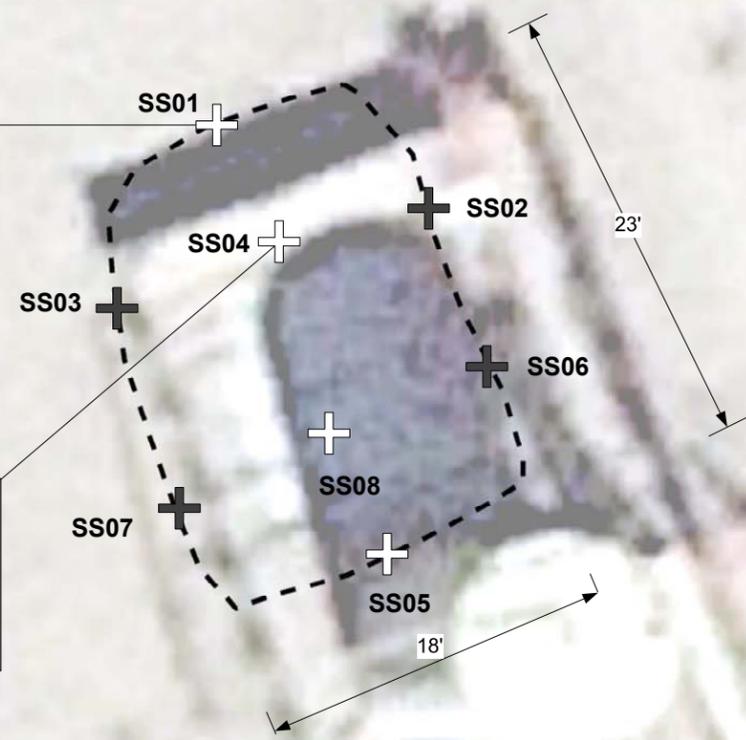


SS01@3'
 B - <0.0020 mg/kg
 T - <0.0050 mg/kg
 E - <0.0050 mg/kg
 X - <0.010 mg/kg
 TPH - <50 mg/kg
 N - <0.010 mg/kg
 SAR - <0.100
 EC - 0.364 mmhos/cm
 pH - 8.80

SS04@5'
 B - <0.0020 mg/kg
 T - <0.0050 mg/kg
 E - <0.0050 mg/kg
 X - <0.010 mg/kg
 TPH - <50 mg/kg
 N - <0.010 mg/kg



Legend

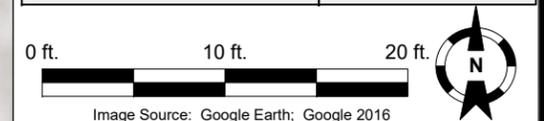
- Excavation Sample Location
- Excavation Sample Location (Not Submitted for Laboratory Analysis)
- Excavation Extent (Collected via Trimble GPS)

Notes

- 1) Site Coordinates: 40.358430, -104.796730
- 2) All locations are approximate unless otherwise noted
- 3) **RED** value indicates concentration greater than COGCC table 910-1 soil standard (see table below).
- 4) Soil Samples (SS05-SS08) are associated with the Carlson J 33-31D vault pull data.

GPS – Global Positioning System
 mg/kg – Milligrams Per Kilogram
 mmhos/cm – Millimhos Per Centimeter

Contaminant of Concern	COGCC Concentration Standard
B - Benzene	0.17 mg/kg
T - Toluene	85 mg/kg
E - Ethylbenzene	100 mg/kg
X – Total Xylenes	175 mg/kg
TPH- Total Petroleum Hydrocarbons	500 mg/kg
N - Naphthalene	23 mg/kg
SAR – Sodium Absorption Ratio	<12 ⁵
EC – Electrical Conductivity	<4mmhos/cm or 2x background
pH	6-9



DATE: 08/01/2018
 DESIGNED BY: DA
 DRAWN BY: GB

TASMAN GEOSCIENCES
 Tasman Geosciences, Inc.
 6899 Pecos Street – Unit C
 Denver, CO 80221

Noble Energy, Inc. – DJ Basin
Carlson J 33-30D Vault Removal – Location ID: 336636
 SENE, Section 32, Township 5 North, Range 66 West
 Weld County, Colorado

Excavation Soil Analytical
 Results Map
 (07/20/2018)

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

July 27, 2018

Brandon Bruns
Tasman Geosciences
6899 Pecos St, Unit C
Denver, CO 80221
RE: Noble - Carlson J33-30D

Enclosed are the results of analyses for samples received by Summit Scientific on 07/20/18 18:35. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Muri Premer For Ben Shrewsbury
Laboratory Manager



