

FRANK 2, 5, 6, CC 7-19, 29 HISTORIC RELEASE

SITE ASSESSMENT REPORT

September 28, 2016



Image: Google 2016

PREPARED ON BEHALF OF

Noble Energy, Inc.
1600 Broadway
Denver, CO 80202



PREPARED BY

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



September 15, 2016

Mr. Jacob Evans
Noble Energy Inc.
1600 Broadway
Denver, CO 80202

Subject: **Site Assessment Report**
 Frank 2, 5, 6, CC 7-19, 29 Historic Release
 Facility ID #: 302683
 API #: 05-123-29603
 Spill/Release Point ID: 447515
 NENW S7 T4N R63W
 Weld County, Colorado

Dear Mr. Evans:

Below please find a copy of the above referenced Site Assessment Report (Report) for the Frank 2, 5, 6, CC7-19, 29 Historic Release site (Site) in Weld County, Colorado. The text below describes environmental assessment and associated soil and groundwater sampling activities conducted by Tasman Geosciences, Inc. (Tasman), on behalf of Noble Energy, Inc. (Noble), between August 31, 2016 and September 9, 2016.

Introduction

The purpose of this document is to describe the results of site assessment and soil and groundwater sampling activities at the Site. The activities described below were performed in response to the discovery of a historic release near the Frank CC 7-29D flow line during construction activities.

Facility Background

The Site is located approximately 5.5 miles southeast of the town of Kersey in Weld County, Colorado, as shown on Figure 1. The site is surrounded by agricultural crop land, and the legal description is the northeast ¼ of the northwest ¼ of Section 7, Township 4 North, Range 63 West, of the 6th Principal Meridian. The Site is located on relatively flat terrain that slopes gradually to the north-northeast. The Site is approximately 1,800 feet (ft.) east of Weld County Road 61 and has coordinates of 40.331331°, -104.483193°.

As reported on the initial Form 19, a historic release was discovered near the Frank CC 7-29D flow line, east of the separator containment, as shown on Figure 2. In response to the release, production equipment was shut in and construction activities were suspended until additional site assessment activities could be completed.

Site Assessment Field Activities

On August 31, 2016, Tasman was retained to assess soil and groundwater impacts associated with the historic release at the Site, in the area east of the separator containment near the Frank CC 7-29D flow line. Eight boreholes (BH01 – BH08) and seven groundwater monitoring wells (BH01 – BH07) were installed using direct push drilling techniques. Borehole and monitoring well locations are illustrated on Figure 2, and boring logs are included in Attachment A. During boring operations, soil samples were collected and field screened for volatile organic compounds (VOC) using a photoionization detector (PID) and standard headspace sampling techniques. Nine soil samples were submitted to Summit Scientific Laboratories in Golden, Colorado (Summit) for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene, and total petroleum hydrocarbons-gasoline range organics (TPH-GRO) using United States Environmental Protection Agency (USEPA) Method 8260B, as well as total petroleum hydrocarbons-diesel range organics (TPH-DRO) using USEPA Method 8015. Soil analytical results are summarized in Table 1 and illustrated on Figure 3. Complete laboratory analytical reports are included in Attachment B.

On September 1, 2016, Tasman returned to the site to collect groundwater samples from the monitoring wells installed on August 31, 2016. Groundwater was encountered at depths of approximately 9 to 12 ft. below ground surface (bgs), and light non-aqueous phase liquid (LNAPL) was observed in three wells (BH01, BH02, BH04) at thicknesses ranging from 1.75 ft. in BH04 to 2.27 ft. in BH02. Groundwater samples were collected from the four wells without LNAPL and submitted to Summit for laboratory analysis of BTEX by USEPA Method 8260B. Groundwater analytical results are summarized in Table 2 and illustrated on Figure 4. Complete laboratory analytical reports are included in Attachment B.

Based on the results of groundwater sampling, additional soil boring and soil and groundwater sampling activities were conducted on September 9, 2016, in order to further delineate the extent of dissolved phase groundwater impacts at the Site. Seven additional boreholes (BH09 – BH15) were installed using direct push drilling techniques, and completed as groundwater monitoring wells. Well locations are illustrated on Figure 2, and boring logs are included in Attachment A. Soil samples were collected from each boring for field screening of VOCs using a PID, and seven soil samples were submitted to Summit for laboratory analysis of BTEX, naphthalene, and TPH-GRO by USEPA Method 8260B, as well as TPH-DRO by USEPA Method 8015. Soil analytical results are summarized in Table 1 and illustrated on Figure 3. Complete laboratory analytical reports are included in Attachment B.

On September 9, 2016, groundwater gauging and sampling was conducted at all 14 Site monitoring well locations. LNAPL was observed in four wells (BH01 – BH04) at thicknesses ranging from 0.07 ft. in BH03 to 2.58 ft. in BH02. Groundwater samples were collected from the ten wells without LNAPL and submitted to Summit for laboratory analysis of BTEX by USEPA Method 8260B. Groundwater analytical results are summarized in Table 2 and illustrated on Figure 5. Complete laboratory analytical reports are included in Attachment B.

Results

Laboratory analytical results for groundwater samples collected during site assessment activities indicate that dissolved and non-aqueous phase impacts to groundwater are present at the Site.

LNAPL has been observed in wells BH01 – BH04, and dissolved phase BTEX concentrations are above the applicable Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 groundwater standards in wells BH05 and BH11.

Laboratory analytical results for soil samples collected during site assessment activities indicate that vadose zone soil impacts are below applicable COGCC regulatory standard in all 15 soil boring locations.

Conclusions

Based on field and laboratory data, LNAPL and dissolved-phase groundwater impacts are present at the Site, as a result of the historic release. Based on the data collected during site assessment activities, and presented in this Report, additional remediation efforts will be completed at the Site to address these groundwater impacts. These efforts may include: excavation and chemical soil mixing treatment of the saturated zone, mobile enhanced fluid recovery events, or installation of a remediation system. Additional monitoring well installation may also be required northwest of BH11, in order to fully delineate dissolved-phase impacts to groundwater.

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 if you require additional information.

Sincerely,
Tasman Geosciences, Inc.



Brandon Bruns, PE
Project Manager

Attached:

Table 1 – Soil Analytical Data
Table 2 – Groundwater Analytical Data
Table 3 – Groundwater Elevation Data
Figure 1 – Site Location Map
Figure 2 – Site Overview Map
Figure 3 – Soil Boring Analytical Results Map (08/31/16 – 09/09/16)
Figure 4 – Groundwater Analytical Results Map (09/01/16)
Figure 5 – Groundwater Analytical Results Map (09/09/16)
Figure 6 – Groundwater Potentiometric Surface Contour Map (09/09/16)
Attachment A – Boring Logs
Attachment B – Laboratory Analytical Data Reports

TABLES

TABLE 1
SOIL ANALYTICAL DATA
NOBLE ENERGY, INC. - FRANK 2, 5, 6, CC 7-19, 29 HISTORIC 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
BH01@3-4'	08/31/16	0.0062	0.021	<0.0050	0.23	<50	120	0.048
BH02@5-6'	08/31/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH03@8-9'	08/31/16	<0.0020	<0.0050	<0.0050	0.021	<50	54	0.021
BH04@5-6'	08/31/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH05@5-6'	08/31/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH06@6-8'	08/31/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH07@6-9'	08/31/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH08@5-6'	08/31/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH08@8-9'	08/31/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH09@2-4'	09/09/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH10@8-9'	09/09/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH11@2-4'	09/09/16	0.038	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH12@8-9'	09/09/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH13@7-8'	09/09/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH14@8-9'	09/09/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH15@8-9'	09/09/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010

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

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

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. - FRANK 2, 5, 6, CC 7-19, 29 HISTORIC RELEASE

Monitoring Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
COGCC Standard		5	560	700	1,400
BH01	09/01/16	Sample Not Collected - 2.19 ft. LNAPL			
BH01	09/09/16	Sample Not Collected - 2.50 ft. LNAPL			
BH02	09/01/16	Sample Not Collected - 2.27 ft. LNAPL			
BH02	09/09/16	Sample Not Collected - 2.58 ft. LNAPL			
BH03	09/01/16	260	720	65	640
BH03	09/09/16	Sample Not Collected - 0.07 ft. LNAPL			
BH04	09/01/16	Sample Not Collected - 1.75 ft. LNAPL			
BH04	09/09/16	Sample Not Collected - 2.15 ft. LNAPL			
BH05	09/01/16	19	29	2.2	20
BH05	09/09/16	6.3	12	1.3	14
BH06	09/01/16	<1.0	<1.0	<1.0	<1.0
BH06	09/09/16	<1.0	<1.0	<1.0	<1.0
BH07	09/01/16	<1.0	1.3	<1.0	3.4
BH07	09/09/16	<1.0	<1.0	<1.0	<1.0
BH09	09/09/16	<1.0	1.0	<1.0	<1.0
BH10	09/09/16	<1.0	<1.0	8.4	39
BH11	09/09/16	130	20	4.6	27
BH12	09/09/16	<1.0	<1.0	<1.0	<1.0
BH13	09/09/16	<1.0	<1.0	<1.0	<1.0
BH14	09/09/16	<1.0	<1.0	<1.0	<1.0
BH15	09/09/16	<1.0	<1.0	<1.0	<1.0

COGCC = Colorado Oil and Gas Conservation Commission

µg/L = Micrograms per liter

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

LNAPL = Light non-aqueous phase liquid

Groundwater standards referenced from COGCC Table 910-1

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

TABLE 3
GROUNDWATER ELEVATION DATA
NOBLE ENERGY, INC. - FRANK 2, 5, 6, CC 7-19, 29 HISTORIC RELEASE

Monitoring Well ID	Date	Top of Casing Elevation (ft. AMSL)	Total Depth (ft. BTOC)	Depth to Water (ft. BTOC)	Depth to LNAPL (ft. BTOC)	LNAPL Thickness (ft.)	Groundwater Elevation* (ft. AMSL)
BH01	09/01/16	4614.95	NM	13.23	11.04	2.19	4603.36
BH01	09/09/16	4614.95	NM	13.73	11.23	2.50	4603.10
BH02	09/01/16	4616.68	NM	15.07	12.80	2.27	4603.31
BH02	09/09/16	4616.68	NM	15.54	12.96	2.58	4603.08
BH03	09/01/16	4615.20	22.36	11.79	ND	ND	4603.41
BH03	09/09/16	4615.20	NM	12.08	12.01	0.07	4603.17
BH04	09/01/16	4615.54	NM	13.49	11.74	1.75	4603.36
BH04	09/09/16	4615.54	NM	14.04	11.89	2.15	4603.11
BH05	09/01/16	4616.26	21.19	12.86	ND	ND	4603.40
BH05	09/09/16	4616.26	21.05	13.10	ND	ND	4603.16
BH06	09/01/16	4614.99	21.45	11.58	ND	ND	4603.41
BH06	09/09/16	4614.99	21.00	11.80	ND	ND	4603.19
BH07	09/01/16	4615.03	22.51	11.56	ND	ND	4603.47
BH07	09/09/16	4615.03	22.43	11.81	ND	ND	4603.22
BH09	09/09/16	4615.12	17.20	12.03	ND	ND	4603.09
BH10	09/09/16	4615.46	17.26	12.35	ND	ND	4603.11
BH11	09/09/16	4615.54	16.92	12.47	ND	ND	4603.07
BH12	09/09/16	4615.25	17.24	12.09	ND	ND	4603.16
BH13	09/09/16	4614.12	16.47	10.96	ND	ND	4603.16
BH14	09/09/16	4615.12	16.69	12.05	ND	ND	4603.07
BH15	09/09/16	4614.94	18.15	11.89	ND	ND	4603.05

ft. = Feet

AMSL = Above mean sea level

BTOC = Below top of casing

LNAPL = Light non-aqueous phase liquid

NM = Not measured

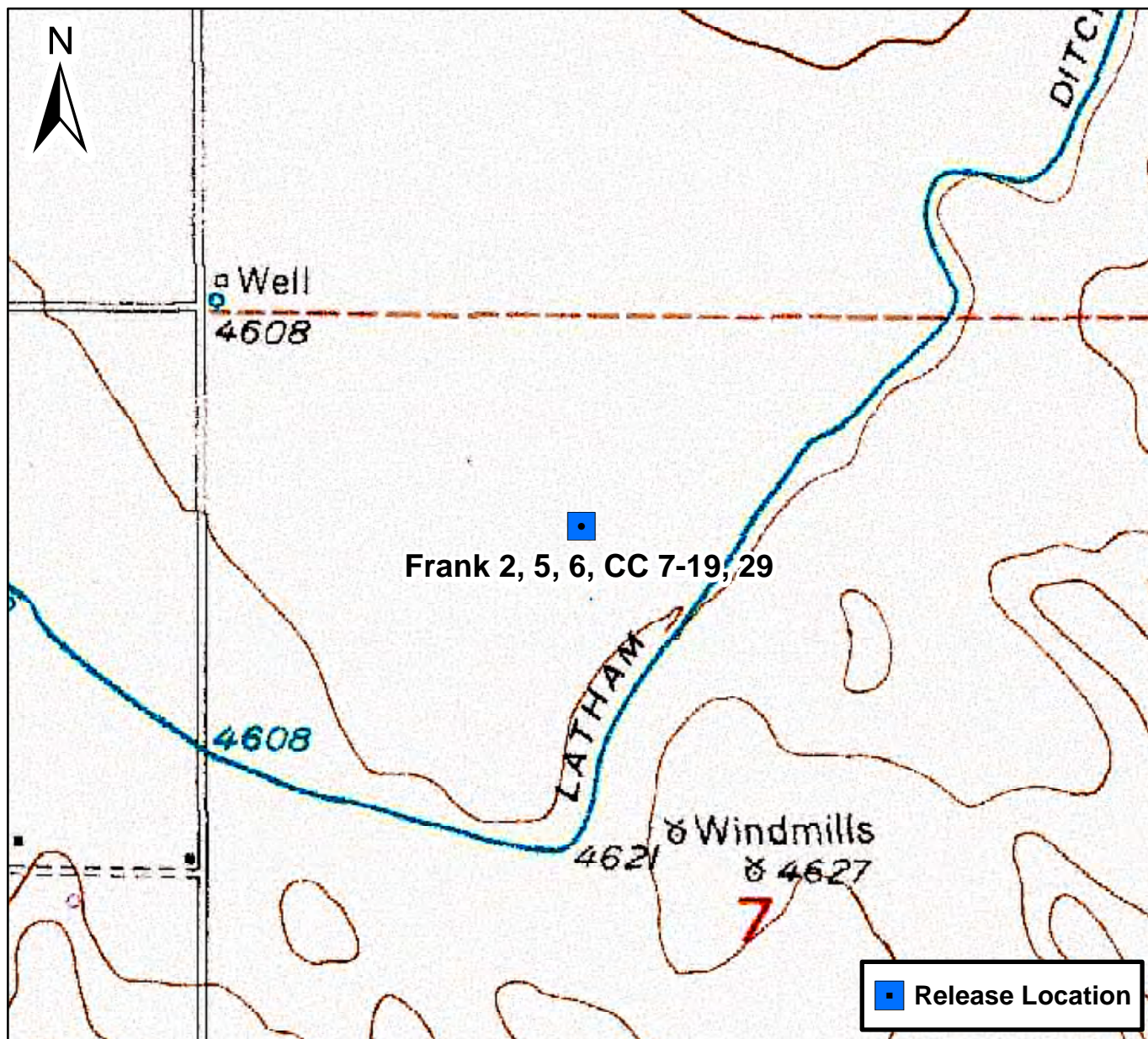
ND = No LNAPL detected

* Groundwater elevation was corrected for product thickness (when present) using the following calculation:

