

FIRST QUARTER 2020 SITE MONITORING DATA

DUNCAN D20-12, 20-13

COGCC SPILL TRACKING # 459804
COGCC REMEDIATION # 12461

Prepared for:



2115 117th Avenue
Greeley, CO 80631

Prepared by:



6855 West 119th Avenue
Broomfield, Colorado, 80020

TABLE 3
GROUNDWATER ELEVATION DATA
NOBLE ENERGY, INC. - DUNCAN D20-12, 20-13

Monitoring Well ID	Date	Top of Casing Elevation (ft. AMSL)	Total Depth (ft. BTOC)	Depth to Water (ft.) ⁽¹⁾	Depth to LNAPL (ft.) ⁽¹⁾	LNAPL Thickness (ft.)	Groundwater Elevation* (ft. AMSL)
BH01	08/23/19	4772.46	21.77	5.32	ND	ND	4765.17
BH01	11/15/19	4772.46	21.68	5.73	ND	ND	4764.76
BH01	02/05/20	4772.46	21.47	5.38	ND	ND	4765.11
BH02	08/23/19	4773.47	17.30	5.47	ND	ND	4765.14
BH02	11/15/19	4773.47	17.23	5.89	ND	ND	4764.72
BH02	02/05/20	4773.47	17.20	5.58	ND	ND	4765.03
BH03	08/23/19	4770.68	14.10	5.83	ND	ND	4765.26
BH03	11/15/19	4770.68	13.92	6.27	ND	ND	4764.82
BH03	02/05/20	4770.68	13.94	5.94	ND	ND	4765.15
BH04	08/23/19	4773.76	20.74	5.62	ND	ND	4765.20
BH04	11/15/19	4773.76	19.76	6.02	ND	ND	4764.80
BH04	02/05/20	4773.76	20.42	5.69	ND	ND	4765.13
BH05	08/23/19	4772.36	20.15	5.56	ND	ND	4765.12
BH05	11/15/19	4772.36	19.69	5.93	ND	ND	4764.75
BH05	02/05/20	4772.36	19.40	5.61	ND	ND	4765.07
BH06	08/23/19	4772.64	16.63	5.53	ND	ND	4765.18
BH06	11/15/19	4772.64	16.59	5.90	ND	ND	4764.81
BH06	02/05/20	4772.64	16.52	5.55	ND	ND	4765.16
BH07	02/05/20	4772.12	16.01	5.03	ND	ND	4765.00
BH08	02/05/20	4770.79	12.65	6.00	ND	ND	4764.86

ft. = Feet

AMSL = Above mean sea level

BTOC = Below top of casing

LNAPL = Light non-aqueous phase liquid

ND = No LNAPL detected

1) Depth to water measurements collected prior to third quarter 2019 were measured from top of well casing. Subsequent measurements were collected from top of casing and adjusted using survey data to reflect depth of water from ground surface.

* 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

TABLE 3
GROUNDWATER ANALYTICAL DATA
NOBLE ENERGY, INC. - DUNCAN D20-12, 20-13

Monitoring Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
COGCC Standard		5	560	700	1,400
GW01	12/10/18	970	3.2	560	3,800
BH01	08/23/19	440	<1.0	490	1,400
BH01	11/15/19	840	<1.0	420	1,200
BH01	02/05/20	<1.0	<1.0	<1.0	<2.0
BH02	08/23/19	<1.0	<1.0	<1.0	<2.0
BH02	11/15/19	<1.0	<1.0	<1.0	<2.0
BH02	02/05/20	<1.0	<1.0	<1.0	<2.0
BH03	08/23/19	<1.0	<1.0	<1.0	<2.0
BH03	11/15/19	<1.0	<1.0	<1.0	<2.0
BH03	02/05/20	<1.0	<1.0	<1.0	<2.0
BH04	08/23/19	<1.0	<1.0	<1.0	<2.0
BH04	11/15/19	<1.0	<1.0	<1.0	<2.0
BH04	02/05/20	<1.0	<1.0	25	79
BH05	08/23/19	340	<1.0	500	1,700
BH05	11/15/19	530	<1.0	490	1,600
BH05	02/05/20	240	<1.0	450	1,100
BH06	08/23/19	<1.0	<1.0	<1.0	<2.0
BH06	11/15/19	<1.0	<1.0	<1.0	<2.0
BH06	02/05/20	<1.0	<1.0	<1.0	<2.0
BH07	02/05/20	<1.0	<1.0	<1.0	<2.0
BH08	02/05/20	<1.0	<1.0	<1.0	2.5

Notes:

COGCC = Colorado Oil and Gas Conservation Commission

µg/L = Micrograms per liter

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

Groundwater standards referenced from COGCC Table 910-1

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

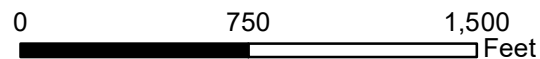
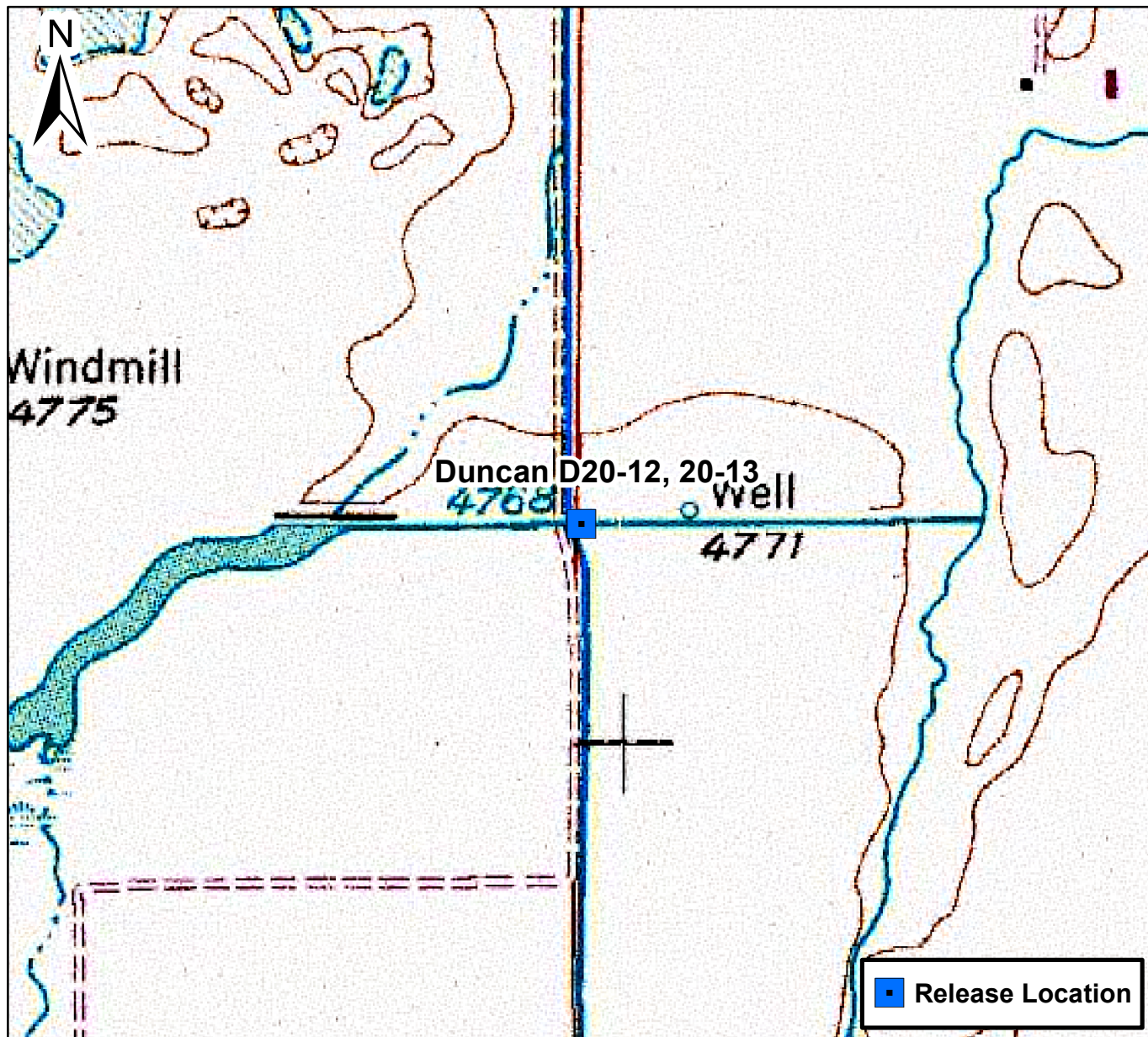
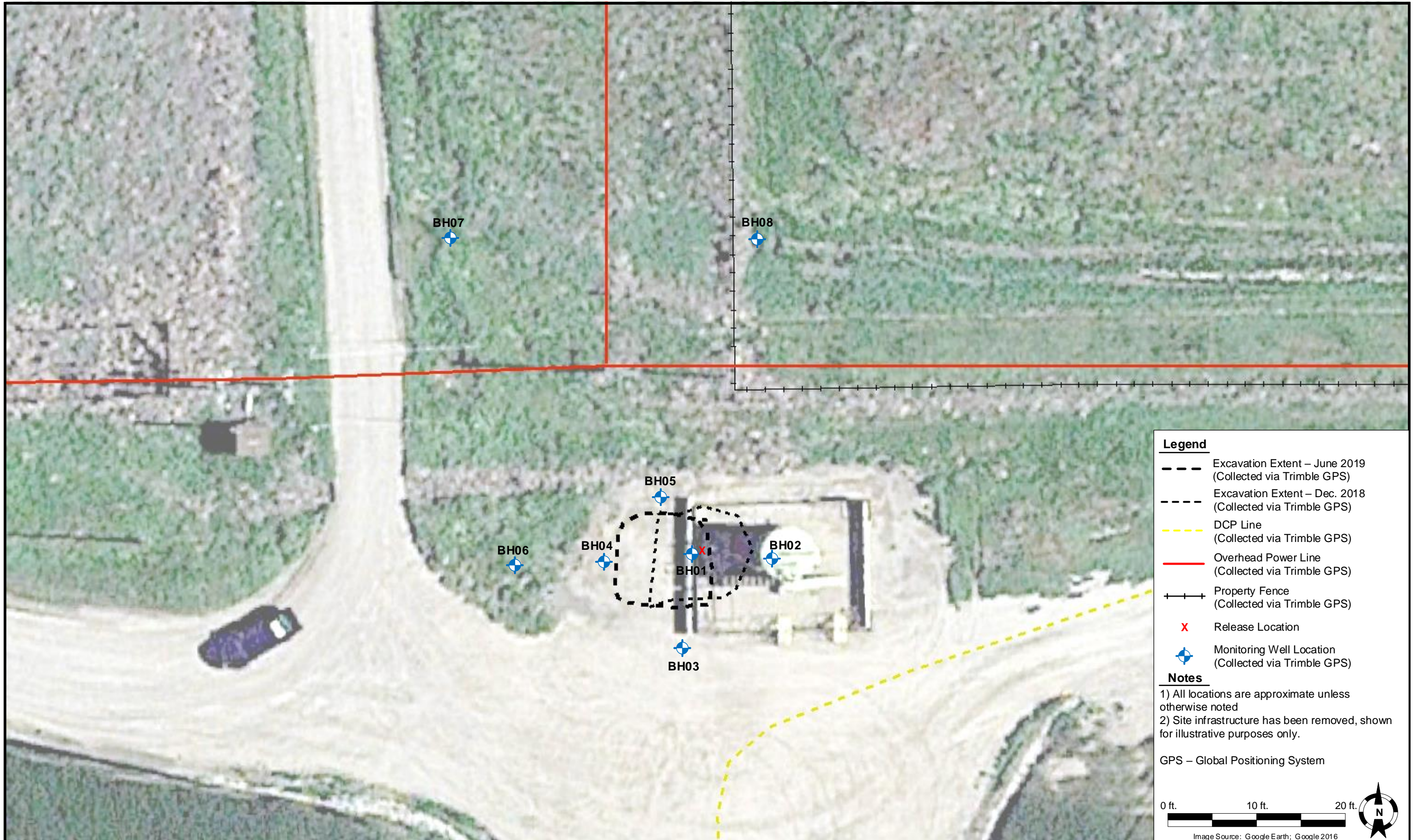


