

Wellhead Closure Checklist

COGCC Rule 911.a.(4) Environmental Site Closure Assessment Field Form

Additional attachments (optional):		Pit Closure		Tank Battery Closure		Flowline Closure		Partially Buried Vault Closure	
Site Name & COGCC Facility Number: O'Connell C31-18		Date: 10/4/2022					Remediation Project #: 24272		
Associated Wells:		Age of Site:					Number of Photos Attached: 6		
Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple) 40.272165 / -104.593023							Estimated Facility Size (acres):		
General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.) Good none observed									
USCS Soil Type: Well Graded Sand - SW				Estimated Depth to Groundwater: >6'					
Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) None observed									
Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) None observed									
Wellhead(s)									
Well API	05-123-26059								
Age									
Condition of surface around wellhead	Good								
PID Readings	0.0								
Condition of subsurface (staining present)	Non observed								
PID Readings									
Sample taken? Location/Sample ID#	Yes, see below								
Photo Number(s)	1-6								
Other observations regarding wellheads: Samples taken at wellhead (SS01-04@2.5', FS01@6') and flowline (FL01-A@4')									
Summary									
Was impacted soil identified? No Yes - less than 10 cubic yards Yes - more than 10 cubic yards									
Total number of samples field screened: 6				Total number of samples collected: 6					
Highest PID Reading: 0.0				Total number of samples submitted to lab for analysis: 3					
If more than 10 cubic yards of impacted soil were observed:									
Vertical extent:				Estimated spill volume:					
Lateral extent:				Volume of soil removed:					
Is additional investigation required?									
Was groundwater encountered during the investigation? No Yes - not impacted or in contact with impacted soils Yes - groundwater impacted and/or in contact with impacted soils									
Measured depth to groundwater:				Was remedial groundwater removal conducted? Yes No					
Date Groundwater was encountered:				Commencement date of removal:					
Sheen on groundwater? Yes No				Volume of groundwater removed prior to sampling:					
Free product observed? Yes No				Volume of groundwater removed post sampling:					
Total number of samples collected:				Total Volume of groundwater removed:					
Total number of samples submitted to lab for analysis:									

Photographic Log


Equipment ID: SS01 @2.5'		Equipment Type: Wellhead		Equipment ID: SS02 @2.5'		Equipment Type: Wellhead	
Material: Steel	Volume:	Contents: Oil/Gas/Water		Material: Steel	Volume:	Contents: Oil/Gas/Water	
Notes/Conditions:				Notes/Conditions:			

Photographic Log



Equipment ID: SS03@2.5'		Equipment Type: Wellhead	
Material: Steel	Volume:	Contents: Oil/Gas/Water	
Notes/Conditions:			

Equipment ID: SS04@2.5'		Equipment Type: Wellhead	
Material: Steel	Volume:	Contents: Oil/Gas/Water	
Notes/Conditions:			

Photographic Log



Equipment ID: FS01 @6'		Equipment Type: Wellhead	
Material: Steel	Volume:	Contents: Oil/Gas/Water	
Notes/Conditions:			

Equipment ID: FL01-A@4'		Equipment Type: Flowline	
Material: Steel	Volume:	Contents: Oil/Gas/Water	
Notes/Conditions:			

Photographic Log


Equipment ID:		Equipment Type:		Equipment ID:		Equipment Type:	
Material:	Volume:	Contents:		Material:	Volume:	Contents:	
Notes/Conditions:				Notes/Conditions:			

TABLE 1
SOIL SAMPLE LOCATIONS
NOBLE ENERGY, INC. - O'CONNELL C31-18

Soil Sample ID	Date	PID (ppm)	Visual	Olfactory	Sample Type (Grab/Lab)	Latitude ¹	Longitude	PDOP
SS01@2.5'	10/04/22	0.0	No Staining	No Odor	Lab	40.27216767	-104.5929938	1.3
SS02@2.5'	10/04/22	0.0	No Staining	No Odor	Grab	40.27214708	-104.5929894	1.3
SS03@2.5'	10/04/22	0.0	No Staining	No Odor	Grab	40.27214224	-104.5930197	1.3
SS04@2.5'	10/04/22	0.0	No Staining	No Odor	Grab	40.27216359	-104.5930487	1.3
FS01@6'	10/04/22	0.0	No Staining	No Odor	Lab	40.27216238	-104.5930079	1.3
FL01-A@4'	10/04/22	0.0	No Staining	No Odor	Lab	40.27217490	-104.5930041	1.5
BH01@6'	10/27/22	0.0	No Staining	No Odor	Lab	40.27216959	-104.5929970	1.1
BH01@10'	10/27/22	0.0	No Staining	No Odor	Lab	40.27216959	-104.5929970	1.1
BG01@4'	10/27/22	0.0	No Staining	No Odor	Lab	40.27215876	-104.5925624	1.2
BG01@8'	10/27/22	0.0	No Staining	No Odor	Lab	40.27215876	-104.5925624	1.2
BG02@4'	10/27/22	0.0	No Staining	No Odor	Lab	40.27211040	-104.5925705	1.2
BG02@8'	10/27/22	0.0	No Staining	No Odor	Lab	40.27211040	-104.5925705	1.2
BG03@4'	10/27/22	0.0	No Staining	No Odor	Lab	40.27207067	-104.5925788	1.2
BG03@8'	10/27/22	0.0	No Staining	No Odor	Lab	40.27207067	-104.5925788	1.2
BG04@4'	10/27/22	0.0	No Staining	No Odor	Lab	40.27214027	-104.5926063	1.1
BG04@8'	10/27/22	0.0	No Staining	No Odor	Lab	40.27214027	-104.5926063	1.1
BG05@4'	10/27/22	0.0	No Staining	No Odor	Lab	40.27209834	-104.5926042	1.2
BG05@8'	10/27/22	0.0	No Staining	No Odor	Lab	40.27209834	-104.5926042	1.2

Notes:

PID = Photo-ionization detector

ppm = parts per million

PDOP = Position dilution of precision

HC = Hydrocarbon

1.) Latitude and longitude coordinates will be provided in decimal degrees with an accuracy and precision of 5 decimals of a degree using the North American Datum ("NAD") of 1983

TABLE 2
SOIL ANALYTICAL DATA
NOBLE ENERGY, INC. - O'CONNELL C31-18

Soil Sample ID	Date	¹ Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	1,2,4 - TMB (mg/kg)	1,3,5 - TMB (mg/kg)	Naphthalene (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-ORO (mg/kg)	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benz(a) (mg/kg)	Benzo(a) (mg/kg)	Benzo(b) (mg/kg)	Benzo(k) (mg/kg)	Chrysene (mg/kg)	A,H (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	1,2,3-CD (mg/kg)	Pyrene (mg/kg)	1-M (mg/kg)	2-M (mg/kg)
Residential SSL ²		1.2	490	5.8	58	30	27	2	500			360	1,800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
Protection of Groundwater SSL ^{2,3}		0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500			0.55	6	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98	1.3	0.006	0.019
FS01@6'	10/04/22	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00335	<0.200	<25.0	<100	<0.00335	<0.00335	<0.00335	<0.00335	<0.00335	<0.00335	<0.00335	<0.00335	<0.00335	<0.00335	<0.00335	<0.00335	<0.00335	<0.00335
FL01-A@4'	10/04/22	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.0069	<0.200	<25.0	<100	0.0269	0.0572	0.125	0.11	0.104	0.0782	0.121	0.0218	0.308	0.0316	0.0715	0.242	0.00249	0.00291
BH01@6'	10/27/22	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH01@10'	10/27/22	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500

Soil Sample ID	Date	pH	SAR	EC (mmhos/cm)	Boron (mg/L)
Residential SSL ²		6 - 8.3	<6	<4mmhos/cm	2
FS01@6'	10/04/22	8.19	0.247	0.421	0.157
FL01-A@4'	10/04/22	8.07	0.109	0.268	<0.0992
BH01@6'	10/27/22	8.03	0.0938	0.221	0.0647
BH01@10'	10/27/22	7.89	0.100	0.153	0.0532

