

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 - 0.104
 EC - 0.471 mmhos/cm
 pH - 8.10

SS06@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 - 0.322 mmhos/cm
 pH - 8.50

SS05@7'
 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

SS10@7'
 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

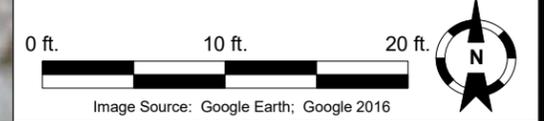
Legend

-  Excavation Sample Location
-  Excavation Sample Location (Not Submitted for Laboratory Analysis)
-  Excavation Extent

Notes

- 1) Site Coordinates: 40.575938, -104.509592
 - 2) All locations are approximate unless otherwise noted
 - 3) **RED** value indicates concentration greater than COGCC table 910-1 soil standard (see table below).
- 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
EC – Electrical Conductivity	<4mmhos/cm or 2x background
pH	6-9



DATE:	11/20/18
DESIGNED BY:	JW
DRAWN BY:	MG



TASMAN
 GEOSCIENCES

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

Noble Energy, Inc. – DJ Basin
Shable 14-22, 23, 24, 25 Vault Removal – Location ID: 302250
 SENE, Section 14, Township 7 North, Range 64 West
 Weld County, Colorado

Excavation Soil Analytical
 Results Map
 (11/20/2018)

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

November 29, 2018

Brandon Bruns

Tasman Geosciences

6899 Pecos St, Unit C

Denver, CO 80221

RE: Noble - Shable 22-23,24,25

Enclosed are the results of analyses for samples received by Summit Scientific on 11/20/18 18:50. 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', with a stylized, cursive script.

Paul Shrewsbury For Ben Shrewsbury

Laboratory Manager



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

Project: Noble - Shable 22-23,24,25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/29/18 11:39

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@3'	1811257-01	Soil	11/20/18 09:35	11/20/18 18:50
SS05@7'	1811257-05	Soil	11/20/18 09:45	11/20/18 18:50
SS06@3'	1811257-06	Soil	11/20/18 10:00	11/20/18 18:50
SS10@7'	1811257-10	Soil	11/20/18 10:10	11/20/18 18:50

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

1811257

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

Page 1 of 1

Client: Noble/ Tasman
Address: _____
City/State/Zip: _____
Phone: 720-616-8383 Fax: _____
Sampler Name: J Whritenour

Project Manager: Brandon Bruns, Invoice: ~~Jacob Evans~~ Howard Arnold
E-Mail: bbruns@tasman-geo.com
Project Name: Shale 22-23, 24, 25
Project Number: _____

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)				
SS01@3'	11-20-18	0935	1						X						HOLD SS02@3' SS03@3' SS04@3' SS07@3' SS08@3' SS09@3'
SS02@3'		0938	1												
SS03@3'		0940	1												
SS04@3'		0942	1												
SS05@7'		0945	1												
SS06@3'		1000	1												
SS07@3'		1002	1												
SS08@3'		1005	1												
SS09@3'		1008	1												
SS10@7'		1000	1												
Relinquished by: _____		Date/Time: 11/20/18		Received by: _____		Date/Time: 11-20-18		Turn Around Time (Check)				Notes:			
								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>45</u> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>							

1811257

Sample Receipt Checklist

S2 Work Order _____

Client: Noble/Tasman Client Project ID: Shable 22-23, 24, 25

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

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

Temp (°C)	<u>4.5</u>
-----------	------------

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.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
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 of Custodian

11-20-18 1850
Date/Time



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

Project: Noble - Shable 22-23,24,25

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/29/18 11:39

SS01@3'
1811257-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 09:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	1811284	11/21/18	11/22/18	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: **11/20/18 09:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		105 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.4 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.2 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 09:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	1811283	11/21/18	11/23/18	EPA 8015M	

Date Sampled: **11/20/18 09:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		83.6 %		30-150		"	"	"	"	

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

Date Sampled: **11/20/18 09:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Calcium	809	10.7		mg/kg dry	1	1811282	"	11/22/18	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 - Shable 22-23,24,25

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/29/18 11:39

SS01@3'
1811257-01 (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	173	5.35	mg/kg dry	1	1811282	11/21/18	11/22/18	EPA 6020B	
Sodium	12.5	5.35	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **11/20/18 09:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.104	0.100	units	1	1811324	11/27/18	11/27/18	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/20/18 09:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	93.5		%	1	1811275	11/21/18	11/21/18	Calculation	
pH	8.10		pH Units	"	1811321	11/26/18	11/27/18	EPA 9045D	