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Carlson J33-30D

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/27/18 12:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@3'	1807283-01	Soil	07/20/18 12:00	07/20/18 18:35
SS04@5'	1807283-04	Soil	07/20/18 12:06	07/20/18 18:35

1807283

Sample Receipt Checklist

S2 Work Order: _____

Client: Noble/Tasman Client Project ID: Carlson J-33-30D

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

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

Temp (°C) 10.2

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<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 type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

UP
 Custodian Printed Name or Initials

[Signature]
 Signature or Initials of Custodian

7.20.18 1835
 Date/Time



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Carlson J33-30D

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
07/27/18 12:23

SS01@3'
1807283-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/20/18 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1807265	07/23/18	07/24/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **07/20/18 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **07/20/18 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1807266	"	07/24/18	EPA 8015M	

Date Sampled: **07/20/18 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		102 %	30-150		"	"	"	"	

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

Date Sampled: **07/20/18 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	2330	10.8	mg/kg dry	1	1807275	07/23/18	07/25/18	EPA 6020B	

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.



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Carlson J33-30D

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
07/27/18 12:23

SS01@3'
1807283-01 (Soil)

Summit Scientific

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

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	208	5.39	mg/kg dry	1	1807275	07/23/18	07/25/18	EPA 6020B	
Sodium	11.4	5.39	"	"	"	"	"	"	"

Calculated Analysis

Date Sampled: **07/20/18 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	ND	0.100	units	1	1807306	07/25/18	07/27/18	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **07/20/18 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	92.7		%	1	1807280	07/23/18	07/24/18	Calculation	
pH	8.80		pH Units	"	1807291	07/24/18	07/24/18	EPA 9045D	

Specific Conductance by EPA Method 120.1

Date Sampled: **07/20/18 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.364	0.0100	mmhos/cm	1	1807292	07/24/18	07/24/18	EPA 120.1	



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Carlson J33-30D

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
07/27/18 12:23

SS04@5'
1807283-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/20/18 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1807265	07/23/18	07/24/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **07/20/18 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **07/20/18 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1807266	"	07/24/18	EPA 8015M	

Date Sampled: **07/20/18 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		107 %	30-150		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Carlson J33-30D

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
07/27/18 12:23

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1807265 - EPA 5030 Soil MS

Blank (1807265-BLK1)

Prepared & Analyzed: 07/23/18

Benzene	ND	0.0020	mg/kg								
Toluene	ND	0.0050	"								
Ethylbenzene	ND	0.0050	"								
Xylenes (total)	ND	0.010	"								
Naphthalene	ND	0.010	"								
Gasoline Range Hydrocarbons	ND	50	"								
Surrogate: 1,2-Dichloroethane-d4	0.0390		"	0.0396		98.5	23-173				
Surrogate: Toluene-d8	0.0392		"	0.0400		98.0	20-170				
Surrogate: 4-Bromofluorobenzene	0.0392		"	0.0400		98.0	21-167				

LCS (1807265-BS1)

Prepared: 07/23/18 Analyzed: 07/24/18

Benzene	0.0893	0.0020	mg/kg	0.100		89.3	70-130				
Toluene	0.0987	0.0050	"	0.100		98.7	70-130				
Ethylbenzene	0.107	0.0050	"	0.100		107	70-130				
m,p-Xylene	0.212	0.010	"	0.200		106	70-130				
o-Xylene	0.0951	0.0050	"	0.100		95.1	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0396		"	0.0396		99.9	23-173				
Surrogate: Toluene-d8	0.0391		"	0.0400		97.8	20-170				
Surrogate: 4-Bromofluorobenzene	0.0387		"	0.0400		96.8	21-167				

Matrix Spike (1807265-MS1)

Source: 1807270-01

Prepared: 07/23/18 Analyzed: 07/24/18

Benzene	0.0891	0.0020	mg/kg	0.100	ND	89.1	70-130				
Toluene	0.0995	0.0050	"	0.100	ND	99.5	70-130				
Ethylbenzene	0.113	0.0050	"	0.100	ND	113	70-130				
m,p-Xylene	0.217	0.010	"	0.200	ND	108	70-130				
o-Xylene	0.100	0.0050	"	0.100	ND	100	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0404		"	0.0396		102	23-173				
Surrogate: Toluene-d8	0.0393		"	0.0400		98.2	20-170				
Surrogate: 4-Bromofluorobenzene	0.0400		"	0.0400		100	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.



