

State of Colorado  
**Oil and Gas Conservation Commission**

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109



FOR OGCC USE ONLY

**SITE INVESTIGATION AND REMEDIATION WORKPLAN**

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

OGCC Employee:

Spill                      Complaint  
Inspection              NOAV

Tracking No:

**CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED**

Spill or Release    Plug & Abandon    Central Facility Closure    Site/Facility Closure    Other (describe): \_\_\_\_\_

OGCC Operator Number: _____	Contact Name and Telephone: _____
Name of Operator: _____	_____
Address: _____	No: _____
City: _____ State: _____ Zip: _____	Fax: _____
API Number: _____	County: _____
Facility Name: _____	Facility Number: _____
Well Name: _____	Well Number: _____
Location: (QtrQtr, Sec, Twp, Rng, Meridian): _____ Latitude: _____ Longitude: _____	

**TECHNICAL CONDITIONS**

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): \_\_\_\_\_

Site Conditions: Is location within a sensitive area (according to Rule 901e)?              Y              N              If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): \_\_\_\_\_

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: \_\_\_\_\_

Potential receptors (water wells within 1/4 mi, surface waters, etc.): \_\_\_\_\_

\_\_\_\_\_

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):	Extent of Impact:	How Determined:
Soils	_____	_____
Vegetation	_____	_____
Groundwater	_____	_____
Surface Water	_____	_____

**REMEDIATION WORKPLAN**

Describe initial action taken (if previously provided, refer to that form or document):

\_\_\_\_\_

Describe how source is to be removed:

\_\_\_\_\_

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

\_\_\_\_\_



Tracking Number:	_____
Name of Operator:	_____
OGCC Operator No:	_____
Received Date:	_____
Well Name & No:	_____
Facility Name & No:	_____

**REMEDIATION WORKPLAN (Cont.)**

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required?                      Y                      N                      If yes, describe:

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

**IMPLEMENTATION SCHEDULE**

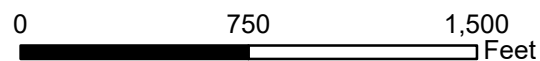
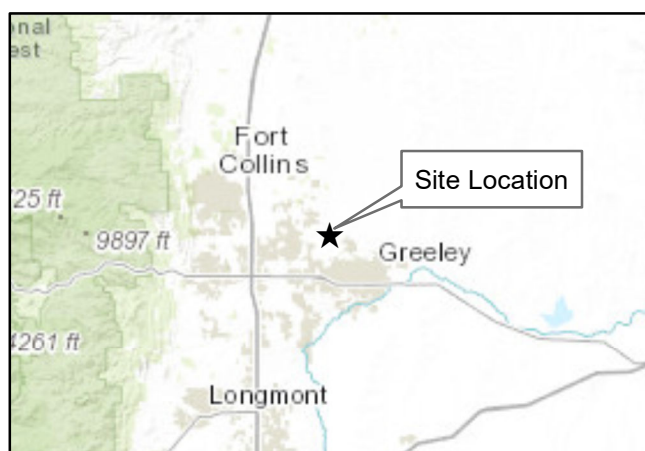
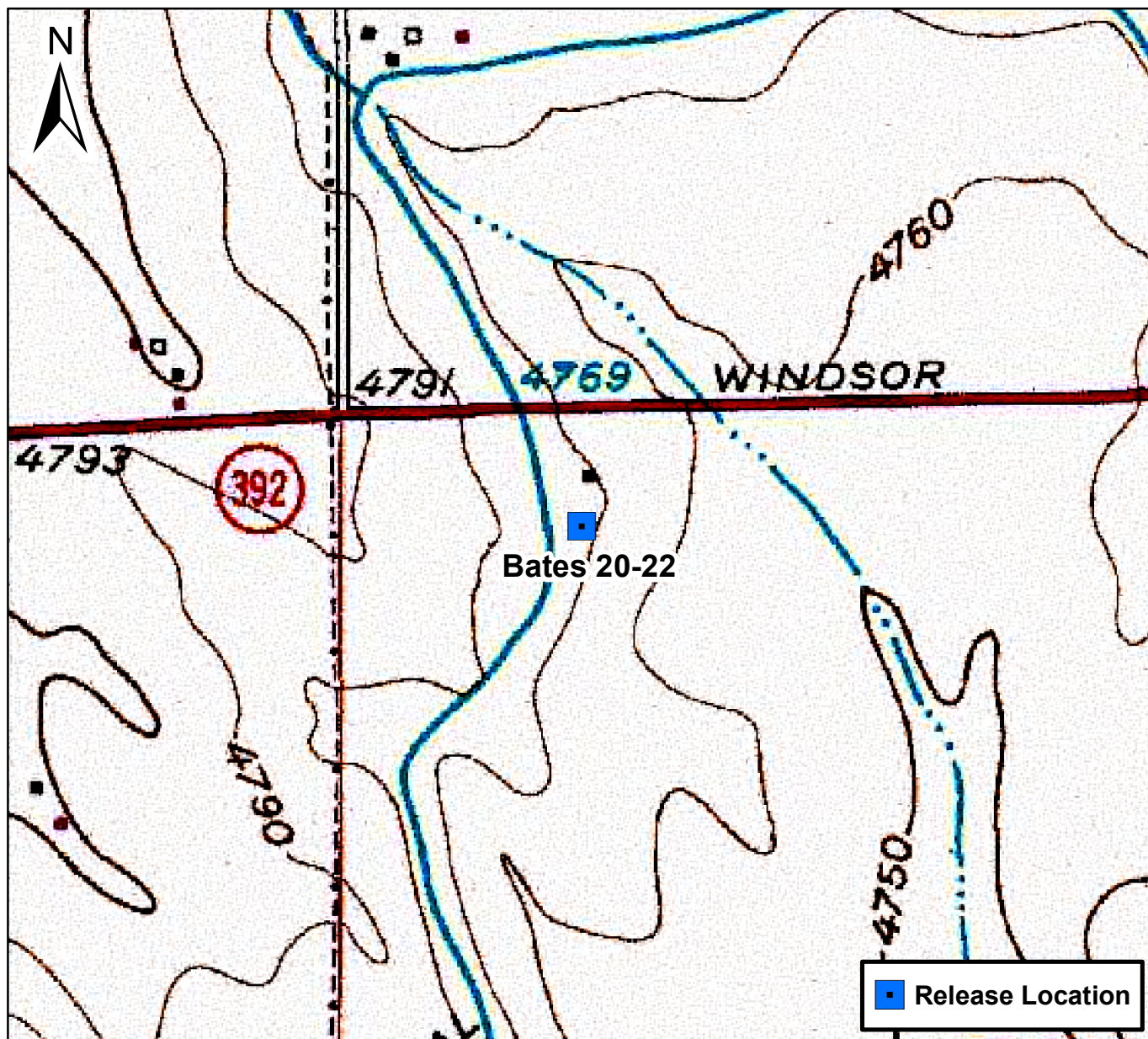
Date Site Investigation Began: _____	Date Site Investigation Completed: _____	Date Remediation Plan Submitted: _____
Remediation Start Date: _____	Anticipated Completion Date: _____	Actual Completion Date: _____

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: \_\_\_\_\_ Signed: \_\_\_\_\_

