

# EXCAVATION REPORT AND NO FURTHER ACTION REQUEST

## GUTTERSEN D04-32 HISTORIC PRODUCED WATER VESSEL RELEASE

COGCC SPILL FACILITY ID # 456248  
COGCC REMEDIATION # Not Assigned

Prepared for:



2115 117th Avenue  
Greeley, CO 80631

Prepared by:



6899 North Pecos Street, Unit C  
Denver, CO 80221

August 29, 2018

Mr. Jacob Evans  
Noble Energy Inc.  
2115 117<sup>th</sup> Avenue  
Greeley, CO 80631

Subject:       **Excavation Report and No Further Action Request**  
                  ***Guttersen D04-32 Historic Produced Water Vessel Release***  
                  Release API #: 05-123-30201  
                  Spill/Release Point ID: 456248  
                  Initial Form 19 #: 401714391  
                  SEW S4 T3N R64W  
                  Weld County, Colorado

Dear Mr. Evans:

Below please find a copy of the above referenced Excavation Report and No Further Action Request for the Guttersen D04-32 Historic Produced Water Vessel Release site (Site) in Weld County, Colorado. The text below describes environmental assessment, remediation, and associated confirmation sampling activities conducted by Tasman Geosciences, Inc. (Tasman), on behalf of Noble Energy, Inc. (Noble) between July 17, 2018 and August 15, 2018.

## **Introduction**

The purpose of this document is to describe the assessment and removal of impacted soil, and confirmation sampling activities completed at the Site. The activities described below were performed in response to a produced water vessel release confirmed during the plugging and abandonment of the Guttersen D04-32 tank battery.

## **Facility Background**

The Site is located approximately 10 miles north of the town of Keenesburg in Weld County, Colorado as shown in Figure 1. The Site legal description is the southeast 1/4 of the northwest 1/4 of Section 4, Township 3 north, Range 64 west, of the 6<sup>th</sup> Principal Meridian. The Site is located on relatively flat terrain and is surrounded by ranch land. The site is approximately 2,300 feet (ft.) east of County Road 53 and approximately 3,100 ft. north of County Road 36 and has coordinates of 40.255769°, -104.556953°.

As reported on the initial Form 19 submitted on July 25, 2018, an historic release was discovered beneath the produced water vessel during the plugging and abandonment of the Guttersen D04-32 tank battery. The Colorado Oil and Gas Conservation Commission (COGCC) assigned Spill/Release Point ID# 456248 for the project.

## **Field Activities – Vault Removal & Test Pit Assessment**

Tasman was retained by Noble Energy, Inc. on July 17, 2018, to investigate the historic produced water vessel release at the Guttersen D04-32 tank battery in order to determine the nature and extent of hydrocarbon impacts associated with the release.

Following the removal of oil and gas production equipment from the site, excavation activities were initiated and Tasman was on site July 17, 2018 to collect confirmation soil samples in the area of the suspected release. Soil samples were collected from five locations (SS01 through SS05), along the excavation sidewalls and base. The samples were field screened for volatile organic compounds (VOC) with a photo-ionization detector (PID) and standard headspace soil sampling techniques were used. Soil samples were submitted to Summit Scientific Laboratory in Golden, Colorado (Summit) for analysis of benzene, toluene, ethylbenzene, total xylene and naphthalene (BTEXN), total petroleum hydrocarbons gasoline-range organics (TPH-GRO) using United States Environmental Protection Agency (USEPA) Method 8260B, and total petroleum hydrocarbons diesel-range organics (TPH-DRO) using USEPA Method 8015. Sample SS01@3' was also analyzed for sodium adsorption ratio (SAR) by USEPA Method 6020 / United States Department of Agriculture (USDA) Method 60 6(2,3A) and specific conductance (EC) and pH via American Public Health Association (APHA)/American Society for Testing and Materials (ASTM)/USEPA methods. Soil impacts above COGCC Table 910-1 soil standards were confirmed following the receipt of laboratory analytical results from Summit. Soil analytical data is summarized in Table 1 and the soil sample locations are illustrated on Figure 2. The laboratory analytical report is included as Attachment A.

After completion of the vault removal soil testing, Tasman returned to the site on July 18, 2018 to assess the extent of impacts using test pit sampling techniques.

Tasman, along with the Gusher roust-about group completed a test pit assessment to determine the extent of impacts and calculate an estimated amount of impacted material for removal. A total of seven test pits were completed from 5 to 10 ft. below ground surface (bgs). Along with completing the test pit locations, a soil sample was collected at the midpoint and base of the test pits (SS06 through SS12). The samples were field screened for VOCs with a PID and standard headspace soil sampling techniques were used. Soil samples were submitted to Summit, for analysis of BTEXN, TPH-GRO and TPH-DRO. Soil impacts above COGCC Table 910-1 soil standards were not found in any soil samples submitted except SS10. Test pit assessment soil analytical results were the driving force for the planned excavation. Soil analytical data is summarized in Table 1 and the soil sample locations are illustrated on Figure 2. The laboratory analytical report is included as Attachment A.

## **Field Activities – Excavation**

Based on the results of the test pit assessment activities, the excavation of impacted soils was conducted between August 13, 2018 and August 15, 2018. The extent of the excavation was determined by collecting soil samples and field screening for VOCs using a PID and standard headspace sampling techniques. A total of six samples were collected at approximately 9 ft. bgs. along the sidewalls of the excavation. Soil samples were submitted to Summit for laboratory analysis of

BTEXN, TPH-GRO and TPH-DRO. Soil analytical data is summarized in Table 1 and the final excavation extent and excavation soil sample locations are illustrated in Figure 3. After sampling activities were completed, the excavation was backfilled with clean overburden material and imported clean fill. At the request of Noble, confirmation backfill samples were collected and screened from the imported clean fill. Representative sample BS01 was submitted to the laboratory for analysis of the sample analytical suite mentioned above. The laboratory analytical reports are included in Attachment A.

Groundwater was encountered within the base of the excavation at approximately 10 ft. bgs. A groundwater sample (GW01) was collected during excavation activities and is illustrated on Figure 3. The groundwater sample was submitted to Summit for laboratory analysis of BTEX using USEPA Method 8260B. Groundwater analytical results are summarized in Table 2. The laboratory report is included in Appendix A.

Based on the PID screening and soil sample analytical results, an excavation with final dimensions of approximately 49 ft. by 40 ft. by an average of 10 ft. bgs. was completed. Approximately 580 cubic yards of soil were removed and transported off-site for disposal at the Buffalo Ridge landfill in Keenesburg, Colorado under signed Noble waste manifests. Two bags of activated carbon were added to the groundwater within the base of the excavation. Following the completion of the excavation and carbon application, backfilling activities were completed.

## **Results**

Laboratory analytical results from the vault removal and test pit assessment samples indicate soil concentrations above the applicable COGCC Table 910-1 soil standards were present at the site. The areas where soil samples exceeded COGCC standards were subsequently over-excavated. Laboratory analytical results from the final extents and base of the excavation indicate that BTEXN, TPH-GRO, and TPH-DRO concentrations were below the applicable COGCC Table 910-1 soil standards.

Laboratory analytical results indicate BTEX concentrations in the groundwater collected were below the COGCC Table 910-1 groundwater standards for BTEX in GW01.

Analytical results for the backfill soil sample collected (BS01) indicate that BTEXN, TPH-GRO, and TPH-DRO concentrations were below laboratory detection limits.

## **Conclusions**

Based upon excavation activities completed at the site and laboratory analytical data presented herein, petroleum hydrocarbon impacts to soil have been successfully removed. Noble is requesting a No Further Action designation from the COGCC for this site.

## **Remarks**

The discussion and conclusions contained in this report represent the professional opinions of Tasman Geosciences, Inc. These opinions are based on currently available information and are arrived at in accordance with currently accepted geologic and engineering practices.

Please contact me at (720) 431-1190 or at [bbruns@tasman-geo.com](mailto:bbruns@tasman-geo.com) if you require additional information.

Sincerely,  
Tasman Geosciences, Inc.