Groundwater elevation = (TOC Elevation - Measured Depth to Water)+(LNAPL Thickness in Well x LNAPL Relative Density)

LNAPL relative density was estimated to be approximately 0.75

FIGURES





0 750 1,500 Feet

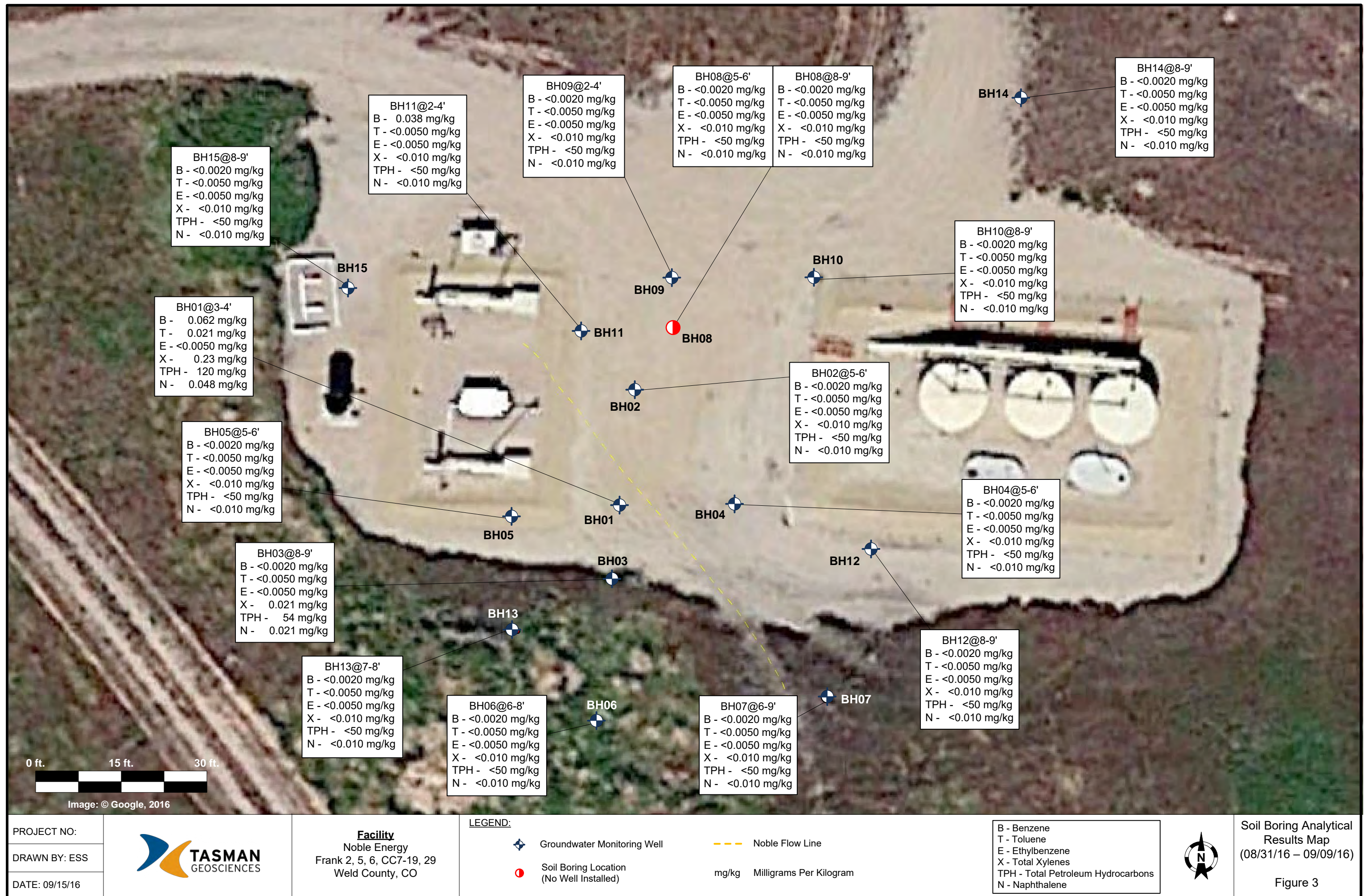
Figure 1

Site Location Map
 Frank 2, 5, 6, CC 7-19, 29
 NENW S7 T4N R63W
 Weld County, Colorado










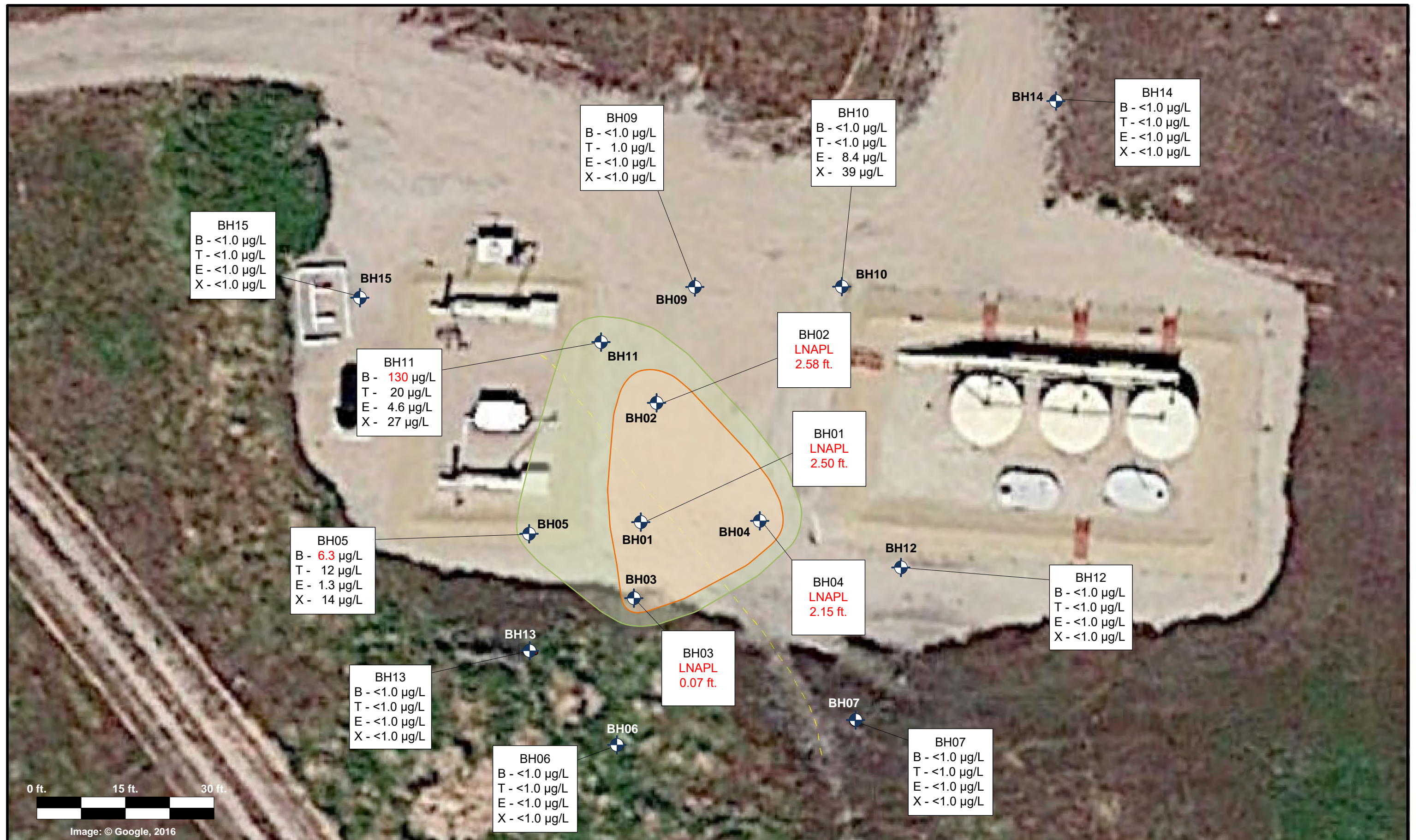
PROJECT NO:		Facility Noble Energy Frank 2, 5, 6, CC7-19, 29 Weld County, CO	LEGEND: Groundwater Monitoring Well Soil Boring Location (No Well Installed) Noble Flow Line		Site Overview Map Figure 2
DRAWN BY: ESS					
DATE: 09/15/16					

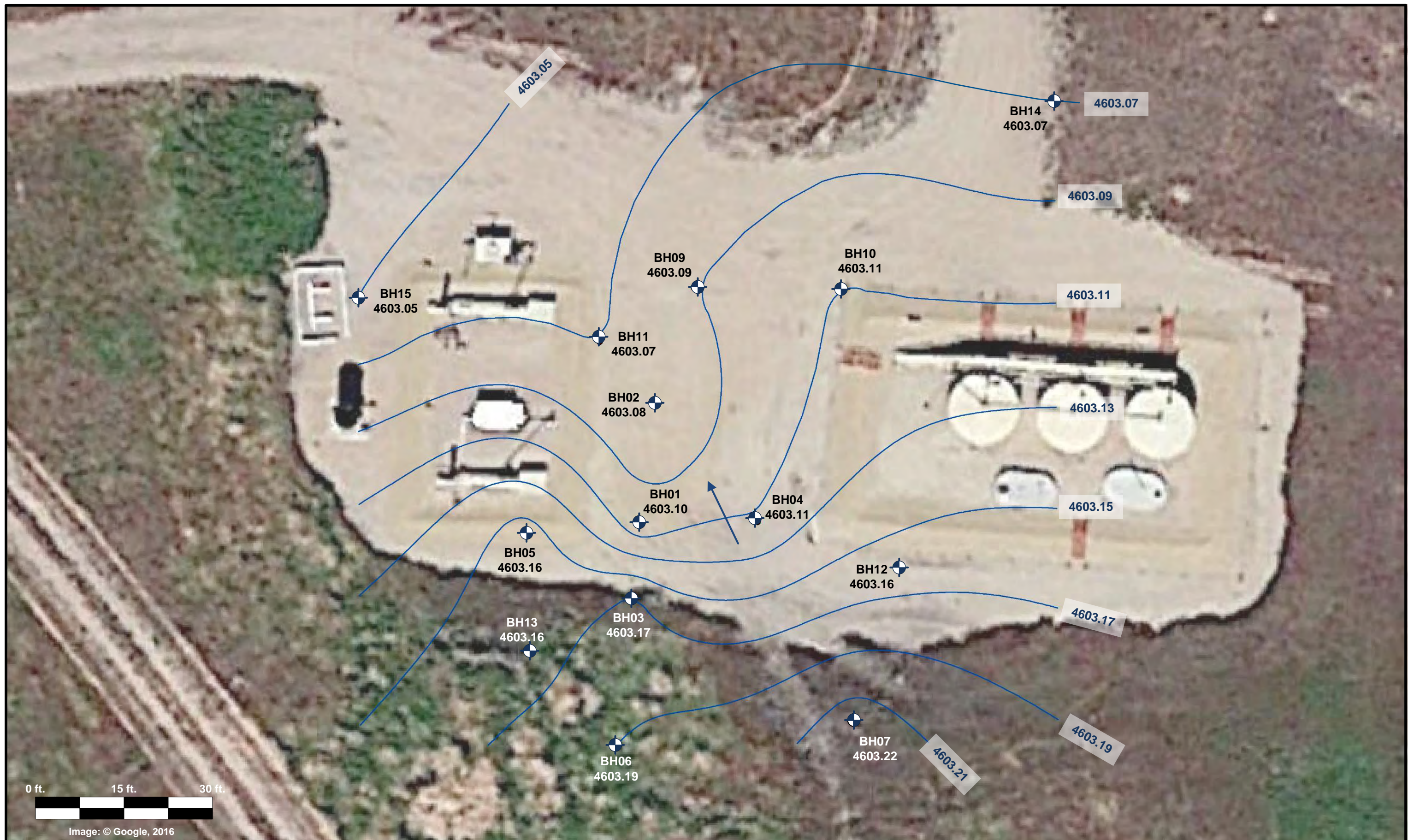





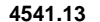




PROJECT NO:		Facility Noble Energy Frank 2, 5, 6, CC7-19, 29 Weld County, CO	LEGEND:  Groundwater Monitoring Well  Soil Boring Location (No Well Installed)  Noble Flow Line µg/L Micrograms Per Liter		Groundwater Analytical Results Map (09/01/16) Figure 4
DRAWN BY: ESS					
DATE: 09/15/16					

B - Benzene
T - Toluene
E - Ethylbenzene
X - Total Xylenes





PROJECT NO:		Facility Noble Energy Frank 2, 5, 6, CC7-19, 29 Weld County, CO	LEGEND:  Groundwater Monitoring Well  Groundwater Elevation Contour  4541.13 Measured Groundwater Elevation (feet above mean sea level)  Approximate Groundwater Flow Direction		Groundwater Potentiometric Surface Contour Map (09/09/16) Figure 6
DRAWN BY: ESS					
DATE: 09/15/16					

ATTACHMENT A

BORING LOGS



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy, Inc.