Soil Sample ID	Date	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
Residential SSL ²		0.68	15,000	71	0.3	3,100	400	1,500	390	390	23,000
Protection of Groundwater SSL ^{2,3}		0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
FL01-A@4'	10/04/22	1.55	41.3	<0.0973	<2.53	<9.73	<9.73	<9.73	<0.0973	<0.0973	<97.3
BH01@6'	10/27/22	0.559	21.9	<0.211	<0.30	2.49	3.08	2.01	<0.274	<0.0211	9.89
BH01@10'	10/27/22	0.632	31.9	<0.212	<0.30	2.67	2.71	2.96	<0.275	<0.0212	12.3
BG01@4'	10/27/22	0.709	27.3	<0.205	<0.30	2.53	2.74	2.65	<0.267	0.0205	10.9
BG01@8'	10/27/22	0.678	28.3	<0.206	<0.30	2.31	2.45	2.63	<0.268	0.0218	10.0
BG02@4'	10/27/22	0.628	28.9	<0.205	<0.30	2.24	2.40	2.37	<0.267	<0.0205	10.2
BG02@8'	10/27/22	0.567	28.0	<0.206	<0.30	2.12	2.38	2.42	<0.267	<0.0206	10.1
BG03@4'	10/27/22	0.665	32.2	<0.206	<0.30	2.30	2.45	2.41	<0.267	<0.0206	10.4
BG03@8'	10/27/22	0.609	28.6	<0.206	<0.30	2.42	2.34	2.52	<0.268	<0.0206	10.7
BG04@4'	10/27/22	0.566	30.2	<0.205	<0.30	2.20	2.20	2.24	<0.266	<0.0205	10.3
BG04@8'	10/27/22	0.571	27.3	<0.206	<0.30	2.09	2.35	2.30	<0.267	<0.0206	9.44
BG05@4'	10/27/22	0.633	30.6	<0.205	<0.30	2.19	2.41	2.39	<0.267	<0.0205	10.3
BG05@8'	10/27/22	0.644	35.0	<0.207	<0.30	2.28	2.51	2.51	<0.269	<0.0207	10.8

Notes:

- Compounds referenced from 2 CCR 404-1, Table 915-1, effective January 15, 2021.
- Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.
- SSLs are applicable if a pathway for communication with groundwater is present.

Definitions:

COGCC = Colorado Oil and Gas Conservation Commission
 TPH-GRO = Total petroleum hydrocarbons - gasoline range organics
 TPH-DRO = Total petroleum hydrocarbons - diesel range organics
 TPH-ORO = Total petroleum hydrocarbons - oil range organics
 mg/kg = Milligrams per kilogram
 SAR = Sodium Adsorption Ratio
 EC = Electrical Conductivity
 mmhos/cm = Millimhos per centimeter
 mg/L = Milligrams per liter
 < = Analytical result is less than the indicated laboratory reporting limit

1,2,4 - TMB = 1,2,4 Trimethylbenzene
 1,3,5 - TMB = 1,3,5 Trimethylbenzene
 Benz(a) = Benzantracene
 Benzo(b) = Benzofluoranthene
 Benzo(k) = Benzofluoranthene
 Benzo(a) = Benzopyrene
 A,H = Dibenzoanthracene
 1,2,3-CD = Indenopyrene
 1-M = 1-methylnaphthalene
 2-M = 2-methylnaphthalene

Highlighted results are equal to or exceed the COGCC Table 915-1 standard

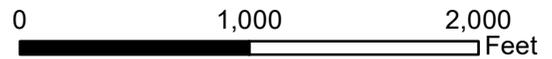
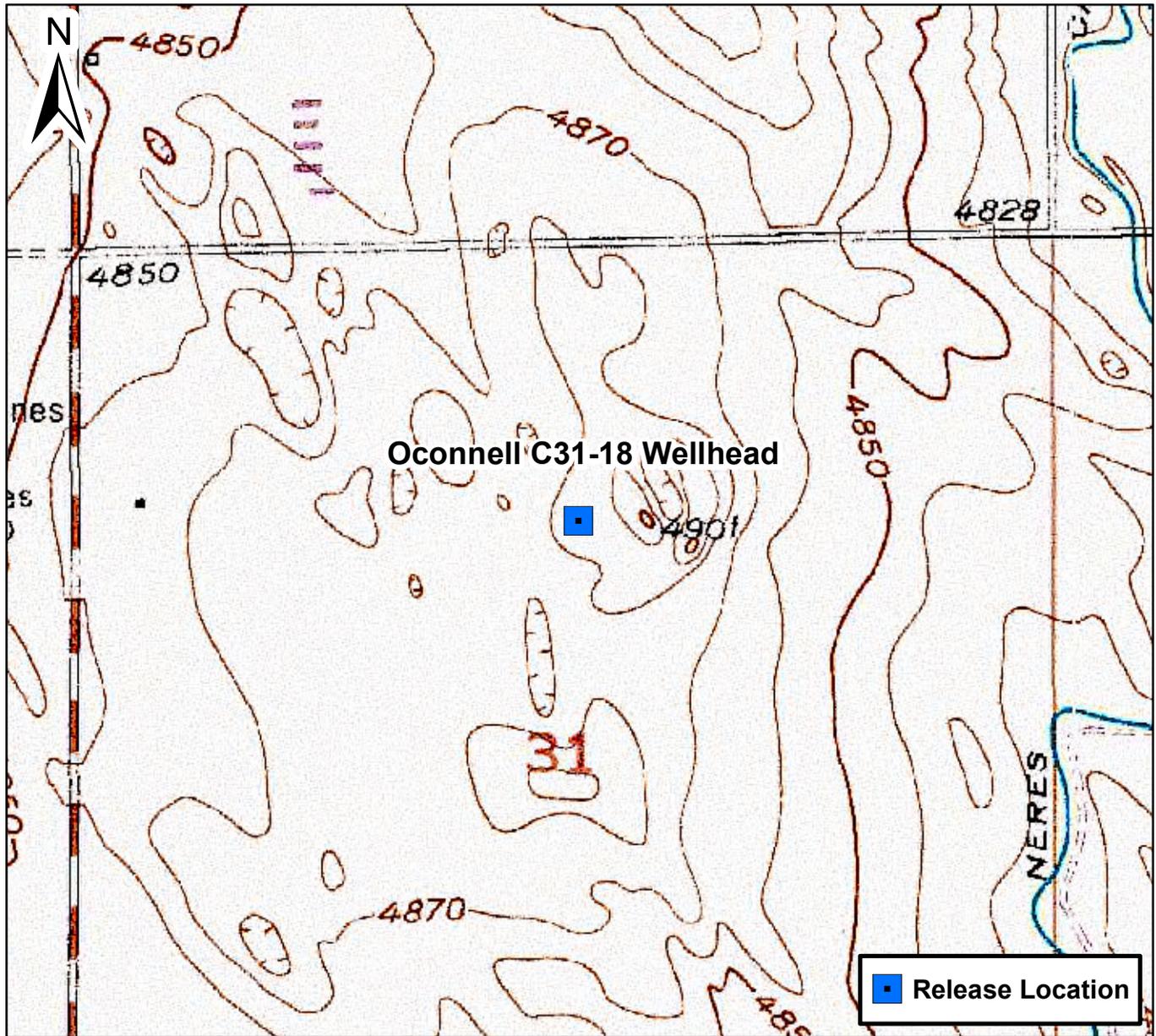
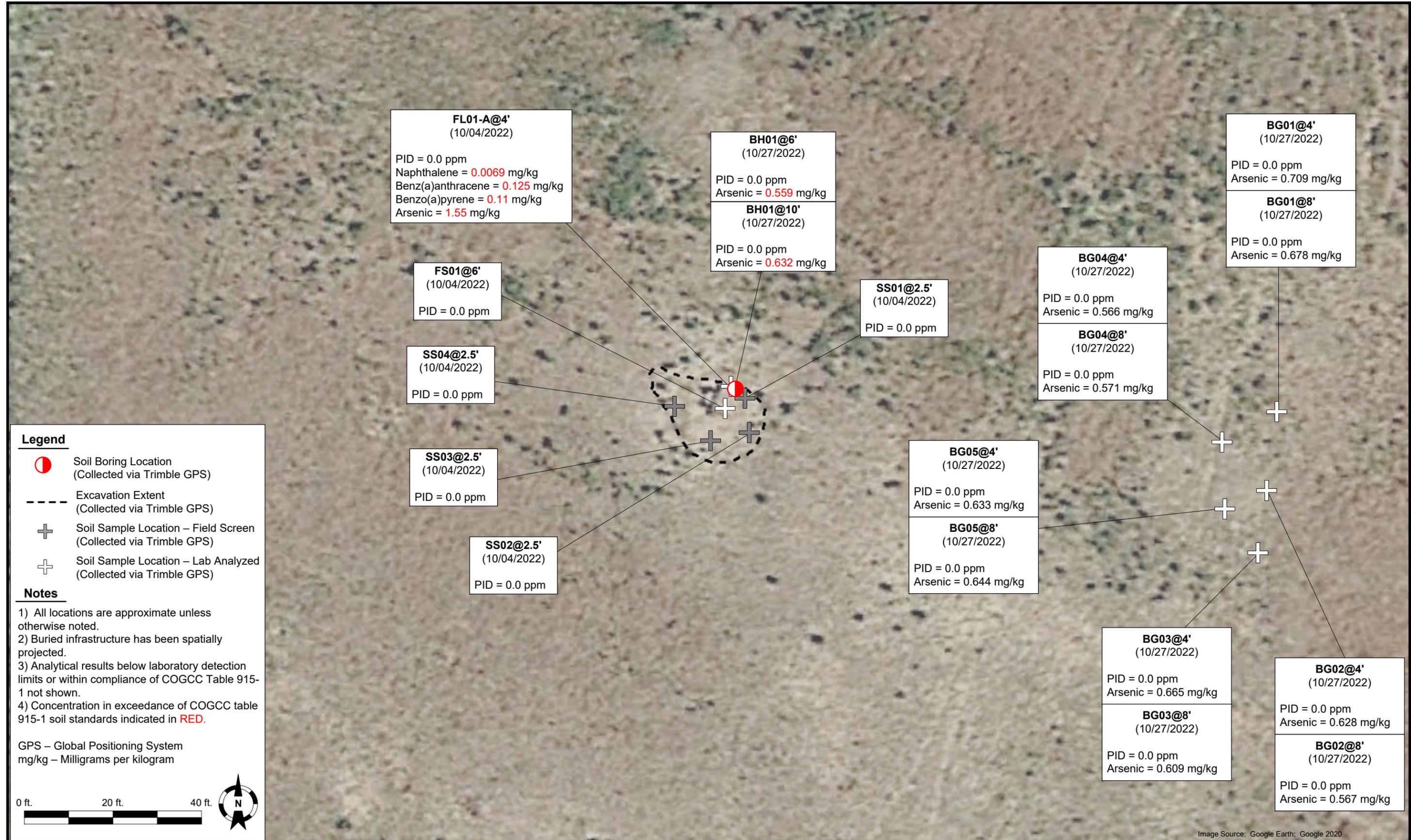