Brandon Bruns, PE  
Project Manager

Attachments:

Table 1 – Soil Analytical Data

Table 2 – Groundwater Analytical Data

Figure 1 – Site Location Map

Figure 2 – Vault Removal and Test Pit Analytical Results Map (07/17/2018 , 07/18/2018)

Figure 3 – Excavation Soil and Groundwater Analytical Results Map (08/13/2018 , 08/15/2018)

Attachment A – Laboratory Analytical Data Reports

# **TABLES**

**TABLE 1**  
**SOIL ANALYTICAL DATA**  
**NOBLE ENERGY, INC. - GUTTERSEN D04-32**  
**HISTORIC PRODUCED WATER VESSEL RELEASE**

Soil Sample ID	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	Naphthalene (mg/kg)
COGCC Standard		0.17	85	100	175	500		23
SS01@3' <sup>(1)</sup>	7/17/2018	<0.0020	<0.0050	0.031	<0.010	68	410	0.14
SS02@3'	7/17/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS03@3'	7/17/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS04@3'	7/17/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS05@8' <sup>(1)</sup>	7/17/2018	<0.0020	<0.0050	0.17	7.7	<b>2500</b>	<b>2200</b>	1.6
SS06@5'	7/18/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS06@10'	7/18/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS07@5'	7/18/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS07@10'	7/18/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS08@5'	7/18/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS08@10'	7/18/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS09@5'	7/18/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS09@10'	7/18/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS10@5' <sup>(1)</sup>	7/18/2018	0.058	<0.0050	0.46	32	<b>240</b>	<b>1800</b>	0.46
SS10@10'	7/18/2018	<0.0020	<0.0050	<0.0050	0.012	<50	<50	<0.010
SS11@5'	7/18/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS11@10'	7/18/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS12@5'	7/18/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS12@10'	7/18/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS15@9'	8/13/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS16@9'	8/13/2018	0.0052	<0.0050	0.0053	<0.010	<50	<50	0.018
SS17@9'	8/13/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS20@9'	8/13/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS21@9'	8/13/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
SS22@9'	8/13/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BS01	8/15/2018	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010

Soil Sample ID	Date	EC (mmhos/cm)	pH	SAR
		4 or 2x BG	6-9	<12
SS01@3'	07/17/18	1.55	<b>9.31</b>	6.28

Notes:

COGCC = Colorado Oil and Gas Conservation Commission

TPH-GRO = Total petroleum hydrocarbons - gasoline range organics

TPH-DRO = Total petroleum hydrocarbons - diesel range organics

mg/kg = Milligrams per kilogram

EC = Specific Conductance

mmhos/cm = Millimhos per centimeter

BG = Background

SAR = Sodium adsorption ratio

< = Analytical result is less than the indicated laboratory reporting limit

1 = The percent recovery of surrogate 4-Bromofluorobenzene associated with this sample was high and the lab flagged it with an S-02 flag which means the surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.

Soil standards referenced from COGCC Table 910-1

**Highlighted results are equal to or exceed the COGCC Table 910-1 standard**

**TABLE 2**  
**GROUNDWATER ANALYTICAL DATA**  
**NOBLE ENERGY, INC. - GUTTERSEN D04-32**  
**HISTORIC PRODUCED WATER VESSEL RELEASE**

Monitoring Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
<b>COGCC Standard</b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>
GW01	08/15/18	<1.0	1.3	<1.0	<2.0

Notes:

COGCC = Colorado Oil and Gas Conservation Commission

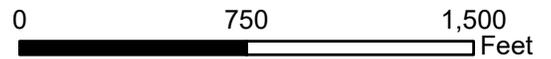
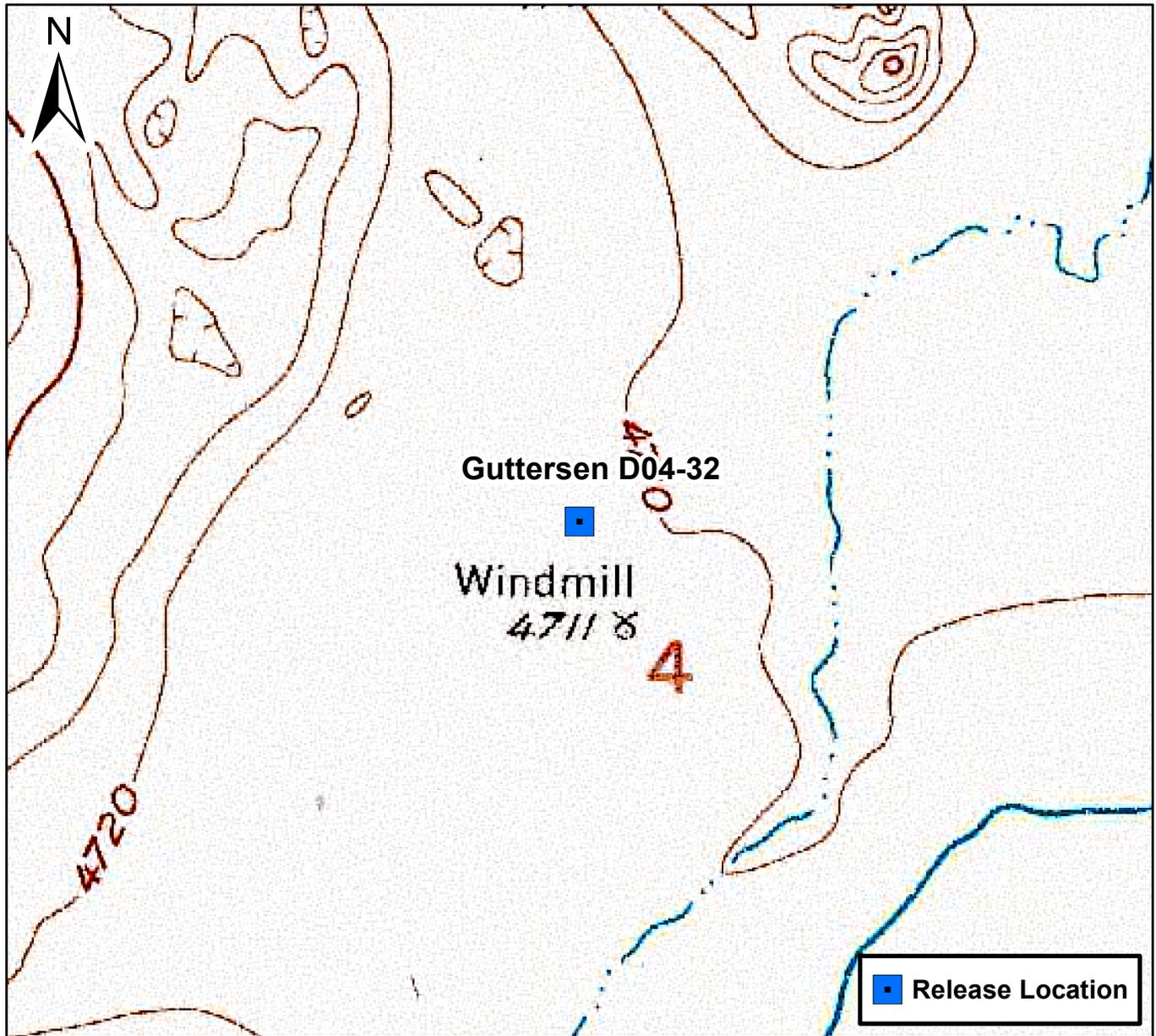
µg/L = Micrograms per liter