LOGGED BY: Jake Whritenour

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: Power Probe

DRILL BIT SIZE (INCHES): 2.375

DATE STARTED - COMPLETED: 8/31/16

TOTAL BORING DEPTH (FT. BGS): 18

DEPTH TO WATER (FT. BGS): 10

Frank 2, 5, 6, CC 7-19, 29

BORING / WELL ID: BH01

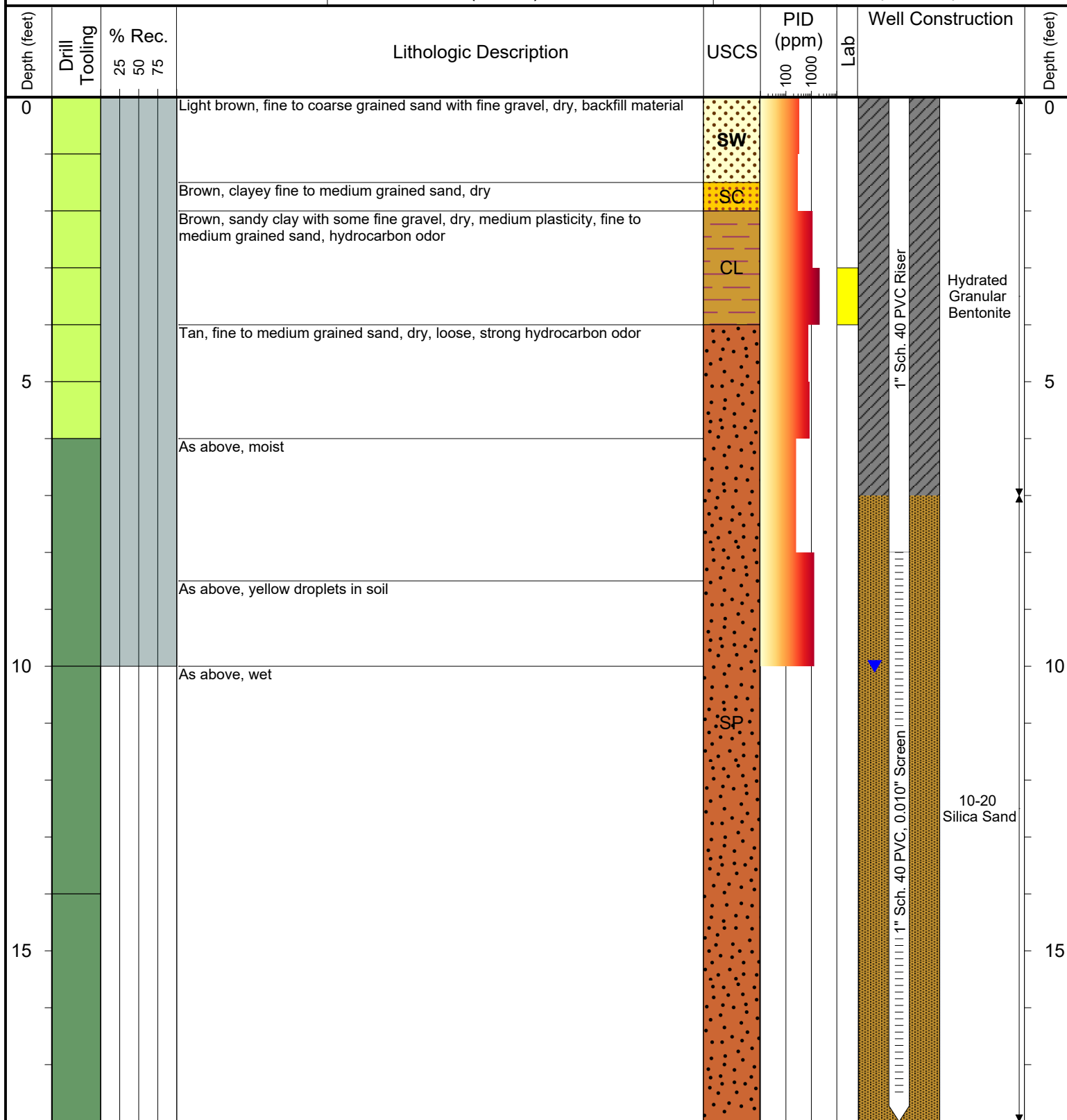
LOCATION: Weld County, CO

LATITUDE (DEGREES): 40.331327735935

LONGITUDE (DEGREES): -104.48321333041

CASING ELEVATION (FT. AMSL): 4614.95

GROUND ELEVATION (FT. AMSL): NS



Drilling / Sample Method:

Macro-Core
CME Continuous Core

Hand Auger
Hollow Stem Auger

Laboratory Sample Types:

Geotechnical Lab
Analytical Chemistry Lab
Geotechnical & Analytical Chemistry Lab



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy, Inc.

LOGGED BY: Jake Whritenour

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: Power Probe

DRILL BIT SIZE (INCHES): 2.375

DATE STARTED - COMPLETED: 8/31/16

TOTAL BORING DEPTH (FT. BGS): 20

DEPTH TO WATER (FT. BGS): 12

Frank 2, 5, 6, CC 7-19, 29

BORING / WELL ID: BH02

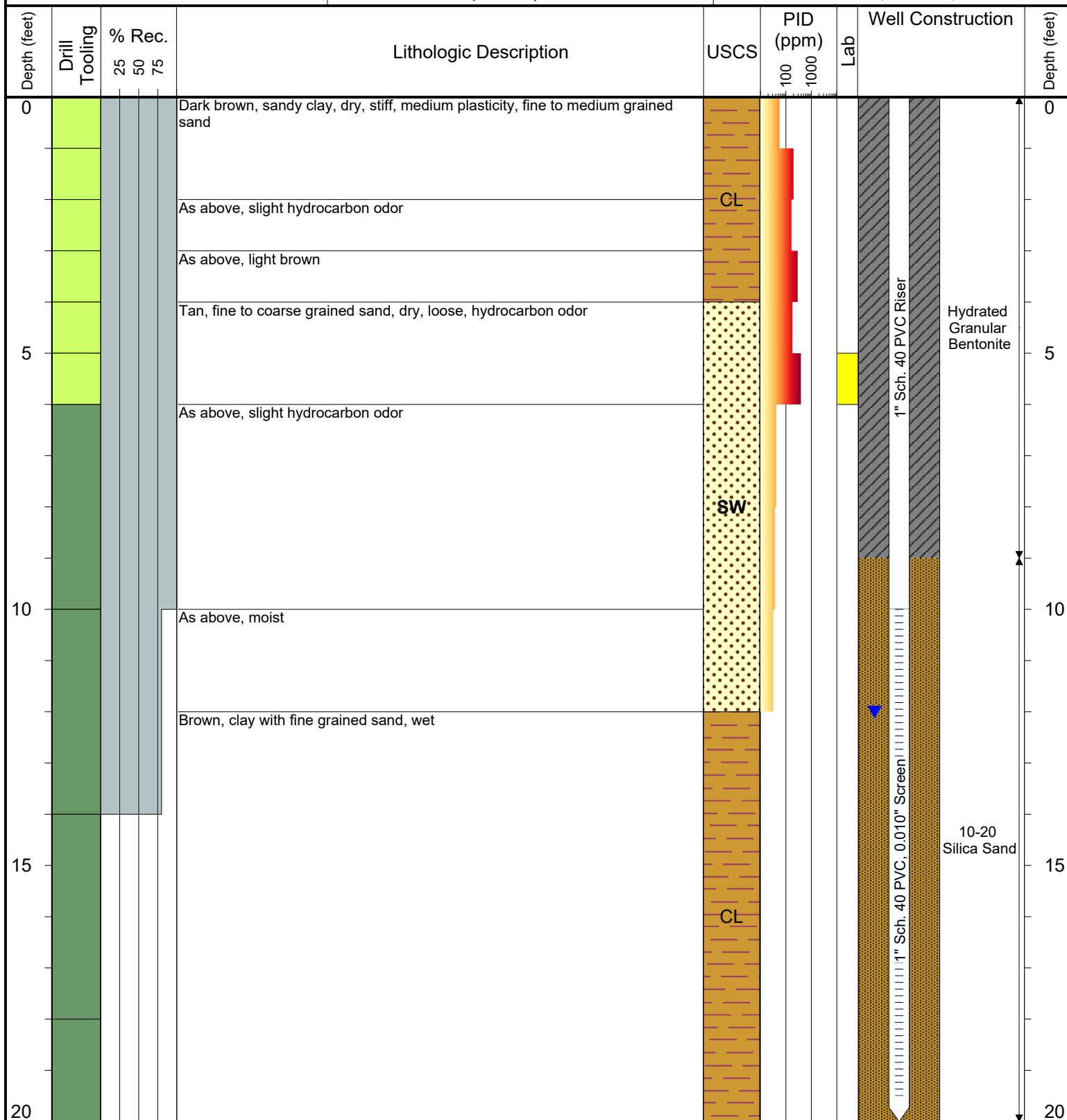
LOCATION: Weld County, CO

LATITUDE (DEGREES): 40.331382918099

LONGITUDE (DEGREES): -104.48320346175

CASING ELEVATION (FT. AMSL): 4616.68

GROUND ELEVATION (FT. AMSL): NS



Drilling / Sample Method:

Macro-Core

CME Continuous Core

Hand Auger

Hollow Stem Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy, Inc.

LOGGED BY: Jake Whritenour

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: Power Probe

DRILL BIT SIZE (INCHES): 2.375

DATE STARTED - COMPLETED: 8/31/16

TOTAL BORING DEPTH (FT. BGS): 20

DEPTH TO WATER (FT. BGS): 9.5

Frank 2, 5, 6, CC 7-19, 29

BORING / WELL ID: BH03

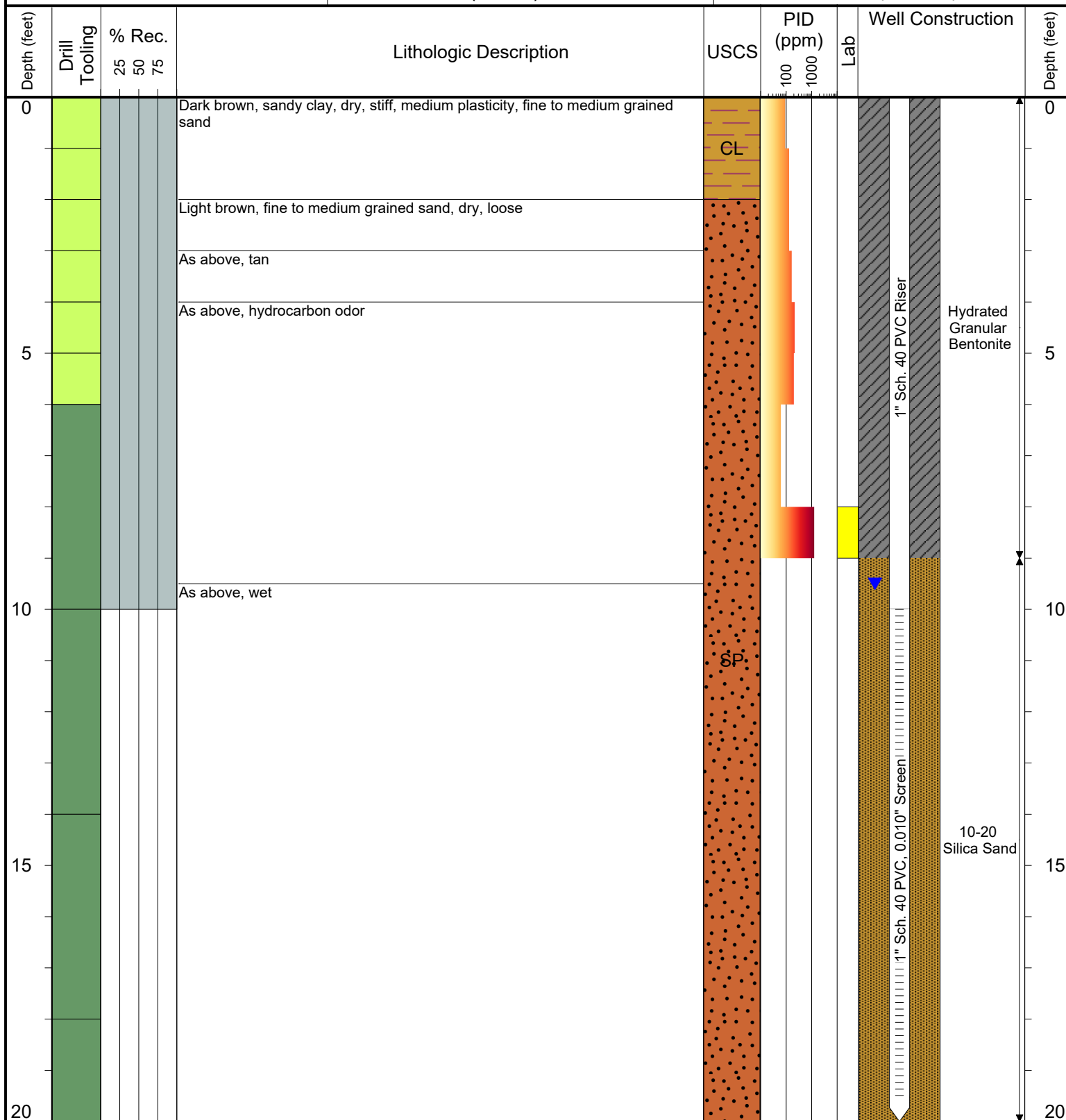
LOCATION: Weld County, CO

LATITUDE (DEGREES): 40.331292036015

LONGITUDE (DEGREES): -104.48321759044

CASING ELEVATION (FT. AMSL): 4615.2

GROUND ELEVATION (FT. AMSL): NS



Drilling / Sample Method:

Macro-Core

CME Continuous Core

Hand Auger

Hollow Stem Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy, Inc.

LOGGED BY: Jake Whritenour

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: Power Probe

DRILL BIT SIZE (INCHES): 2.375

DATE STARTED - COMPLETED: 8/31/16

TOTAL BORING DEPTH (FT. BGS): 20

DEPTH TO WATER (FT. BGS): 9

Frank 2, 5, 6, CC 7-19, 29

BORING / WELL ID: BH04

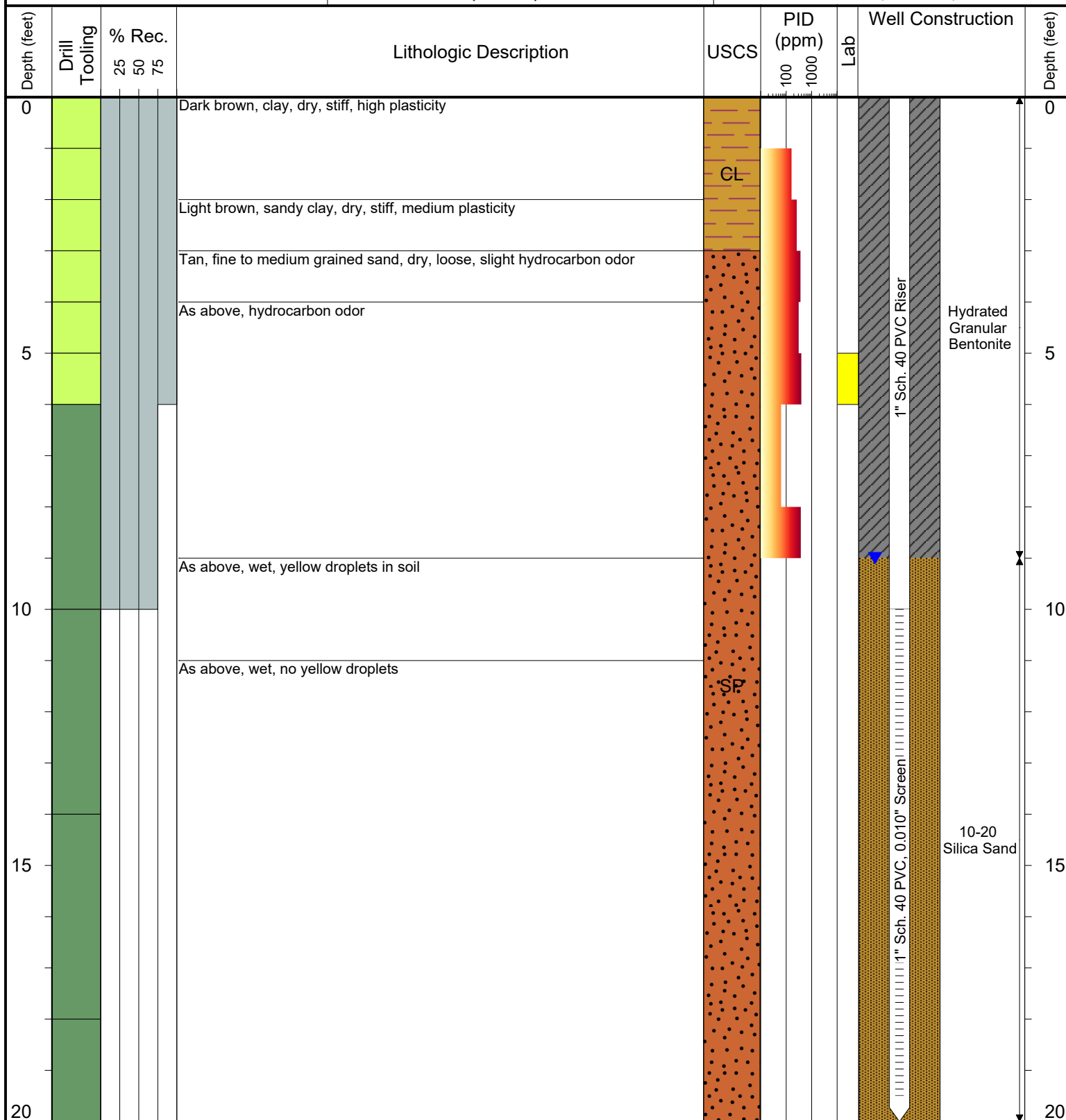
LOCATION: Weld County, CO

LATITUDE (DEGREES): 40.331327454251

LONGITUDE (DEGREES): -104.48314156937

CASING ELEVATION (FT. AMSL): 4615.54

GROUND ELEVATION (FT. AMSL): NS



Drilling / Sample Method:

Macro-Core
CME Continuous Core

Hand Auger
Hollow Stem Auger

Laboratory Sample Types:

Geotechnical Lab
Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy, Inc.