Figure 1

Site Location Map
 Oconnell C31-18 Wellhead
 SWNE S31 T4N R64W
 Weld County, Colorado





DATE: 12/01/2022

DESIGNED BY: JW

DRAWN BY: SQ

TASMAN Tasman Geosciences, Inc.
6855 W 119th Avenue
Broomfield, CO 80020

Noble Energy, Inc. – DJ Basin
O’Connell C31-18
SWNE, Section 31, Township 4 North, Range 64 West
Weld County, Colorado

Soil Analytical
Results Map
(10/04/2022 – 10/27/2022)

FIGURE
2

October 13, 2022

Tasman Geosciences

Jake Whritenour

6855 West 119th Avenue

Broomfield CO 80020

Project Name - Noble - OConnell C31-18 WH

Project Number - UWRWE-A2704-ABN

Attached are your analytical results for Noble - OConnell C31-18 WH received by Origins Laboratory, Inc. October 04, 2022. This project is associated with Origins project number Y210042-02.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



Tasman Geosciences
6855 West 119th Avenue
Broomfield CO 80020

Jake Whritenour
Project Number: UWRWE-A2704-ABN
Project: Noble - OConnell C31-18 WH

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FS01@6'	Y210042-02	Soil	October 4, 2022 8:53	10/04/2022 14:28
FL01-A@4'	Y210042-03	Soil	October 4, 2022 8:56	10/04/2022 14:28

Origins Laboratory, Inc.



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
 6855 West 119th Avenue
 Broomfield CO 80020

Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

Origins Laboratory

F-012207-01-R1
 Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: Y 21004Z

Client: Tasman

Checklist Completed by: EHS / OE

Client Project ID: O'Connell C31-18 WH

Date/time completed: 10/4/12

Shipped Via: HD
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Matrix(s) Received: (Check all that apply): Soil/Solid

Airbill #: NA

Cooler Number/Temperature: 1 14.1 °C / _____ °C / _____ °C (Describe) _____ °C

Thermometer ID: T004

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	X			
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact ⁽¹⁾ ?	X			
Was adequate sample volume provided ⁽¹⁾ ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		X		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	X			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	X			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	X			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			X	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH < 2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH > 10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)			X	
Additional Comments (if any):				

⁽¹⁾If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by: JB (Project Manager)

Date/Time Reviewed: 10/6/12

Origins Laboratory, Inc.



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
 6855 West 119th Avenue
 Broomfield CO 80020

Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

FS01@6'

10/4/2022 8:53:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y210042-02 (Soil)

Boron (DTPA Sorbitol)

Boron	0.157		0.0994	mg/L	1	B2J0506	10/05/2022	10/06/2022	
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DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND		25.0	mg/kg	1	B2J0501	10/05/2022	10/05/2022	U
Residual Range Organics (C28-C40)	ND		100	"	"	"	"	"	U

Surrogate: o-Terphenyl	89.9 %		50-150			"	"	"	
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GBTEX+TMBs by 8260D

1,2,4-Trimethylbenzene	ND		0.00200	mg/kg	1	B2J0528	10/05/2022	10/07/2022	U
1,3,5-Trimethylbenzene	ND		0.00200	"	"	"	"	"	U
Benzene	ND		0.00200	"	"	"	"	"	U
Ethylbenzene	ND		0.00200	"	"	"	"	"	U
Toluene	ND		0.00200	"	"	"	"	"	U
Xylenes, total	ND		0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND		0.200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	82.9 %		70-130			"	"	"	
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Origins Laboratory, Inc.



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
 6855 West 119th Avenue
 Broomfield CO 80020

Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

FS01@6'

10/4/2022 8:53:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
 Y210042-02 (Soil)

GBTEX+TMBs by 8260D

Surrogate: Toluene-d8	110 %		70-130			B2J05 28	10/05/2022	10/07/2022	
Surrogate: 4-Bromofluorobenzene	99.8 %		70-130			"	"	"	

Metals by Saturated Paste by EPA 6010

Calcium	2.07		0.499	meq/L	10	[CALC]	10/05/2022	10/06/2022	
Magnesium	ND		0.823	"	"	"	"	"	
Sodium	ND		0.435	"	"	"	"	"	

PAH by 8270D SIM

1-Methylnaphthalene	ND	0.00335	0.00335	mg/Kg	5	L642044	10/10/2022	10/10/2022	
2-Methylnaphthalene	ND	0.00335	0.00335	"	"	"	"	"	
Acenaphthene	ND	0.00335	0.00335	"	"	"	"	"	
Anthracene	ND	0.00335	0.00335	"	"	"	"	"	
Benzo(a)anthracene	ND	0.00335	0.00335	"	"	"	"	"	
Benzo(a)pyrene	ND	0.00335	0.00335	"	"	"	"	"	
Benzo(b)fluoranthene	ND	0.00335	0.00335	"	"	"	"	"	
Benzo(k)fluoranthene	ND	0.00335	0.00335	"	"	"	"	"	
Chrysene	ND	0.00335	0.00335	"	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.00335	0.00335	"	"	"	"	"	
Fluoranthene	ND	0.00335	0.00335	"	"	"	"	"	

Origins Laboratory, Inc.