< = Analytical result is less than the indicated laboratory reporting limit

Groundwater standards referenced from COGCC Table 910-1

**Highlighted results are equal to or exceed the COGCC Table 910-1 standard**

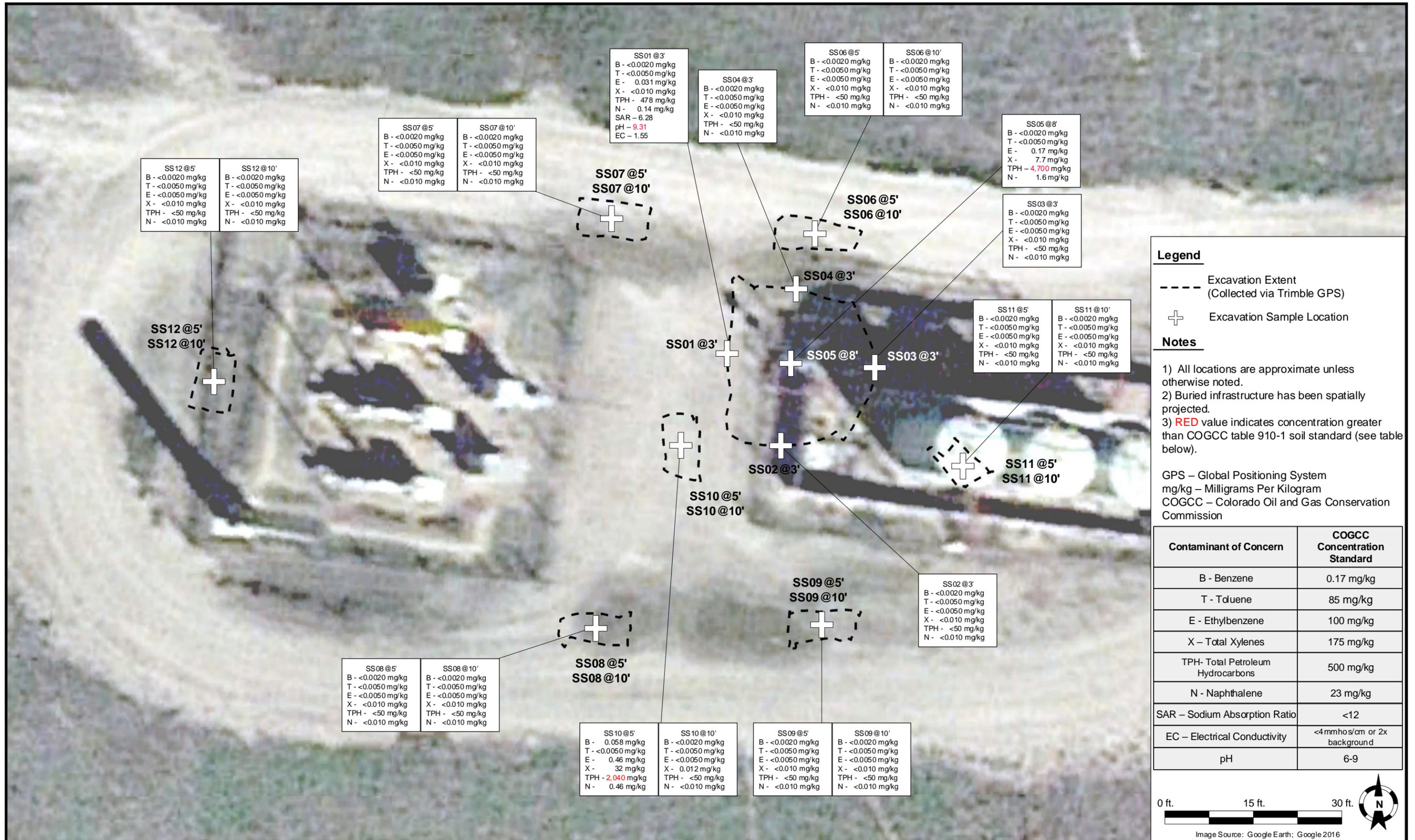
## **FIGURES**



### Figure 1

Site Location Map  
 Guttersen D04-32  
 HISTORIC PRODUCED WATER  
 VESSEL RELEASE  
 SENW S4 T3N R64W  
 Weld County, Colorado





DATE: 08/29/2018  
 DESIGNED BY: JW  
 DRAWN BY: TL

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

**Noble Energy, Inc. – DJ Basin**  
**Guttersen D04-32**  
**HISTORIC PRODUCED WATER VESSEL RELEASE**  
 SENW, Section 4, Township 3 North, Range 64 West  
 Weld County, Colorado

Vault Removal and Test Pit  
 Analytical Results Map  
 (07/17/18, 07/18/18)

**FIGURE 2**



DATE: 08/29/2018  
 DESIGNED BY: DC  
 DRAWN BY: TL

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

**Noble Energy, Inc. – DJ Basin**  
**Guttersen D04-32**  
**HISTORIC PRODUCED WATER VESSEL RELEASE**  
 SENW, Section 4, Township 3 North, Range 64 West  
 Weld County, Colorado

Excavation Soil and Groundwater  
 Analytical Results Map  
 (08/13/18, 08/15/18)

**FIGURE 3**

# **ATTACHMENT A**

## **LABORATORY ANALYTICAL DATA REPORTS**

# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

July 24, 2018

Brandon Bruns  
Tasman Geosciences  
6899 Pecos St, Unit C  
Denver, CO 80221  
RE: Noble - Guttersen D04-32

Enclosed are the results of analyses for samples received by Summit Scientific on 07/17/18 18:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury  
Laboratory Manager



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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
07/24/18 07:37

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@3'	1807194-01	Soil	07/17/18 16:00	07/17/18 18:00
SS02@3'	1807194-02	Soil	07/17/18 16:05	07/17/18 18:00
SS03@3'	1807194-03	Soil	07/17/18 16:10	07/17/18 18:00
SS04@3'	1807194-04	Soil	07/17/18 16:15	07/17/18 18:00
SS05@8'	1807194-05	Soil	07/17/18 16:20	07/17/18 18:00

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.*



**Sample Receipt Checklist**

S2 Work Order: 1807194

Client: Noble/Tanner Client Project ID: Gutterson DDY-32

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

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

Temp (°C)	<u>8.5</u>
-----------	------------

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <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.	/			
Were all samples received intact <sup>(1)</sup> ?	/			
Was adequate sample volume provided <sup>(1)</sup> ?	/			
If custody seals are present, are they intact <sup>(1)</sup> ?			/	
Are samples with holding times due within 48 hours sample due within 48 hours present?			/	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	/			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	/			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	/			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	/			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>			/	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? 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 <sup>(1)</sup> ? Record the pH in Comments.			/	
If dissolved metals are requested, were samples field filtered?			/	
Additional Comments (if any):				
<b><sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.</b>				

CP  
Custodian Printed Name or Initials

[Signature]  
Signature or Initials of Custodian

7.17.18 1825  
Date/Time



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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
07/24/18 07:37

**SS01@3'**  
**1807194-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/17/18 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1807191	07/18/18	07/19/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>0.031</b>	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
<b>Naphthalene</b>	<b>0.14</b>	0.010	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>68</b>	50	"	"	"	"	"	"	

Date Sampled: **07/17/18 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		119 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		88.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		227 %	21-167		"	"	"	"	S-02

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/17/18 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>410</b>	50	mg/kg	1	1807192	07/18/18	07/20/18	EPA 8015M	

Date Sampled: **07/17/18 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		97.1 %	30-150		"	"	"	"	

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

Date Sampled: **07/17/18 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>511</b>	11.6	mg/kg dry	1	1807228	07/19/18	07/20/18	EPA 6020B	
<b>Magnesium</b>	<b>659</b>	5.79	"	"	"	"	"	"	

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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/24/18 07:37

**SS01@3'**  
**1807194-01 (Soil)**

**Summit Scientific**

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

<b>Sodium</b>	<b>911</b>	5.79 mg/kg dry	1	1807228	07/19/18	07/20/18	EPA 6020B
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**Calculated Analysis**

Date Sampled: **07/17/18 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>6.28</b>	0.100	units	1	1807273	07/23/18	07/23/18	Calculation	

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

Date Sampled: **07/17/18 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>86.4</b>		%	1	1807206	07/18/18	07/19/18	Calculation	
<b>pH</b>	<b>9.31</b>		pH Units	"	1807210	07/18/18	07/18/18	EPA 9045D	

**Specific Conductance by EPA Method 120.1**

Date Sampled: **07/17/18 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>1.55</b>	0.0100	mmhos/cm	1	1807211	07/18/18	07/18/18	EPA 120.1	

Summit Scientific

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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brunns

Reported:  
07/24/18 07:37

**SS02@3'**  
**1807194-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/17/18 16:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1807191	07/18/18	07/18/18	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: **07/17/18 16:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/17/18 16:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1807192	07/18/18	07/20/18	EPA 8015M	

Date Sampled: **07/17/18 16:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.0 %	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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/24/18 07:37