Title: \_\_\_\_\_ Date: \_\_\_\_\_

OGCC Approved: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

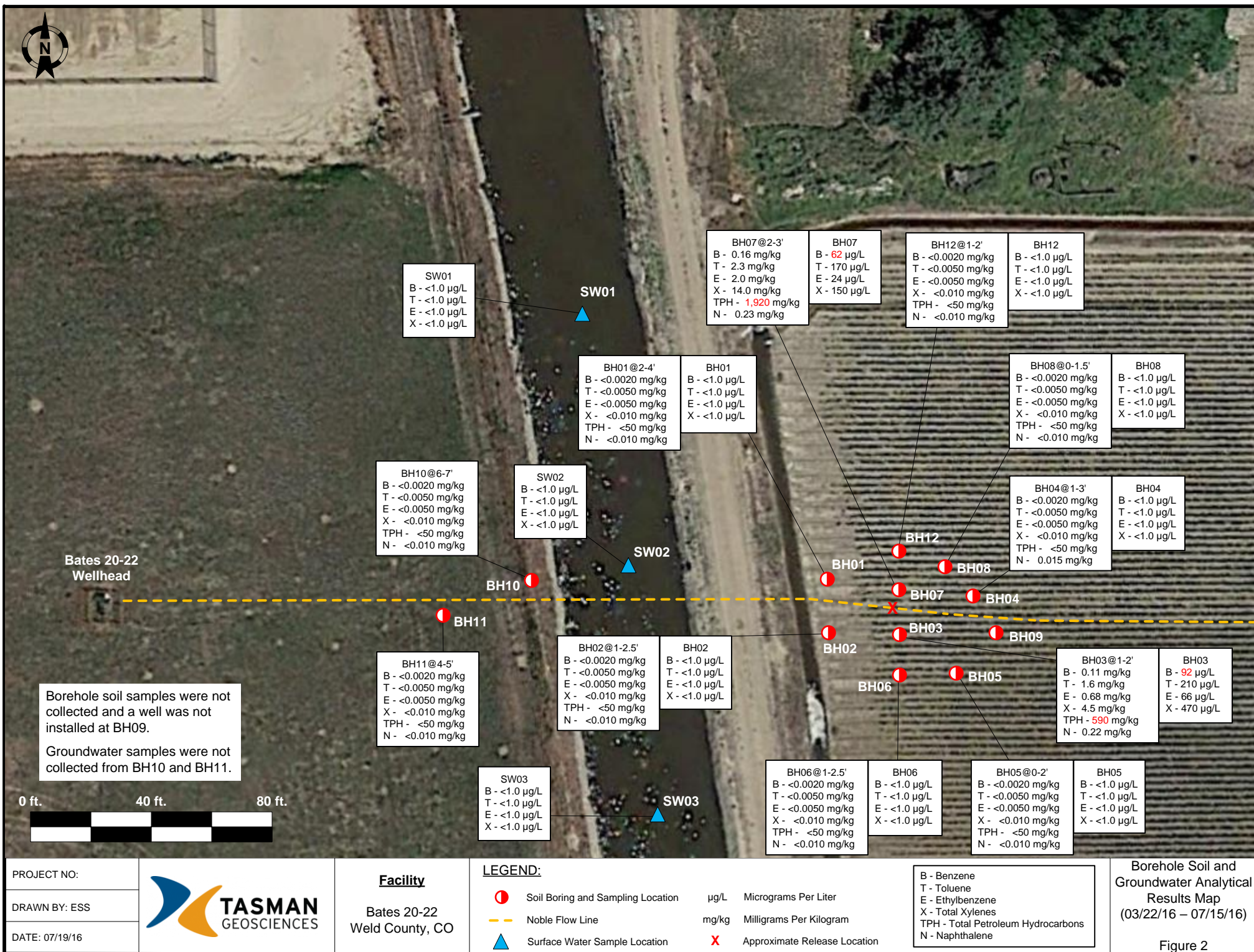


## Figure 1

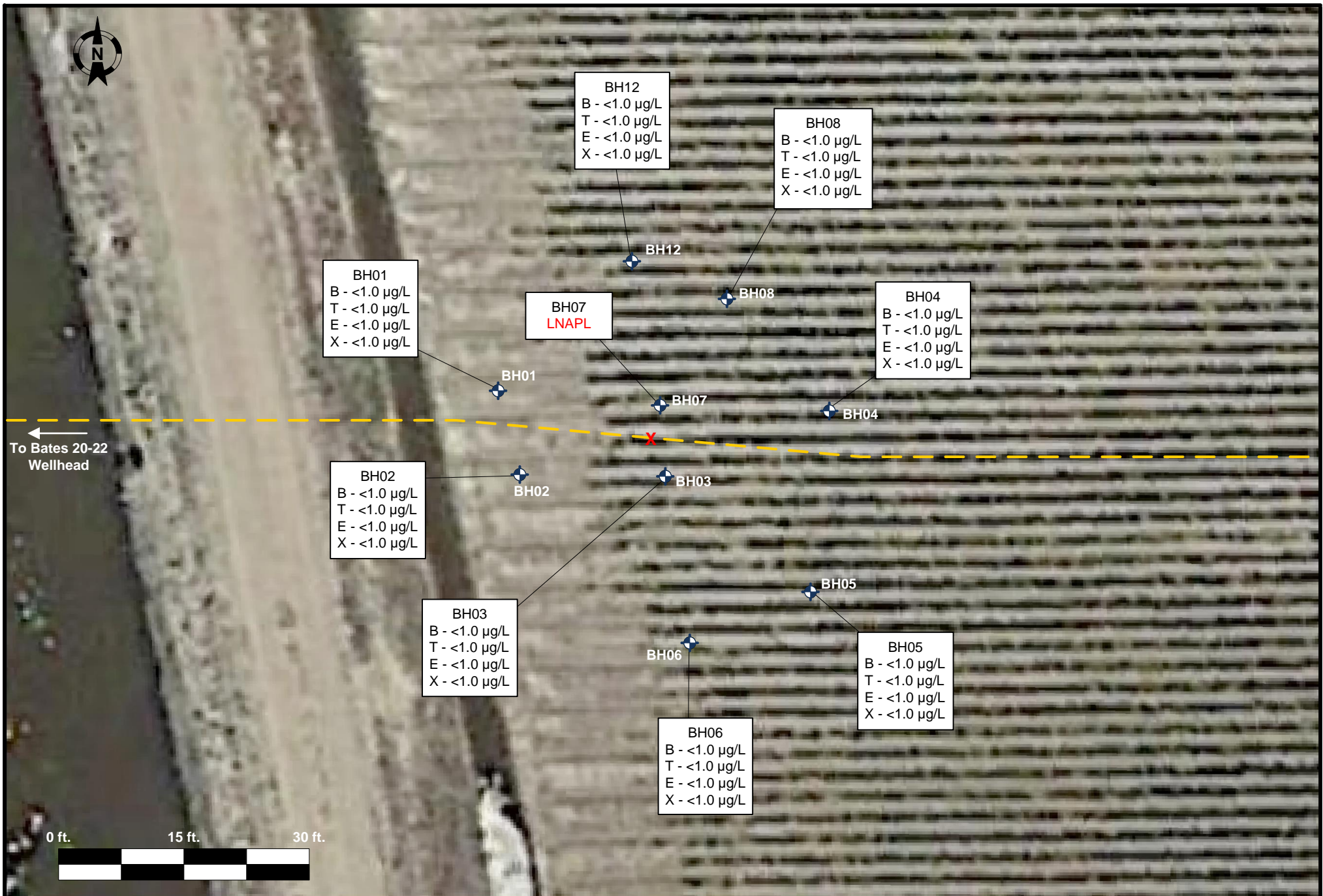
Site Location Map  
Bates 20-22  
NWNW S20 T6N R66W  
Weld County, Colorado











PROJECT NO:

DRAWN BY: ESS

DATE: 07/19/16



**Facility**  
Bates 20-22  
Weld County, CO

**LEGEND:**



Groundwater Monitoring Well



Noble Flow Line

µg/L

Micrograms Per Liter



Approximate Release Location

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

Groundwater Analytical  
Results Map  
(07/13/16 – 07/15/16)

Figure 3

**TABLE 1**  
**SOIL ANALYTICAL DATA**  
**NOBLE ENERGY, INC. - BATES 20-22 FLOWLINE 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)
<b>COGCC Standard</b>		<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	<b>500</b>		<b>23</b>
BH01@2-4'	03/22/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH02@1-2.5'	03/22/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH03@1-2'	03/22/16	0.11	1.6	0.68	4.5	<b>170</b>	<b>420</b>	0.22
BH04@1-3'	03/22/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	0.015
BH05@0-2'	03/22/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH06@1-2.5'	03/22/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH07@2-3'	03/22/16	0.16	2.3	2.0	14	<b>720</b>	<b>1,200</b>	0.23
BH08@0-1.5'	03/22/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH10@6-7'	03/22/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH11@4-5'	03/22/16	<0.0020	<0.0050	<0.0050	<0.010	<50	<50	<0.010
BH12@1-2'	07/15/16	<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 exceed the COGCC Table 910-1 standard**

**TABLE 2**  
**GROUNDWATER ANALYTICAL DATA**  
**NOBLE ENERGY, INC. - BATES 20-22 FLOWLINE RELEASE**

Monitoring Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
<b>COGCC Standard</b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>
BH01	03/22/16	<1.0	<1.0	<1.0	<1.0
BH01	07/13/16	<1.0	<1.0	<1.0	<1.0
BH02	03/22/16	<1.0	<1.0	<1.0	<1.0
BH02	07/13/16	<1.0	<1.0	<1.0	<1.0
BH03	03/22/16	<b>92</b>	210	66	470
BH03	07/13/16	<1.0	<1.0	<1.0	<1.0
BH04	03/22/16	<1.0	<1.0	<1.0	<1.0
BH04	07/13/16	<1.0	<1.0	<1.0	<1.0
BH05	03/22/16	<1.0	<1.0	<1.0	<1.0
BH05	07/13/16	<1.0	<1.0	<1.0	<1.0
BH06	03/22/16	<1.0	<1.0	<1.0	<1.0
BH06	07/13/16	<1.0	<1.0	<1.0	<1.0
BH07	03/22/16	<b>62</b>	170	24	150
BH07	07/13/16	<b>Not Sampled - LNAPL Present</b>			
BH08	03/22/16	<1.0	<1.0	<1.0	<1.0
BH08	07/13/16	<1.0	<1.0	<1.0	<1.0
BH12	07/15/16	<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

Groundwater standards referenced from COGCC Table 910-1

**Highlighted results exceed the COGCC Table 910-1 standard**

**TABLE 3**  
**SURFACE WATER ANALYTICAL DATA**  
**NOBLE ENERGY, INC. - BATES 20-22 FLOWLINE RELEASE**

Monitoring Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
<b>COGCC Standard</b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>
SW01	03/22/16	<1.0	<1.0	<1.0	<1.0
SW02	03/22/16	<1.0	<1.0	<1.0	<1.0
SW03	03/22/16	<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

Groundwater standards referenced from COGCC Table 910-1

**Highlighted results exceed the COGCC Table 910-1 standard**



# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

March 28, 2016

Brandon Bruns  
Tasman Geosciences  
6899 Pecos Street  
Denver, CO 80221  
RE: Bates 20-22

Enclosed are the results of analyses for samples received by Summit Scientific on 03/22/16 17:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury  
President



Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
03/28/16 12:21

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01@2-4'	1603156-01	Soil	03/22/16 10:15	03/22/16 17:50
BH02@1-2.5'	1603156-02	Soil	03/22/16 10:40	03/22/16 17:50
BH03@1-2'	1603156-03	Soil	03/22/16 11:15	03/22/16 17:50
BH04@1-3'	1603156-04	Soil	03/22/16 11:45	03/22/16 17:50
BH05@0-2'	1603156-05	Soil	03/22/16 12:05	03/22/16 17:50
BH06@1-2.5'	1603156-06	Soil	03/22/16 12:30	03/22/16 17:50
BH07@2-3'	1603156-07	Soil	03/22/16 13:00	03/22/16 17:50
BH08@0-1.5'	1603156-08	Soil	03/22/16 13:20	03/22/16 17:50
BH10@6-7'	1603156-09	Soil	03/22/16 15:00	03/22/16 17:50
BH11@4-5'	1603156-10	Soil	03/22/16 15:30	03/22/16 17:50
BH01	1603156-11	Water	03/22/16 14:15	03/22/16 17:50
BH02	1603156-12	Water	03/22/16 14:20	03/22/16 17:50
BH03	1603156-13	Water	03/22/16 15:25	03/22/16 17:50
BH04	1603156-14	Water	03/22/16 15:30	03/22/16 17:50
BH05	1603156-15	Water	03/22/16 15:34	03/22/16 17:50
BH06	1603156-16	Water	03/22/16 15:39	03/22/16 17:50
BH07	1603156-17	Water	03/22/16 15:43	03/22/16 17:50
BH08	1603156-18	Water	03/22/16 15:49	03/22/16 17:50
SW01	1603156-19	Water	03/22/16 15:10	03/22/16 17:50
SW02	1603156-20	Water	03/22/16 15:15	03/22/16 17:50
SW03	1603156-21	Water	03/22/16 15:20	03/22/16 17:50

### Case Narrative

Client: Tasman Geosciences

Project: Bates 20-22

Report Number 1603156

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: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
03/28/16 12:21

Per client request via email dated 3/23/16 from Jacob Whritenour, the sample IDs in this report have been changed in the following manner:

SS(ID@depth) to BH(ID@depth) for all soils samples.