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
 6855 West 119th Avenue
 Broomfield CO 80020

Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

FS01@6'

10/4/2022 8:53:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Waypoint Analytical, LLC.
Y210042-02 (Soil)

PAH by 8270D SIM

Fluorene	ND	0.00335	0.00335	mg/Kg	5	L642044	10/10/2022	10/10/2022	
Indeno(1,2,3-cd)pyrene	ND	0.00335	0.00335	"	"	"	"	"	
Naphthalene	ND	0.00335	0.00335	"	"	"	"	"	
Pyrene	ND	0.00335	0.00335	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	59.5 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	71.2 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	57.1 %		29-110			"	"	"	

pH in Soil by 9045D

pH	8.19			pH Units	1	B2J0509	10/05/2022	10/06/2022	
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SAR by 20B Saturated Paste

SAR	0.247			SAR	1	B2J0504	10/05/2022	10/06/2022	
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Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.421		0.00500	mmhos/cm	1	B2J0509	10/05/2022	10/06/2022	
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Origins Laboratory, Inc.



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Tasman Geosciences
 6855 West 119th Avenue
 Broomfield CO 80020

Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

FL01-A@4'

10/4/2022 8:56:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y210042-03 (Soil)

Boron (DTPA Sorbitol)

Boron	ND		0.0992	mg/L	1	B2J0506	10/05/2022	10/06/2022	
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DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND		25.0	mg/kg	1	B2J0501	10/05/2022	10/05/2022	U
Residual Range Organics (C28-C40)	ND		100	"	"	"	"	"	U

Surrogate: *o*-Terphenyl 86.4 % 50-150 " " "

GBTEX+TMBs by 8260D

1,2,4-Trimethylbenzene	ND		0.00200	mg/kg	1	B2J0528	10/05/2022	10/07/2022	U
1,3,5-Trimethylbenzene	ND		0.00200	"	"	"	"	"	U
Benzene	ND		0.00200	"	"	"	"	"	U
Ethylbenzene	ND		0.00200	"	"	"	"	"	U
Toluene	ND		0.00200	"	"	"	"	"	U
Xylenes, total	ND		0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND		0.200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4 85.9 % 70-130 " " "

Origins Laboratory, Inc.



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Tasman Geosciences
 6855 West 119th Avenue
 Broomfield CO 80020

Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

FL01-A@4'
10/4/2022 8:56:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y210042-03 (Soil)

GBTEX+TMBs by 8260D

Surrogate: Toluene-d8	110 %		70-130			B2J05 28	10/05/2022	10/07/2022	
Surrogate: 4-Bromofluorobenzene	99.6 %		70-130			"	"	"	

Metals by Saturated Paste by EPA 6010

Calcium	1.33		0.499	meq/L	10	[CALC]	10/05/2022	10/06/2022	
Magnesium	ND		0.823	"	"	"	"	"	
Sodium	ND		0.435	"	"	"	"	"	

PAH by 8270D SIM

1-Methylnaphthalene	0.00249	0.00067	0.00067	mg/Kg	1	L642044	10/10/2022	10/10/2022	
2-Methylnaphthalene	0.00291	0.00067	0.00067	"	"	"	"	"	
Acenaphthene	0.0269	0.00067	0.00067	"	"	"	"	"	
Anthracene	0.0572	0.00067	0.00067	"	"	"	"	"	
Benzo(a)anthracene	0.125	0.00067	0.00067	"	"	"	"	"	
Benzo(a)pyrene	0.11	0.00067	0.00067	"	"	"	"	"	
Benzo(b)fluoranthene	0.104	0.00067	0.00067	"	"	"	"	"	
Benzo(k)fluoranthene	0.0782	0.00067	0.00067	"	"	"	"	"	
Chrysene	0.121	0.00067	0.00067	"	"	"	"	"	
Dibenz(a,h)anthracene	0.0218	0.00067	0.00067	"	"	"	"	"	
Fluoranthene	0.308	0.00067	0.00067	"	"	"	"	"	
Fluorene	0.0316	0.00067	0.00067	"	"	"	"	"	
Indeno(1,2,3-cd)pyrene	0.0715	0.00067	0.00067	"	"	"	"	"	

Origins Laboratory, Inc.



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Tasman Geosciences
 6855 West 119th Avenue
 Broomfield CO 80020

Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

FL01-A@4'
10/4/2022 8:56:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Waypoint Analytical, LLC.
Y210042-03 (Soil)

PAH by 8270D SIM

Naphthalene	0.0069	0.00067	0.00067	mg/Kg	1	L642044	10/10/2022	10/10/2022	
Pyrene	0.242	0.00067	0.00067	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	50.5 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	60.7 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	54.7 %		29-110			"	"	"	

pH in Soil by 9045D

pH	8.07			pH Units	1	B2J0509	10/05/2022	10/06/2022	
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SAR by 20B Saturated Paste

SAR	0.109			SAR	1	B2J0504	10/05/2022	10/06/2022	
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Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.268		0.00500	mmhos/cm	1	B2J0509	10/05/2022	10/06/2022	
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Tasman Geosciences
 6855 West 119th Avenue
 Broomfield CO 80020

Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

Extractable Petroleum Hydrocarbons by 8015D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B2J0501 - EPA 3580										
Blank (B2J0501-BLK1)										
					Prepared: 10/05/2022 Analyzed: 10/05/2022					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	24		"	24.9		97.5	50-150			

Origins Laboratory, Inc.



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Tasman Geosciences
 6855 West 119th Avenue
 Broomfield CO 80020

Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

Extractable Petroleum Hydrocarbons by 8015D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2J0501 - EPA 3580

LCS (B2J0501-BS1)

Prepared: 10/05/2022 Analyzed: 10/05/2022

Diesel (C10-C28)	810	50.0	mg/kg	1000		81.0	70-130			
Residual Range Organics (C28-C40)	901	200	"	1000		90.1	70-130			
Surrogate: o-Terphenyl	40		"	49.8		79.7	50-150			

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Tasman Geosciences
 6855 West 119th Avenue
 Broomfield CO 80020

Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

Extractable Petroleum Hydrocarbons by 8015D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2J0501 - EPA 3580

Matrix Spike (B2J0501-MS1)	Source: Y210003-01			Prepared: 10/05/2022 Analyzed: 10/05/2022						
Diesel (C10-C28)	933	50.0	mg/kg	1000	ND	93.3	70-130			
Residual Range Organics (C28-C40)	1620	200	"	1000	436	119	70-130			
Surrogate: o-Terphenyl	50		"	49.8		100	50-150			

Origins Laboratory, Inc.