**SS03@3'**  
**1807194-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/17/18 16:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1807191	07/18/18	07/18/18	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: **07/17/18 16:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		115 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/17/18 16:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1807192	07/18/18	07/20/18	EPA 8015M	

Date Sampled: **07/17/18 16:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		102 %	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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brunns

Reported:  
07/24/18 07:37

**SS04@3'**  
**1807194-04 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/17/18 16:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1807191	07/18/18	07/18/18	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: **07/17/18 16:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/17/18 16:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1807192	07/18/18	07/20/18	EPA 8015M	

Date Sampled: **07/17/18 16:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		102 %	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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brunns

Reported:  
07/24/18 07:37

**SS05@8'**  
**1807194-05 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/17/18 16:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1807191	07/18/18	07/19/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>0.17</b>	0.0050	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>7.7</b>	1.0	"	100	"	"	07/18/18	"	
<b>Naphthalene</b>	<b>1.6</b>	0.010	"	1	"	"	07/19/18	"	
<b>Gasoline Range Hydrocarbons</b>	<b>2500</b>	500	"	10	"	"	"	"	

Date Sampled: **07/17/18 16:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		127 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		88.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		753 %	21-167		"	"	"	"	S-02

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/17/18 16:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>2200</b>	50	mg/kg	1	1807192	07/18/18	07/20/18	EPA 8015M	

Date Sampled: **07/17/18 16:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		111 %	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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brunns

Reported:  
07/24/18 07:37

### 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 1807191 - EPA 5030 Soil MS

##### Blank (1807191-BLK1)

Prepared & Analyzed: 07/18/18

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	0.0431		"	0.0396		109	23-173				
Surrogate: Toluene-d8	0.0394		"	0.0400		98.4	20-170				
Surrogate: 4-Bromofluorobenzene	0.0418		"	0.0400		105	21-167				

##### LCS (1807191-BS1)

Prepared & Analyzed: 07/18/18

Benzene	0.0833	0.0020	mg/kg	0.100		83.3	70-130				
Toluene	0.0869	0.0050	"	0.100		86.9	70-130				
Ethylbenzene	0.0873	0.0050	"	0.100		87.3	70-130				
m,p-Xylene	0.168	0.010	"	0.200		83.9	70-130				
o-Xylene	0.0860	0.0050	"	0.100		86.0	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0421		"	0.0396		106	23-173				
Surrogate: Toluene-d8	0.0415		"	0.0400		104	20-170				
Surrogate: 4-Bromofluorobenzene	0.0393		"	0.0400		98.2	21-167				

##### Matrix Spike (1807191-MS1)

Source: 1807187-01

Prepared & Analyzed: 07/18/18

Benzene	0.0817	0.0020	mg/kg	0.100	ND	81.7	70-130				
Toluene	0.0849	0.0050	"	0.100	ND	84.9	70-130				
Ethylbenzene	0.0875	0.0050	"	0.100	ND	87.5	70-130				
m,p-Xylene	0.167	0.010	"	0.200	ND	83.7	70-130				
o-Xylene	0.0852	0.0050	"	0.100	ND	85.2	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0421		"	0.0396		106	23-173				
Surrogate: Toluene-d8	0.0406		"	0.0400		102	20-170				
Surrogate: 4-Bromofluorobenzene	0.0394		"	0.0400		98.6	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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/24/18 07:37

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

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

**Batch 1807191 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1807191-MSD1)</b>	<b>Source: 1807187-01</b>			<b>Prepared &amp; Analyzed: 07/18/18</b>					
Benzene	0.0790	0.0020	mg/kg	0.100	ND	79.0	70-130	3.36	30
Toluene	0.0822	0.0050	"	0.100	ND	82.2	70-130	3.23	30
Ethylbenzene	0.0848	0.0050	"	0.100	ND	84.8	70-130	3.17	30
m,p-Xylene	0.162	0.010	"	0.200	ND	81.1	70-130	3.09	30
o-Xylene	0.0835	0.0050	"	0.100	ND	83.5	70-130	2.06	30
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0415</i>		<i>"</i>	<i>0.0396</i>		<i>105</i>	<i>23-173</i>		
<i>Surrogate: Toluene-d8</i>	<i>0.0409</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>20-170</i>		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0394</i>		<i>"</i>	<i>0.0400</i>		<i>98.6</i>	<i>21-167</i>		

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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/24/18 07:37

**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 1807192 - EPA 3550A**

**Blank (1807192-BLK1)**

Prepared: 07/18/18 Analyzed: 07/20/18

C10-C28 (DRO) ND 50 mg/kg

**LCS (1807192-BS1)**

Prepared: 07/18/18 Analyzed: 07/20/18

C10-C28 (DRO) 503 50 mg/kg 70-130

**Matrix Spike (1807192-MS1)**

Source: 1807187-01

Prepared: 07/18/18 Analyzed: 07/20/18

C10-C28 (DRO) 500 50 mg/kg 34.1 70-130

**Matrix Spike Dup (1807192-MSD1)**

Source: 1807187-01

Prepared: 07/18/18 Analyzed: 07/20/18

C10-C28 (DRO) 505 50 mg/kg 34.1 70-130 1.01 20

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 - Gutterson D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
07/24/18 07:37

**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 1807228 - General Preparation**

**Blank (1807228-BLK1)**

Prepared: 07/19/18 Analyzed: 07/20/18

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

**LCS (1807228-BS1)**

Prepared: 07/19/18 Analyzed: 07/20/18

Calcium	459	10.0	mg/kg wet	500		91.8	70-130		
Magnesium	568	5.00	"	500		114	70-130		
Sodium	592	5.00	"	500		118	70-130		

**Duplicate (1807228-DUP1)**

Source: 1807186-01

Prepared: 07/19/18 Analyzed: 07/20/18

Calcium	1160	11.3	mg/kg dry	1100				4.64	20
Magnesium	213	5.63	"	202				5.43	20
Sodium	137	5.63	"	139				1.25	20

**Matrix Spike (1807228-MS1)**

Source: 1807186-01

Prepared: 07/19/18 Analyzed: 07/20/18

Calcium	1570	11.3	mg/kg dry	563	1100	83.8	70-130		
Magnesium	815	5.63	"	563	202	109	70-130		
Sodium	753	5.63	"	563	139	109	70-130		

**Matrix Spike Dup (1807228-MSD1)**

Source: 1807186-01

Prepared: 07/19/18 Analyzed: 07/20/18

Calcium	1750	11.3	mg/kg dry	563	1100	115	70-130	10.6	25
Magnesium	823	5.63	"	563	202	110	70-130	0.947	25
Sodium	783	5.63	"	563	139	115	70-130	3.90	25

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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/24/18 07:37

**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 1807206 - General Preparation**

Duplicate (1807206-DUP1)	Source: 1807185-01			Prepared: 07/18/18 Analyzed: 07/19/18	
% Solids	95.5		%	95.1	0.339 20

**Batch 1807210 - General Preparation**

LCS (1807210-BS1)	Prepared & Analyzed: 07/18/18				
pH	9.2		pH Units	9.18	99.7 95-105
Duplicate (1807210-DUP1)	Source: 1807186-01			Prepared & Analyzed: 07/18/18	
pH	8.2		pH Units	8.1	1.11 20

Summit Scientific

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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/24/18 07:37

**Specific Conductance by EPA Method 120.1 - Quality Control**  
**Summit Scientific**

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

**Batch 1807211 - General Preparation**

**LCS (1807211-BS1)**

Prepared & Analyzed: 07/18/18

Specific Conductance (EC)	0.750	0.0100	mmhos/cm	0.750	100	90-110
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**Duplicate (1807211-DUP1)**

**Source: 1807186-01**

Prepared & Analyzed: 07/18/18

Specific Conductance (EC)	1.66	0.0100	mmhos/cm	1.70	2.23	20
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Summit Scientific

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

Project: Noble - Gutterson D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
07/24/18 07:37

### 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.
- 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

August 06, 2018

Brandon Bruns

Tasman Geosciences

6899 Pecos St, Unit C

Denver, CO 80221

RE: Noble - Guttersen D04-32

Enclosed are the results of analyses for samples received by Summit Scientific on 07/18/18 18:45. 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', written in a cursive style.