Specific Conductance by EPA Method 120.1

Date Sampled: **11/20/18 09:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.471	0.0100	mmhos/cm	1	1811279	11/21/18	11/21/18	EPA 120.1	

Summit Scientific

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

Project: Noble - Shable 22-23,24,25

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/29/18 11:39

SS05@7'
1811257-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1811284	11/21/18	11/22/18	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: **11/20/18 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.9 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1811283	11/21/18	11/23/18	EPA 8015M	

Date Sampled: **11/20/18 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		83.8 %	30-150		"	"	"	"	

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 - Shable 22-23,24,25

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/29/18 11:39

SS06@3'
1811257-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1811284	11/21/18	11/22/18	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: **11/20/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.1 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1811283	11/21/18	11/23/18	EPA 8015M	

Date Sampled: **11/20/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		85.7 %	30-150		"	"	"	"	

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

Date Sampled: **11/20/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	1100	10.7	mg/kg dry	1	1811282	"	11/22/18	EPA 6020B	
Magnesium	184	5.37	"	"	"	"	"	"	

Summit Scientific

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

Project: Noble - Shable 22-23,24,25

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/29/18 11:39

SS06@3'
1811257-06 (Soil)

Summit Scientific

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

Sodium	12.9	5.37	mg/kg dry	1	1811282	11/21/18	11/22/18	EPA 6020B
---------------	-------------	------	-----------	---	---------	----------	----------	-----------

Calculated Analysis

Date Sampled: **11/20/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	ND	0.100	units	1	1811324	11/27/18	11/27/18	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/20/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	93.1		%	1	1811275	11/21/18	11/21/18	Calculation	
pH	8.50		pH Units	"	1811321	11/26/18	11/27/18	EPA 9045D	

Specific Conductance by EPA Method 120.1

Date Sampled: **11/20/18 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.322	0.0100	mmhos/cm	1	1811279	11/21/18	11/21/18	EPA 120.1	

Summit Scientific

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

Project: Noble - Shable 22-23,24,25

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/29/18 11:39

SS10@7'
1811257-10 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/20/18 10:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1811284	11/21/18	11/22/18	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: **11/20/18 10:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.4 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/20/18 10:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1811283	11/21/18	11/23/18	EPA 8015M	

Date Sampled: **11/20/18 10:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		82.7 %	30-150		"	"	"	"	

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 - Shable 22-23,24,25

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
11/29/18 11:39

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1811284 - EPA 5030 Soil MS

Blank (1811284-BLK1)

Prepared: 11/21/18 Analyzed: 11/27/18

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	0.0413		"	0.0396		104		23-173			
Surrogate: Toluene-d8	0.0374		"	0.0400		93.5		20-170			
Surrogate: 4-Bromofluorobenzene	0.0401		"	0.0400		100		21-167			

LCS (1811284-BS1)

Prepared: 11/21/18 Analyzed: 11/27/18

Benzene	0.0810	0.0020	mg/kg	0.100		81.0		70-130			
Toluene	0.0922	0.0050	"	0.100		92.2		70-130			
Ethylbenzene	0.109	0.0050	"	0.100		109		70-130			
m,p-Xylene	0.212	0.010	"	0.200		106		70-130			
o-Xylene	0.101	0.0050	"	0.100		101		70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0418		"	0.0396		106		23-173			
Surrogate: Toluene-d8	0.0401		"	0.0400		100		20-170			
Surrogate: 4-Bromofluorobenzene	0.0412		"	0.0400		103		21-167			

Matrix Spike (1811284-MS1)

Source: 1811248-01

Prepared: 11/21/18 Analyzed: 11/27/18

Benzene	0.0769	0.0020	mg/kg	0.100	ND	76.9		70-130			
Toluene	0.0905	0.0050	"	0.100	ND	90.5		70-130			
Ethylbenzene	0.110	0.0050	"	0.100	ND	110		70-130			
m,p-Xylene	0.214	0.010	"	0.200	ND	107		70-130			
o-Xylene	0.103	0.0050	"	0.100	ND	103		70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0440		"	0.0396		111		23-173			
Surrogate: Toluene-d8	0.0388		"	0.0400		97.1		20-170			
Surrogate: 4-Bromofluorobenzene	0.0416		"	0.0400		104		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 - Shable 22-23,24,25