---

Summit Scientific

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

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
03/28/16 12:21

# Summit Scientific 1603156.1

741 Corporate Circle Suite 1 • Golden, Colorado 80401  
303-277-9310 • 303-374-5933 Fax

Page 1 of 3

Client: Noble/Tasman

Address:

City/State/Zip:

Phone:

Fax:

Sampler Name: Jacob Whritenour & Rob Irvin

Project Manager: Brandon Bruns, Invoice: Jacob Evans

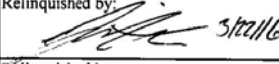
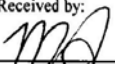
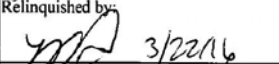
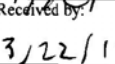
E-Mail:

Project Name: Bates 20-22

Project Number:

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix				Analyze For:				Special Instructions	
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	8260 BTEX	8260B GBTEXN	8015 DRO	pH, EC, SAR		
SS01 @ 2-4'	3/22/2016	10:15a	1		X			X					X	X			
SS02 @ 1-2.5'	3/22/2016	10:40a	1		X			X					X	X			
SS03 @ 1-2'	3/22/2016	11:15a	1		X			X					X	X			
SS04 @ 1-3'	3/22/2016	11:45a	1		X			X					X	X			
SS05 @ 0-2'	3/22/2016	12:05	1		X			X					X	X			
SS06 @ 1-2.5'	3/22/2016	12:30	1		X			X					X	X			
SS07 @ 2-3'	3/22/2016	13:00	1		X			X					X	X			
SS08 @ 0-1.5'	3/22/2016	13:20	1		X			X					X	X			
SS09 @ 6-7'	3/22/2016	15:00	1		X			X					X	X			
SS10 @ 4-5'	3/22/2016	16:30	1		X			X					X	X			

Relinquished by: 	Date/Time: 3/22/16 1700	Received by: 	Date/Time: 3/22/16 1700	Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> 48 Hours <input type="checkbox"/>	Notes:  on ice
Relinquished by: 	Date/Time: 3/22/16 1750	Received by: 	Date/Time: 3/22/16 1750	Sample Integrity: Temperature Upon Receipt: 4.8°C	
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:	Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
03/28/16 12:21

# Summit Scientific 1603156.2

741 Corporate Circle Suite 1 • Golden, Colorado 80401  
303-277-9310 • 303-374-5933 Fax

Page 2 of 3

Client: Noble/Tasman

Address:

City/State/Zip:

Phone:

Fax:

Sampler Name: Jacob Whritenour & Rob Irvin

Project Manager: Brandon Bruns, Invoice: Jacob Evans

E-Mail:

Project Name: Bates 20-22

Project Number:

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:						Special Instructions	
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	8260 BTEX	8260B GBTEXN	8015 DRO	pH, EC, SAR			
BH01	3/22/2016	1415	3	X				X			X							
BH02	3/22/2016	1420						X			X							
BH03	3/22/2016	1525						X			X							
BH04	3/22/2016	1530						X			X							
BH05	3/22/2016	1534						X			X							
BH06	3/22/2016	1539						X			X							
BH07	3/22/2016	1543						X			X							
BH08	3/22/2016	1549						X			X							
SW01	3/22/2016	1510						X			X							
SW02	3/22/2016	1515	↓	↓				X			X							
Relinquished by: <i>[Signature]</i> 3/22/16 1700				Date/Time: 3/22/16 1700				Received by: <i>[Signature]</i> 3/22/16 1700				Date/Time: 3/22/16 1700				Turn Around Time (Check)		Notes:  on ice
Relinquished by: <i>[Signature]</i> 3/22/16 1750				Date/Time: 3/22/16 1750				Received by:				Date/Time:				Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 Hours <input type="checkbox"/>		
Relinquished by:				Date/Time:				Received in Lab by:				Date/Time:				Sample Integrity: Temperature Upon Receipt: 4.0°C Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
03/28/16 12:21

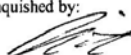
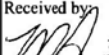
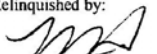
## Summit Scientific 1603156.3

741 Corporate Circle Suite 1 ♦ Golden, Colorado 80401  
303-277-9310 ♦ 303-374-5933 Fax

Page 3 of 3

Client:	Noble/Tasman
Address:	
City/State/Zip:	
Phone:	Fax:
Sampler Name:	Jacob Whritenour & Rob Irvin

Project Manager: Brandon Bruns, Invoice: Jacob Evans  
E-Mail:  
Project Name: Bates 20-22  
Project Number:

				Preservative		Matrix		Analyze For:									
Sample Description	Date Sampled	Time Sampled	Number of Containers	HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	8260 BTEX	8260B GBTEXN	8015 DRO	pH, EC, SAR		Special Instructions
SW03	3/22/2016	1520	3	X				X				X					
Relinquished by:  3/22/16				Date/Time: 1700		Received by:  3/22/16		Date/Time: 1700		Turn Around Time (Check)				Notes:			
										Same Day <input checked="" type="checkbox"/>				72 Hours <input type="checkbox"/>			
										24 Hours <input type="checkbox"/>				Standard <input type="checkbox"/>			
Relinquished by:  3/22/16				Date/Time: 1750		Received by:		Date/Time:									
Relinquished by:				Date/Time:		Received in Lab by:		Date/Time:		Sample Integrity:							
										Temperature Upon Receipt: 4.0°C				on ice			
										Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

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Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
03/28/16 12:21

**BH01@2-4'**  
**1603156-01 (Soil)**

### Summit Scientific

#### Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 03/22/16 10:15

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1603235	03/22/16	03/22/16	8015M	

Date Sampled: 03/22/16 10:15

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		113 %	30-150		"	"	"	"	

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

Date Sampled: 03/22/16 10:15

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1603234	03/22/16	03/22/16	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: 03/22/16 10:15

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
03/28/16 12:21

**BH02@1-2.5'**  
**1603156-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/22/16 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1603235	03/22/16	03/22/16	8015M	

Date Sampled: **03/22/16 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		114 %	30-150		"	"	"	"	

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

Date Sampled: **03/22/16 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1603234	03/22/16	03/22/16	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: **03/22/16 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
03/28/16 12:21

**BH03@1-2'**  
**1603156-03 (Soil)**

### Summit Scientific

#### Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/22/16 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>420</b>	50	mg/kg	1	1603235	03/22/16	03/22/16	8015M	

Date Sampled: **03/22/16 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		117 %	30-150		"	"	"	"	

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

Date Sampled: **03/22/16 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Naphthalene</b>	<b>0.22</b>	0.010	mg/kg	1	1603234	03/22/16	03/22/16	EPA 8260B	
<b>Benzene</b>	<b>0.11</b>	0.0020	"	"	"	"	"	"	
<b>Toluene</b>	<b>1.6</b>	0.0050	"	"	"	"	"	"	E
<b>Ethylbenzene</b>	<b>0.68</b>	0.0050	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>4.5</b>	0.010	"	"	"	"	"	"	E
<b>Gasoline Range Hydrocarbons</b>	<b>170</b>	50	"	"	"	"	"	"	E

Date Sampled: **03/22/16 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		107 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		143 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		139 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
03/28/16 12:21

**BH04@1-3'**  
**1603156-04 (Soil)**

### Summit Scientific

#### Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 03/22/16 11:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1603235	03/22/16	03/23/16	8015M	

Date Sampled: 03/22/16 11:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		121 %	30-150		"	"	"	"	

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

Date Sampled: 03/22/16 11:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.015	0.010	mg/kg	1	1603234	03/22/16	03/22/16	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: 03/22/16 11:45

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

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
03/28/16 12:21

**BH05@0-2'**  
**1603156-05 (Soil)**

### Summit Scientific

#### Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 03/22/16 12:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1603235	03/22/16	03/23/16	8015M	

Date Sampled: 03/22/16 12:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		113 %	30-150		"	"	"	"	

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

Date Sampled: 03/22/16 12:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1603234	03/22/16	03/23/16	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: 03/22/16 12:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
03/28/16 12:21

**BH06@1-2.5'**  
**1603156-06 (Soil)**

### Summit Scientific

#### Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 03/22/16 12:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1603235	03/22/16	03/23/16	8015M	

Date Sampled: 03/22/16 12:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		113 %	30-150		"	"	"	"	

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

Date Sampled: 03/22/16 12:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1603234	03/22/16	03/23/16	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: 03/22/16 12:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
03/28/16 12:21

**BH07@2-3'**  
**1603156-07 (Soil)**

### Summit Scientific

#### Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/22/16 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>1200</b>	50	mg/kg	1	1603235	03/22/16	03/23/16	8015M	

Date Sampled: **03/22/16 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		118 %	30-150		"	"	"	"	

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

Date Sampled: **03/22/16 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Naphthalene</b>	<b>0.23</b>	0.010	mg/kg	1	1603234	03/22/16	03/23/16	EPA 8260B	
<b>Benzene</b>	<b>0.16</b>	0.0020	"	"	"	"	"	"	
<b>Toluene</b>	<b>2.3</b>	0.050	"	10	"	"	"	"	
<b>Ethylbenzene</b>	<b>2.0</b>	0.050	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>14</b>	0.10	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>720</b>	500	"	"	"	"	"	"	