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Tasman Geosciences
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Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

Extractable Petroleum Hydrocarbons by 8015D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2J0501 - EPA 3580

Matrix Spike Dup (B2J0501-MSD1)	Source: Y210003-01			Prepared: 10/05/2022 Analyzed: 10/05/2022						
Diesel (C10-C28)	933	50.0	mg/kg	1000	ND	93.3	70-130	0.000536	35	
Residual Range Organics (C28-C40)	1410	200	"	1000	436	97.4	70-130	14.1	35	
Surrogate: o-Terphenyl	41		"	49.8		81.8	50-150			

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Tasman Geosciences
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Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

Extractable Petroleum Hydrocarbons by 8015D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2J0528 - EPA 5030 (soil)

Blank (B2J0528-BLK1)

Prepared: 10/05/2022 Analyzed: 10/07/2022

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
1,3,5-Trimethylbenzene	ND	0.00200	"							U
Benzene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Naphthalene	ND	0.00380	"							U
Toluene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.10		"	0.125	80.3		70-130			
Surrogate: Toluene-d8	0.14		"	0.125	110		70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125	98.3		70-130			

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Tasman Geosciences
 6855 West 119th Avenue
 Broomfield CO 80020

Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2J0528 - EPA 5030 (soil)

LCS (B2J0528-BS1)

Prepared: 10/05/2022 Analyzed: 10/07/2022

1,2,4-Trimethylbenzene	0.108	0.00200	mg/kg	0.100		108	70-130			
1,3,5-Trimethylbenzene	0.110	0.00200	"	0.100		110	70-130			
Benzene	0.0897	0.00200	"	0.100		89.7	70-130			
Ethylbenzene	0.108	0.00200	"	0.100		108	70-130			
Naphthalene	0.116	0.00380	"	0.100		116	70-130			
Toluene	0.106	0.00200	"	0.100		106	70-130			
o-Xylene	0.102	0.00200	"	0.100		102	70-130			
m,p-Xylene	0.221	0.00400	"	0.200		110	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.10		"	0.125		81.4	70-130			
Surrogate: Toluene-d8	0.14		"	0.125		111	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.0	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences
 6855 West 119th Avenue
 Broomfield CO 80020

Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2J0528 - EPA 5030 (soil)

Matrix Spike (B2J0528-MS1)	Source: Y210034-01			Prepared: 10/05/2022 Analyzed: 10/07/2022						
1,2,4-Trimethylbenzene	0.0997	0.00200	mg/kg	0.100	ND	99.7	70-130			
1,3,5-Trimethylbenzene	0.102	0.00200	"	0.100	ND	102	70-130			
Benzene	0.0839	0.00200	"	0.100	ND	83.9	70-130			
Ethylbenzene	0.104	0.00200	"	0.100	ND	104	70-130			
Naphthalene	0.0917	0.00380	"	0.100	ND	91.7	70-130			
Toluene	0.0992	0.00200	"	0.100	ND	99.2	70-130			
o-Xylene	0.0912	0.00200	"	0.100	ND	91.2	70-130			
m,p-Xylene	0.212	0.00400	"	0.200	ND	106	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.098		"	0.125		78.4	70-130			
Surrogate: Toluene-d8	0.14		"	0.125		111	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.7	70-130			

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Tasman Geosciences
 6855 West 119th Avenue
 Broomfield CO 80020

Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2J0528 - EPA 5030 (soil)

Matrix Spike Dup (B2J0528-MSD1)	Source: Y210034-01			Prepared: 10/05/2022 Analyzed: 10/07/2022						
1,2,4-Trimethylbenzene	0.0939	0.00200	mg/kg	0.100	ND	93.9	70-130	5.97	20	
1,3,5-Trimethylbenzene	0.0959	0.00200	"	0.100	ND	95.9	70-130	6.36	20	
Benzene	0.0819	0.00200	"	0.100	ND	81.9	70-130	2.41	20	
Ethylbenzene	0.0993	0.00200	"	0.100	ND	99.3	70-130	4.93	20	
Naphthalene	0.0887	0.00380	"	0.100	ND	88.7	70-130	3.28	20	
Toluene	0.0959	0.00200	"	0.100	ND	95.9	70-130	3.30	20	
o-Xylene	0.0898	0.00200	"	0.100	ND	89.8	70-130	1.50	20	
m,p-Xylene	0.201	0.00400	"	0.200	ND	100	70-130	5.38	20	
Surrogate: 1,2-Dichloroethane-d4	0.099		"	0.125		78.9	70-130			
Surrogate: Toluene-d8	0.14		"	0.125		112	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.6	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences
 6855 West 119th Avenue
 Broomfield CO 80020

Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Classical Chemistry Parameters - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2J0504 - Default Prep Metals

Blank (B2J0504-BLK1)

Prepared: 10/05/2022 Analyzed: 10/06/2022

Calcium PPM	ND	10.0	mg/L							
SAR	0.00		SAR							
Magnesium PPM	ND	10.0	mg/L							
Sodium PPM	ND	10.0	"							

Duplicate (B2J0504-DUP1)

Source: Y210029-06

Prepared: 10/05/2022 Analyzed: 10/06/2022

Calcium PPM	48.2	10.0	mg/L		47.6			1.25	50	
SAR	0.00		SAR		0.753			200	200	
Magnesium PPM	8.85	10.0	mg/L		8.09			8.96	50	
Sodium PPM	23.5	10.0	"		21.3			9.73	50	

Batch B2J0506 - Default Prep Metals

Blank (B2J0506-BLK1)

Prepared: 10/05/2022 Analyzed: 10/06/2022

Boron	ND	0.100	mg/L							
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Duplicate (B2J0506-DUP1)

Source: Y210026-06

Prepared: 10/05/2022 Analyzed: 10/06/2022

Boron	0.282	0.100	mg/L		0.310			9.64	50	
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Origins Laboratory, Inc.



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Tasman Geosciences
 6855 West 119th Avenue
 Broomfield CO 80020

Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

Saturated Paste - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2J0509 - NO PREP

Blank (B2J0509-BLK1)

Prepared: 10/05/2022 Analyzed: 10/06/2022

Specific Conductance (EC)	ND	0.00500	mmhos/cm							
pH	0.00		pH Units							

Duplicate (B2J0509-DUP1)

Source: Y210029-06

Prepared: 10/05/2022 Analyzed: 10/06/2022

Specific Conductance (EC)	0.473	0.00500	mmhos/cm		0.450			5.09	25	
pH	8.17		pH Units		8.25			0.974	25	

Origins Laboratory, Inc.



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Tasman Geosciences
 6855 West 119th Avenue
 Broomfield CO 80020

Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

PAH by 8270D SIM - Quality Control
Waypoint Analytical, LLC.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch L642044 - 3550B

MSD (L 93795-MSD-L642044)		Source: 93795			Prepared: 10/10/2022 Analyzed: 10/10/2022					
Fluorene	0.114	0.00067	mg/Kg	0.166	<0.000286	68.6	30-130	0	30	
1-Methylnaphthalene	0.107	0.00067	"	0.166	<0.000364	64.4	30-130	1.8	30	
Pyrene	0.12	0.00067	"	0.166	<0.000643	72.2	30-130	3.2	30	
Indeno(1,2,3-cd)pyrene	0.125	0.00067	"	0.166	<0.000627	75.3	30-130	1.5	30	
Fluoranthene	0.121	0.00067	"	0.166	0.000421	72.6	30-130	3.2	30	
Dibenz(a,h)anthracene	0.154	0.00067	"	0.166	<0.000614	92.7	30-130	0.6	30	
Chrysene	0.117	0.00067	"	0.166	<0.000624	70.4	30-130	4.3	30	
Naphthalene	0.102	0.00067	"	0.166	<0.000484	61.4	30-130	2	30	
2-Methylnaphthalene	0.106	0.00067	"	0.166	<0.000645	63.8	30-130	0.9	30	
Benzo(k)fluoranthene	0.0935	0.00067	"	0.166	<0.000437	56.3	30-130	2.3	30	
Acenaphthene	0.112	0.00067	"	0.166	<0.000304	67.4	30-130	0.8	30	
Anthracene	0.115	0.00067	"	0.166	<0.000334	69.2	30-130	1.7	30	
Benzo(a)anthracene	0.122	0.00067	"	0.166	<0.000493	73.4	30-130	2.4	30	
Benzo(a)pyrene	0.131	0.00067	"	0.166	<0.000468	78.9	30-130	1.5	30	
Benzo(b)fluoranthene	0.102	0.00067	"	0.166	<0.000585	61.4	30-130	2.8	30	
Surrogate: 2-Fluorobiphenyl	67.6		"	0.331	172	67.6	33-115			
Surrogate: Nitrobenzene-d5	65.5		"	0.331	183	65.5	29-110			
Surrogate: 4-Terphenyl-d14	74.3		"	0.331	230	74.3	33-122			