Figure 1

Site Location Map
 Duncan D20-12, 20-13
 NWSW S20 T3N R64W
 Weld County, Colorado





Legend

- - - Excavation Extent – June 2019 (Collected via Trimble GPS)
- - - Excavation Extent – Dec. 2018 (Collected via Trimble GPS)
- - - DCP Line (Collected via Trimble GPS)
- Overhead Power Line (Collected via Trimble GPS)
- + + + Property Fence (Collected via Trimble GPS)
- X Release Location
- Monitoring Well Location (Collected via Trimble GPS)


Notes

1) All locations are approximate unless otherwise noted
2) Site infrastructure has been removed, shown for illustrative purposes only.

GPS – Global Positioning System

0 ft. 10 ft. 20 ft.

Image Source: Google Earth; Google 2016

DATE: 02/28/2020	 TASMAN GEOSCIENCES	Tasman Geosciences, Inc. 6855 W. 119 th Avenue Broomfield, CO 80020	Noble Energy, Inc. – DJ Basin Duncan D20-12, 20-13 NWSW, Section 20, Township 3 North, Range 64 West Weld County, Colorado	Site Overview	FIGURE 2
DESIGNED BY: JW					
DRAWN BY: KC					



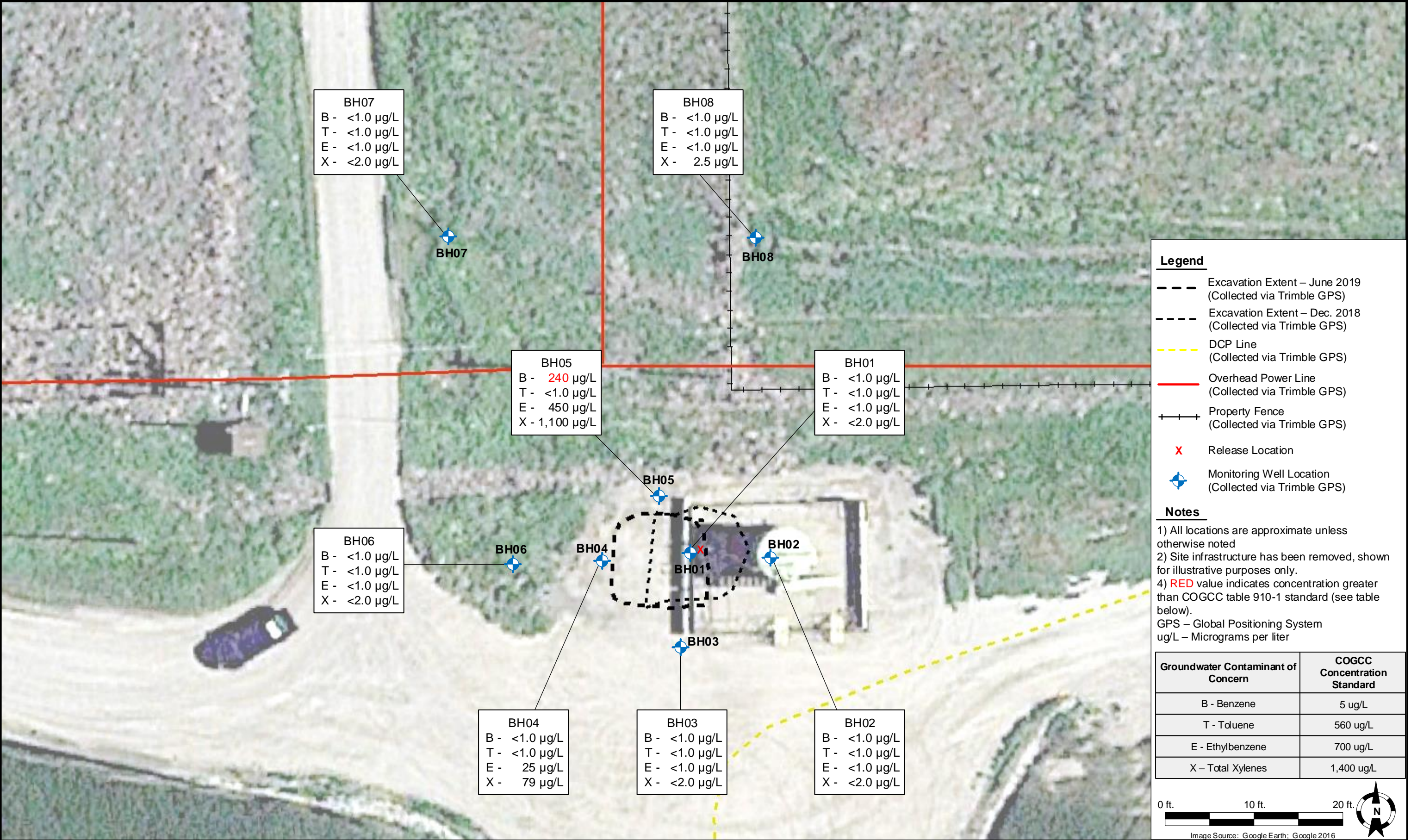
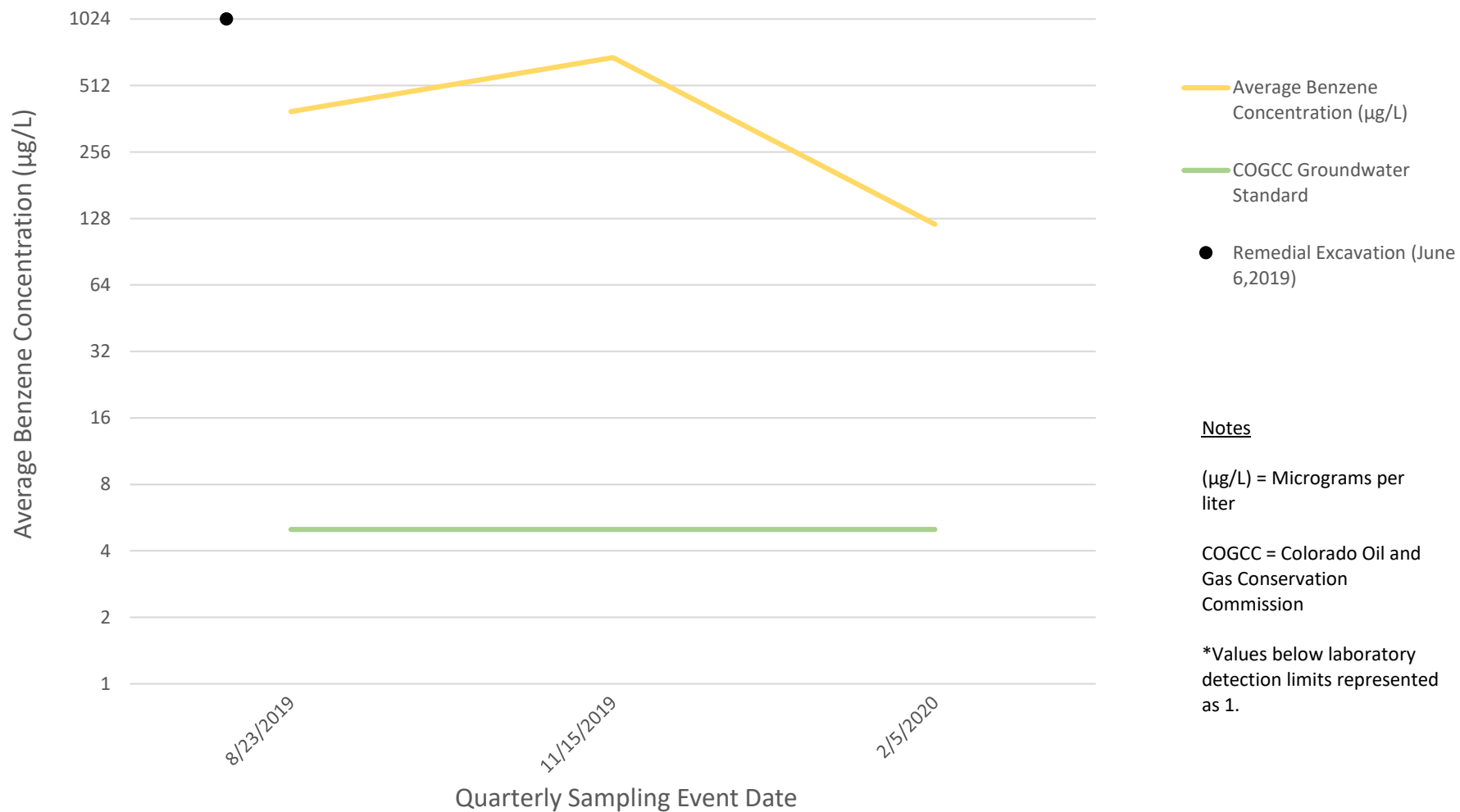