Date Sampled: **03/22/16 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		99.8 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		151 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		113 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Brunns

Reported:  
03/28/16 12:21

**BH08@0-1.5'**  
**1603156-08 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: 03/22/16 13:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1603235	03/22/16	03/23/16	8015M	

Date Sampled: 03/22/16 13:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		117 %	30-150		"	"	"	"	

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

Date Sampled: 03/22/16 13:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1603234	03/22/16	03/23/16	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: 03/22/16 13:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
03/28/16 12:21

**BH10@6-7'**  
**1603156-09 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/22/16 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1603235	03/22/16	03/23/16	8015M	

Date Sampled: **03/22/16 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		109 %	30-150		"	"	"	"	

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

Date Sampled: **03/22/16 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1603234	03/22/16	03/23/16	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: **03/22/16 15:00**

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

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
03/28/16 12:21

**BH11@4-5'**  
**1603156-10 (Soil)**

### Summit Scientific

#### Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 03/22/16 15:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1603235	03/22/16	03/23/16	8015M	

Date Sampled: 03/22/16 15:30

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

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

Date Sampled: 03/22/16 15:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1603234	03/22/16	03/23/16	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: 03/22/16 15:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		90.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22  
Project Number: [none]  
Project Manager: Brandon Brunns

Reported:  
03/28/16 12:21

**BH01**  
**1603156-11 (Water)**

**Summit Scientific**

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

Date Sampled: **03/22/16 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1603236	03/22/16	03/22/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/22/16 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		93.4 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		106 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	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: Bates 20-22  
Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
03/28/16 12:21

**BH02**  
**1603156-12 (Water)**

**Summit Scientific**

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

Date Sampled: **03/22/16 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1603236	03/22/16	03/22/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/22/16 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		94.6 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		102 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		108 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22  
Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
03/28/16 12:21

**BH03**  
**1603156-13 (Water)**

**Summit Scientific**

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

Date Sampled: **03/22/16 15:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>92</b>	1.0	ug/l	1	1603236	03/22/16	03/22/16	EPA 8260B	
<b>Toluene</b>	<b>210</b>	100	"	100	"	"	03/22/16	"	
<b>Ethylbenzene</b>	<b>66</b>	1.0	"	1	"	"	03/22/16	"	
<b>Xylenes (total)</b>	<b>470</b>	1.0	"	"	"	"	"	"	

Date Sampled: **03/22/16 15:25**

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>		105 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		108 %	45-146		"	"	"	"	

Summit Scientific

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6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22  
Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
03/28/16 12:21

**BH04**  
**1603156-14 (Water)**

**Summit Scientific**

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

Date Sampled: **03/22/16 15:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1603236	03/22/16	03/22/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/22/16 15:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		100 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		104 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		111 %	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: Bates 20-22  
Project Number: [none]  
Project Manager: Brandon Brunns

Reported:  
03/28/16 12:21

**BH05**  
**1603156-15 (Water)**

**Summit Scientific**

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

Date Sampled: **03/22/16 15:34**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1603236	03/22/16	03/22/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/22/16 15:34**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		98.3 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		104 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22  
Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
03/28/16 12:21

**BH06**  
**1603156-16 (Water)**

**Summit Scientific**

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

Date Sampled: **03/22/16 15:39**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1603236	03/22/16	03/22/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/22/16 15:39**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		101 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		104 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22  
Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
03/28/16 12:21

**BH07**  
**1603156-17 (Water)**

**Summit Scientific**

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

Date Sampled: **03/22/16 15:43**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>62</b>	1.0	ug/l	1	1603236	03/22/16	03/22/16	EPA 8260B	
<b>Toluene</b>	<b>170</b>	1.0	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>24</b>	1.0	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>150</b>	1.0	"	"	"	"	"	"	

Date Sampled: **03/22/16 15:43**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		96.0 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		103 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		109 %	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: Bates 20-22  
Project Number: [none]  
Project Manager: Brandon Brunns

Reported:  
03/28/16 12:21

**BH08**  
**1603156-18 (Water)**

**Summit Scientific**

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

Date Sampled: 03/22/16 15:49

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1603236	03/22/16	03/22/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: 03/22/16 15:49

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		105 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22  
Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
03/28/16 12:21

**SW01**  
**1603156-19 (Water)**

**Summit Scientific**

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

Date Sampled: **03/22/16 15:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1603236	03/22/16	03/22/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/22/16 15:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		100 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		103 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	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: Bates 20-22  
Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
03/28/16 12:21

**SW02**  
**1603156-20 (Water)**

**Summit Scientific**

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

Date Sampled: **03/22/16 15:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1603236	03/22/16	03/22/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/22/16 15:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		99.5 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		103 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22  
Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
03/28/16 12:21

**SW03**  
**1603156-21 (Water)**

**Summit Scientific**

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

Date Sampled: **03/22/16 15:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1603236	03/22/16	03/22/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/22/16 15:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		99.3 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		104 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
03/28/16 12:21

**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 1603235 - EPA 3550A**

**Blank (1603235-BLK1)**

Prepared: 03/22/16 Analyzed: 03/23/16

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 14.2 " 12.5 114 30-150

**LCS (1603235-BS1)**

Prepared: 03/22/16 Analyzed: 03/23/16

C10-C28 (DRO) 512 50 mg/kg 499 103 73-134

Surrogate: o-Terphenyl 13.7 " 12.5 110 30-150

**Matrix Spike (1603235-MS1)**

Source: 1603154-01

Prepared: 03/22/16 Analyzed: 03/23/16

C10-C28 (DRO) 476 50 mg/kg 481 34.0 91.8 50-148

Surrogate: o-Terphenyl 13.2 " 12.0 110 30-150

**Matrix Spike Dup (1603235-MSD1)**

Source: 1603154-01

Prepared: 03/22/16 Analyzed: 03/23/16

C10-C28 (DRO) 486 50 mg/kg 481 34.0 94.1 50-148 2.25 13

Surrogate: o-Terphenyl 13.4 " 12.0 111 30-150

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22  
Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
03/28/16 12:21

**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 1603234 - EPA 5030 Soil MS**

**Blank (1603234-BLK1)**

Prepared: 03/22/16 Analyzed: 03/23/16

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	0.0372		"	0.0400		93.0	23-173			
Surrogate: Toluene-d8	0.0388		"	0.0400		97.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0408		"	0.0400		102	21-167			

**LCS (1603234-BS1)**

Prepared: 03/22/16 Analyzed: 03/23/16

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.0978	0.0020	"	0.100		97.8	58-130			
Toluene	0.106	0.0050	"	0.100		106	61-134			
Ethylbenzene	0.114	0.0050	"	0.0992		114	74-139			
m,p-Xylene	0.210	0.010	"	0.200		105	73-137			
o-Xylene	0.106	0.0050	"	0.0980		108	73-141			
Surrogate: 1,2-Dichloroethane-d4	0.0390		"	0.0400		97.6	23-173			
Surrogate: Toluene-d8	0.0428		"	0.0400		107	20-170			
Surrogate: 4-Bromofluorobenzene	0.0414		"	0.0400		104	21-167			

**Matrix Spike (1603234-MS1)**

Source: 1603154-01

Prepared: 03/22/16 Analyzed: 03/23/16

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.0932	0.0020	"	0.0978	ND	95.3	30-131			
Toluene	0.106	0.0050	"	0.0978	ND	108	30-134			
Ethylbenzene	0.118	0.0050	"	0.0971	ND	122	22-153			
m,p-Xylene	0.219	0.010	"	0.195	ND	112	10-159			
o-Xylene	0.102	0.0050	"	0.0959	ND	106	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0398		"	0.0391		102	23-173			
Surrogate: Toluene-d8	0.0392		"	0.0391		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0409		"	0.0391		104	21-167			

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22  
Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
03/28/16 12:21

**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 1603234 - EPA 5030 Soil MS**

Matrix Spike Dup (1603234-MSD1)				Source: 1603154-01		Prepared: 03/22/16		Analyzed: 03/23/16	
Naphthalene	ND	0.010	mg/kg		ND		10-158		42
Benzene	0.0948	0.0020	"	0.0988	ND	96.0	30-131	1.70	34
Toluene	0.108	0.0050	"	0.0988	ND	109	30-134	1.84	30
Ethylbenzene	0.124	0.0050	"	0.0980	ND	126	22-153	4.86	24
m,p-Xylene	0.231	0.010	"	0.197	ND	117	10-159	5.43	68
o-Xylene	0.114	0.0050	"	0.0968	ND	118	31-151	11.3	38
Surrogate: 1,2-Dichloroethane-d4	0.0382		"	0.0395		96.5	23-173		
Surrogate: Toluene-d8	0.0388		"	0.0395		98.2	20-170		
Surrogate: 4-Bromofluorobenzene	0.0394		"	0.0395		99.6	21-167		

**Batch 1603236 - EPA 5030 Water MS**

Blank (1603236-BLK1)				Prepared: 03/22/16		Analyzed: 03/23/16	
Benzene	ND	1.0	ug/l				
Toluene	ND	1.0	"				
Ethylbenzene	ND	1.0	"				
Xylenes (total)	ND	1.0	"				
Surrogate: 1,2-Dichloroethane-d4	13.2		"	13.3		99.4	37-154
Surrogate: Toluene-d8	13.8		"	13.3		103	45-149
Surrogate: 4-Bromofluorobenzene	14.4		"	13.3		108	45-146
LCS (1603236-BS1)				Prepared: 03/22/16		Analyzed: 03/23/16	
Benzene	31.8	1.0	ug/l	33.3		95.4	51-132
Toluene	31.0	1.0	"	33.3		92.9	51-138
Ethylbenzene	35.6	1.0	"	33.1		108	58-146
m,p-Xylene	72.2	2.0	"	66.5		109	57-144
o-Xylene	34.0	1.0	"	32.7		104	53-146
Surrogate: 1,2-Dichloroethane-d4	13.4		"	13.3		100	37-154
Surrogate: Toluene-d8	13.7		"	13.3		103	45-149
Surrogate: 4-Bromofluorobenzene	14.4		"	13.3		108	45-146