MS (L 93795-MS-L642044)		Source: 93795			Prepared: 10/10/2022 Analyzed: 10/10/2022					
Benzo(k)fluoranthene	0.0957	0.00067	mg/Kg	0.162	<0.000437	59	30-130			
Acenaphthene	0.111	0.00067	"	0.162	<0.000304	68.5	30-130			
Naphthalene	0.0999	0.00067	"	0.162	<0.000484	61.6	30-130			
Indeno(1,2,3-cd)pyrene	0.127	0.00067	"	0.162	<0.000627	78.3	30-130			
Fluorene	0.114	0.00067	"	0.162	<0.000286	70.3	30-130			
Fluoranthene	0.125	0.00067	"	0.162	0.000421	76.9	30-130			
Dibenz(a,h)anthracene	0.155	0.00067	"	0.162	<0.000614	95.6	30-130			

Origins Laboratory, Inc.



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
 6855 West 119th Avenue
 Broomfield CO 80020

Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

PAH by 8270D SIM - Quality Control
Waypoint Analytical, LLC.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch L642044 - 3550B

MS (L 93795-MS-L642044)	Source: 93795			Prepared: 10/10/2022 Analyzed: 10/10/2022						
Chrysene	0.112	0.00067	mg/Kg	0.162	<0.000624	69.1	30-130			
1-Methylnaphthalene	0.105	0.00067	"	0.162	<0.000364	64.8	30-130			
Benzo(a)pyrene	0.133	0.00067	"	0.162	<0.000468	82	30-130			
Anthracene	0.117	0.00067	"	0.162	<0.000334	72.2	30-130			
Pyrene	0.124	0.00067	"	0.162	<0.000643	76.5	30-130			
2-Methylnaphthalene	0.105	0.00067	"	0.162	<0.000645	64.8	30-130			
Benzo(b)fluoranthene	0.105	0.00067	"	0.162	<0.000585	64.8	30-130			
Benzo(a)anthracene	0.119	0.00067	"	0.162	<0.000493	73.4	30-130			
Surrogate: Nitrobenzene-d5	65.5		"	0.325	183	65.5	29-110			
Surrogate: 4-Terphenyl-d14	79.6		"	0.325	230	79.6	33-122			
Surrogate: 2-Fluorobiphenyl	68		"	0.325	172	68	33-115			

LCS (LCS-L642044)	Prepared: 10/10/2022 Analyzed: 10/10/2022									
Chrysene	0.123	0.00067	mg/Kg	0.167		73.6	30-130			
Dibenz(a,h)anthracene	0.156	0.00067	"	0.167		93.4	30-130			
Fluoranthene	0.131	0.00067	"	0.167		78.4	30-130			
Fluorene	0.118	0.00067	"	0.167		70.6	30-130			
Indeno(1,2,3-cd)pyrene	0.13	0.00067	"	0.167		77.8	30-130			
Naphthalene	0.108	0.00067	"	0.167		64.6	30-130			
Pyrene	0.13	0.00067	"	0.167		77.8	30-130			
Benzo(k)fluoranthene	0.104	0.00067	"	0.167		62.2	30-130			
Benzo(a)pyrene	0.137	0.00067	"	0.167		82	30-130			
Benzo(a)anthracene	0.128	0.00067	"	0.167		76.6	30-130			
Anthracene	0.122	0.00067	"	0.167		73	30-130			
Acenaphthene	0.116	0.00067	"	0.167		69.4	30-130			
2-Methylnaphthalene	0.112	0.00067	"	0.167		67	30-130			
1-Methylnaphthalene	0.114	0.00067	"	0.167		68.2	30-130			

Origins Laboratory, Inc.



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
 6855 West 119th Avenue
 Broomfield CO 80020

Jake Whritenour
 Project Number: UWRWE-A2704-ABN
 Project: Noble - OConnell C31-18 WH

PAH by 8270D SIM - Quality Control
Waypoint Analytical, LLC.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch L642044 - 3550B

LCS (LCS-L642044)

Prepared: 10/10/2022 Analyzed: 10/10/2022

Benzo(b)fluoranthene	0.104	0.00067	mg/Kg	0.167		62.2	30-130			
Surrogate: Nitrobenzene-d5	74.4		"	0.333		74.4	29-110			
Surrogate: 4-Terphenyl-d14	88.2		"	0.333		88.2	33-122			
Surrogate: 2-Fluorobiphenyl	77.4		"	0.333		77.4	33-115			

LRB (LRB-L642044)

Prepared: 10/10/2022 Analyzed: 10/10/2022

Chrysene	ND	0.00067	mg/Kg				-			
Dibenz(a,h)anthracene	ND	0.00067	"				-			
Fluoranthene	ND	0.00067	"				-			
Fluorene	ND	0.00067	"				-			
Benzo(k)fluoranthene	ND	0.00067	"				-			
Naphthalene	ND	0.00067	"				-			
Indeno(1,2,3-cd)pyrene	ND	0.00067	"				-			
Benzo(b)fluoranthene	ND	0.00067	"				-			
Benzo(a)pyrene	ND	0.00067	"				-			
Benzo(a)anthracene	ND	0.00067	"				-			
Acenaphthene	ND	0.00067	"				-			
2-Methylnaphthalene	ND	0.00067	"				-			
1-Methylnaphthalene	ND	0.00067	"				-			
Pyrene	ND	0.00067	"				-			
Anthracene	ND	0.00067	"				-			
Surrogate: Nitrobenzene-d5	70.8		"	0.333		70.8	29-110			
Surrogate: 4-Terphenyl-d14	78.3		"	0.333		78.3	33-122			
Surrogate: 2-Fluorobiphenyl	64.5		"	0.333		64.5	33-115			

Origins Laboratory, Inc.



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
6855 West 119th Avenue
Broomfield CO 80020

Jake Whritenour
Project Number: UWRWE-A2704-ABN
Project: Noble - OConnell C31-18 WH

Notes and Definitions

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported on a wet weight basis.

Origins Laboratory, Inc.



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

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

November 07, 2022

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

RE: Noble - O'Connell C31-18WH

Work Order #2210535

Enclosed are the results of analyses for samples received by Summit Scientific on 10/27/22 17:10. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mikayla Axtell For Paul Shrewsbury
President



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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
 Project Manager: Jacob Whritenour

Reported:
 11/07/22 09:34

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BG01@4'	2210535-01	Soil	10/27/22 11:50	10/27/22 17:10
BG01@8'	2210535-02	Soil	10/27/22 12:00	10/27/22 17:10
BG02@4'	2210535-03	Soil	10/27/22 12:10	10/27/22 17:10
BG02@8'	2210535-04	Soil	10/27/22 12:20	10/27/22 17:10
BG03@4'	2210535-05	Soil	10/27/22 12:30	10/27/22 17:10
BG03@8'	2210535-06	Soil	10/27/22 12:40	10/27/22 17:10
BG04@4'	2210535-07	Soil	10/27/22 12:50	10/27/22 17:10
BG04@8'	2210535-08	Soil	10/27/22 13:00	10/27/22 17:10
BG05@4'	2210535-09	Soil	10/27/22 13:10	10/27/22 17:10
BG05@8'	2210535-10	Soil	10/27/22 13:20	10/27/22 17:10
BH01@6'	2210535-11	Soil	10/27/22 13:50	10/27/22 17:10
BH01@10'	2210535-12	Soil	10/27/22 14:00	10/27/22 17:10