Paul Shrewsbury For Ben Shrewsbury

Laboratory Manager



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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/06/18 16:15

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS06@5'	1807228-01	Soil	07/18/18 08:45	07/18/18 18:45
SS06@10'	1807228-02	Soil	07/18/18 08:58	07/18/18 18:45
SS07@5'	1807228-03	Soil	07/18/18 09:40	07/18/18 18:45
SS07@10'	1807228-04	Soil	07/18/18 09:44	07/18/18 18:45
SS08@5'	1807228-05	Soil	07/18/18 10:01	07/18/18 18:45
SS08@10'	1807228-06	Soil	07/18/18 10:05	07/18/18 18:45
SS09@5'	1807228-07	Soil	07/18/18 10:15	07/18/18 18:45
SS09@10'	1807228-08	Soil	07/18/18 10:17	07/18/18 18:45
SS10@5'	1807228-09	Soil	07/18/18 10:28	07/18/18 18:45
SS10@10'	1807228-10	Soil	07/18/18 10:31	07/18/18 18:45
SS11@5'	1807228-11	Soil	07/18/18 11:05	07/18/18 18:45
SS11@10'	1807228-12	Soil	07/18/18 11:11	07/18/18 18:45
SS12@5'	1807228-13	Soil	07/18/18 11:30	07/18/18 18:45
SS12@10'	1807228-14	Soil	07/18/18 11:32	07/18/18 18:45

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

1807228.1

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

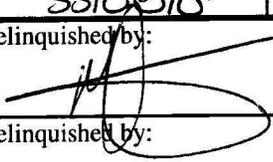
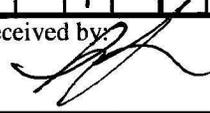
Page 1 of 2

Client: Noble/Tasman  
Address: -  
City/State/Zip: -  
Phone: 970.210.6571 Fax: -  
Sampler Name: T. Lichtenberg

Project Manager: Brandon Bruns, Invoice: Jacob Evans  
E-Mail: Bbruns@tasman-geo.com  
Project Name: GUTTERSEN D04-32  
Project Number: -

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions		
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	8260 BTEX	8260B GBTEXN	8015 DRO		pH, EC, SAR	
SS06@5'	7/18/18	845	1			X			X				X	X			
SS06@10'		858															
SS07@5'		940															
SS07@10'		944															
SS08@5'		1001															
SS08@10'		1005															
SS09@5'		1015															
SS09@10'		1017															
SS10@5'		1028															
SS10@10'		1031															

Relinquished by: 	Date/Time: <u>7-18-18</u> <u>1845</u>	Received by: 	Date/Time: <u>7-18-18</u> <u>1845</u>	Turn Around Time (Check)	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:	Same Day <input type="checkbox"/>	72 Hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/>
Relinquished by:	Date/Time:	Received by:	Date/Time:	24 Hours <input type="checkbox"/>	
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:	48 Hours <input type="checkbox"/>	
				Sample Integrity:	
				Temperature Upon Receipt: <u>9.2</u>	
				Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

# Summit Scientific

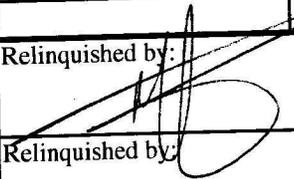
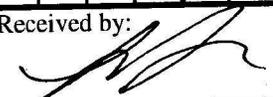
1807228.2

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

Page 2 of 2

Client: Noble/Tasman  
Address: -  
City/State/Zip: -  
Phone: 970.210.6571 Fax: -  
Sampler Name: T. Lichtenberg

Project Manager: Brandon Bruns, Invoice: Jacob Evans  
E-Mail: Bbruns@tasman-geo.com  
Project Name: GUTTERSEN D04-32  
Project Number: -

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix				Analyze For:				Special Instructions		
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Ground water	Soil	Air - Canister Serial #	Other (Specify)	8260 BTEX	8260B GBTEXN	8015 DRO	pH, EC, SAR			
SS11@5'	7/18/18	1105	1			X			X				X	X				
SS11@10'		1111																
SS12@5'		1130																
SS12@10'		1132																
Relinquished by: 				Date/Time: 7.18.18 1845	Received by: 				Date/Time: 7.18.18 1845	Turn Around Time (Check)				Notes:				
Relinquished by:				Date/Time:	Received by:				Date/Time:	Same Day <input type="checkbox"/>				72 Hours <input type="checkbox"/>				
Relinquished by:				Date/Time:	Received in Lab by:				Date/Time:	24 Hours <input type="checkbox"/>				Standard <input checked="" type="checkbox"/>				
Relinquished by:				Date/Time:	Received in Lab by:				Date/Time:	48 Hours <input type="checkbox"/>				Sample Integrity:				
Relinquished by:				Date/Time:	Received in Lab by:				Date/Time:	Temperature Upon Receipt: 47				Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				

1807228

Sample Receipt Checklist

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

Client: Noble/Tasman Client Project ID: Grottersen D04-32

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

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

Temp (°C)	9.2
-----------	-----

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 type="checkbox"/>	<input checked="" type="checkbox"/>	
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? <b>If yes, contact client and note in narrative.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? 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 <sup>(1)</sup> ? 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):

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

CP  
Custodian Printed Name or Initials

[Signature]  
Signature of Custodian

7.18.18 1845  
Date/Time



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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/06/18 16:15

**SS06@5'**  
**1807228-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/18/18 08:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1807235	07/19/18	07/19/18	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: **07/18/18 08:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		115 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/18/18 08:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1807234	07/19/18	07/21/18	EPA 8015M	

Date Sampled: **07/18/18 08:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		105 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/06/18 16:15

**SS06@10'**  
**1807228-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/18/18 08:58**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1807235	07/19/18	07/19/18	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: **07/18/18 08:58**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/18/18 08:58**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1807234	07/19/18	07/21/18	EPA 8015M	

Date Sampled: **07/18/18 08:58**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		104 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/06/18 16:15

**SS07@5'**  
**1807228-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/18/18 09:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1807235	07/19/18	07/20/18	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: **07/18/18 09:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		118 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/18/18 09:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1807234	07/19/18	07/21/18	EPA 8015M	

Date Sampled: **07/18/18 09:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		103 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

Reported:  
08/06/18 16:15

**SS07@10'**  
**1807228-04 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/18/18 09:44**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1807235	07/19/18	07/20/18	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: **07/18/18 09:44**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/18/18 09:44**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1807234	07/19/18	07/21/18	EPA 8015M	

Date Sampled: **07/18/18 09:44**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		105 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/06/18 16:15

**SS08@5'**  
**1807228-05 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/18/18 10:01**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1807235	07/19/18	07/20/18	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: **07/18/18 10:01**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		116 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/18/18 10:01**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1807234	07/19/18	07/21/18	EPA 8015M	

Date Sampled: **07/18/18 10:01**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		112 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/06/18 16:15

**SS08@10'**  
**1807228-06 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/18/18 10:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1807235	07/19/18	07/20/18	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: **07/18/18 10:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		115 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/18/18 10:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1807234	07/19/18	07/21/18	EPA 8015M	

Date Sampled: **07/18/18 10:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		110 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/06/18 16:15

**SS09@5'**  
**1807228-07 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/18/18 10:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1807235	07/19/18	07/20/18	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: **07/18/18 10:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		123 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/18/18 10:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1807234	07/19/18	07/21/18	EPA 8015M	

Date Sampled: **07/18/18 10:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		106 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/06/18 16:15

**SS09@10'**  
**1807228-08 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/18/18 10:17**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1807235	07/19/18	07/20/18	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: **07/18/18 10:17**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/18/18 10:17**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1807234	07/19/18	07/21/18	EPA 8015M	

Date Sampled: **07/18/18 10:17**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		106 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/06/18 16:15

**SS10@5'**  
**1807228-09 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/18/18 10:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>0.058</b>	0.0020	mg/kg	1	1807235	07/19/18	07/20/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>0.46</b>	0.0050	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>32</b>	1.0	"	100	"	"	07/20/18	"	
<b>Naphthalene</b>	<b>0.46</b>	0.010	"	1	"	"	07/20/18	"	
<b>Gasoline Range Hydrocarbons</b>	<b>240</b>	50	"	"	"	"	"	"	