LOGGED BY: Jake Whritenour

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: Power Probe

DRILL BIT SIZE (INCHES): 2.375

DATE STARTED - COMPLETED: 8/31/16

TOTAL BORING DEPTH (FT. BGS): 20

DEPTH TO WATER (FT. BGS): 9

Frank 2, 5, 6, CC 7-19, 29

BORING / WELL ID: BH05

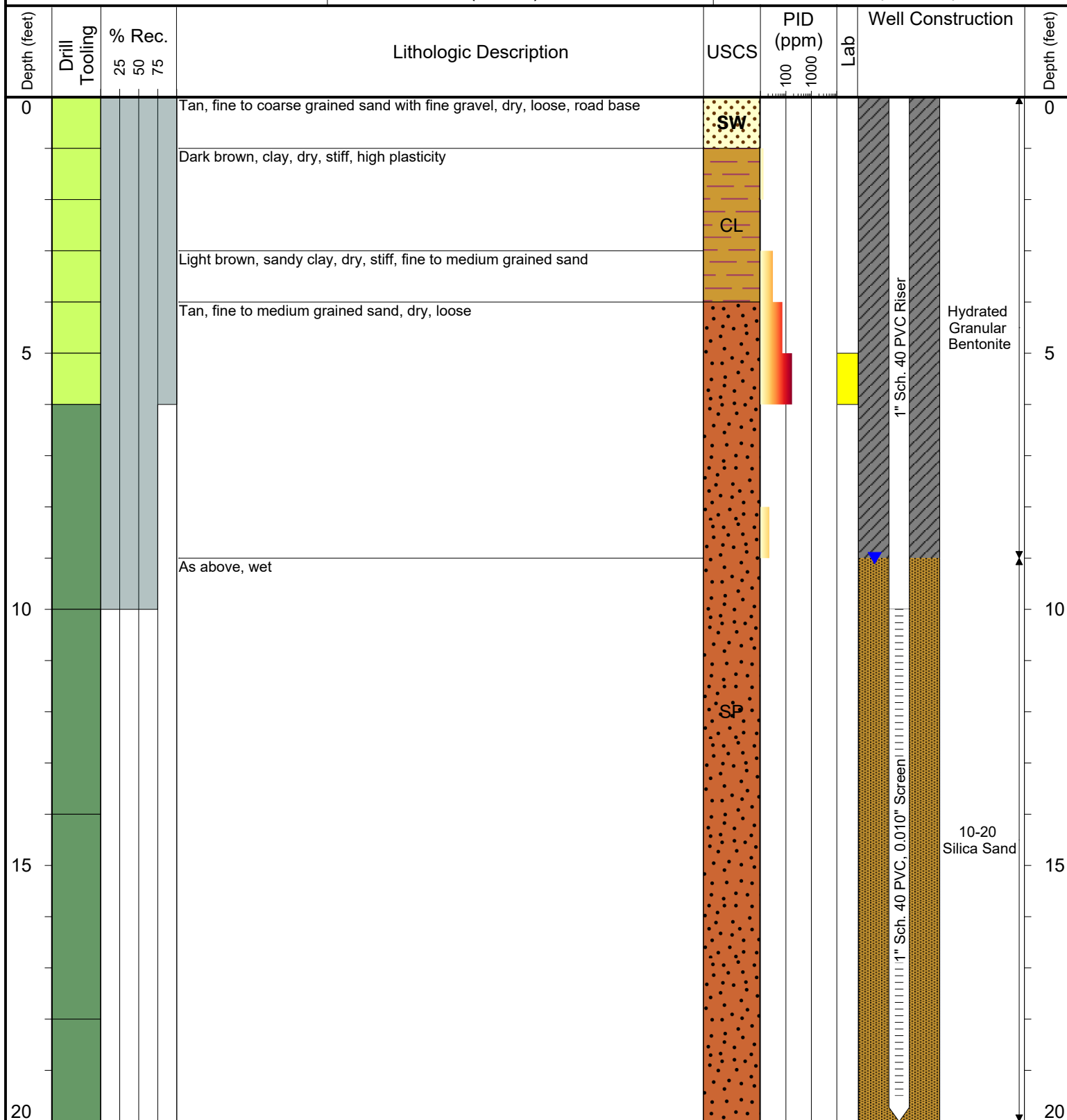
LOCATION: Weld County, CO

LATITUDE (DEGREES): 40.331322471177

LONGITUDE (DEGREES): -104.48328385508

CASING ELEVATION (FT. AMSL): 4616.26

GROUND ELEVATION (FT. AMSL): NS



Drilling / Sample Method:

Macro-Core
CME Continuous Core

Hand Auger
Hollow Stem Auger

Laboratory Sample Types:

Geotechnical Lab
Analytical Chemistry Lab
Geotechnical & Analytical Chemistry Lab



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy, Inc.

LOGGED BY: Jake Whritenour

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: Power Probe

DRILL BIT SIZE (INCHES): 2.375

DATE STARTED - COMPLETED: 8/31/16

TOTAL BORING DEPTH (FT. BGS): 20

DEPTH TO WATER (FT. BGS): 9

Frank 2, 5, 6, CC 7-19, 29

BORING / WELL ID: BH06

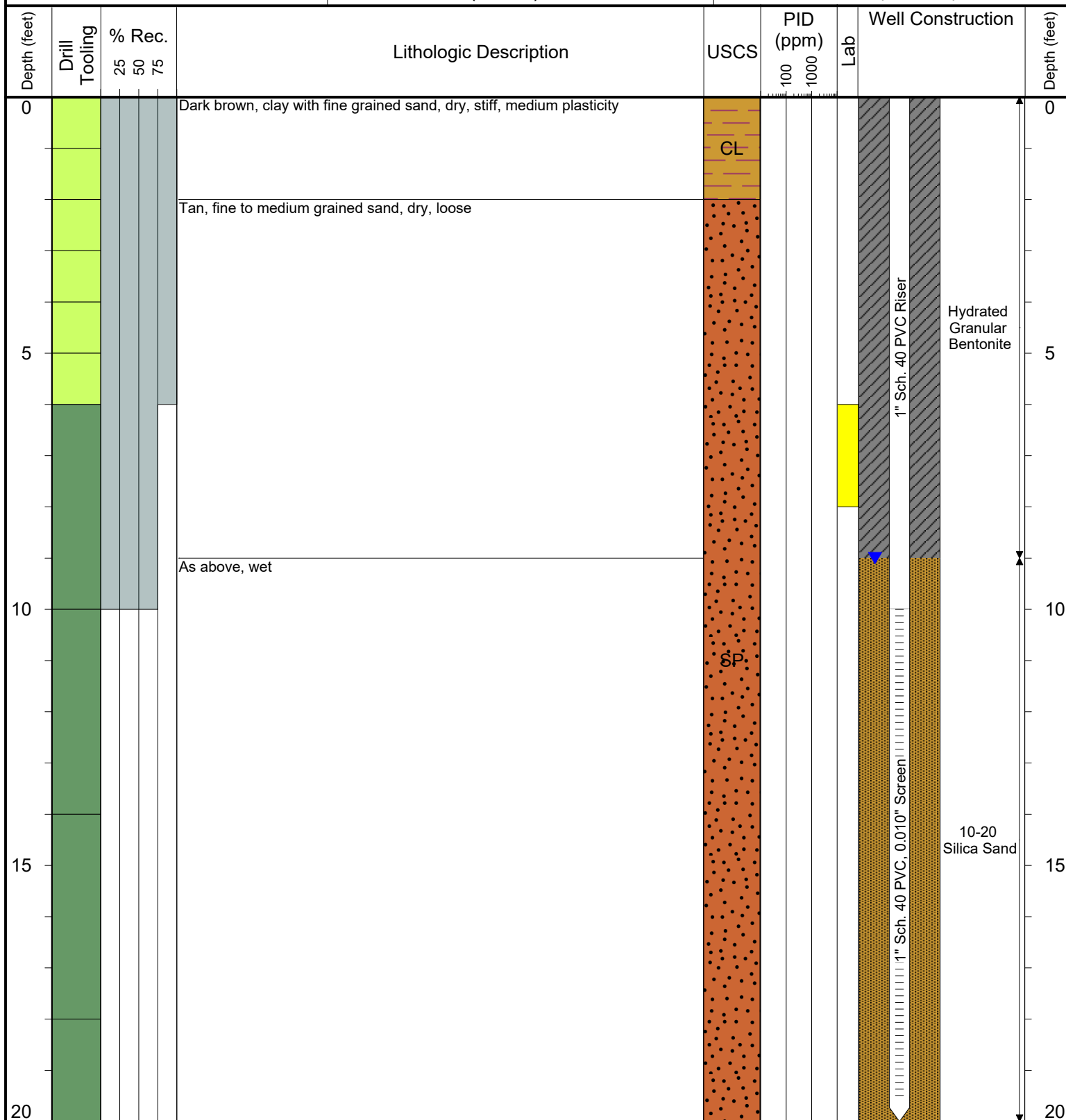
LOCATION: Weld County, CO

LATITUDE (DEGREES): 40.331224303885

LONGITUDE (DEGREES): -104.48322797233

CASING ELEVATION (FT. AMSL): 4614.99

GROUND ELEVATION (FT. AMSL): NS



Drilling / Sample Method:

Macro-Core

CME Continuous Core

Hand Auger

Hollow Stem Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy, Inc.

LOGGED BY: Jake Whritenour

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: Power Probe

DRILL BIT SIZE (INCHES): 2.375

DATE STARTED - COMPLETED: 8/31/16

TOTAL BORING DEPTH (FT. BGS): 20

DEPTH TO WATER (FT. BGS): 9

Frank 2, 5, 6, CC 7-19, 29

BORING / WELL ID: BH07

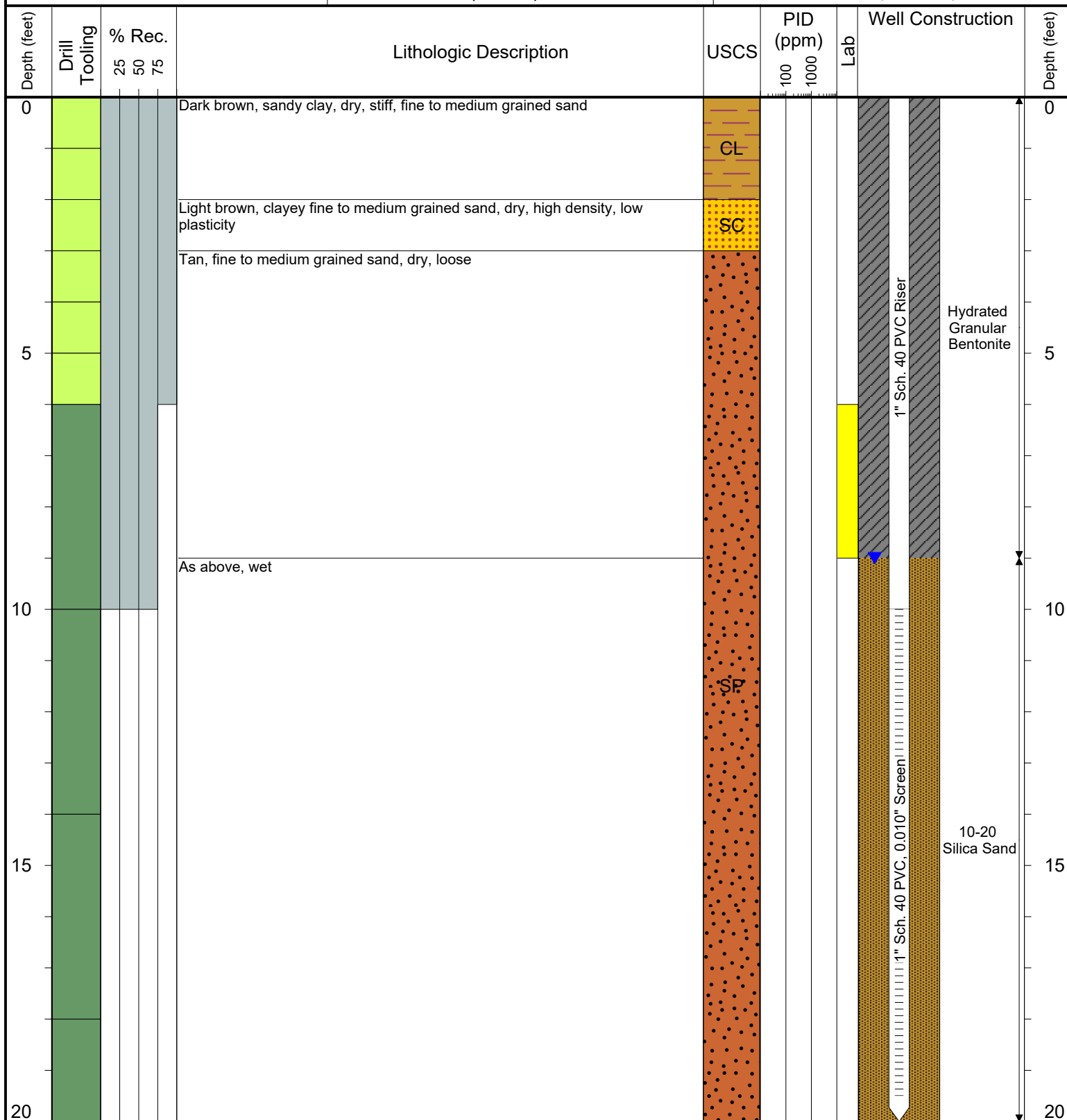
LOCATION: Weld County, CO

LATITUDE (DEGREES): 40.331234756508

LONGITUDE (DEGREES): -104.48308328031

CASING ELEVATION (FT. AMSL): 4615.03

GROUND ELEVATION (FT. AMSL): NS



Drilling / Sample Method:

Macro-Core
CME Continuous Core

Hand Auger
Hollow Stem Auger

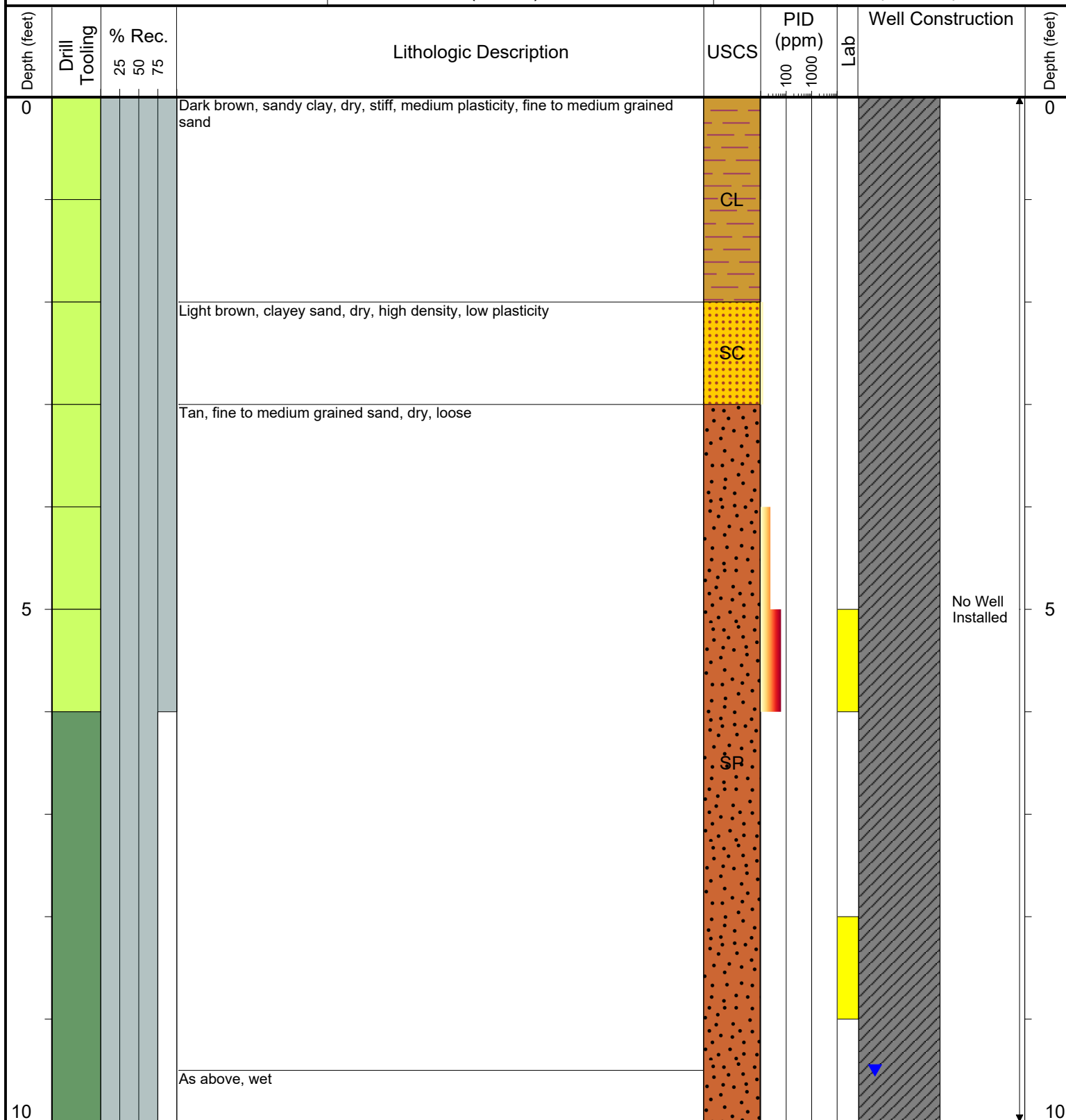
Laboratory Sample Types:

Geotechnical Lab
Analytical Chemistry Lab
Geotechnical & Analytical Chemistry Lab



DEPTH TO WATER (FT. BGS): 9.5

GROUND ELEVATION (FT. AMSL): NS



- Macro-Core
- CME Continuous Core

Analytical Chemistry Lab

 Geotechnical & Analytical Chemistry Lab



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy, Inc.

LOGGED BY: Jake Whritenour

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: Power Probe

DRILL BIT SIZE (INCHES): 2.375

DATE STARTED - COMPLETED: 9/9/16

TOTAL BORING DEPTH (FT. BGS): 16

DEPTH TO WATER (FT. BGS): 9

Frank 2, 5, 6, CC 7-19, 29

BORING / WELL ID: BH09

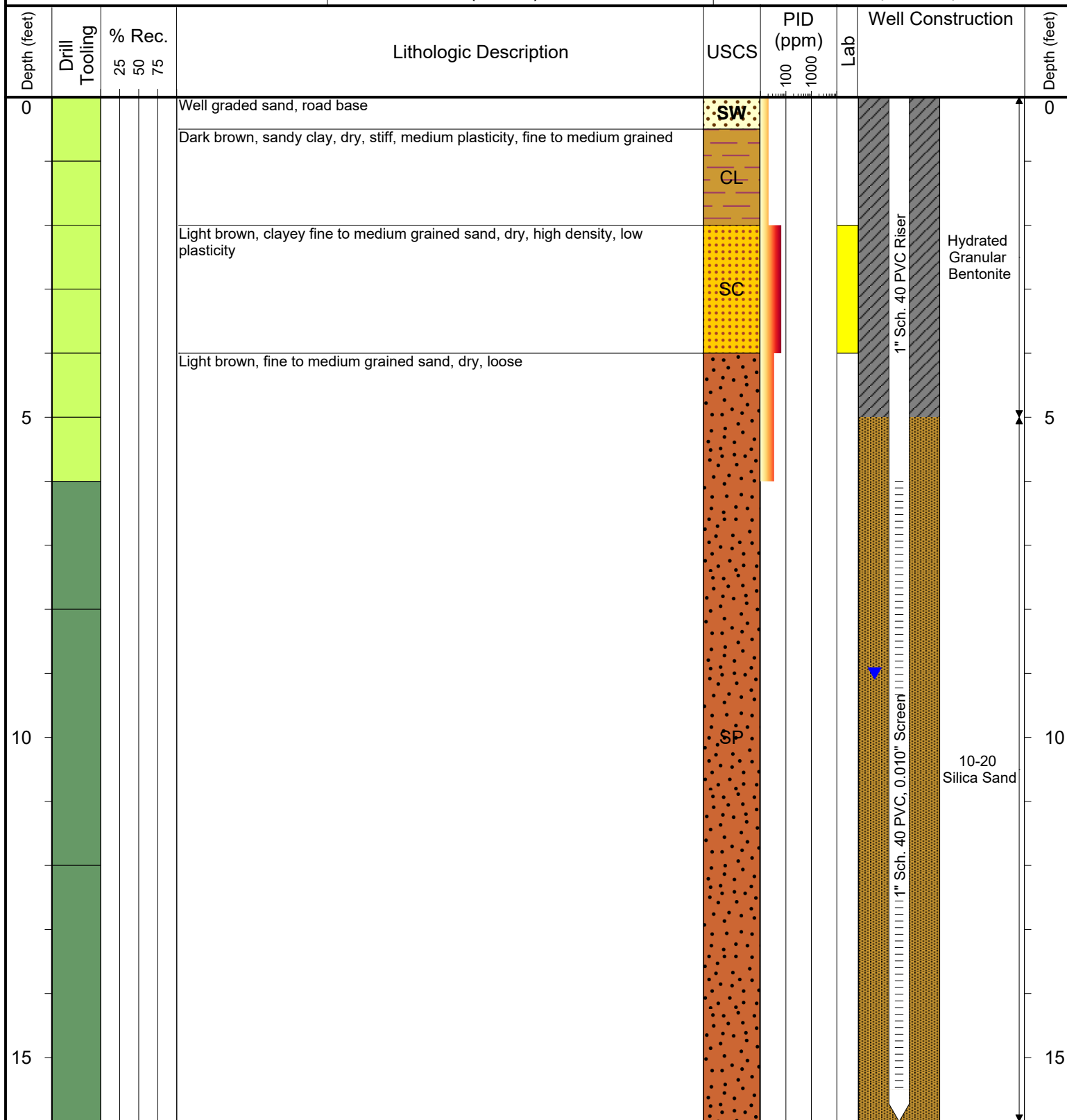
LOCATION: Weld County, CO

LATITUDE (DEGREES): 40.331436580258

LONGITUDE (DEGREES): -104.48317961229

CASING ELEVATION (FT. AMSL): 4615.12

GROUND ELEVATION (FT. AMSL): NS



Drilling / Sample Method:

Macro-Core
CME Continuous Core

Hand Auger
Hollow Stem Auger

Laboratory Sample Types:

Geotechnical Lab
Analytical Chemistry Lab
Geotechnical & Analytical Chemistry Lab



DEPTH TO WATER (FT. BGS): 9

GROUND ELEVATION (FT. AMSL): NS





6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy, Inc.

LOGGED BY: Jake Whritenour

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: Power Probe

DRILL BIT SIZE (INCHES): 2.375

DATE STARTED - COMPLETED: 9/9/16

TOTAL BORING DEPTH (FT. BGS): 16

DEPTH TO WATER (FT. BGS): 9.5

Frank 2, 5, 6, CC 7-19, 29

BORING / WELL ID: BH11

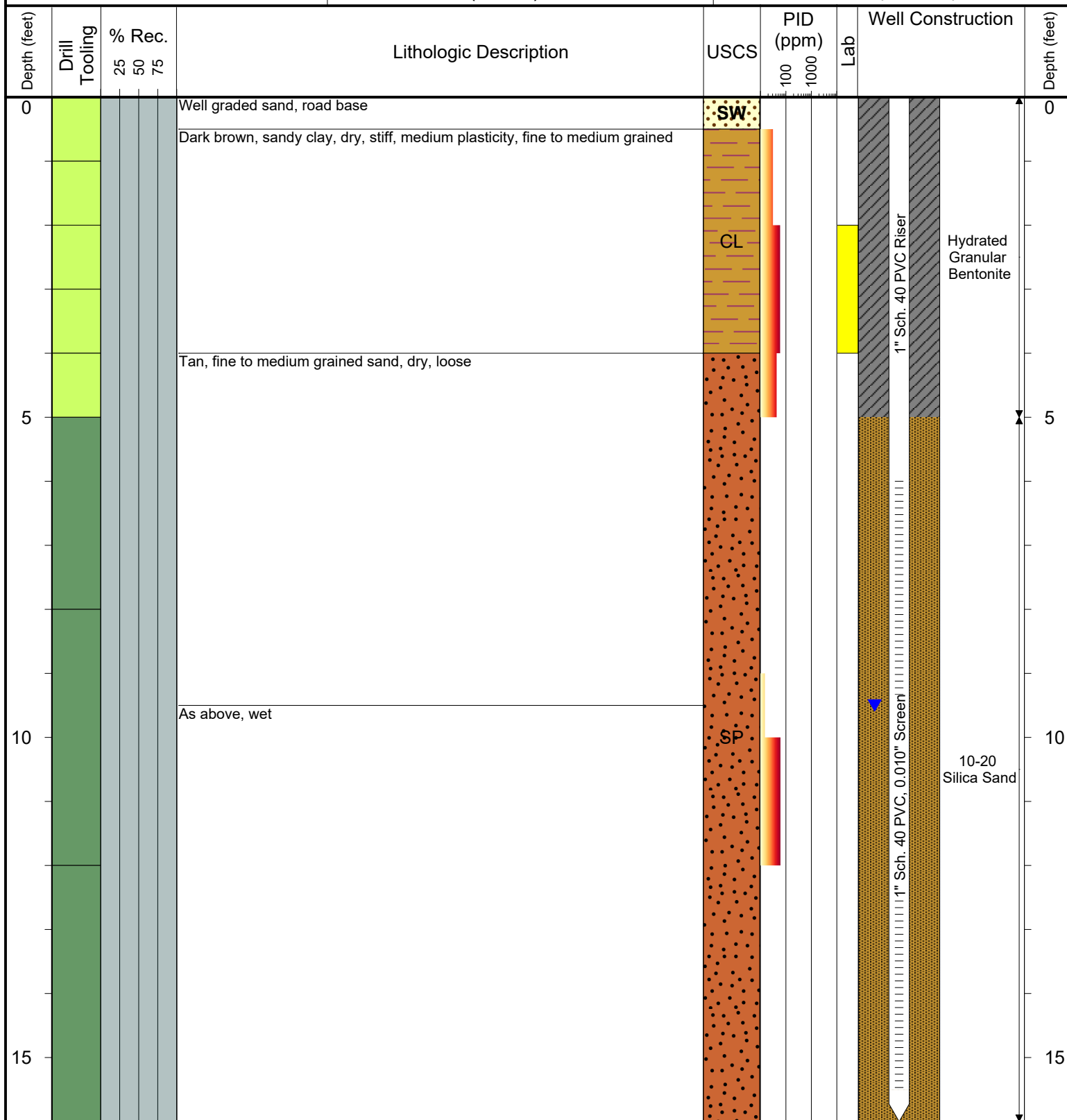
LOCATION: Weld County, CO

LATITUDE (DEGREES): 40.33141158738

LONGITUDE (DEGREES): -104.48323708993

CASING ELEVATION (FT. AMSL): 4615.54

GROUND ELEVATION (FT. AMSL): NS



Drilling / Sample Method:

Macro-Core
CME Continuous Core

Hand Auger
Hollow Stem Auger

Laboratory Sample Types:

Geotechnical Lab
Analytical Chemistry Lab
Geotechnical & Analytical Chemistry Lab



DEPTH TO WATER (FT. BGS): 9.5

GROUND ELEVATION (FT. AMSL): NS





6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy, Inc.