Summit Scientific

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

Summit Scientific

2210535.1

S₂

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310

Client: Noble / Tasman Project Manager: Jacob Whritenour Invoice: Erica Tuniga
Address: 6855 W. 119th Ave E-Mail: jwhritenour@tasman-geo.com
City/State/Zip: Broomfield/ CO/ 80020
Phone: 503-915-3046 Project Name: O'Connell C31-18WH
Sampler Name: Martin Medeiros Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested						Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	Metals-915						
1	B601e4'	10/27/22	1150	1			X			X			X						
2	B601e8'		1200																
3	B602e4'		1210																
4	B602e8'		1220																
5	B603e4'		1230																
6	B603e8'		1240																
7	B604e4'		1250																
8	B604e8'		1300																
9	B605e4'		1310																
10	B605e8'		1320																

Relinquished by: <i>Martin Medeiros</i> Martin Medeiros	Date/Time: 10/27/22 14:30	Received by: <i>Tasman's Lock Box</i>	Date/Time: 10/27/22	Turn Around Time (Check) Same Day _____ 72 hours 24 hours _____ Standard <input checked="" type="checkbox"/> 48 hours _____	Notes:
Relinquished by: <i>Tasman's Lock Box</i>	Date/Time: 10/27/22 1710	Received by: <i>[Signature]</i>	Date/Time: 10/27/22 1710	Sample Integrity: Temperature Upon Receipt: <u>7.9</u>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Samples Intact: <input checked="" type="checkbox"/> Yes No	

Summit Scientific

S₂

2210535.2

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310

Client: Noble / Tasman Project Manager: Jacob Whritenour, *Erica Zuniga*
 Address: 6855 W. 119th Ave E-Mail:
 City/State/Zip: Broomfield/ CO/ 80020
 Phone: 503-915-3046 Project Name: O'Connell C31-18 WH
 Sampler Name: Martin Medeiros Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	Metals-915	VOC-915	TPH-915	PAH-915	pH, EC, SAR	Bover-HWS		
1	BH01 E6'	10/27/22	1350	2			X			X				X	X	X	X	X	X	pH, EC, SAR by Saturated Paste
2	BH01 E10'	↓	1400	2			X			X				X	X	X	X	X	X	
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Relinquished by: <i>Martin Medeiros</i> Martin Medeiros	Date/Time: 10/27/22 14:30	Received by: Tasman's Lock Box	Date/Time: 10/27/22	Turn Around Time (Check) Same Day — 72 hours 24 hours — Standard <u>X</u> 48 hours —	Notes:
Relinquished by: Tasman's Lock Box	Date/Time: 10/27/22 1710	Received by: <i>[Signature]</i>	Date/Time: 10/27/22 1710	Sample Integrity: Temperature Upon Receipt: <u>79</u>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Samples Intact: (Yes) No	

S₂

2/2
Sample Receipt Checklist

S2 Work Order# 2210535

Client: Nobel Trasman Client Project ID: O'Connell C31-18 WH

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

-

Matrix (Check all that apply) Air Soil/Solid Water Other

Temp (°C) Thermometer #

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? ⁽¹⁾ NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	on ICE
If custody seals are present, are they intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe ²⁺), Hexavalent Chromium (Cr ⁶⁺ , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out Completely? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? ⁽¹⁾	<input checked="" type="checkbox"/>	<input checked="" 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"/>	
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"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling)? ⁽¹⁾ Note the type of preservative in the comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2? ⁽¹⁾ Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

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

[Signature]
Custodian Printed Name

10/27/22 1710
Date/Time



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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

BG01@4'
2210535-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/27/22 11:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	0.709	0.205	mg/kg dry	1	BFJ0790	10/28/22	10/28/22	EPA 6020B	
Barium	27.3	0.410	"	"	"	"	"	"	
Cadmium	ND	0.205	"	"	"	"	"	"	
Copper	2.53	0.410	"	"	"	"	"	"	
Lead	2.74	0.205	"	"	"	"	"	"	
Nickel	2.65	0.410	"	"	"	"	"	"	
Selenium	ND	0.267	"	"	"	"	"	"	
Silver	0.0205	0.0205	"	"	"	"	"	"	
Zinc	10.9	0.410	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/27/22 11:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0800	10/28/22	10/28/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/27/22 11:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	97.5		%	1	BFJ0798	10/28/22	10/28/22	Calculation	

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
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

BG01@8'
2210535-02 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/27/22 12:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	0.678	0.206	mg/kg dry	1	BFJ0790	10/28/22	10/28/22	EPA 6020B	
Barium	28.3	0.412	"	"	"	"	"	"	
Cadmium	ND	0.206	"	"	"	"	"	"	
Copper	2.31	0.412	"	"	"	"	"	"	
Lead	2.45	0.206	"	"	"	"	"	"	
Nickel	2.63	0.412	"	"	"	"	"	"	
Selenium	ND	0.268	"	"	"	"	"	"	
Silver	0.0218	0.0206	"	"	"	"	"	"	
Zinc	10.0	0.412	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/27/22 12:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0800	10/28/22	10/28/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/27/22 12:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	97.1		%	1	BFJ0798	10/28/22	10/28/22	Calculation	

Summit Scientific

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

BG02@4'
2210535-03 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/27/22 12:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	0.628	0.205	mg/kg dry	1	BFJ0790	10/28/22	10/28/22	EPA 6020B	
Barium	28.9	0.411	"	"	"	"	"	"	
Cadmium	ND	0.205	"	"	"	"	"	"	
Copper	2.24	0.411	"	"	"	"	"	"	
Lead	2.40	0.205	"	"	"	"	"	"	
Nickel	2.37	0.411	"	"	"	"	"	"	
Selenium	ND	0.267	"	"	"	"	"	"	
Silver	ND	0.0205	"	"	"	"	"	"	
Zinc	10.2	0.411	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/27/22 12:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0800	10/28/22	10/28/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/27/22 12:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	97.3		%	1	BFJ0798	10/28/22	10/28/22	Calculation	

Summit Scientific

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

BG02@8'
2210535-04 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/27/22 12:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	0.567	0.206	mg/kg dry	1	BFJ0790	10/28/22	10/28/22	EPA 6020B	
Barium	28.0	0.412	"	"	"	"	"	"	
Cadmium	ND	0.206	"	"	"	"	"	"	
Copper	2.12	0.412	"	"	"	"	"	"	
Lead	2.38	0.206	"	"	"	"	"	"	
Nickel	2.42	0.412	"	"	"	"	"	"	
Selenium	ND	0.267	"	"	"	"	"	"	
Silver	ND	0.0206	"	"	"	"	"	"	
Zinc	10.1	0.412	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/27/22 12:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0800	10/28/22	10/28/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/27/22 12:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	97.2		%	1	BFJ0798	10/28/22	10/28/22	Calculation	

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
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

BG03@4'
2210535-05 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/27/22 12:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	0.665	0.206	mg/kg dry	1	BFJ0790	10/28/22	10/28/22	EPA 6020B	
Barium	32.2	0.411	"	"	"	"	"	"	
Cadmium	ND	0.206	"	"	"	"	"	"	
Copper	2.30	0.411	"	"	"	"	"	"	
Lead	2.45	0.206	"	"	"	"	"	"	
Nickel	2.41	0.411	"	"	"	"	"	"	
Selenium	ND	0.267	"	"	"	"	"	"	
Silver	ND	0.0206	"	"	"	"	"	"	
Zinc	10.4	0.411	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/27/22 12:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0800	10/28/22	10/28/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/27/22 12:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	97.3		%	1	BFJ0798	10/28/22	10/28/22	Calculation	

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
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

BG03@8'
2210535-06 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/27/22 12:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	0.609	0.206	mg/kg dry	1	BFJ0790	10/28/22	10/28/22	EPA 6020B	
Barium	28.6	0.412	"	"	"	"	"	"	
Cadmium	ND	0.206	"	"	"	"	"	"	
Copper	2.42	0.412	"	"	"	"	"	"	
Lead	2.34	0.206	"	"	"	"	"	"	
Nickel	2.52	0.412	"	"	"	"	"	"	
Selenium	ND	0.268	"	"	"	"	"	"	
Silver	ND	0.0206	"	"	"	"	"	"	
Zinc	10.7	0.412	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/27/22 12:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0800	10/28/22	10/28/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/27/22 12:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	97.1		%	1	BFJ0798	10/28/22	10/28/22	Calculation	