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/29/18 11:39

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

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

Batch 1811284 - EPA 5030 Soil MS

Matrix Spike Dup (1811284-MSD1)	Source: 1811248-01			Prepared: 11/21/18 Analyzed: 11/27/18						
Benzene	0.0791	0.0020	mg/kg	0.100	ND	79.1	70-130	2.85	30	
Toluene	0.0923	0.0050	"	0.100	ND	92.3	70-130	1.97	30	
Ethylbenzene	0.108	0.0050	"	0.100	ND	108	70-130	2.26	30	
m,p-Xylene	0.211	0.010	"	0.200	ND	106	70-130	1.12	30	
o-Xylene	0.101	0.0050	"	0.100	ND	101	70-130	1.44	30	
Surrogate: 1,2-Dichloroethane-d4	0.0415		"	0.0396		105	23-173			
Surrogate: Toluene-d8	0.0393		"	0.0400		98.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0400		"	0.0400		99.9	21-167			

Summit Scientific

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

Project: Noble - Shable 22-23,24,25

Project Number: [none]
Project Manager: Brandon Brun

Reported:
11/29/18 11:39

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 1811283 - EPA 3550A

Blank (1811283-BLK1)

Prepared: 11/21/18 Analyzed: 11/22/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1811283-BS1)

Prepared: 11/21/18 Analyzed: 11/22/18

C10-C28 (DRO) 606 50 mg/kg 500 121 70-130

Matrix Spike (1811283-MS1)

Source: 1811238-01

Prepared: 11/21/18 Analyzed: 11/22/18

C10-C28 (DRO) 607 50 mg/kg 500 37.5 114 70-130

Matrix Spike Dup (1811283-MSD1)

Source: 1811238-01

Prepared: 11/21/18 Analyzed: 11/22/18

C10-C28 (DRO) 631 50 mg/kg 500 37.5 119 70-130 3.93 20

Summit Scientific

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

Project: Noble - Shable 22-23,24,25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/29/18 11:39

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

Summit Scientific

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

Batch 1811282 - General Preparation

Blank (1811282-BLK1)

Prepared & Analyzed: 11/21/18

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

LCS (1811282-BS1)

Prepared & Analyzed: 11/21/18

Calcium	281	10.0	mg/kg wet	250		112	70-130			
Magnesium	311	5.00	"	250		124	70-130			
Sodium	274	5.00	"	250		109	70-130			

Duplicate (1811282-DUP1)

Source: 1811247-01

Prepared & Analyzed: 11/21/18

Calcium	227	11.2	mg/kg dry		234			3.19	20	
Magnesium	118	5.59	"		125			5.81	20	
Sodium	21.6	5.59	"		33.0			41.6	20	

Matrix Spike (1811282-MS1)

Source: 1811247-01

Prepared & Analyzed: 11/21/18

Calcium	496	11.2	mg/kg dry	280	234	93.7	70-130			
Magnesium	455	5.59	"	280	125	118	70-130			
Sodium	324	5.59	"	280	33.0	104	70-130			

Matrix Spike Dup (1811282-MSD1)

Source: 1811247-01

Prepared & Analyzed: 11/21/18

Calcium	507	11.2	mg/kg dry	280	234	97.4	70-130	2.07	25	
Magnesium	431	5.59	"	280	125	109	70-130	5.58	25	
Sodium	301	5.59	"	280	33.0	95.9	70-130	7.22	25	

Summit Scientific

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

Project: Noble - Shable 22-23,24,25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/29/18 11:39

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 1811275 - General Preparation

Duplicate (1811275-DUP1)		Source: 1811247-01			Prepared & Analyzed: 11/21/18						
% Solids	89.6		%		89.4				0.212	20	

Batch 1811321 - General Preparation

LCS (1811321-BS1)		Prepared: 11/26/18 Analyzed: 11/27/18									
pH	9.2		pH Units		9.18		100		95-105		
Duplicate (1811321-DUP1)		Source: 1811291-01			Prepared: 11/26/18 Analyzed: 11/27/18						
pH	8.5		pH Units		8.5				0.00	20	

Summit Scientific

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

Project: Noble - Shable 22-23,24,25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/29/18 11:39

Specific Conductance by EPA Method 120.1 - Quality Control
Summit Scientific

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

Batch 1811279 - General Preparation

Blank (1811279-BLK1)

Prepared & Analyzed: 11/21/18

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (1811279-BS1)

Prepared & Analyzed: 11/21/18

Specific Conductance (EC) 0.761 0.0100 mmhos/cm 0.750 101 90-110

Duplicate (1811279-DUP1)

Source: 1811184-01

Prepared & Analyzed: 11/21/18

Specific Conductance (EC) 5.41 0.0100 mmhos/cm 6.27 14.7 20

Summit Scientific

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

Project: Noble - Shable 22-23,24,25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/29/18 11:39

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