LOGGED BY: Jake Whritenour

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: Power Probe

DRILL BIT SIZE (INCHES): 2.375

DATE STARTED - COMPLETED: 9/9/16

TOTAL BORING DEPTH (FT. BGS): 16

DEPTH TO WATER (FT. BGS): 9

Frank 2, 5, 6, CC 7-19, 29

BORING / WELL ID: BH13

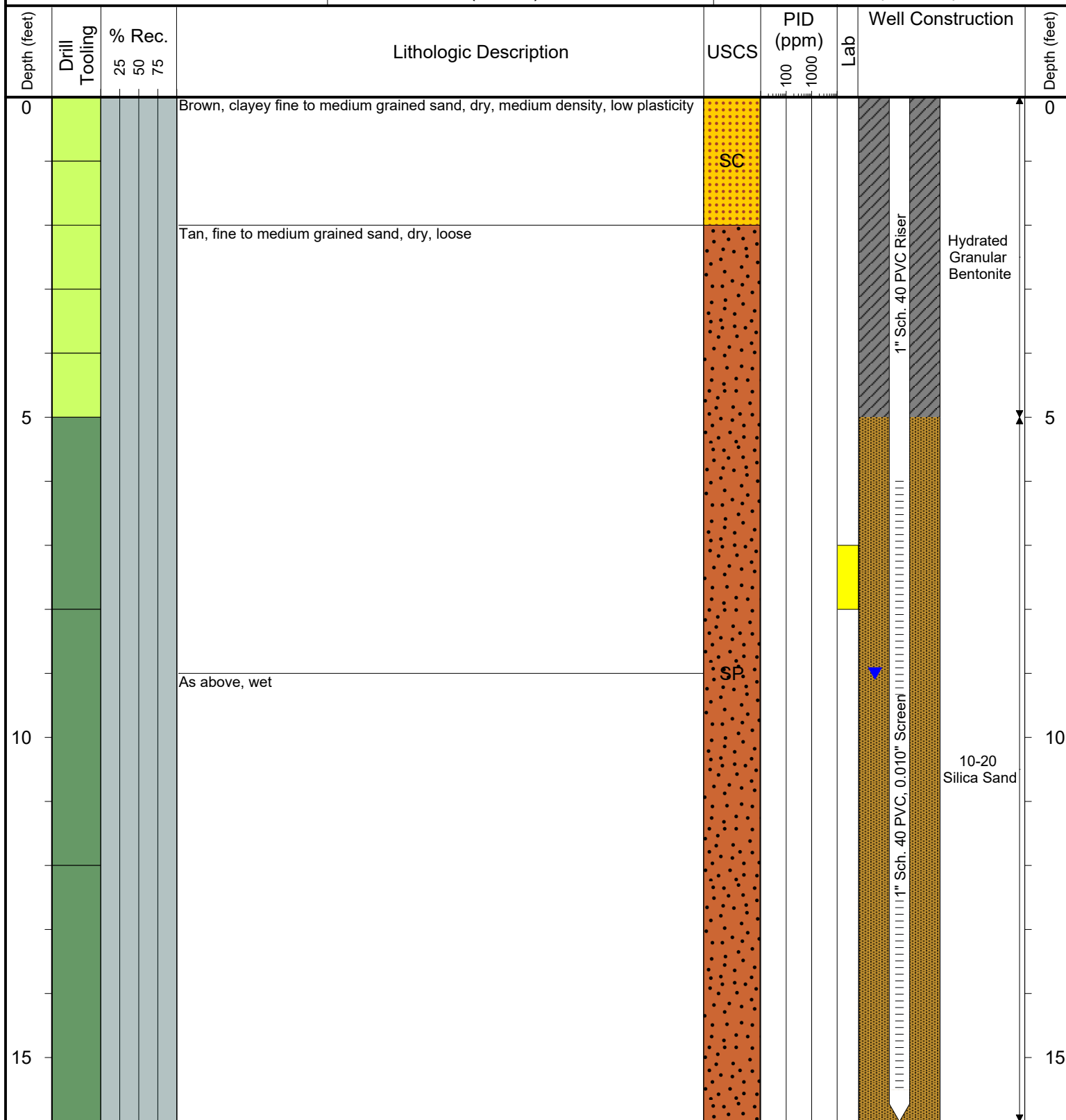
LOCATION: Weld County, CO

LATITUDE (DEGREES): 40.331267549694

LONGITUDE (DEGREES): -104.48327875056

CASING ELEVATION (FT. AMSL): 4614.12

GROUND ELEVATION (FT. AMSL): NS



Drilling / Sample Method:

Macro-Core
CME Continuous Core

Hand Auger
Hollow Stem Auger

Laboratory Sample Types:

Geotechnical Lab
Analytical Chemistry Lab
Geotechnical & Analytical Chemistry Lab



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy, Inc.

LOGGED BY: Jake Whritenour

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: Power Probe

DRILL BIT SIZE (INCHES): 2.375

DATE STARTED - COMPLETED: 9/9/16

TOTAL BORING DEPTH (FT. BGS): 16

DEPTH TO WATER (FT. BGS): 10

Frank 2, 5, 6, CC 7-19, 29

BORING / WELL ID: BH14

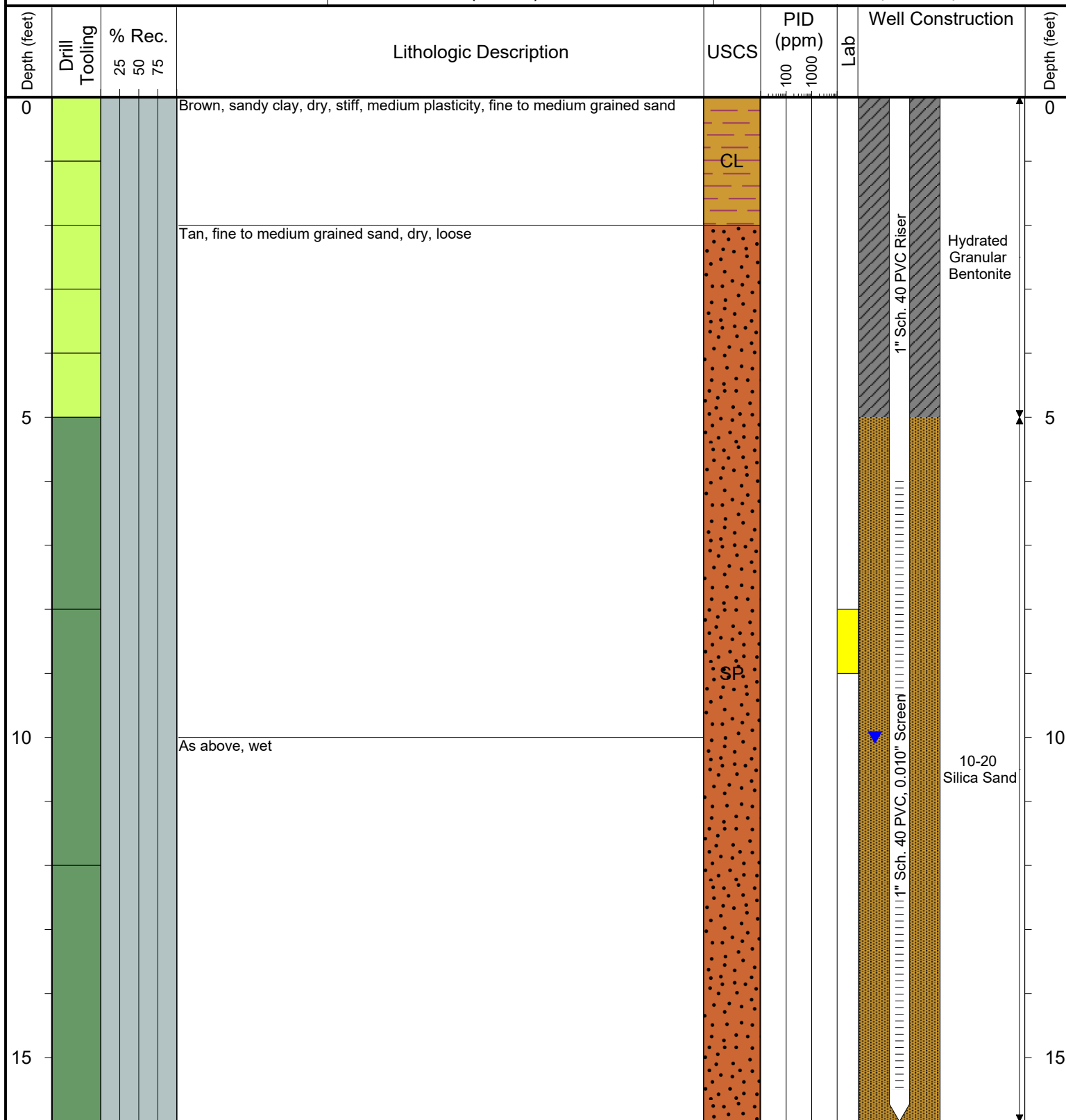
LOCATION: Weld County, CO

LATITUDE (DEGREES): 40.331522612186

LONGITUDE (DEGREES): -104.4829597634

CASING ELEVATION (FT. AMSL): 4615.12

GROUND ELEVATION (FT. AMSL): NS



Drilling / Sample Method:

Macro-Core
CME Continuous Core

Hand Auger
Hollow Stem Auger

Laboratory Sample Types:

Geotechnical Lab
Analytical Chemistry Lab
Geotechnical & Analytical Chemistry Lab



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Noble Energy, Inc.

LOGGED BY: Jake Whritenour

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: Power Probe

DRILL BIT SIZE (INCHES): 2.375

DATE STARTED - COMPLETED: 9/9/16

TOTAL BORING DEPTH (FT. BGS): 16

DEPTH TO WATER (FT. BGS): 9

Frank 2, 5, 6, CC 7-19, 29

BORING / WELL ID: BH15

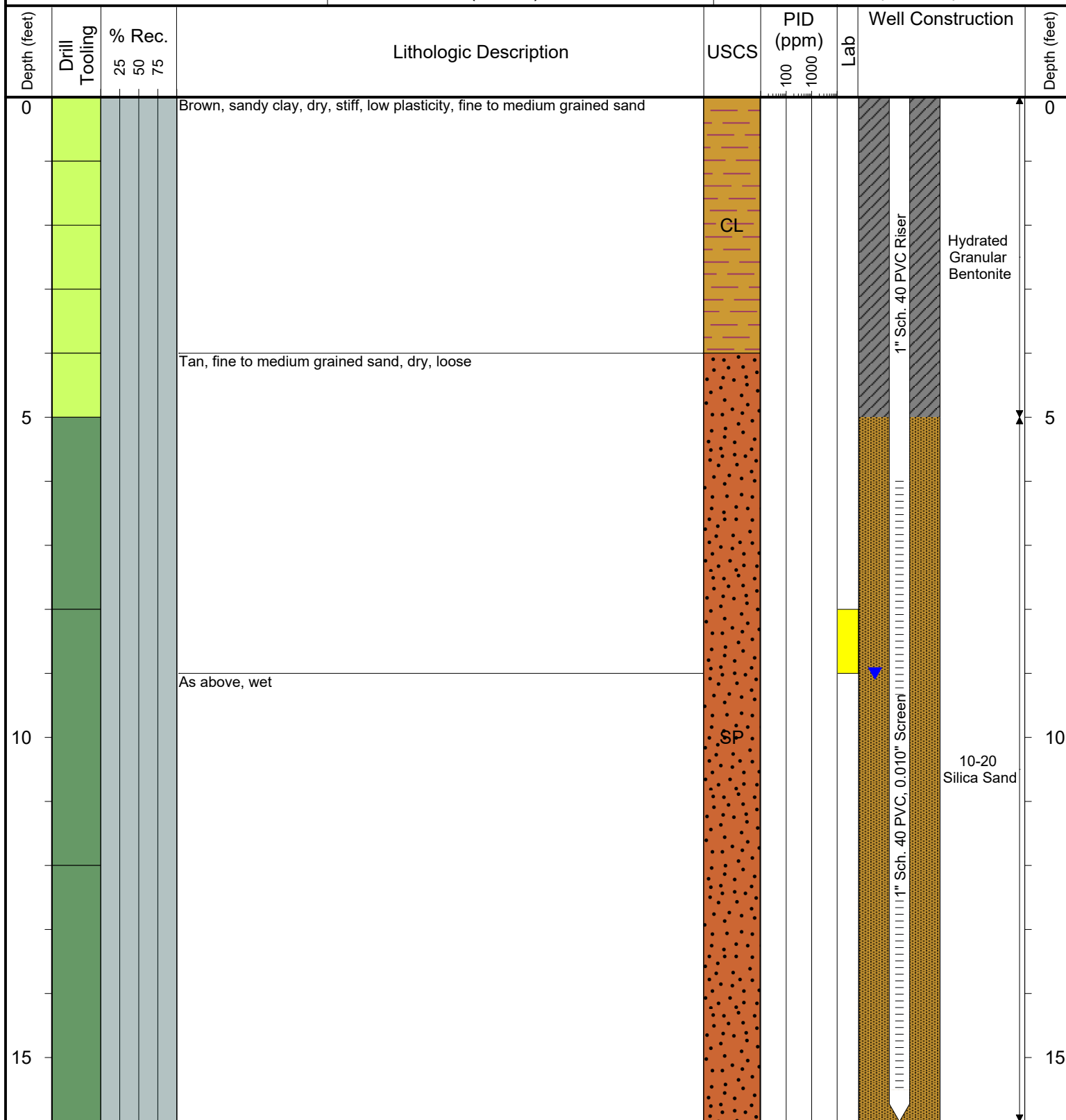
LOCATION: Weld County, CO

LATITUDE (DEGREES): 40.331432607391

LONGITUDE (DEGREES): -104.48338388282

CASING ELEVATION (FT. AMSL): 4614.94

GROUND ELEVATION (FT. AMSL): NS



Drilling / Sample Method:

Macro-Core
CME Continuous Core

Hand Auger
Hollow Stem Auger

Laboratory Sample Types:

Geotechnical Lab
Analytical Chemistry Lab
Geotechnical & Analytical Chemistry Lab

ATTACHMENT B

LABORATORY ANALYTICAL DATA REPORTS

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

September 01, 2016

Brandon Bruns
Tasman Geosciences
6899 Pecos Street
Denver, CO 80221

RE: Noble - Frank 2.5.6 CC7-19,29

Enclosed are the results of analyses for samples received by Summit Scientific on 08/31/16 17:49. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury
President



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/01/16 06:43

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01@3-4'	1608264-01	Soil	08/31/16 10:55	08/31/16 17:49
BH02@5-6'	1608264-02	Soil	08/31/16 10:20	08/31/16 17:49
BH03@8-9'	1608264-03	Soil	08/31/16 11:20	08/31/16 17:49
BH04@5-6'	1608264-04	Soil	08/31/16 12:25	08/31/16 17:49
BH05@5-6'	1608264-05	Soil	08/31/16 14:00	08/31/16 17:49
BH06@6-8'	1608264-06	Soil	08/31/16 14:45	08/31/16 17:49
BH07@6-9'	1608264-07	Soil	08/31/16 15:30	08/31/16 17:49
BH08@5-6'	1608264-08	Soil	08/31/16 16:00	08/31/16 17:49
BH08@8-9'	1608264-09	Soil	08/31/16 16:10	08/31/16 17:49

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 Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/01/16 06:43

Summit Scientific *160826H*

S₂

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

Page 1 of 1

Client: *Tasman/Noble* Project Manager: *Brandon Bruns*
Address: _____ E-Mail: *bbruns@tasman-geo.com*
City/State/Zip: _____
Phone: *720-616-4383* Fax: _____ Project Name: *Frank 2.5.6, CC7-19,29*
Sampler Name: *Jacob Whittemour* Project Number: _____