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22  
Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
03/28/16 12:21

**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 1603236 - EPA 5030 Water MS**

Matrix Spike (1603236-MS1)		Source: 1603156-12			Prepared: 03/22/16		Analyzed: 03/23/16			
Benzene	32.2	1.0	ug/l	33.3	ND	96.6	34-141			
Toluene	31.2	1.0	"	33.3	ND	93.8	27-151			
Ethylbenzene	34.6	1.0	"	33.1	ND	105	29-160			
m,p-Xylene	70.7	2.0	"	66.5	ND	106	20-166			
o-Xylene	33.0	1.0	"	32.7	ND	101	33-159			
Surrogate: 1,2-Dichloroethane-d4	13.8		"	13.3		103	37-154			
Surrogate: Toluene-d8	13.8		"	13.3		104	45-149			
Surrogate: 4-Bromofluorobenzene	14.0		"	13.3		105	45-146			
Matrix Spike Dup (1603236-MSD1)		Source: 1603156-12			Prepared: 03/22/16		Analyzed: 03/23/16			
Benzene	32.3	1.0	ug/l	33.3	ND	96.9	34-141	0.372	32	
Toluene	31.8	1.0	"	33.3	ND	95.3	27-151	1.62	25	
Ethylbenzene	34.5	1.0	"	33.1	ND	104	29-160	0.318	50	
m,p-Xylene	71.1	2.0	"	66.5	ND	107	20-166	0.536	36	
o-Xylene	32.6	1.0	"	32.7	ND	99.8	33-159	1.04	26	
Surrogate: 1,2-Dichloroethane-d4	13.6		"	13.3		102	37-154			
Surrogate: Toluene-d8	13.9		"	13.3		104	45-149			
Surrogate: 4-Bromofluorobenzene	14.0		"	13.3		105	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: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
03/28/16 12:21

### Notes and Definitions

E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference

# Summit Scientific

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

July 19, 2016

Brandon Bruns  
Tasman Geosciences  
6899 Pecos Street  
Denver, CO 80221  
RE: Noble - Bates 20 - 22

Enclosed are the results of analyses for samples received by Summit Scientific on 07/13/16 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: Noble - Bates 20 - 22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
07/19/16 14:57

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	1607086-01	Water	07/13/16 12:40	07/13/16 17:00
BH02	1607086-02	Water	07/13/16 12:50	07/13/16 17:00
BH03	1607086-03	Water	07/13/16 13:00	07/13/16 17:00
BH04	1607086-04	Water	07/13/16 13:30	07/13/16 17:00
BH05	1607086-05	Water	07/13/16 13:15	07/13/16 17:00
BH06	1607086-06	Water	07/13/16 12:50	07/13/16 17:00
BH08	1607086-07	Water	07/13/16 13:30	07/13/16 17:00

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*





Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Noble - Bates 20 - 22

Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
07/19/16 14:57

# Summit Scientific

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

1607086  
Page 1 of 1

Client: Noble/Tasman  
Address: —  
City/State/Zip: —  
Phone: 503-487-1228 Fax: —  
Sampler Name: Graham Basee & Jake Whiskey

Project Manager: Brandon Bruns, Invoice: Jacob Evans  
E-Mail: B.Brun@tasman-geo.com  
Project Name: Noble: Bates 20-22  
Project Number: —

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix				Analyze For:				Special Instructions	
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	B260 BTEX	B260 GBTEXN	B015 DRO	pH, EC, SAR		
BH01	7-13-16	1240	3			X		X					X				
BH02	7-13-16	1250	3			X		X					X				
BH03	7-13-16	1300	3			X		X					X				
BH04	7-13-16	1330	3			X		X					X				
BH05	7-13-16	1315	3			X		X					X				
BH06	7-13-16	1250	3			X		X					X				
BH07	7-13-16	—	—														
BH08	7-13-16	1330	3			X		X					X				

Relinquished by:	Date/Time: 7-13-16 1700	Received by:	Date/Time: 7/13/16 1700	Turn Around Time (Check): Same Day <input type="checkbox"/> 72 Hours <input checked="" type="checkbox"/> 24 Hours <input type="checkbox"/> Standard 48 Hours <input type="checkbox"/>	Notes: on ice
Relinquished by:	Date/Time: 7/13/16 1745	Received by:	Date/Time: 7/13/16 1745	Sample Integrity: Temperature Upon Receipt: 4.7°C	
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:	Intact: Yes <input checked="" 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 - Bates 20 - 22

Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
07/19/16 14:57

# Sample Receipt Checklist

S2 Work Order: 1607086

Client: Noble/Tasman

Client Project ID: Noble: Bates 20-22

Shipped Via: P/V

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

Airbill #: \_\_\_\_\_

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

Cooler ID					
Temp (°C)	<u>4.7</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 <sup>(1)</sup> ?	<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 <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are 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 <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Record the pH in Comments.			<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

Nakita  
Custodian Printed Name

MA  
Signature of Initials of Custodian

7/13/16 1745  
Date/Time



Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Noble - Bates 20 - 22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
07/19/16 14:57

**BH01**  
**1607086-01 (Water)**

**Summit Scientific**

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

Date Sampled: 07/13/16 12:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1607143	07/16/16	07/16/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: 07/13/16 12:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		97.8 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		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 - Bates 20 - 22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/19/16 14:57

**BH02**  
**1607086-02 (Water)**

**Summit Scientific**

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

Date Sampled: **07/13/16 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1607143	07/16/16	07/16/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **07/13/16 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		96.3 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		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 - Bates 20 - 22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/19/16 14:57

**BH03**  
**1607086-03 (Water)**

**Summit Scientific**

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

Date Sampled: **07/13/16 13:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1607143	07/16/16	07/16/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **07/13/16 13:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		115 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Noble - Bates 20 - 22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/19/16 14:57

**BH04**  
**1607086-04 (Water)**

**Summit Scientific**

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

Date Sampled: **07/13/16 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1607143	07/16/16	07/16/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **07/13/16 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		115 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		96.8 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		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 - Bates 20 - 22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/19/16 14:57

**BH05**  
**1607086-05 (Water)**

**Summit Scientific**

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

Date Sampled: **07/13/16 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1607143	07/16/16	07/16/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **07/13/16 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		113 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		97.7 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	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 - Bates 20 - 22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/19/16 14:57

**BH06**  
**1607086-06 (Water)**

**Summit Scientific**

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

Date Sampled: **07/13/16 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1607143	07/16/16	07/16/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **07/13/16 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		116 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		98.9 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	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 - Bates 20 - 22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/19/16 14:57

**BH08**  
**1607086-07 (Water)**

**Summit Scientific**

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

Date Sampled: **07/13/16 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1607143	07/16/16	07/16/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **07/13/16 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		116 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		97.6 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.7 %	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 - Bates 20 - 22

Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
07/19/16 14:57

## 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 1607143 - EPA 5030 Water MS

##### Blank (1607143-BLK1)

Prepared & Analyzed: 07/16/16

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	14.3		"	13.3		107	37-154			
Surrogate: Toluene-d8	12.8		"	13.3		96.4	45-149			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		100	45-146			

##### LCS (1607143-BS1)

Prepared & Analyzed: 07/16/16

Benzene	41.3	1.0	ug/l	33.3		124	51-132			
Toluene	39.3	1.0	"	33.3		118	51-138			
Ethylbenzene	45.9	1.0	"	33.1		139	58-146			
m,p-Xylene	81.6	2.0	"	66.5		123	57-144			
o-Xylene	39.0	1.0	"	32.7		120	53-146			
Surrogate: 1,2-Dichloroethane-d4	14.4		"	13.3		108	37-154			
Surrogate: Toluene-d8	13.7		"	13.3		103	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.9	45-146			

##### Matrix Spike (1607143-MS1)

Source: 1607072-01

Prepared & Analyzed: 07/16/16

Benzene	43.6	1.0	ug/l	33.3	ND	131	34-141			
Toluene	41.5	1.0	"	33.3	ND	125	27-151			
Ethylbenzene	50.3	1.0	"	33.1	ND	152	29-160			
m,p-Xylene	87.6	2.0	"	66.5	ND	132	20-166			
o-Xylene	42.4	1.0	"	32.7	ND	130	33-159			
Surrogate: 1,2-Dichloroethane-d4	15.5		"	13.3		116	37-154			
Surrogate: Toluene-d8	13.5		"	13.3		101	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.5	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 - Bates 20 - 22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
07/19/16 14:57

**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 1607143 - EPA 5030 Water MS**

<b>Matrix Spike Dup (1607143-MSD1)</b>	<b>Source: 1607072-01</b>			<b>Prepared &amp; Analyzed: 07/16/16</b>						
Benzene	44.5	1.0	ug/l	33.3	ND	134	34-141	2.16	32	
Toluene	42.1	1.0	"	33.3	ND	126	27-151	1.48	25	
Ethylbenzene	51.7	1.0	"	33.1	ND	156	29-160	2.84	50	
m,p-Xylene	90.7	2.0	"	66.5	ND	136	20-166	3.47	36	
o-Xylene	44.0	1.0	"	32.7	ND	135	33-159	3.63	26	
Surrogate: 1,2-Dichloroethane-d4	15.6		"	13.3		117	37-154			
Surrogate: Toluene-d8	13.2		"	13.3		99.1	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.9	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 - Bates 20 - 22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
07/19/16 14:57

### 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

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

*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

July 22, 2016

Brandon Bruns  
Tasman Geosciences  
6899 Pecos Street  
Denver, CO 80221  
RE: Bates 20-22

Enclosed are the results of analyses for samples received by Summit Scientific on 07/15/16 14:00. 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: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
07/22/16 14:14

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH12@1-2'	1607104-01	Soil	07/15/16 09:40	07/15/16 14:00
BH12	1607104-02	Water	07/15/16 11:10	07/15/16 14:00

Summit Scientific

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



Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
07/22/16 14:14

Sonnit Scientific

1607104

741 Corporate Circle Suite 1 Golden, Colorado 80401  
303-277-9310 303-374-5933 Fax

Client: Noble/Tasman

Page 1 of 1

Address: \_\_\_\_\_ Noble / Isman

Project Manager: Brandon Bruns, Invoice: Jacob Evans

City/State/Zip: \_\_\_\_\_

E-Mail:

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Project Name: Bates ~~2020~~ 2022

Sampler Name: Eric Siegel

Project Number:

[illegible]

[www.szscitech.com](http://www.szscitech.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: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
07/22/16 14:14

### Sample Receipt Checklist

S2 Work Order: 1607104

Client: Tasman

Client Project ID: Bates 20-22

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

Airbill #: \_\_\_\_\_

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

Cooler ID					
Temp (°C)	<u>3.1</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 <sup>(1)</sup> ?			X	
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 <sup>(1)</sup> ?	X			
Was adequate sample volume provided <sup>(1)</sup> ?	X			
If custody seals are present, are they intact <sup>(1)</sup> ?			X	
Are short holding time analytes or samples with HTs due within 48 hours present?			X	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	X			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	X			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	X			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	X			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		X		
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?			X	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			X	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			X	
Additional Comments (if any):				
<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.				