Date Sampled: **07/18/18 10:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		150 %	23-173	"	"	"	"	"	
Surrogate: Toluene-d8		89.9 %	20-170	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		443 %	21-167	"	"	"	"	"	S-02

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/18/18 10:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>1800</b>	50	mg/kg	1	1807234	07/19/18	07/21/18	EPA 8015M	

Date Sampled: **07/18/18 10:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		106 %	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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/06/18 16:15

**SS10@10'**  
**1807228-10 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/18/18 10:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1807235	07/19/18	07/20/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>0.012</b>	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **07/18/18 10:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		115 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/18/18 10:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1807234	07/19/18	07/21/18	EPA 8015M	

Date Sampled: **07/18/18 10:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		107 %	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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/06/18 16:15

**SS11@5'**  
**1807228-11 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/18/18 11:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1807235	07/19/18	07/20/18	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: **07/18/18 11:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/18/18 11:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1807234	07/19/18	07/21/18	EPA 8015M	

Date Sampled: **07/18/18 11:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		100 %	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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/06/18 16:15

**SS11@10'**  
**1807228-12 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/18/18 11:11**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1807235	07/19/18	07/20/18	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: **07/18/18 11:11**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		118 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/18/18 11:11**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1807234	07/19/18	07/21/18	EPA 8015M	

Date Sampled: **07/18/18 11:11**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		118 %	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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/06/18 16:15

**SS12@5'**  
**1807228-13 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/18/18 11:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1807235	07/19/18	07/20/18	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: **07/18/18 11:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/18/18 11:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1807234	07/19/18	07/21/18	EPA 8015M	

Date Sampled: **07/18/18 11:30**

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

Summit Scientific

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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/06/18 16:15

**SS12@10'**  
**1807228-14 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/18/18 11:32**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1807235	07/19/18	07/20/18	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: **07/18/18 11:32**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/18/18 11:32**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1807234	07/19/18	07/21/18	EPA 8015M	

Date Sampled: **07/18/18 11:32**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		103 %	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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/06/18 16:15

### 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 1807235 - EPA 5030 Soil MS

##### Blank (1807235-BLK1)

Prepared & Analyzed: 07/19/18

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	0.0445		"	0.0396		112	23-173			
Surrogate: Toluene-d8	0.0397		"	0.0400		99.3	20-170			
Surrogate: 4-Bromofluorobenzene	0.0413		"	0.0400		103	21-167			

##### LCS (1807235-BS1)

Prepared & Analyzed: 07/19/18

Benzene	0.0886	0.0020	mg/kg	0.100		88.6	70-130			
Toluene	0.0934	0.0050	"	0.100		93.4	70-130			
Ethylbenzene	0.0959	0.0050	"	0.100		95.9	70-130			
m,p-Xylene	0.185	0.010	"	0.200		92.5	70-130			
o-Xylene	0.0936	0.0050	"	0.100		93.6	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0418		"	0.0396		106	23-173			
Surrogate: Toluene-d8	0.0410		"	0.0400		103	20-170			
Surrogate: 4-Bromofluorobenzene	0.0397		"	0.0400		99.3	21-167			

##### Matrix Spike (1807235-MS1)

Source: 1807227-01

Prepared & Analyzed: 07/19/18

Benzene	0.0820	0.0020	mg/kg	0.100	ND	82.0	70-130			
Toluene	0.0875	0.0050	"	0.100	ND	87.5	70-130			
Ethylbenzene	0.0883	0.0050	"	0.100	ND	88.3	70-130			
m,p-Xylene	0.172	0.010	"	0.200	ND	85.8	70-130			
o-Xylene	0.0864	0.0050	"	0.100	ND	86.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0434		"	0.0396		110	23-173			
Surrogate: Toluene-d8	0.0416		"	0.0400		104	20-170			
Surrogate: 4-Bromofluorobenzene	0.0396		"	0.0400		98.9	21-167			

Summit Scientific

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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/06/18 16:15

**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 1807235 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1807235-MSD1)</b>	<b>Source: 1807227-01</b>			<b>Prepared &amp; Analyzed: 07/19/18</b>						
Benzene	0.0660	0.0020	mg/kg	0.100	ND	66.0	70-130	21.6	30	QM-07
Toluene	0.0696	0.0050	"	0.100	ND	69.6	70-130	22.8	30	QM-07
Ethylbenzene	0.0706	0.0050	"	0.100	ND	70.6	70-130	22.2	30	
m,p-Xylene	0.137	0.010	"	0.200	ND	68.3	70-130	22.8	30	QM-07
o-Xylene	0.0697	0.0050	"	0.100	ND	69.7	70-130	21.4	30	QM-07
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0425</i>		<i>"</i>	<i>0.0396</i>		<i>107</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0412</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0408</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>21-167</i>			

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 - Gutterson D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/06/18 16:15

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

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

**Batch 1807234 - EPA 3550A**

**Blank (1807234-BLK1)**

Prepared: 07/19/18 Analyzed: 07/21/18

C10-C28 (DRO) ND 50 mg/kg

**LCS (1807234-BS1)**

Prepared: 07/19/18 Analyzed: 07/21/18

C10-C28 (DRO) 489 50 mg/kg 500 97.7 70-130

**Matrix Spike (1807234-MS1)**

**Source: 1807227-01**

Prepared: 07/19/18 Analyzed: 07/21/18

C10-C28 (DRO) 519 50 mg/kg 500 33.0 97.2 70-130

**Matrix Spike Dup (1807234-MSD1)**

**Source: 1807227-01**

Prepared: 07/19/18 Analyzed: 07/21/18

C10-C28 (DRO) 485 50 mg/kg 500 33.0 90.5 70-130 6.66 20

Summit Scientific

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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/06/18 16:15

### 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.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- 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

August 15, 2018

Brandon Bruns

Tasman Geosciences

6899 Pecos St, Unit C

Denver, CO 80221

RE: Noble - Gutteresen D04-32

Enclosed are the results of analyses for samples received by Summit Scientific on 08/13/18 18:24. 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', written in a cursive style.

Paul Shrewsbury For Ben Shrewsbury

Laboratory Manager



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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/15/18 07:08

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS15@9'	1808167-01	Soil	08/13/18 10:40	08/13/18 18:24
SS16@9'	1808167-02	Soil	08/13/18 10:50	08/13/18 18:24
SS17@9'	1808167-03	Soil	08/13/18 11:00	08/13/18 18:24
SS20@9'	1808167-04	Soil	08/13/18 14:00	08/13/18 18:24
SS21@9'	1808167-05	Soil	08/13/18 14:10	08/13/18 18:24
SS22@9'	1808167-06	Soil	08/13/18 14:20	08/13/18 18:24

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.*

1808167

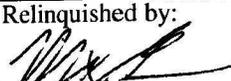
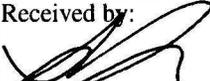
# Summit Scientific

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: 979-255-425 Fax: -  
Sampler Name: Max Garza

Project Manager: Brandon Bruns, Invoice: Jacob Evans  
E-Mail: Bbruns@tasman-geo.com  
Project Name: Gutteresen D04-32  
Project Number: N/A

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions		
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	8260 BTEX	8260B GBTEXN	8015 DRO		pH, EC, SAR	
SS15@9'	8/13/18	1040	1			X			X				X	X			
SS16@9'	↓	1050	↓			X			X				X	X			
SS17@9'	↓	1100	↓			X			X				X	X			
SS20@9'	↓	1400	↓			X			X				X	X			
SS21@9'	↓	1410	↓			X			X				X	X			
SS22@9'	↓	1420	↓			X			X				X	X			
Relinquished by: 				Date/Time: 8-13-18 1815	Received by: 				Date/Time: 8-13-18 1815	Turn Around Time (Check)				Notes:			
Relinquished by:				Date/Time:	Received by:				Date/Time:	Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/>							
Relinquished by:				Date/Time:	Received in Lab by:				Date/Time:	24 Hours <input type="checkbox"/> Standard <input type="checkbox"/>							
Relinquished by:				Date/Time:	Received in Lab by:				Date/Time:	48 Hours <input type="checkbox"/>				Sample Integrity:			
Relinquished by:				Date/Time:	Received in Lab by:				Date/Time:	Temperature Upon Receipt: 10.2				Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			