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Carlson J33-30D

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
07/27/18 12:23

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 1807265 - EPA 5030 Soil MS

Matrix Spike Dup (1807265-MSD1)	Source: 1807270-01			Prepared: 07/23/18	Analyzed: 07/24/18					
Benzene	0.0967	0.0020	mg/kg	0.100	ND	96.7	70-130	8.17	30	
Toluene	0.109	0.0050	"	0.100	ND	109	70-130	8.79	30	
Ethylbenzene	0.122	0.0050	"	0.100	ND	122	70-130	8.25	30	
m,p-Xylene	0.236	0.010	"	0.200	ND	118	70-130	8.48	30	
o-Xylene	0.110	0.0050	"	0.100	ND	110	70-130	9.06	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0398</i>		<i>"</i>	<i>0.0396</i>		<i>100</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0391</i>		<i>"</i>	<i>0.0400</i>		<i>97.6</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0401</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>21-167</i>			



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Carlson J33-30D

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
07/27/18 12:23

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1807266 - EPA 3550A

Blank (1807266-BLK1)				Prepared: 07/23/18 Analyzed: 07/24/18						
C10-C28 (DRO)	ND	50	mg/kg							
LCS (1807266-BS1)				Prepared: 07/23/18 Analyzed: 07/24/18						
C10-C28 (DRO)	508	50	mg/kg			70-130				
Matrix Spike (1807266-MS1)				Source: 1807270-01 Prepared: 07/23/18 Analyzed: 07/24/18						
C10-C28 (DRO)	429	50	mg/kg		40.6	70-130				
Matrix Spike Dup (1807266-MSD1)				Source: 1807270-01 Prepared: 07/23/18 Analyzed: 07/24/18						
C10-C28 (DRO)	502	50	mg/kg		40.6	70-130	15.8		20	



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Carlson J33-30D

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/27/18 12:23

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 1807275 - General Preparation

Blank (1807275-BLK1)

Prepared: 07/23/18 Analyzed: 07/25/18

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

LCS (1807275-BS1)

Prepared: 07/23/18 Analyzed: 07/25/18

Calcium	521	10.0	mg/kg wet	500		104	70-130		
Magnesium	541	5.00	"	500		108	70-130		
Sodium	552	5.00	"	500		110	70-130		

Duplicate (1807275-DUP1)

Source: 1807230-01

Prepared: 07/23/18 Analyzed: 07/25/18

Calcium	297	11.7	mg/kg dry		322			7.84	20
Magnesium	134	5.86	"		145			7.59	20
Sodium	85.6	5.86	"		90.4			5.44	20

Matrix Spike (1807275-MS1)

Source: 1807230-01

Prepared: 07/23/18 Analyzed: 07/25/18

Calcium	908	11.7	mg/kg dry	586	322	100	70-130		
Magnesium	769	5.86	"	586	145	107	70-130		
Sodium	739	5.86	"	586	90.4	111	70-130		

Matrix Spike Dup (1807275-MSD1)

Source: 1807230-01

Prepared: 07/23/18 Analyzed: 07/25/18

Calcium	957	11.7	mg/kg dry	586	322	108	70-130	5.21	25
Magnesium	773	5.86	"	586	145	107	70-130	0.528	25
Sodium	769	5.86	"	586	90.4	116	70-130	4.07	25



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Carlson J33-30D

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/27/18 12:23

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 1807280 - General Preparation

Duplicate (1807280-DUP1)	Source: 1807283-01			Prepared: 07/23/18 Analyzed: 07/24/18	
% Solids	93.4		%	92.7	0.720 20

Batch 1807291 - General Preparation

LCS (1807291-BS1)	Prepared & Analyzed: 07/24/18				
pH	9.1		pH Units	9.18	99.3 95-105
Duplicate (1807291-DUP1)	Source: 1807277-01			Prepared & Analyzed: 07/24/18	
pH	8.5		pH Units	8.4	0.827 20



Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Carlson J33-30D

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
07/27/18 12:23

Specific Conductance by EPA Method 120.1 - Quality Control
Summit Scientific

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

Batch 1807292 - General Preparation

LCS (1807292-BS1)

Prepared & Analyzed: 07/24/18

Specific Conductance (EC)	0.748	0.0100	mmhos/cm	0.750	99.8	90-110
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Duplicate (1807292-DUP1)

Source: 1807277-01

Prepared & Analyzed: 07/24/18

Specific Conductance (EC)	0.642	0.0100	mmhos/cm	0.632	1.41	20
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Tasman Geosciences
6899 Pecos St, Unit C
Denver CO, 80221

Project: Noble - Carlson J33-30D

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
07/27/18 12:23

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