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested					Special Instructions
					HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	8260	6015	TPH-DREXLER	905	
1	<i>BH01C 3-4'</i>	<i>8/31/16</i>	<i>1055</i>	<i>1</i>			<i>X</i>			<i>X</i>			<i>X</i>	<i>X</i>			
2	<i>BH02C 5-6'</i>		<i>1020</i>	<i>1</i>			<i>X</i>			<i>X</i>			<i>X</i>	<i>X</i>			
3	<i>BH03C 8-9'</i>		<i>1120</i>	<i>1</i>			<i>X</i>			<i>X</i>			<i>X</i>	<i>X</i>			
4	<i>BH04C 5-6'</i>		<i>1225</i>	<i>1</i>			<i>X</i>			<i>X</i>			<i>X</i>	<i>X</i>			
5	<i>BH05C 5-6'</i>		<i>1400</i>	<i>1</i>			<i>X</i>			<i>X</i>			<i>X</i>	<i>X</i>			
6	<i>BH06C 6-8'</i>		<i>1445</i>	<i>1</i>			<i>X</i>			<i>X</i>			<i>X</i>	<i>X</i>			
7	<i>BH07C 6-9'</i>		<i>1530</i>	<i>1</i>			<i>X</i>			<i>X</i>			<i>X</i>	<i>X</i>			
8	<i>BH08C 5-6'</i>		<i>1600</i>	<i>1</i>			<i>X</i>			<i>X</i>			<i>X</i>	<i>X</i>			
9	<i>BH08C 8-9'</i>	<i>✓</i>	<i>1610</i>	<i>1</i>			<i>X</i>			<i>X</i>			<i>X</i>	<i>X</i>			
10																	

Relinquished by: _____ Date/Time: <i>8/31/16 17:49</i>	Received by: <i>LA</i> Date/Time: <i>8-31-16 17:49</i>	Turn Around Time (Check) Same Day <i>X</i> 72 hours _____ 24 hours _____ Standard _____ 48 hours _____	Notes:
Relinquished by: _____ Date/Time: _____	Received by: _____ Date/Time: _____	Sample Integrity: Temperature Upon Receipt: <i>6.1</i> Intact: <i>(Yes)</i> No	
Relinquished by: _____ Date/Time: _____	Received by: _____ Date/Time: _____		

www.s2scientific.com

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/01/16 06:43

Sample Receipt Checklist

S2 Work Order: 1608264

Client: Tasman

Client Project ID: Frank 2.5.6 CC7-19,29

Shipped Via: 4D on ice
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: _____

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

Cooler ID					
Temp (°C)	<u>6.1</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.				
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?	<input checked="" type="checkbox"/>			
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

Muri P.
Custodian Printed Name

MB 8-31-16
Signature or Initials of Custodian

17:50
Date/Time



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/01/16 06:43

BH01@3-4'
1608264-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/31/16 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	120	50	mg/kg	1	1608323	08/31/16	08/31/16	8015M	

Date Sampled: **08/31/16 10:55**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/31/16 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.048	0.010	mg/kg	1	1608322	08/31/16	08/31/16	EPA 8260B	
Benzene	0.0062	0.0020	"	"	"	"	"	"	
Toluene	0.021	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.23	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **08/31/16 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		99.0 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		95.0 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		97.1 %	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 Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/01/16 06:43

BH02@5-6'
1608264-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/31/16 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1608323	08/31/16	08/31/16	8015M	

Date Sampled: **08/31/16 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.3 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/31/16 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1608322	08/31/16	08/31/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **08/31/16 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.7 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/01/16 06:43

BH03@8-9'
1608264-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/31/16 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	54	50	mg/kg	1	1608323	08/31/16	08/31/16	8015M	

Date Sampled: **08/31/16 11:20**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/31/16 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.021	0.010	mg/kg	1	1608322	08/31/16	08/31/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.021	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **08/31/16 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		106 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		94.4 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		99.4 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/01/16 06:43

BH04@5-6'
1608264-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/31/16 12:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1608323	08/31/16	08/31/16	8015M	

Date Sampled: **08/31/16 12:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		100 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/31/16 12:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1608322	08/31/16	08/31/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **08/31/16 12:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.4 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/01/16 06:43

BH05@5-6'
1608264-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/31/16 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1608323	08/31/16	08/31/16	8015M	

Date Sampled: **08/31/16 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		101 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/31/16 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1608322	08/31/16	08/31/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **08/31/16 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.9 %	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 Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/01/16 06:43

BH06@6-8'
1608264-06 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/31/16 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1608323	08/31/16	08/31/16	8015M	

Date Sampled: **08/31/16 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		98.5 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/31/16 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1608322	08/31/16	08/31/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **08/31/16 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.8 %	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 Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/01/16 06:43

BH07@6-9'
1608264-07 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/31/16 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1608323	08/31/16	08/31/16	8015M	

Date Sampled: **08/31/16 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		99.2 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/31/16 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1608322	08/31/16	08/31/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **08/31/16 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.5 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/01/16 06:43

BH08@5-6'
1608264-08 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/31/16 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1608323	08/31/16	09/01/16	8015M	

Date Sampled: **08/31/16 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		99.7 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/31/16 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1608322	08/31/16	08/31/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **08/31/16 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.7 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/01/16 06:43

BH08@8-9'
1608264-09 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/31/16 16:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1608323	08/31/16	09/01/16	8015M	

Date Sampled: **08/31/16 16:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		101 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/31/16 16:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1608322	08/31/16	08/31/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **08/31/16 16:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		100 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.7 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/01/16 06:43

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1608323 - EPA 3550A

Blank (1608323-BLK1)

Prepared & Analyzed: 08/31/16

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 13.0 " 12.5 104 30-150

LCS (1608323-BS1)

Prepared & Analyzed: 08/31/16

C10-C28 (DRO) 446 50 mg/kg 499 89.5 73-134

Surrogate: o-Terphenyl 12.8 " 12.5 102 30-150

Matrix Spike (1608323-MS1)

Source: 1608264-02

Prepared & Analyzed: 08/31/16

C10-C28 (DRO) 450 50 mg/kg 490 18.2 88.2 50-148

Surrogate: o-Terphenyl 12.8 " 12.3 104 30-150

Matrix Spike Dup (1608323-MSD1)

Source: 1608264-02

Prepared & Analyzed: 08/31/16

C10-C28 (DRO) 454 50 mg/kg 490 18.2 88.8 50-148 0.702 20

Surrogate: o-Terphenyl 12.9 " 12.3 105 30-150

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/01/16 06:43

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

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

Batch 1608322 - EPA 5030 Soil MS

Blank (1608322-BLK1)

Prepared & Analyzed: 08/31/16

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0404</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0386</i>		<i>"</i>	<i>0.0400</i>		<i>96.4</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0356</i>		<i>"</i>	<i>0.0400</i>		<i>88.9</i>	<i>21-167</i>			

LCS (1608322-BS1)

Prepared & Analyzed: 08/31/16

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.0779	0.0020	"	0.100		77.9	58-130			
Toluene	0.0867	0.0050	"	0.100		86.7	61-134			
Ethylbenzene	0.0954	0.0050	"	0.0992		96.1	74-139			
m,p-Xylene	0.194	0.010	"	0.200		97.1	73-137			
o-Xylene	0.105	0.0050	"	0.0980		107	73-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0413</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0390</i>		<i>"</i>	<i>0.0400</i>		<i>97.6</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0374</i>		<i>"</i>	<i>0.0400</i>		<i>93.4</i>	<i>21-167</i>			

Matrix Spike (1608322-MS1)

Source: 1608264-02

Prepared & Analyzed: 08/31/16

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.0767	0.0020	"	0.0977	ND	78.6	30-131			
Toluene	0.0846	0.0050	"	0.0977	ND	86.7	30-134			
Ethylbenzene	0.0928	0.0050	"	0.0969	ND	95.8	22-153			
m,p-Xylene	0.192	0.010	"	0.195	ND	98.6	10-159			
o-Xylene	0.104	0.0050	"	0.0957	ND	109	31-151			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0419</i>		<i>"</i>	<i>0.0391</i>		<i>107</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0368</i>		<i>"</i>	<i>0.0391</i>		<i>94.3</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0384</i>		<i>"</i>	<i>0.0391</i>		<i>98.4</i>	<i>21-167</i>			

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/01/16 06:43

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

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

Batch 1608322 - EPA 5030 Soil MS

Matrix Spike Dup (1608322-MSD1)		Source: 1608264-02			Prepared & Analyzed: 08/31/16					
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.0778	0.0020	"	0.0984	ND	79.0	30-131	1.39	34	
Toluene	0.0876	0.0050	"	0.0984	ND	89.0	30-134	3.41	30	
Ethylbenzene	0.0939	0.0050	"	0.0976	ND	96.1	22-153	1.16	24	
m,p-Xylene	0.194	0.010	"	0.196	ND	98.7	10-159	0.891	68	
o-Xylene	0.106	0.0050	"	0.0965	ND	110	31-151	1.62	38	
<hr/>										
Surrogate: 1,2-Dichloroethane-d4	0.0412		"	0.0394		105	23-173			
Surrogate: Toluene-d8	0.0378		"	0.0394		96.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0380		"	0.0394		96.5	21-167			

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/01/16 06:43

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

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

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

September 02, 2016

Brandon Bruns
Tasman Geosciences
6899 Pecos Street
Denver, CO 80221
RE: Frank 2, 5, 6, CC7-19, 29

Enclosed are the results of analyses for samples received by Summit Scientific on 09/01/16 17:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury
President



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Frank 2, 5, 6, CC7-19, 29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/02/16 07:20

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH03	1609003-01	Water	09/01/16 12:10	09/01/16 17:00
BH05	1609003-02	Water	09/01/16 12:35	09/01/16 17:00
BH06	1609003-03	Water	09/01/16 12:50	09/01/16 17:00
BH07	1609003-04	Water	09/01/16 13:26	09/01/16 17:00

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Frank 2, 5, 6, CC7-19, 29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/02/16 07:20

Summit Scientific 1609003

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

Page 1 of 1

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

Project Manager: Brandon Brens, Invoice: Jacob Evans
E-Mail: bbrens@tasman-geo.com
Project Name: Frank 25.6, 47-19, 29
Project Number: _____

[illegible]

www.s2scientific.com

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Frank 2, 5, 6, CC7-19, 29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/02/16 07:20

Sample Receipt Checklist

S2 Work Order: 1609003

Client: Tasman/Noble Client Project ID: Frank 2,5,6, CC7-19, 29

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

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

Cooler ID					
Temp (°C)	<u>9.1</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C ⁽¹⁾ ?		<input checked="" type="checkbox"/>		
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.				
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		<input checked="" type="checkbox"/>		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

Nakita
Custodian Printed Name

MB
Signature or Initials of Custodian

9/1/16 1740
Date/Time



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Frank 2, 5, 6, CC7-19, 29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/02/16 07:20

BH03
1609003-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/01/16 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	260	1.0	ug/l	1	1609013	09/01/16	09/01/16	EPA 8260B	
Toluene	720	100	"	100	"	"	09/01/16	"	
Ethylbenzene	65	1.0	"	1	"	"	09/01/16	"	
Xylenes (total)	640	1.0	"	"	"	"	"	"	

Date Sampled: **09/01/16 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		109 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		92.6 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		103 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Frank 2, 5, 6, CC7-19, 29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/02/16 07:20

BH05
1609003-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/01/16 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	19	1.0	ug/l	1	1609013	09/01/16	09/01/16	EPA 8260B	
Toluene	29	1.0	"	"	"	"	"	"	
Ethylbenzene	2.2	1.0	"	"	"	"	"	"	
Xylenes (total)	20	1.0	"	"	"	"	"	"	

Date Sampled: **09/01/16 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		98.5 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		98.5 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		98.4 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Frank 2, 5, 6, CC7-19, 29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/02/16 07:20

BH06
1609003-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/01/16 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609013	09/01/16	09/01/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **09/01/16 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.5 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		100 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.3 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Frank 2, 5, 6, CC7-19, 29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/02/16 07:20

BH07
1609003-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/01/16 13:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609013	09/01/16	09/01/16	EPA 8260B	
Toluene	1.3	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	3.4	1.0	"	"	"	"	"	"	

Date Sampled: **09/01/16 13:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		96.4 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		99.2 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		101 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Frank 2, 5, 6, CC7-19, 29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/02/16 07:20

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1609013 - EPA 5030 Water MS

Blank (1609013-BLK1)

Prepared & Analyzed: 09/02/16

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.1		"	13.3		98.6	37-154			
Surrogate: Toluene-d8	13.6		"	13.3		102	45-149			
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.8	45-146			

LCS (1609013-BS1)

Prepared & Analyzed: 09/02/16

Benzene	27.8	1.0	ug/l	33.3		83.3	51-132			
Toluene	29.2	1.0	"	33.3		87.6	51-138			
Ethylbenzene	31.6	1.0	"	33.1		95.6	58-146			
m,p-Xylene	65.6	2.0	"	66.5		98.6	57-144			
o-Xylene	35.6	1.0	"	32.7		109	53-146			
Surrogate: 1,2-Dichloroethane-d4	13.9		"	13.3		104	37-154			
Surrogate: Toluene-d8	12.7		"	13.3		95.1	45-149			
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		101	45-146			

Matrix Spike (1609013-MS1)

Source: 1609003-04

Prepared & Analyzed: 09/02/16

Benzene	36.7	1.0	ug/l	33.3	ND	110	34-141			
Toluene	28.7	1.0	"	33.3	1.27	82.2	27-151			
Ethylbenzene	32.4	1.0	"	33.1	ND	97.9	29-160			
m,p-Xylene	67.0	2.0	"	66.5	3.42	95.6	20-166			
o-Xylene	37.2	1.0	"	32.7	ND	114	33-159			
Surrogate: 1,2-Dichloroethane-d4	13.8		"	13.3		104	37-154			
Surrogate: Toluene-d8	12.5		"	13.3		93.8	45-149			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.1	45-146			

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Frank 2, 5, 6, CC7-19, 29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/02/16 07:20

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

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

Batch 1609013 - EPA 5030 Water MS

Matrix Spike Dup (1609013-MSD1)	Source: 1609003-04			Prepared & Analyzed: 09/02/16						
Benzene	35.0	1.0	ug/l	33.3	ND	105	34-141	4.85	32	
Toluene	29.5	1.0	"	33.3	1.27	84.6	27-151	2.82	25	
Ethylbenzene	32.3	1.0	"	33.1	ND	97.7	29-160	0.186	50	
m,p-Xylene	67.2	2.0	"	66.5	3.42	95.9	20-166	0.253	36	
o-Xylene	37.4	1.0	"	32.7	ND	115	33-159	0.643	26	
Surrogate: 1,2-Dichloroethane-d4	15.6		"	13.3		117	37-154			
Surrogate: Toluene-d8	12.9		"	13.3		96.6	45-149			
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102	45-146			

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 Street
Denver CO, 80221

Project: Frank 2, 5, 6, CC7-19, 29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/02/16 07:20

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

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.

A handwritten signature in black ink, appearing to be 'MSM'.