1808167

Sample Receipt Checklist

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

Client: Noble/Tasman Client Project ID: Gutterzen D04-32

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 <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.	/			
Were all samples received intact <sup>(1)</sup> ?	/			
Was adequate sample volume provided <sup>(1)</sup> ?	/			
If custody seals are present, are they intact <sup>(1)</sup> ?			/	
Are samples with holding times due within 48 hours sample due within 48 hours present?			/	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	/			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	/			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	/			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	/			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			/	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? 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 <sup>(1)</sup> ? Record the pH in Comments.			/	
If dissolved metals are requested, were samples field filtered?			/	
Additional Comments (if any):				

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

IA  
Custodian Printed Name or Initials

[Signature]  
Signature or Initials of Custodian

8.13.10 1825  
Date/Time



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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/15/18 07:08

**SS15@9'**  
**1808167-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/13/18 10:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1808154	08/13/18	08/14/18	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: **08/13/18 10:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/13/18 10:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1808158	08/13/18	08/14/18	EPA 8015M	

Date Sampled: **08/13/18 10:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		98.0 %	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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/15/18 07:08

**SS16@9'**  
**1808167-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/13/18 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>0.0052</b>	0.0020	mg/kg	1	1808154	08/13/18	08/14/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>0.0053</b>	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
<b>Naphthalene</b>	<b>0.018</b>	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **08/13/18 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.1 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/13/18 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1808158	08/13/18	08/14/18	EPA 8015M	

Date Sampled: **08/13/18 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.1 %	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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/15/18 07:08

**SS17@9'**  
**1808167-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/13/18 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1808154	08/13/18	08/14/18	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: **08/13/18 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		99.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/13/18 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1808158	08/13/18	08/14/18	EPA 8015M	

Date Sampled: **08/13/18 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		97.2 %	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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/15/18 07:08

**SS20@9'**  
**1808167-04 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/13/18 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1808154	08/13/18	08/14/18	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: **08/13/18 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.5 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/13/18 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1808158	08/13/18	08/14/18	EPA 8015M	

Date Sampled: **08/13/18 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		97.5 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/15/18 07:08

**SS21@9'**  
**1808167-05 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/13/18 14:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	1808154	08/13/18	08/14/18	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: **08/13/18 14:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		101 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.4 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %		21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/13/18 14:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	1808158	08/13/18	08/14/18	EPA 8015M	

Date Sampled: **08/13/18 14:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		103 %		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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/15/18 07:08

**SS22@9'**  
**1808167-06 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/13/18 14:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	1808154	08/13/18	08/14/18	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: **08/13/18 14:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		99.5 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.4 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %		21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/13/18 14:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	1808158	08/13/18	08/14/18	EPA 8015M	

Date Sampled: **08/13/18 14:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		94.6 %		30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/15/18 07:08

### 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 1808154 - EPA 5030 Soil MS

##### Blank (1808154-BLK1)

Prepared: 08/13/18 Analyzed: 08/14/18

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	0.0433		"	0.0396		109	23-173			
Surrogate: Toluene-d8	0.0398		"	0.0400		99.4	20-170			
Surrogate: 4-Bromofluorobenzene	0.0440		"	0.0400		110	21-167			

##### LCS (1808154-BS1)

Prepared: 08/13/18 Analyzed: 08/14/18

Benzene	0.135	0.0020	mg/kg	0.150		90.0	70-130			
Toluene	0.127	0.0050	"	0.150		84.9	70-130			
Ethylbenzene	0.114	0.0050	"	0.150		76.2	70-130			
m,p-Xylene	0.229	0.010	"	0.300		76.3	70-130			
o-Xylene	0.136	0.0050	"	0.150		90.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0440		"	0.0396		111	23-173			
Surrogate: Toluene-d8	0.0390		"	0.0400		97.6	20-170			
Surrogate: 4-Bromofluorobenzene	0.0391		"	0.0400		97.8	21-167			

##### Matrix Spike (1808154-MS1)

Source: 1808162-01

Prepared: 08/13/18 Analyzed: 08/14/18

Benzene	0.0958	0.0020	mg/kg	0.100	ND	95.8	70-130			
Toluene	0.0889	0.0050	"	0.100	ND	88.9	70-130			
Ethylbenzene	0.0791	0.0050	"	0.100	ND	79.1	70-130			
m,p-Xylene	0.158	0.010	"	0.200	ND	79.1	70-130			
o-Xylene	0.0947	0.0050	"	0.100	ND	94.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0464		"	0.0396		117	23-173			
Surrogate: Toluene-d8	0.0395		"	0.0400		98.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0400		"	0.0400		99.9	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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/15/18 07:08

**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 1808154 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1808154-MSD1)</b>	<b>Source: 1808162-01</b>			Prepared: 08/13/18 Analyzed: 08/14/18					
Benzene	0.107	0.0020	mg/kg	0.100	ND	107	70-130	10.7	30
Toluene	0.0989	0.0050	"	0.100	ND	98.9	70-130	10.7	30
Ethylbenzene	0.0886	0.0050	"	0.100	ND	88.6	70-130	11.3	30
m,p-Xylene	0.178	0.010	"	0.200	ND	88.9	70-130	11.6	30
o-Xylene	0.106	0.0050	"	0.100	ND	106	70-130	11.2	30
Surrogate: 1,2-Dichloroethane-d4	0.0454		"	0.0396		115	23-173		
Surrogate: Toluene-d8	0.0394		"	0.0400		98.6	20-170		
Surrogate: 4-Bromofluorobenzene	0.0398		"	0.0400		99.5	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 - Gutteresen D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/15/18 07:08

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

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

**Batch 1808158 - EPA 3550A**

**Blank (1808158-BLK1)**

Prepared: 08/13/18 Analyzed: 08/14/18

C10-C28 (DRO) ND 50 mg/kg

**LCS (1808158-BS1)**

Prepared: 08/13/18 Analyzed: 08/14/18

C10-C28 (DRO) 492 50 mg/kg 500 98.4 70-130

**Matrix Spike (1808158-MS1)**

**Source: 1808160-01**

Prepared: 08/13/18 Analyzed: 08/14/18

C10-C28 (DRO) 487 50 mg/kg 500 84.3 80.6 70-130

**Matrix Spike Dup (1808158-MSD1)**

**Source: 1808160-01**

Prepared: 08/13/18 Analyzed: 08/14/18

C10-C28 (DRO) 521 50 mg/kg 500 84.3 87.4 70-130 6.76 20

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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/15/18 07:08

### 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

# Summit Scientific

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

August 16, 2018

Brandon Bruns

Tasman Geosciences

6899 Pecos St, Unit C

Denver, CO 80221

RE: Noble - Guttersen D04-32

Enclosed are the results of analyses for samples received by Summit Scientific on 08/15/18 17:45. 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', written in a cursive style.