Murip  
Custodian Printed Name

BR 7.15.16  
Signature or Initials of Custodian

18:33  
Date/Time



Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/22/16 14:14

**BH12@1-2'**  
**1607104-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: 07/15/16 09:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1607160	07/18/16	07/18/16	8015M	

Date Sampled: 07/15/16 09:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		108 %	30-150		"	"	"	"	

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

Date Sampled: 07/15/16 09:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1607159	"	07/18/16	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: 07/15/16 09:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.5 %	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: Bates 20-22  
Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/22/16 14:14

**BH12**  
**1607104-02 (Water)**

**Summit Scientific**

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

Date Sampled: 07/15/16 11:10

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1607161	07/18/16	07/18/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: 07/15/16 11:10

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.7 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		100 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.5 %	45-146		"	"	"	"	

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
07/22/16 14:14

**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 1607160 - EPA 3550A**

**Blank (1607160-BLK1)**

Prepared & Analyzed: 07/18/16

C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	12.6		"	12.5	101	30-150				

**LCS (1607160-BS1)**

Prepared & Analyzed: 07/18/16

C10-C28 (DRO)	453	50	mg/kg	499	90.9	73-134				
Surrogate: o-Terphenyl	12.6		"	12.5	101	30-150				

**Matrix Spike (1607160-MS1)**

Source: 1607099-03

Prepared & Analyzed: 07/18/16

C10-C28 (DRO)	436	50	mg/kg	472	10.8	90.2	50-148			
Surrogate: o-Terphenyl	11.4		"	11.8	96.6	30-150				

**Matrix Spike Dup (1607160-MSD1)**

Source: 1607099-03

Prepared & Analyzed: 07/18/16

C10-C28 (DRO)	450	50	mg/kg	488	10.8	90.1	50-148	3.21	20	
Surrogate: o-Terphenyl	12.0		"	12.2	98.1	30-150				

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22  
Project Number: [none]  
Project Manager: Brandon Brunns

Reported:  
07/22/16 14:14

**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 1607159 - EPA 5030 Soil MS**

**Blank (1607159-BLK1)**

Prepared & Analyzed: 07/18/16

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	0.0352		"	0.0400		88.0	23-173			
Surrogate: Toluene-d8	0.0395		"	0.0400		98.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0375		"	0.0400		93.8	21-167			

**LCS (1607159-BS1)**

Prepared & Analyzed: 07/18/16

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.0943	0.0020	"	0.100		94.3	58-130			
Toluene	0.110	0.0050	"	0.100		110	61-134			
Ethylbenzene	0.116	0.0050	"	0.0992		116	74-139			
m,p-Xylene	0.235	0.010	"	0.200		118	73-137			
o-Xylene	0.110	0.0050	"	0.0980		112	73-141			
Surrogate: 1,2-Dichloroethane-d4	0.0374		"	0.0400		93.4	23-173			
Surrogate: Toluene-d8	0.0388		"	0.0400		96.9	20-170			
Surrogate: 4-Bromofluorobenzene	0.0377		"	0.0400		94.3	21-167			

**Matrix Spike (1607159-MS1)**

Source: 1607099-03

Prepared & Analyzed: 07/18/16

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.0940	0.0020	"	0.0977	ND	96.2	30-131			
Toluene	0.109	0.0050	"	0.0977	ND	112	30-134			
Ethylbenzene	0.114	0.0050	"	0.0969	ND	117	22-153			
m,p-Xylene	0.228	0.010	"	0.195	ND	117	10-159			
o-Xylene	0.109	0.0050	"	0.0957	ND	114	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0378		"	0.0391		96.7	23-173			
Surrogate: Toluene-d8	0.0388		"	0.0391		99.4	20-170			
Surrogate: 4-Bromofluorobenzene	0.0369		"	0.0391		94.4	21-167			

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22  
Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
07/22/16 14:14

**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 1607159 - EPA 5030 Soil MS**

**Matrix Spike Dup (1607159-MSD1)**

Source: 1607099-03

Prepared & Analyzed: 07/18/16

Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.0930	0.0020	"	0.0954	ND	97.5	30-131	1.02	34	
Toluene	0.107	0.0050	"	0.0954	ND	112	30-134	1.91	30	
Ethylbenzene	0.114	0.0050	"	0.0947	ND	120	22-153	0.150	24	
m,p-Xylene	0.230	0.010	"	0.190	ND	121	10-159	0.953	68	
o-Xylene	0.110	0.0050	"	0.0935	ND	117	31-151	0.411	38	
Surrogate: 1,2-Dichloroethane-d4	0.0360		"	0.0382		94.4	23-173			
Surrogate: Toluene-d8	0.0375		"	0.0382		98.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0362		"	0.0382		94.8	21-167			

**Batch 1607161 - EPA 5030 Water MS**

**Blank (1607161-BLK1)**

Prepared & Analyzed: 07/18/16

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	14.1		"	13.3		106	37-154			
Surrogate: Toluene-d8	12.9		"	13.3		96.9	45-149			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.0	45-146			

**LCS (1607161-BS1)**

Prepared & Analyzed: 07/18/16

Benzene	36.6	1.0	ug/l	33.3		110	51-132			
Toluene	34.4	1.0	"	33.3		103	51-138			
Ethylbenzene	34.2	1.0	"	33.1		104	58-146			
m,p-Xylene	62.7	2.0	"	66.5		94.2	57-144			
o-Xylene	29.9	1.0	"	32.7		91.4	53-146			
Surrogate: 1,2-Dichloroethane-d4	13.8		"	13.3		104	37-154			
Surrogate: Toluene-d8	15.6		"	13.3		117	45-149			
Surrogate: 4-Bromofluorobenzene	13.8		"	13.3		104	45-146			

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22  
Project Number: [none]  
Project Manager: Brandon Brunns

Reported:  
07/22/16 14:14

**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 1607161 - EPA 5030 Water MS**

Matrix Spike (1607161-MS1)		Source: 1607101-01			Prepared & Analyzed: 07/18/16					
Benzene	40.8	1.0	ug/l	33.3	ND	122	34-141			
Toluene	39.2	1.0	"	33.3	ND	117	27-151			
Ethylbenzene	42.4	1.0	"	33.1	ND	128	29-160			
m,p-Xylene	76.4	2.0	"	66.5	ND	115	20-166			
o-Xylene	36.4	1.0	"	32.7	ND	112	33-159			
Surrogate: 1,2-Dichloroethane-d4	14.7		"	13.3		110	37-154			
Surrogate: Toluene-d8	14.4		"	13.3		108	45-149			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.0	45-146			
Matrix Spike Dup (1607161-MSD1)		Source: 1607101-01			Prepared & Analyzed: 07/18/16					
Benzene	44.7	1.0	ug/l	33.3	ND	134	34-141	9.11	32	
Toluene	42.4	1.0	"	33.3	ND	127	27-151	7.90	25	
Ethylbenzene	49.2	1.0	"	33.1	ND	149	29-160	14.7	50	
m,p-Xylene	86.6	2.0	"	66.5	ND	130	20-166	12.5	36	
o-Xylene	41.6	1.0	"	32.7	ND	127	33-159	13.3	26	
Surrogate: 1,2-Dichloroethane-d4	15.6		"	13.3		117	37-154			
Surrogate: Toluene-d8	13.7		"	13.3		103	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.7	45-146			

Summit Scientific

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Tasman Geosciences  
6899 Pecos Street  
Denver CO, 80221

Project: Bates 20-22

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
07/22/16 14:14

### 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'.



6899 Pecos Street, Unit C  
Denver, Colorado 80221

CLIENT: Noble Energy, Inc.