Figure 5
Duncan D20-12, 20-13
Average Quarterly Benzene Concentrations



ATTACHMENT A

BORING LOGS



6855 W. 119th Avenue
Broomfield, Colorado 80020

CLIENT: Noble Energy

LOGGED BY: Tanner Cook

PROJECT MANAGER: Jake Whritenour

DRILLING CONTRACTOR: Tasman Geosciences

DRILLING EQUIPMENT: Geoprobe

DRILL BIT SIZE (INCHES): 2

DATE STARTED - COMPLETED: 12/12/2019

TOTAL WELL DEPTH (FT. BGS): 16

DEPTH TO WATER (FT. BGS): 8

Duncan D20-12, 20-13

BORING / WELL ID: BH07

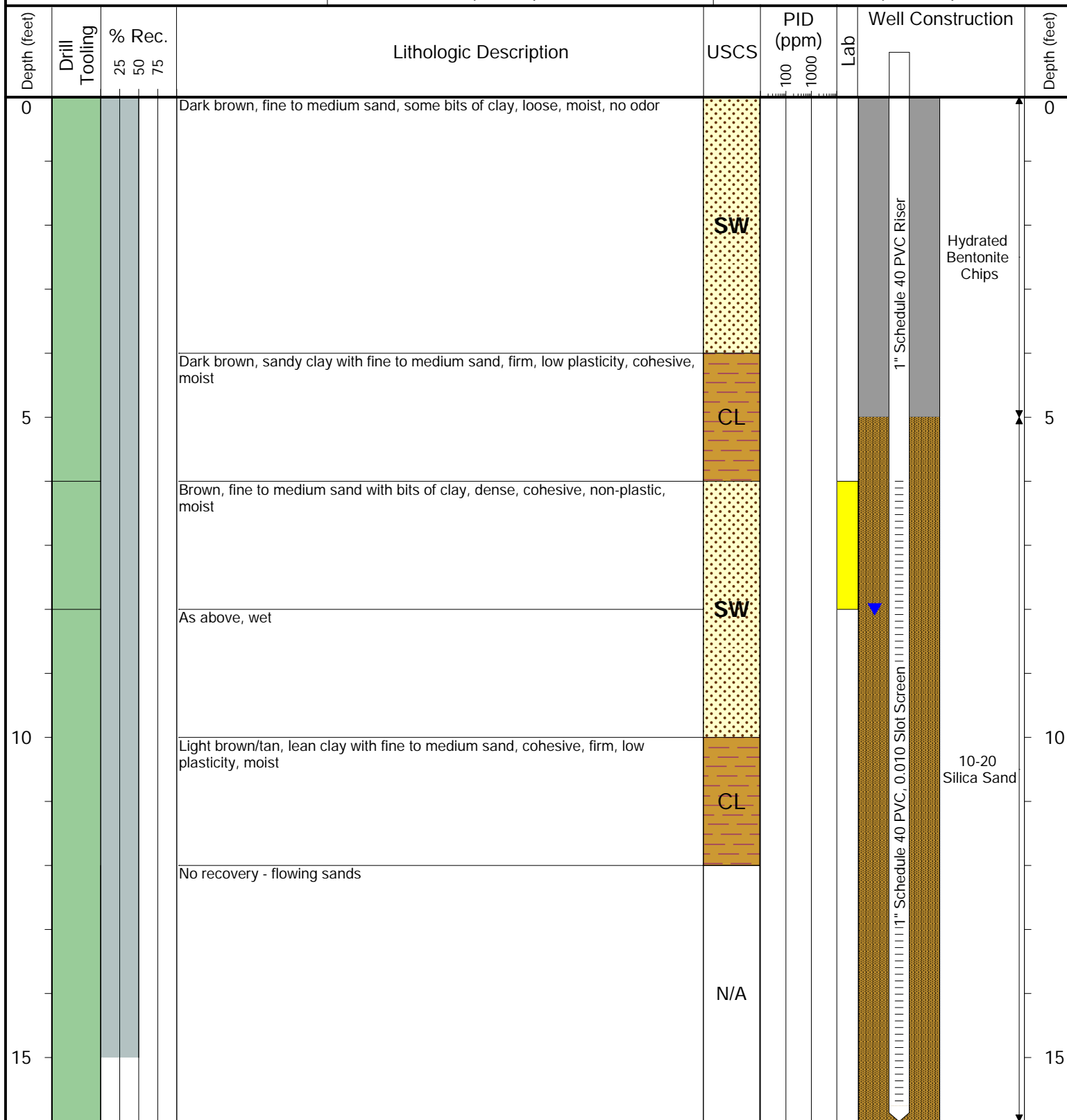
LOCATION: Weld County, Colorado

LATITUDE (WGS 84): 40.210877034

LONGITUDE (WGS 84): -104.584615237

CASING ELEVATION (FT. AMSL): 4772.12

GROUND ELEVATION (FT. AMSL): 4770.03



Drilling / Sample Method:

Macro-Core

Hollow Stem Auger

Solid Stem Auger

Hand Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab



6855 W. 119th Avenue
Broomfield, Colorado 80020

CLIENT: Noble Energy

LOGGED BY: Tanner Cook

PROJECT MANAGER: Jake Whritenour

DRILLING CONTRACTOR: Tasman Geosciences

DRILLING EQUIPMENT: Geoprobe

DRILL BIT SIZE (INCHES): 2

DATE STARTED - COMPLETED: 12/12/2019

TOTAL WELL DEPTH (FT. BGS): 15

DEPTH TO WATER (FT. BGS): 6

Duncan D20-12, 20-13

BORING / WELL ID: BH08

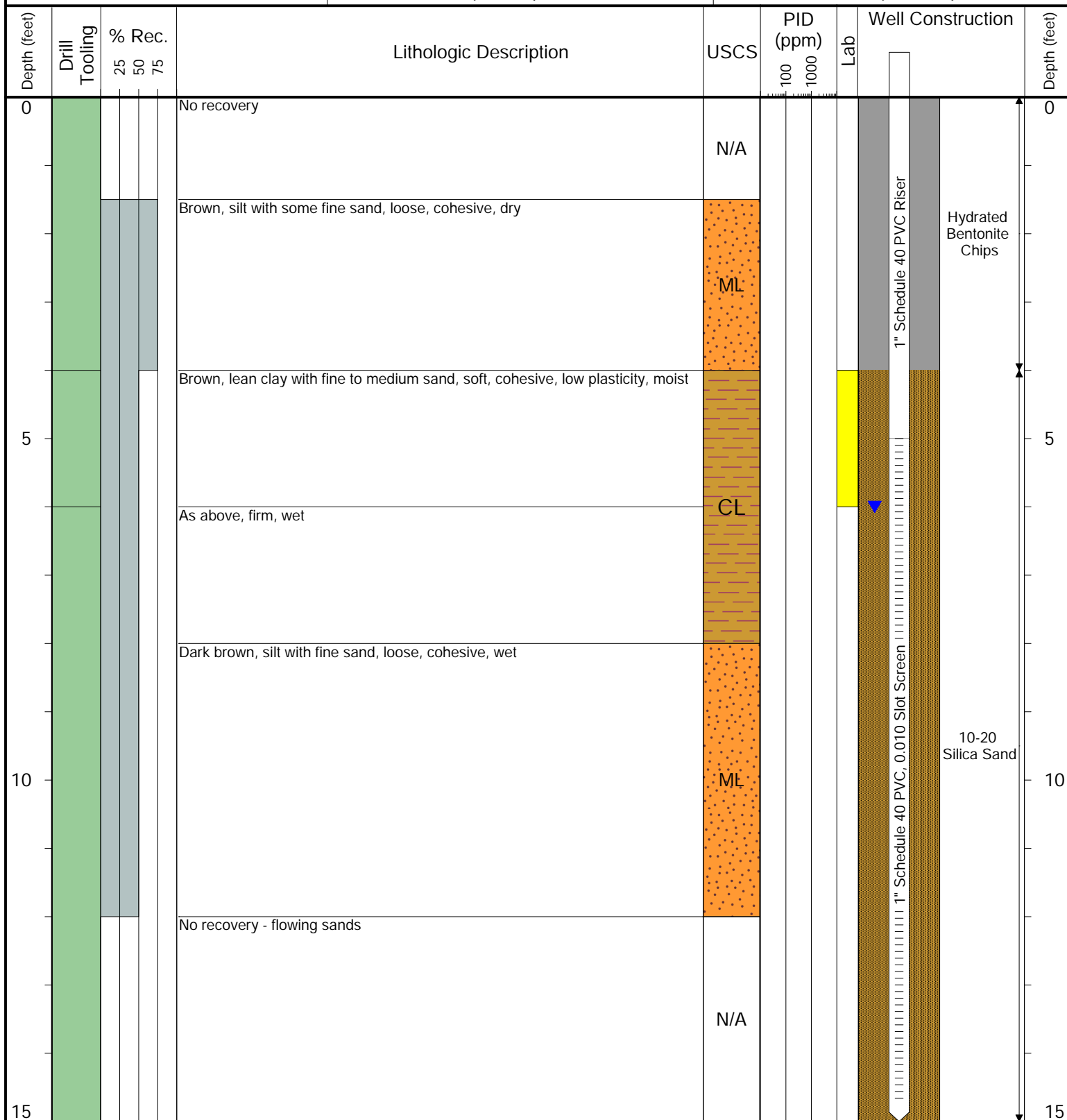
LOCATION: Weld County, Colorado

LATITUDE (WGS 84): 40.210875819

LONGITUDE (WGS 84): -104.584366346

CASING ELEVATION (FT. AMSL): 4770.79

GROUND ELEVATION (FT. AMSL): 4770.86



Drilling / Sample Method:

Macro-Core

Hollow Stem Auger

Solid Stem Auger

Hand Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab

ATTACHMENT B

LABORATORY ANALYTICAL DATA REPORTS

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

February 10, 2020

Brandon Bruns

Tasman Geosciences

6855 W. 119th Ave.

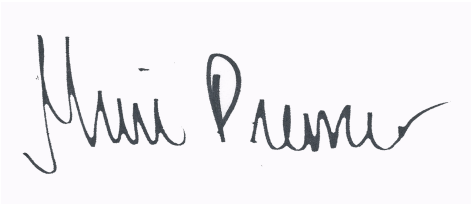
Broomfield, CO 80020

RE: Noble - Duncan D20-12, 20-13

Work Order #2002032

Enclosed are the results of analyses for samples received by Summit Scientific on 02/05/20 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 "Muri Premier", is displayed on a light purple rectangular background.

Muri Premier For Paul Shrewsbury
President



Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
02/10/20 14:29

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2002032-01	Water	02/05/20 16:04	02/05/20 17:30
BH02	2002032-02	Water	02/05/20 15:44	02/05/20 17:30
BH03	2002032-03	Water	02/05/20 15:29	02/05/20 17:30
BH04	2002032-04	Water	02/05/20 15:30	02/05/20 17:30
BH05	2002032-05	Water	02/05/20 15:55	02/05/20 17:30
BH06	2002032-06	Water	02/05/20 15:38	02/05/20 17:30
BH07	2002032-07	Water	02/05/20 15:40	02/05/20 17:30
BH08	2002032-08	Water	02/05/20 15:52	02/05/20 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.

2002032

Page 1 of 1

Project Manager: Brandon Bruns, Invoice: Jacob Evans
E-Mail: Bbruns@tesmanaged.com
Project Name: Duncan D20-12, 20-13
Project Number: 1/9

www.s2scientific.com

Sample Receipt Checklist

S2 Work Order

2002032

Client: NOBLE / TASMAN

Client Project ID: DUNCAN D20-12, 20-13

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

Airbill #:

☐ ☒ ☐ ☐ ☐

Matrix (check all that apply):

☐ Air

☐ Soil/Solid

☒ Water

☐ Other:

(Describe)

Temp (°C)

3.4

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HCL
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

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

RZ

Custodian Printed Name or Initials

Signature of Custodian

2/5/20

Date/Time



Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
02/10/20 14:29

BH01
2002032-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/05/20 16:04**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2002072	02/06/20	02/07/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **02/05/20 16:04**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		91.7 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		70.8 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		84.0 %		21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
02/10/20 14:29