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

September 10, 2016

Brandon Bruns
Tasman Geosciences
6899 Pecos Street
Denver, CO 80221

RE: Noble - Frank 2.5.6 CC7-19,29

Enclosed are the results of analyses for samples received by Summit Scientific on 09/09/16 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury
President



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/10/16 16:27

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH09@2-4'	1609049-01	Soil	09/09/16 10:45	09/09/16 17:30
BH10@8-9'	1609049-02	Soil	09/09/16 11:25	09/09/16 17:30
BH11@2-4'	1609049-03	Soil	09/09/16 11:55	09/09/16 17:30
BH12@8-9'	1609049-04	Soil	09/09/16 12:20	09/09/16 17:30
BH13@7-8'	1609049-05	Soil	09/09/16 13:00	09/09/16 17:30
BH14@8-9'	1609049-06	Soil	09/09/16 13:25	09/09/16 17:30
BH15@8-9'	1609049-07	Soil	09/09/16 13:50	09/09/16 17:30

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 Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/10/16 16:27

Summit Scientific 1609049

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

Page / of

Client: Noble / Lasman

Address:

City/State/Zip:

Phone: 720-616-8383 Fax:


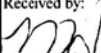
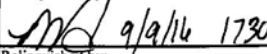
Sampler Name: Jacob W. Ritenour

Project Manager:

E-Mail: bbrans@tasmun-geo.com

Project Name: Frank 2.5.6, CC7-19, 29

Project Number:

				Preservative				Matrix				Analyze For:				Special Instructions
Sample Description	Date Sampled	Time Sampled	Number of Containers	HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)					
BH09 2-4'	9-9-16	1045	1			X		X				LOI EXN 8260 TTH-600, DEC 5/15				
BH10 8-9'		1125	1			X		X				X	X			
BH11 2-4'		1155	1			X		X				X	X			
BH12 8-9'		1220	1			X		X				X	X			
BH13 7-8'		1300	1			X		X				X	X			
BH14 8-9'		1325	1			X		X				X	X			
BH15 8-9'	↓	1350	1			X		X				X	X			
Relinquished by:	Date/Time:	Received by:	Date/Time:	Turn Around Time (Check)				Notes:								
	9-9-16 1700		9/9/16 1700	Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input type="checkbox"/>				On a								
Relinquished by:	Date/Time:	Received by:	Date/Time:	48 Hours <input type="checkbox"/>												
	9/9/16 1730															
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:	Sample Integrity:												
				Temperature Upon Receipt: 24°C Intact: Yes <input type="checkbox"/> No <input type="checkbox"/>												

www.s2scientific.com

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 Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/10/16 16:27

Sample Receipt Checklist

S2 Work Order: 1609049

Client: Noble / Tasman

Client Project ID: Frank 2.5.6, CC7-19, 29

Shipped Via: PIU

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: _____

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

(Describe)

Cooler ID					
Temp (°C)	<u>24</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.				
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?				
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?				
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , ect			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.			<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

Nakita
Custodian Printed Name

MA
Signature or Initials of Custodian

9/9/16 1730
Date/Time



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/10/16 16:27

BH09@2-4'
1609049-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 09/09/16 10:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609068	09/09/16	09/09/16	8015M	

Date Sampled: 09/09/16 10:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		92.6 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 09/09/16 10:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1609067	09/09/16	09/09/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: 09/09/16 10:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.9 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/10/16 16:27

BH10@8-9'
1609049-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/09/16 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609068	09/09/16	09/09/16	8015M	

Date Sampled: **09/09/16 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		93.0 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/09/16 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1609067	09/09/16	09/09/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **09/09/16 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.9 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/10/16 16:27

BH11@2-4'
1609049-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/09/16 11:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609068	09/09/16	09/10/16	8015M	

Date Sampled: **09/09/16 11:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		93.0 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/09/16 11:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1609067	09/09/16	09/09/16	EPA 8260B	
Benzene	0.038	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **09/09/16 11:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		116 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.2 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/10/16 16:27

BH12@8-9'
1609049-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/09/16 12:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609068	09/09/16	09/10/16	8015M	

Date Sampled: **09/09/16 12:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		93.7 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/09/16 12:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1609067	09/09/16	09/09/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **09/09/16 12:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.9 %	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 Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/10/16 16:27

BH13@7-8'
1609049-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 09/09/16 13:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609068	09/09/16	09/10/16	8015M	

Date Sampled: 09/09/16 13:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		95.4 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 09/09/16 13:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1609067	09/09/16	09/09/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: 09/09/16 13:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.5 %	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 Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/10/16 16:27

BH14@8-9'
1609049-06 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 09/09/16 13:25

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609068	09/09/16	09/10/16	8015M	

Date Sampled: 09/09/16 13:25

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		93.7 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 09/09/16 13:25

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1609067	09/09/16	09/09/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: 09/09/16 13:25

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.6 %	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 Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/10/16 16:27

BH15@8-9'
1609049-07 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/09/16 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609068	09/09/16	09/10/16	8015M	

Date Sampled: **09/09/16 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		92.3 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/09/16 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1609067	09/09/16	09/09/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **09/09/16 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.2 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/10/16 16:27

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1609068 - EPA 3550A

Blank (1609068-BLK1)

Prepared & Analyzed: 09/09/16

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 11.7 " 12.5 93.9 30-150

LCS (1609068-BS1)

Prepared & Analyzed: 09/09/16

C10-C28 (DRO) 457 50 mg/kg 499 91.6 73-134

Surrogate: o-Terphenyl 11.9 " 12.5 95.4 30-150

Matrix Spike (1609068-MS1)

Source: 1609049-01

Prepared & Analyzed: 09/09/16

C10-C28 (DRO) 474 50 mg/kg 492 31.4 90.0 50-148

Surrogate: o-Terphenyl 12.1 " 12.3 97.8 30-150

Matrix Spike Dup (1609068-MSD1)

Source: 1609049-01

Prepared & Analyzed: 09/09/16

C10-C28 (DRO) 466 50 mg/kg 492 31.4 88.4 50-148 1.61 20

Surrogate: o-Terphenyl 11.9 " 12.3 96.8 30-150

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/10/16 16:27

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

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

Batch 1609067 - EPA 5030 Soil MS

Blank (1609067-BLK1)

Prepared & Analyzed: 09/09/16

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0403		"	0.0400		101	23-173			
Surrogate: Toluene-d8	0.0397		"	0.0400		99.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0400		"	0.0400		100	21-167			

LCS (1609067-BS1)

Prepared & Analyzed: 09/09/16

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.124	0.0020	"	0.100		124	58-130			
Toluene	0.122	0.0050	"	0.100		122	61-134			
Ethylbenzene	0.122	0.0050	"	0.0992		123	74-139			
m,p-Xylene	0.234	0.010	"	0.200		117	73-137			
o-Xylene	0.120	0.0050	"	0.0980		122	73-141			
Surrogate: 1,2-Dichloroethane-d4	0.0409		"	0.0400		102	23-173			
Surrogate: Toluene-d8	0.0416		"	0.0400		104	20-170			
Surrogate: 4-Bromofluorobenzene	0.0389		"	0.0400		97.4	21-167			

Matrix Spike (1609067-MS1)

Source: 1609049-01

Prepared & Analyzed: 09/09/16

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.134	0.0020	"	0.0996	ND	134	30-150			
Toluene	0.131	0.0050	"	0.0996	ND	131	30-134			
Ethylbenzene	0.136	0.0050	"	0.0988	ND	138	22-153			
m,p-Xylene	0.260	0.010	"	0.199	ND	131	10-159			
o-Xylene	0.134	0.0050	"	0.0976	ND	138	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0451		"	0.0398		113	23-173			
Surrogate: Toluene-d8	0.0411		"	0.0398		103	20-170			
Surrogate: 4-Bromofluorobenzene	0.0399		"	0.0398		100	21-167			

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/10/16 16:27

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

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

Batch 1609067 - EPA 5030 Soil MS

Matrix Spike Dup (1609067-MSD1)		Source: 1609049-01			Prepared & Analyzed: 09/09/16					
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.133	0.0020	"	0.0988	ND	134	30-150	0.593	34	
Toluene	0.130	0.0050	"	0.0988	ND	131	30-134	0.839	30	
Ethylbenzene	0.136	0.0050	"	0.0980	ND	138	22-153	0.355	24	
m,p-Xylene	0.258	0.010	"	0.197	ND	131	10-159	0.840	68	
o-Xylene	0.135	0.0050	"	0.0968	ND	139	31-151	0.311	38	
Surrogate: 1,2-Dichloroethane-d4		0.0476	"	0.0395		120	23-173			
Surrogate: Toluene-d8		0.0403	"	0.0395		102	20-170			
Surrogate: 4-Bromofluorobenzene		0.0382	"	0.0395		96.6	21-167			

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/10/16 16:27

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

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.

A handwritten signature in black ink, appearing to be 'MSM'.

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

September 10, 2016

Brandon Bruns
Tasman Geosciences
6899 Pecos Street
Denver, CO 80221

RE: Noble - Frank 2.5.6 CC7-19,29

Enclosed are the results of analyses for samples received by Summit Scientific on 09/09/16 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury
President



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/10/16 16:29

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH05	1609050-01	Water	09/09/16 15:15	09/09/16 17:30
BH06	1609050-02	Water	09/09/16 15:20	09/09/16 17:30
BH07	1609050-03	Water	09/09/16 15:11	09/09/16 17:30
BH09	1609050-04	Water	09/09/16 15:00	09/09/16 17:30
BH10	1609050-05	Water	09/09/16 14:54	09/09/16 17:30
BH11	1609050-06	Water	09/09/16 14:58	09/09/16 17:30
BH12	1609050-07	Water	09/09/16 14:41	09/09/16 17:30
BH13	1609050-08	Water	09/09/16 14:25	09/09/16 17:30
BH14	1609050-09	Water	09/09/16 14:18	09/09/16 17:30
BH15	1609050-10	Water	09/09/16 14:36	09/09/16 17:30

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/10/16 16:29

Sample Receipt Checklist

S2 Work Order: 1609050

Client: Noble / Tasman

Client Project ID: Frank 2.5.6, CC7-19, 29

Shipped Via: P/U

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: _____

Matrix (check all that apply):

☐ Air

☐ Soil/Solid

☒ Water

☐ Other: _____

(Describe)

Cooler ID					
Temp (°C)	<u>2.4</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.				
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

Nakita
Custodian Printed Name

MA
Signature or Initials of Custodian

9/9/16 1730
Date/Time



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/10/16 16:29

BH05
1609050-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/09/16 15:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	6.3	1.0	ug/l	1	1609066	09/09/16	09/09/16	EPA 8260B	
Toluene	12	1.0	"	"	"	"	"	"	
Ethylbenzene	1.3	1.0	"	"	"	"	"	"	
Xylenes (total)	14	1.0	"	"	"	"	"	"	

Date Sampled: **09/09/16 15:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		108 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		99.0 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		104 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/10/16 16:29

BH06
1609050-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/09/16 15:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609066	09/09/16	09/09/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **09/09/16 15:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		101 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.9 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/10/16 16:29

BH07
1609050-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/09/16 15:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609066	09/09/16	09/09/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **09/09/16 15:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		99.4 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.5 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/10/16 16:29

BH09
1609050-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/09/16 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609066	09/10/16	09/10/16	EPA 8260B	
Toluene	1.0	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **09/09/16 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		99.8 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		94.6 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		100 %	45-146		"	"	"	"	

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 Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/10/16 16:29

BH10
1609050-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/09/16 14:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609066	09/10/16	09/10/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	8.4	1.0	"	"	"	"	"	"	
Xylenes (total)	39	1.0	"	"	"	"	"	"	

Date Sampled: **09/09/16 14:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		105 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		97.1 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		98.2 %	45-146		"	"	"	"	

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 Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/10/16 16:29

BH11
1609050-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/09/16 14:58**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	130	1.0	ug/l	1	1609066	09/10/16	09/10/16	EPA 8260B	
Toluene	20	1.0	"	"	"	"	"	"	
Ethylbenzene	4.6	1.0	"	"	"	"	"	"	
Xylenes (total)	27	1.0	"	"	"	"	"	"	

Date Sampled: **09/09/16 14:58**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		110 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		97.1 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		102 %	45-146		"	"	"	"	

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 Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/10/16 16:29

BH12
1609050-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/09/16 14:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609066	09/10/16	09/10/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **09/09/16 14:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.5 %	45-146		"	"	"	"	

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 Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/10/16 16:29

BH13
1609050-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/09/16 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609066	09/10/16	09/10/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **09/09/16 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		101 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		101 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.8 %	45-146		"	"	"	"	

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/10/16 16:29

BH14
1609050-09 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/09/16 14:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609066	09/10/16	09/10/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **09/09/16 14:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		96.9 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	45-146		"	"	"	"	

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Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/10/16 16:29

BH15
1609050-10 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/09/16 14:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609066	09/10/16	09/10/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **09/09/16 14:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.3 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		96.1 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.9 %	45-146		"	"	"	"	

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Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/10/16 16:29

Volatile Organic Compounds by EPA Method 8260B - Quality Control

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

Batch 1609066 - EPA 5030 Water MS

Blank (1609066-BLK1)

Prepared & Analyzed: 09/09/16

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	8.45		"	13.3	63.4	37-154				
Surrogate: Toluene-d8	13.4		"	13.3	101	45-149				
Surrogate: 4-Bromofluorobenzene	12.7		"	13.3	95.3	45-146				

LCS (1609066-BS1)

Prepared & Analyzed: 09/09/16

Benzene	43.0	1.0	ug/l	50.0	86.0	51-132				
Toluene	46.0	1.0	"	50.0	92.1	51-138				
Ethylbenzene	40.6	1.0	"	50.0	81.2	58-146				
m,p-Xylene	83.8	2.0	"	100	83.8	57-144				
o-Xylene	43.1	1.0	"	50.0	86.2	53-146				
Surrogate: 1,2-Dichloroethane-d4	12.3		"	13.3	92.0	37-154				
Surrogate: Toluene-d8	13.3		"	13.3	99.5	45-149				
Surrogate: 4-Bromofluorobenzene	12.9		"	13.3	96.5	45-146				

Matrix Spike (1609066-MS1)

Source: 1609030-01

Prepared & Analyzed: 09/09/16

Benzene	43.9	1.0	ug/l	50.0	ND	87.7	34-141			
Toluene	47.0	1.0	"	50.0	ND	94.0	27-151			
Ethylbenzene	42.9	1.0	"	50.0	ND	85.8	29-160			
m,p-Xylene	88.2	2.0	"	100	ND	88.2	20-166			
o-Xylene	45.1	1.0	"	50.0	ND	90.1	33-159			
Surrogate: 1,2-Dichloroethane-d4	11.2		"	13.3	83.6	37-154				
Surrogate: Toluene-d8	13.5		"	13.3	101	45-149				
Surrogate: 4-Bromofluorobenzene	12.4		"	13.3	93.3	45-146				

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Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
09/10/16 16:29

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

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

Batch 1609066 - EPA 5030 Water MS

Matrix Spike Dup (1609066-MSD1)	Source: 1609030-01			Prepared & Analyzed: 09/09/16						
Benzene	42.9	1.0	ug/l	50.0	ND	85.8	34-141	2.19	32	
Toluene	46.7	1.0	"	50.0	ND	93.4	27-151	0.598	25	
Ethylbenzene	42.0	1.0	"	50.0	ND	84.0	29-160	2.21	50	
m,p-Xylene	87.0	2.0	"	100	ND	87.0	20-166	1.46	36	
o-Xylene	44.3	1.0	"	50.0	ND	88.6	33-159	1.70	26	
Surrogate: 1,2-Dichloroethane-d4	11.0		"	13.3		82.4	37-154			
Surrogate: Toluene-d8	13.4		"	13.3		100	45-149			
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.7	45-146			

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Project: Noble - Frank 2.5.6 CC7-19,29

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
09/10/16 16:29

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

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A handwritten signature in black ink, appearing to be 'MSM'.