LOGGED BY: Jake Whritenour

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Site Services Drilling

DRILLING EQUIPMENT: Geo Probe

DRILL BIT SIZE (INCHES): 2.375

DATE STARTED - COMPLETED: 3/22/16

TOTAL BORING DEPTH (FT. BGS): 10

DEPTH TO WATER (FT. BGS): 6

## Bates 20-22 Flowline Release

BORING / WELL ID: BH01

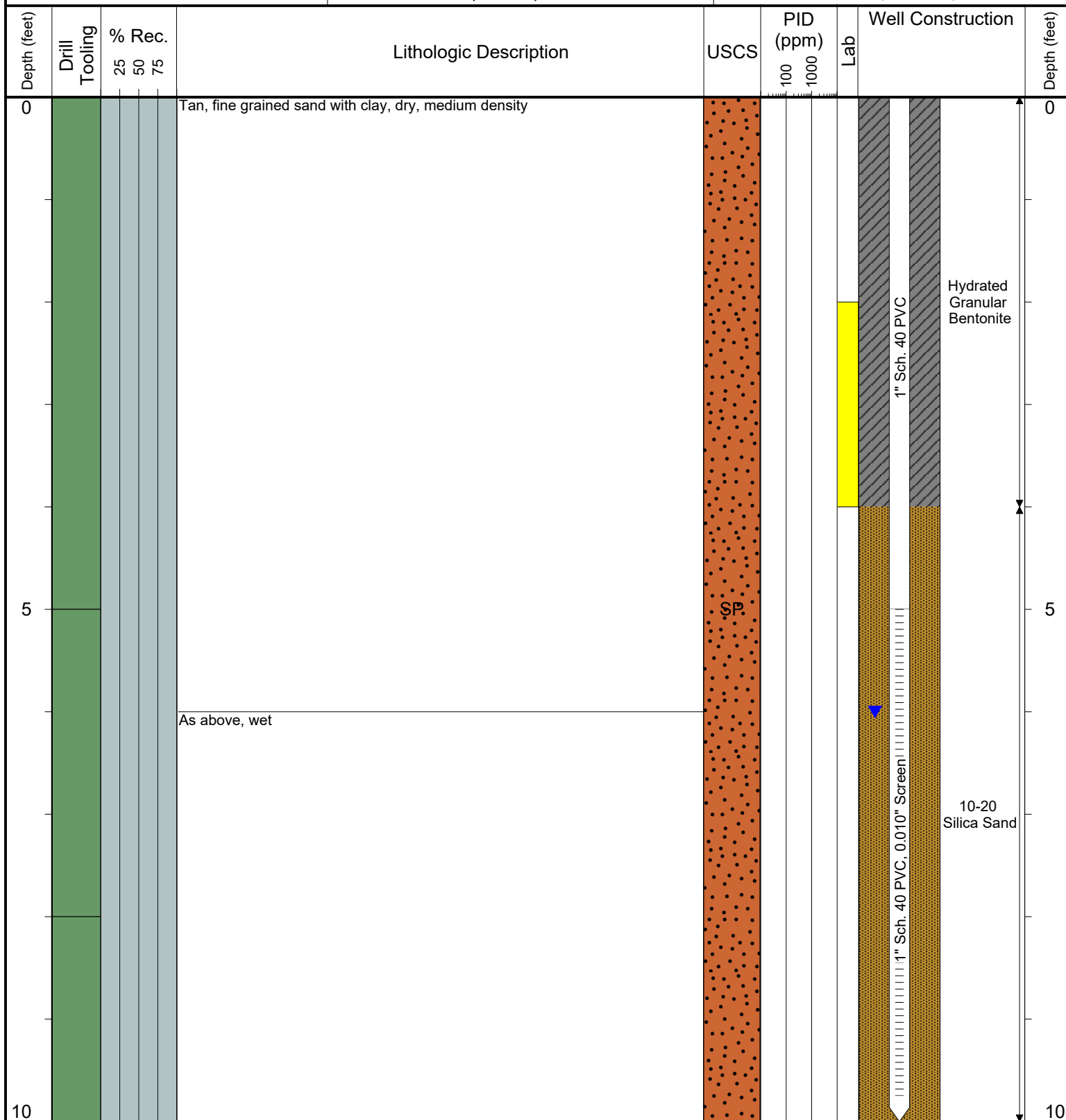
LOCATION: Weld County, CO

LATITUDE (DEGREES): 40.479439129465

LONGITUDE (DEGREES): -104.80827953784

CASING ELEVATION (FT. AMSL): 4716.21

GROUND ELEVATION (FT. AMSL): 4713.37



### 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): 3.5**

**GROUND ELEVATION (FT. AMSL): 4713.35**





**DEPTH TO WATER (FT. BGS): 3.5**

**GROUND ELEVATION (FT. AMSL): 4712.78**





**DEPTH TO WATER (FT. BGS): 3.5**

**GROUND ELEVATION (FT. AMSL): 4712.69**





**DEPTH TO WATER (FT. BGS): 3.5**

**GROUND ELEVATION (FT. AMSL): 4712.7**





6899 Pecos Street, Unit C  
Denver, Colorado 80221

CLIENT: Noble Energy, Inc.

LOGGED BY: Jake Whritenour

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Site Services Drilling

DRILLING EQUIPMENT: Geo Probe

DRILL BIT SIZE (INCHES): 2.375

DATE STARTED - COMPLETED: 3/22/16

TOTAL BORING DEPTH (FT. BGS): 8

DEPTH TO WATER (FT. BGS): 3.5

## Bates 20-22 Flowline Release

BORING / WELL ID: BH06

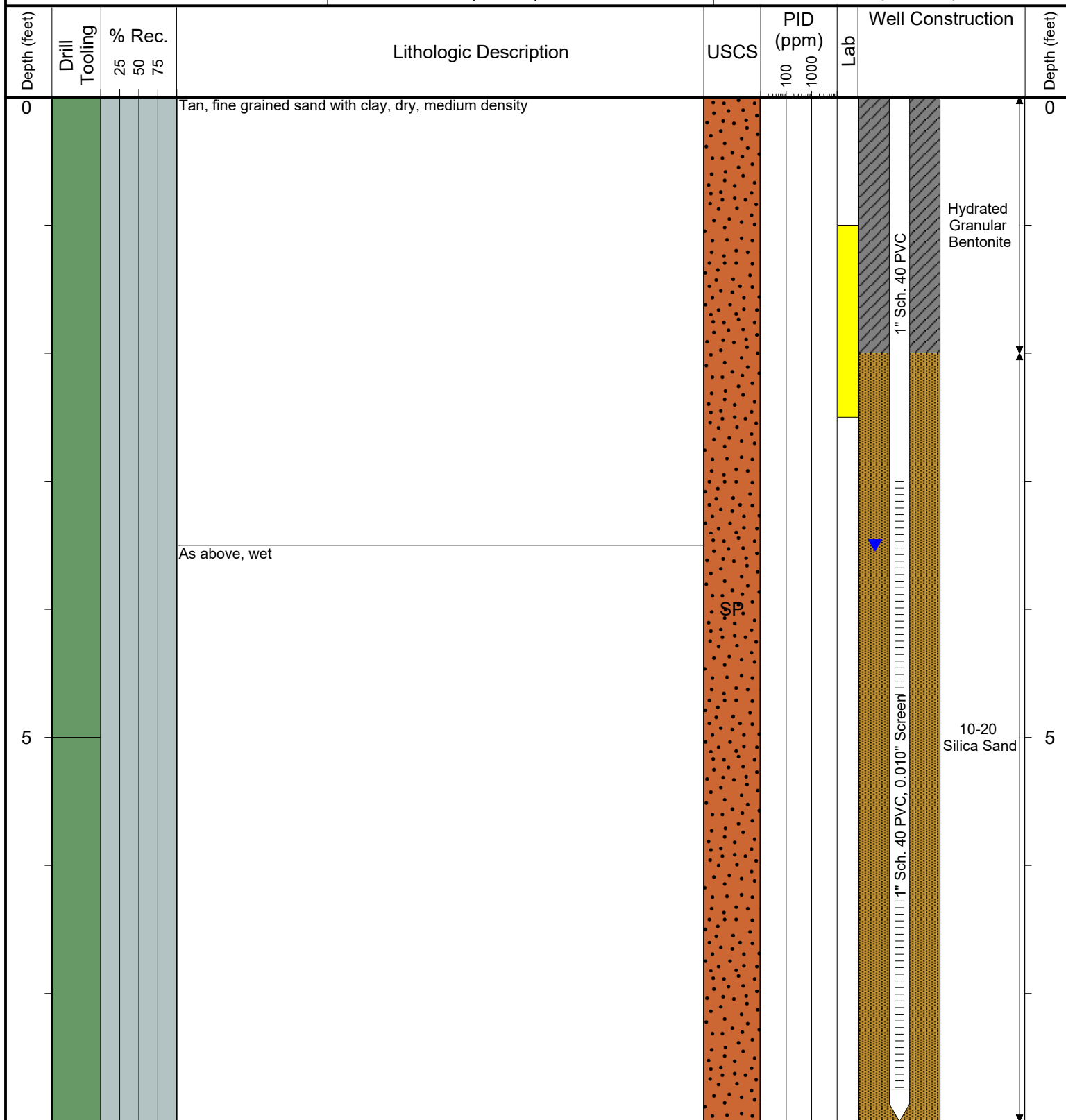
LOCATION: Weld County, CO

LATITUDE (DEGREES): 40.479356402297

LONGITUDE (DEGREES): -104.80819704865

CASING ELEVATION (FT. AMSL): 4714.67

GROUND ELEVATION (FT. AMSL): 4712.8



### 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): 3.5**

**GROUND ELEVATION (FT. AMSL): 4712.79**







**DEPTH TO WATER (FT. BGS): 3.5**

**GROUND ELEVATION (FT. AMSL): 4712.81**





6899 Pecos Street, Unit C  
Denver, Colorado 80221

CLIENT: Noble Energy, Inc.