BH02
2002032-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/05/20 15:44**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	2002072	02/06/20	02/07/20	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **02/05/20 15:44**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		118 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		88.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		83.3 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
02/10/20 14:29

BH03
2002032-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/05/20 15:29**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	2002072	02/06/20	02/07/20	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **02/05/20 15:29**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		53.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		89.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		79.7 %	21-167		"	"	"	"	

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
02/10/20 14:29

BH04
2002032-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/05/20 15:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	2002072	02/06/20	02/07/20	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	25	1.0		"	"	"	"	"	"	
Xylenes (total)	79	2.0		"	"	"	"	"	"	

Date Sampled: **02/05/20 15:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		52.2 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		73.7 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		81.8 %		21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
02/10/20 14:29

BH05
2002032-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/05/20 15:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	240	10		ug/l	10	2002072	02/06/20	02/07/20	EPA 8260B	
Toluene	ND	1.0		"	1	"	"	"	"	
Ethylbenzene	450	10		"	10	"	"	"	"	
Xylenes (total)	1100	20		"	"	"	"	"	"	

Date Sampled: **02/05/20 15:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		97.6 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		68.7 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		80.3 %		21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
02/10/20 14:29

BH06
2002032-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/05/20 15:38**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	2002072	02/06/20	02/07/20	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **02/05/20 15:38**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		52.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		82.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		83.4 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
02/10/20 14:29

BH07
2002032-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/05/20 15:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	2002072	02/06/20	02/07/20	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **02/05/20 15:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		54.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		81.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		81.6 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
02/10/20 14:29

BH08
2002032-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/05/20 15:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	2002072	02/06/20	02/07/20	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	2.5	2.0	"	"	"	"	"	"	

Date Sampled: **02/05/20 15:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		45.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		83.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		81.8 %	21-167		"	"	"	"	

Summit Scientific

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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
02/10/20 14:29

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 2002072 - EPA 5030 Water MS

Blank (2002072-BLK1)

Prepared: 02/06/20 Analyzed: 02/07/20

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	8.51		"	13.3		63.8	23-173			
Surrogate: Toluene-d8	10.8		"	13.3		81.4	20-170			
Surrogate: 4-Bromofluorobenzene	10.9		"	13.3		81.7	21-167			

LCS (2002072-BS1)

Prepared: 02/06/20 Analyzed: 02/07/20

Benzene	26.3	1.0	ug/l	33.3		79.0	51-132			
Toluene	23.4	1.0	"	33.3		70.1	51-138			
Ethylbenzene	27.6	1.0	"	33.3		82.7	58-146			
m,p-Xylene	50.1	2.0	"	66.7		75.2	57-144			
o-Xylene	24.9	1.0	"	33.3		74.8	53-146			
Surrogate: 1,2-Dichloroethane-d4	6.66		"	13.3		50.0	23-173			
Surrogate: Toluene-d8	11.8		"	13.3		88.2	20-170			
Surrogate: 4-Bromofluorobenzene	9.79		"	13.3		73.4	21-167			

Matrix Spike (2002072-MS1)

Source: 2002032-01

Prepared: 02/06/20 Analyzed: 02/07/20

Benzene	25.9	1.0	ug/l	33.3	ND	77.7	34-141			
Toluene	25.1	1.0	"	33.3	ND	75.4	27-151			
Ethylbenzene	30.5	1.0	"	33.3	ND	91.4	29-160			
m,p-Xylene	55.0	2.0	"	66.7	ND	82.6	20-166			
o-Xylene	26.7	1.0	"	33.3	ND	80.2	33-159			
Surrogate: 1,2-Dichloroethane-d4	6.30		"	13.3		47.3	23-173			
Surrogate: Toluene-d8	11.9		"	13.3		89.1	20-170			
Surrogate: 4-Bromofluorobenzene	9.99		"	13.3		74.9	21-167			

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Project: Noble - Duncan D20-12, 20-13

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
02/10/20 14:29

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

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

Batch 2002072 - EPA 5030 Water MS

Matrix Spike Dup (2002072-MSD1)	Source: 2002032-01			Prepared: 02/06/20 Analyzed: 02/07/20						
Benzene	26.0	1.0	ug/l	33.3	ND	77.9	34-141	0.193	30	
Toluene	21.8	1.0	"	33.3	ND	65.4	27-151	14.1	30	
Ethylbenzene	26.5	1.0	"	33.3	ND	79.4	29-160	14.0	30	
m,p-Xylene	47.5	2.0	"	66.7	ND	71.2	20-166	14.7	30	
o-Xylene	23.8	1.0	"	33.3	ND	71.5	33-159	11.4	30	
Surrogate: 1,2-Dichloroethane-d4	8.71		"	13.3		65.3	23-173			
Surrogate: Toluene-d8	10.9		"	13.3		82.1	20-170			
Surrogate: 4-Bromofluorobenzene	10.2		"	13.3		76.5	21-167			

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02/10/20 14:29

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