Paul Shrewsbury For Ben Shrewsbury

Laboratory Manager



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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/16/18 05:39

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW01	1808217-01	Water	08/15/18 09:10	08/15/18 17:45
BS01	1808217-02	Soil	08/15/18 09:31	08/15/18 17:45

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.*

1808217

# Summit Scientific

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

1808217

Page 1 of 1

Client: Noble/Tasman  
 Address: -  
 City/State/Zip: -  
 Phone: 970.210.6571 Fax: -  
 Sampler Name: T. Lichtenberg

Project Manager: Brandon Bruns, Invoice: Jacob Evans  
 E-Mail: Bbruns@tasman-geo.com  
 Project Name: GUTERSEN D04-32  
 Project Number: -

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions			
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	8260 BTEX	8260B GBTEXN	8015 DRO		PH, EC, SAR		
GW01	8/15/18	910	3			X		X					X					
BS01	8/15/18	931	1			X			X					X	X			
Relinquished by: 	Date/Time: <u>8-15-18 17:45</u>	Received by: 	Date/Time: <u>8-15-18 17:45</u>	Turn Around Time (Check)				Notes:										
				Same Day	<input checked="" type="checkbox"/>	72 Hours	<input type="checkbox"/>											
				24 Hours	<input type="checkbox"/>	Standard	<input type="checkbox"/>											
				48 Hours	<input type="checkbox"/>		<input type="checkbox"/>											
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity:														
				Temperature Upon Receipt:	<u>.6</u>													
				Intact: Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>											

1808217

Sample Receipt Checklist

S2 Work Order 1808217

Client: NOBLE/TASMAN Client Project ID: GUTTERSON 004-32

Shipped Via: P.U. Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

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

Temp (°C) .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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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, 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 <sup>(1)</sup> ? 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):				

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

Muri  
Custodian Printed Name or Initials

[Signature] 8-15-18  
Signature of Custodian

18:10  
Date/Time



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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/16/18 05:39

**GW01**  
**1808217-01 (Water)**

**Summit Scientific**

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

Date Sampled: **08/15/18 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1808204	08/15/18	08/16/18	EPA 8260B	
<b>Toluene</b>	<b>1.3</b>	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **08/15/18 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		86.6 %	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 - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Brun

**Reported:**  
08/16/18 05:39

**BS01**  
**1808217-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/15/18 09:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1808191	08/15/18	08/15/18	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: **08/15/18 09:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.6 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/15/18 09:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1808192	08/15/18	08/16/18	EPA 8015M	

Date Sampled: **08/15/18 09:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		98.2 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/16/18 05:39

### 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 1808191 - EPA 5030 Soil MS

##### Blank (1808191-BLK1)

Prepared & Analyzed: 08/15/18

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	0.0456		"	0.0396		115		23-173			
Surrogate: Toluene-d8	0.0406		"	0.0400		101		20-170			
Surrogate: 4-Bromofluorobenzene	0.0439		"	0.0400		110		21-167			

##### LCS (1808191-BS1)

Prepared & Analyzed: 08/15/18

Benzene	0.0968	0.0020	mg/kg	0.100		96.8		70-130			
Toluene	0.0974	0.0050	"	0.100		97.4		70-130			
Ethylbenzene	0.108	0.0050	"	0.100		108		70-130			
m,p-Xylene	0.191	0.010	"	0.200		95.6		70-130			
o-Xylene	0.0994	0.0050	"	0.100		99.4		70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0464		"	0.0396		117		23-173			
Surrogate: Toluene-d8	0.0420		"	0.0400		105		20-170			
Surrogate: 4-Bromofluorobenzene	0.0441		"	0.0400		110		21-167			

##### Matrix Spike (1808191-MS1)

Source: 1808212-01

Prepared & Analyzed: 08/15/18

Benzene	0.0901	0.0020	mg/kg	0.100	ND	90.1		70-130			
Toluene	0.0905	0.0050	"	0.100	ND	90.5		70-130			
Ethylbenzene	0.102	0.0050	"	0.100	ND	102		70-130			
m,p-Xylene	0.178	0.010	"	0.200	ND	88.9		70-130			
o-Xylene	0.0949	0.0050	"	0.100	ND	94.9		70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0487		"	0.0396		123		23-173			
Surrogate: Toluene-d8	0.0412		"	0.0400		103		20-170			
Surrogate: 4-Bromofluorobenzene	0.0426		"	0.0400		107		21-167			

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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/16/18 05:39

**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 1808191 - EPA 5030 Soil MS**

**Matrix Spike Dup (1808191-MSD1)**

Source: 1808212-01

Prepared & Analyzed: 08/15/18

Benzene	0.100	0.0020	mg/kg	0.100	ND	100	70-130	10.8	30	
Toluene	0.101	0.0050	"	0.100	ND	101	70-130	11.3	30	
Ethylbenzene	0.112	0.0050	"	0.100	ND	112	70-130	10.0	30	
m,p-Xylene	0.195	0.010	"	0.200	ND	97.7	70-130	9.47	30	
o-Xylene	0.102	0.0050	"	0.100	ND	102	70-130	7.34	30	
Surrogate: 1,2-Dichloroethane-d4	0.0498		"	0.0396		126	23-173			
Surrogate: Toluene-d8	0.0414		"	0.0400		104	20-170			
Surrogate: 4-Bromofluorobenzene	0.0425		"	0.0400		106	21-167			

**Batch 1808204 - EPA 5030 Water MS**

**Blank (1808204-BLK1)**

Prepared & Analyzed: 08/15/18

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.5		"	13.2		118	23-173			
Surrogate: Toluene-d8	13.1		"	13.3		98.3	20-170			
Surrogate: 4-Bromofluorobenzene	14.8		"	13.3		111	21-167			

**LCS (1808204-BS1)**

Prepared & Analyzed: 08/15/18

Benzene	33.4	1.0	ug/l	33.3		100	70-130			
Toluene	32.4	1.0	"	33.3		97.1	70-130			
Ethylbenzene	34.8	1.0	"	33.3		105	70-130			
m,p-Xylene	61.4	2.0	"	66.7		92.1	70-130			
o-Xylene	32.4	1.0	"	33.3		97.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	16.3		"	13.2		124	23-173			
Surrogate: Toluene-d8	13.5		"	13.3		101	20-170			
Surrogate: 4-Bromofluorobenzene	14.3		"	13.3		107	21-167			

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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/16/18 05:39

**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 1808204 - EPA 5030 Water MS**

<b>Matrix Spike (1808204-MS1)</b>	<b>Source: 1808170-04</b>			<b>Prepared &amp; Analyzed: 08/15/18</b>								
Benzene	33.5	1.0	ug/l	33.3	ND	100	70-130					
Toluene	33.6	1.0	"	33.3	ND	101	70-130					
Ethylbenzene	35.2	1.0	"	33.3	ND	106	70-130					
m,p-Xylene	62.6	2.0	"	66.7	1.58	91.5	70-130					
o-Xylene	33.1	1.0	"	33.3	ND	99.4	70-130					
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>16.3</i>		<i>"</i>	<i>13.2</i>		<i>124</i>	<i>23-173</i>					
<i>Surrogate: Toluene-d8</i>	<i>14.0</i>		<i>"</i>	<i>13.3</i>		<i>105</i>	<i>20-170</i>					
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>14.2</i>		<i>"</i>	<i>13.3</i>		<i>107</i>	<i>21-167</i>					

<b>Matrix Spike Dup (1808204-MSD1)</b>	<b>Source: 1808170-04</b>			<b>Prepared &amp; Analyzed: 08/15/18</b>								
Benzene	33.2	1.0	ug/l	33.3	ND	99.6	70-130	0.810	30			
Toluene	33.9	1.0	"	33.3	ND	102	70-130	0.948	30			
Ethylbenzene	35.5	1.0	"	33.3	ND	107	70-130	0.791	30			
m,p-Xylene	62.6	2.0	"	66.7	1.58	91.6	70-130	0.128	30			
o-Xylene	33.9	1.0	"	33.3	ND	102	70-130	2.15	30			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>16.4</i>		<i>"</i>	<i>13.2</i>		<i>124</i>	<i>23-173</i>					
<i>Surrogate: Toluene-d8</i>	<i>14.0</i>		<i>"</i>	<i>13.3</i>		<i>105</i>	<i>20-170</i>					
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>14.1</i>		<i>"</i>	<i>13.3</i>		<i>106</i>	<i>21-167</i>					

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

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/16/18 05:39

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

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

**Batch 1808192 - EPA 3550A**

**Blank (1808192-BLK1)**

Prepared & Analyzed: 08/15/18

C10-C28 (DRO) ND 50 mg/kg

**LCS (1808192-BS1)**

Prepared & Analyzed: 08/15/18

C10-C28 (DRO) 494 50 mg/kg 500 98.9 70-130

**Matrix Spike (1808192-MS1)**

**Source: 1808212-01**

Prepared & Analyzed: 08/15/18

C10-C28 (DRO) 553 50 mg/kg 500 150 80.7 70-130

**Matrix Spike Dup (1808192-MSD1)**

**Source: 1808212-01**

Prepared & Analyzed: 08/15/18

C10-C28 (DRO) 568 50 mg/kg 500 150 83.6 70-130 2.66 20

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Denver CO, 80221

Project: Noble - Guttersen D04-32

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
08/16/18 05:39

### 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