LOGGED BY: Jake Whritenour

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Site Services Drilling

DRILLING EQUIPMENT: Geo Probe

DRILL BIT SIZE (INCHES): 2.375

DATE STARTED - COMPLETED: 3/22/16

TOTAL BORING DEPTH (FT. BGS): 5

DEPTH TO WATER (FT. BGS): 4

## Bates 20-22 Flowline Release

BORING / WELL ID: BH09

LOCATION: Weld County, CO

LATITUDE (DEGREES): NS

LONGITUDE (DEGREES): NS

CASING ELEVATION (FT. AMSL): NS

GROUND ELEVATION (FT. AMSL): NS

Depth (feet)	Drill Tooling	% Rec. 25 50 75	Lithologic Description	USCS	PID (ppm) 100 1000	Lab	Well Construction	Depth (feet)
0			Tan, fine grained sand with clay, dry, medium density	SP			No Well Installed	0
5			As above, wet					5

### 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: Site Services Drilling

DRILLING EQUIPMENT: Geo Probe

DRILL BIT SIZE (INCHES): 2.375

DATE STARTED - COMPLETED: 3/22/16

TOTAL BORING DEPTH (FT. BGS): 12

DEPTH TO WATER (FT. BGS): 6.5

## Bates 20-22 Flowline Release

BORING / WELL ID: BH10

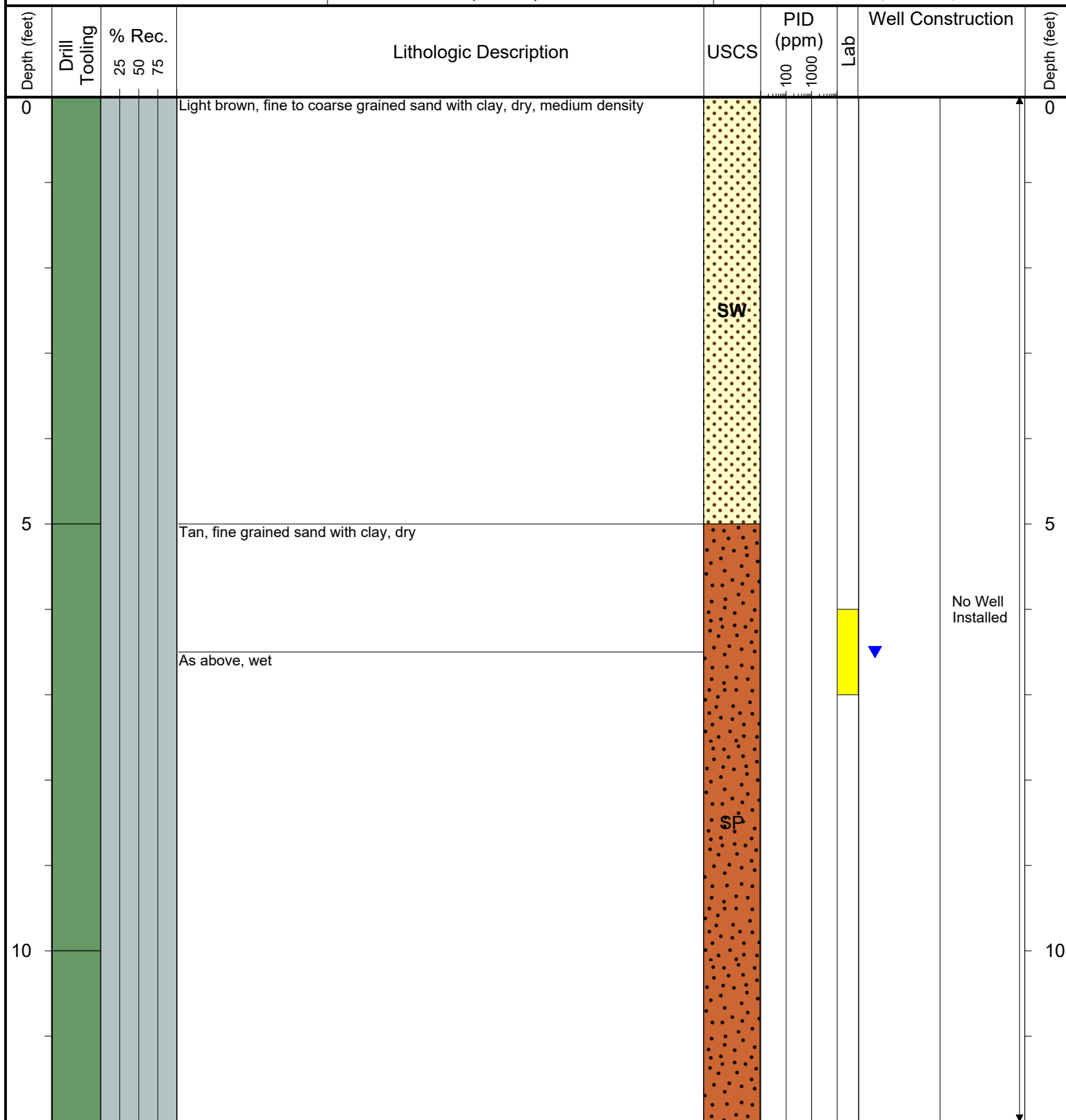
LOCATION: Weld County, CO

LATITUDE (DEGREES): NS

LONGITUDE (DEGREES): NS

CASING ELEVATION (FT. AMSL): NS

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: Site Services Drilling

DRILLING EQUIPMENT: Geo Probe

DRILL BIT SIZE (INCHES): 2.375

DATE STARTED - COMPLETED: 3/22/16

TOTAL BORING DEPTH (FT. BGS): 10

DEPTH TO WATER (FT. BGS): 6.5

## Bates 20-22 Flowline Release

BORING / WELL ID: BH11

LOCATION: Weld County, CO

LATITUDE (DEGREES): NS

LONGITUDE (DEGREES): NS

CASING ELEVATION (FT. AMSL): NS

GROUND ELEVATION (FT. AMSL): NS

Depth (feet)	Drill Tooling	% Rec. 25 50 75	Lithologic Description	USCS	PID (ppm)		Lab	Well Construction	Depth (feet)
					100	1000			
0			Brown, fine to medium grained sand with clay, dry, medium density						0
5				SP				No Well Installed	5
10			As above, wet						10

### 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: Eric Siegel, P.G.

PROJECT MANAGER: Brandon Bruns, P.E.

DRILLING CONTRACTOR: Tasman Geosciences, Inc.

DRILLING EQUIPMENT: Hand Auger

DRILL BIT SIZE (INCHES): 2.5

DATE STARTED - COMPLETED: 7/15/16

TOTAL BORING DEPTH (FT. BGS): 7.5

DEPTH TO WATER (FT. BGS): 2.5

## Bates 20-22 Flowline Release

BORING / WELL ID: BH12

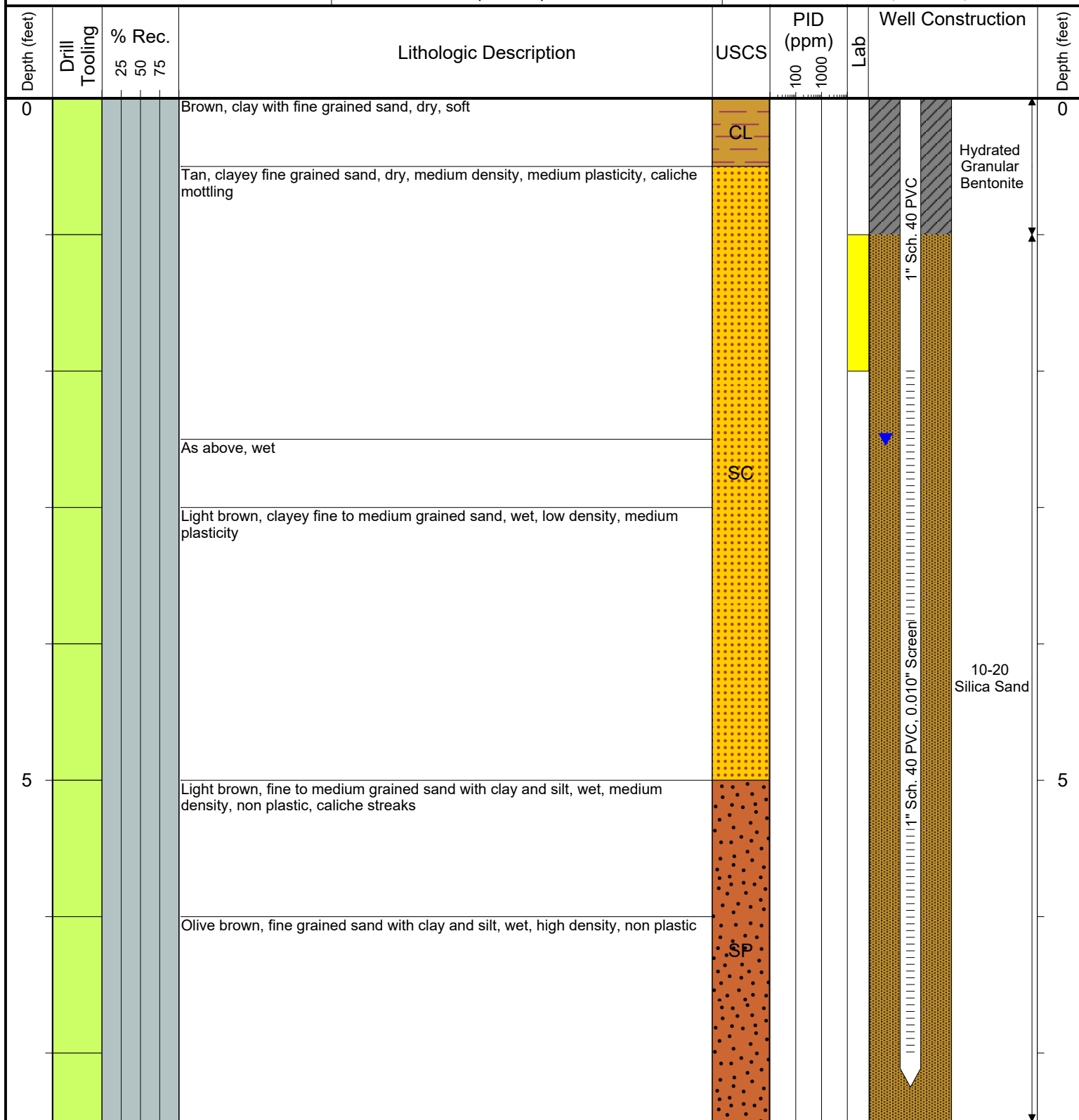
LOCATION: Weld County, CO

LATITUDE (DEGREES): 40.479481681665

LONGITUDE (DEGREES): -104.80822146966

CASING ELEVATION (FT. AMSL): 4715.58

GROUND ELEVATION (FT. AMSL): 4712.77



### 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