Summit Scientific

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

BG04@4'
2210535-07 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/27/22 12:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	0.566	0.205	mg/kg dry	1	BFJ0790	10/28/22	10/28/22	EPA 6020B	
Barium	30.2	0.410	"	"	"	"	"	"	
Cadmium	ND	0.205	"	"	"	"	"	"	
Copper	2.20	0.410	"	"	"	"	"	"	
Lead	2.20	0.205	"	"	"	"	"	"	
Nickel	2.24	0.410	"	"	"	"	"	"	
Selenium	ND	0.266	"	"	"	"	"	"	
Silver	ND	0.0205	"	"	"	"	"	"	
Zinc	10.3	0.410	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/27/22 12:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0800	10/28/22	10/28/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/27/22 12:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	97.6		%	1	BFJ0798	10/28/22	10/28/22	Calculation	

Summit Scientific

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

BG04@8'
2210535-08 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/27/22 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	0.571	0.206	mg/kg dry	1	BFJ0790	10/28/22	10/28/22	EPA 6020B	
Barium	27.3	0.411	"	"	"	"	"	"	
Cadmium	ND	0.206	"	"	"	"	"	"	
Copper	2.09	0.411	"	"	"	"	"	"	
Lead	2.35	0.206	"	"	"	"	"	"	
Nickel	2.30	0.411	"	"	"	"	"	"	
Selenium	ND	0.267	"	"	"	"	"	"	
Silver	ND	0.0206	"	"	"	"	"	"	
Zinc	9.44	0.411	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/27/22 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0800	10/28/22	10/28/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/27/22 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	97.2		%	1	BFJ0798	10/28/22	10/28/22	Calculation	

Summit Scientific

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

BG05@4'
2210535-09 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/27/22 13:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	0.633	0.205	mg/kg dry	1	BFJ0790	10/28/22	10/28/22	EPA 6020B	
Barium	30.6	0.410	"	"	"	"	"	"	
Cadmium	ND	0.205	"	"	"	"	"	"	
Copper	2.19	0.410	"	"	"	"	"	"	
Lead	2.41	0.205	"	"	"	"	"	"	
Nickel	2.39	0.410	"	"	"	"	"	"	
Selenium	ND	0.267	"	"	"	"	"	"	
Silver	ND	0.0205	"	"	"	"	"	"	
Zinc	10.3	0.410	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/27/22 13:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0800	10/28/22	10/28/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/27/22 13:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	97.5		%	1	BFJ0798	10/28/22	10/28/22	Calculation	

Summit Scientific

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

BG05@8'
2210535-10 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **10/27/22 13:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	0.644	0.207	mg/kg dry	1	BFJ0790	10/28/22	10/28/22	EPA 6020B	
Barium	35.0	0.414	"	"	"	"	"	"	
Cadmium	ND	0.207	"	"	"	"	"	"	
Copper	2.28	0.414	"	"	"	"	"	"	
Lead	2.51	0.207	"	"	"	"	"	"	
Nickel	2.51	0.414	"	"	"	"	"	"	
Selenium	ND	0.269	"	"	"	"	"	"	
Silver	ND	0.0207	"	"	"	"	"	"	
Zinc	10.8	0.414	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/27/22 13:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0800	10/28/22	10/28/22	EPA 7196A	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/27/22 13:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	96.7		%	1	BFJ0798	10/28/22	10/28/22	Calculation	

Summit Scientific

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

BH01@6'
2210535-11 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/27/22 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFK0053	11/02/22	11/03/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/27/22 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		89.6 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		106 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/27/22 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFK0054	"	11/03/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/27/22 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		80.0 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

BH01@6'
2210535-11 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/27/22 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0787	10/31/22	11/01/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **10/27/22 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		86.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		66.4 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/27/22 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0647	0.0100	mg/L	1	BFJ0794	10/28/22	10/29/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **10/27/22 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

BH01@6'
2210535-11 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	0.559	0.211	mg/kg dry	1	BFJ0790	10/28/22	10/28/22	EPA 6020B	
Barium	21.9	0.421	"	"	"	"	"	"	
Cadmium	ND	0.211	"	"	"	"	"	"	
Copper	2.49	0.421	"	"	"	"	"	"	
Lead	3.08	0.211	"	"	"	"	"	"	
Nickel	2.01	0.421	"	"	"	"	"	"	
Selenium	ND	0.274	"	"	"	"	"	"	
Silver	ND	0.0211	"	"	"	"	"	"	
Zinc	9.89	0.421	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **10/27/22 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0800	10/28/22	10/28/22	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **10/27/22 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	28.0	0.0526	mg/L dry	1	BFJ0818	10/28/22	10/31/22	EPA 6020B	
Magnesium	12.8	0.0526	"	"	"	"	"	"	
Sodium	5.62	0.0526	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/27/22 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.221	0.00100	units	1	BFK0012	11/01/22	11/01/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

BH01@6'
2210535-11 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/27/22 13:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	95.0			%	1	BFJ0798	10/28/22	10/28/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/27/22 13:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.0938	0.0100		mmhos/cm	1	BFJ0827	10/28/22	10/31/22	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **10/27/22 13:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.03			pH Units	1	BFJ0826	10/28/22	10/31/22	EPA 9045D	

Summit Scientific

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

BH01@10'
2210535-12 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/27/22 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFK0053	11/02/22	11/03/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/27/22 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		90.2 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		109 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/27/22 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFK0054	"	11/03/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/27/22 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		94.2 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

BH01@10'
2210535-12 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/27/22 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0787	10/31/22	11/01/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **10/27/22 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		76.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		54.8 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/27/22 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0532	0.0100	mg/L	1	BFJ0794	10/28/22	10/29/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **10/27/22 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

BH01@10'
2210535-12 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	0.632	0.212	mg/kg dry	1	BFJ0790	10/28/22	10/28/22	EPA 6020B	
Barium	31.9	0.423	"	"	"	"	"	"	
Cadmium	ND	0.212	"	"	"	"	"	"	
Copper	2.67	0.423	"	"	"	"	"	"	
Lead	2.71	0.212	"	"	"	"	"	"	
Nickel	2.96	0.423	"	"	"	"	"	"	
Selenium	ND	0.275	"	"	"	"	"	"	
Silver	ND	0.0212	"	"	"	"	"	"	
Zinc	12.3	0.423	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: 10/27/22 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFJ0800	10/28/22	10/28/22	EPA 7196A	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: 10/27/22 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	67.4	0.0529	mg/L dry	1	BFJ0818	10/28/22	10/31/22	EPA 6020B	
Magnesium	27.1	0.0529	"	"	"	"	"	"	
Sodium	5.89	0.0529	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: 10/27/22 14:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.153	0.00100	units	1	BFK0012	11/01/22	11/01/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

BH01@10'
2210535-12 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/27/22 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	94.5		%	1	BFJ0798	10/28/22	10/28/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/27/22 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.100	0.0100	mmhos/cm	1	BFJ0827	10/28/22	10/31/22	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **10/27/22 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.89		pH Units	1	BFJ0826	10/28/22	10/31/22	EPA 9045D	

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Broomfield CO, 80020

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

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 BFK0053 - EPA 5030 Soil MS

Blank (BFK0053-BLK1)

Prepared & Analyzed: 11/02/22

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0349		"	0.0400		87.3	50-150			
<i>Surrogate: Toluene-d8</i>	0.0445		"	0.0400		111	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0415		"	0.0400		104	50-150			

LCS (BFK0053-BS1)

Prepared & Analyzed: 11/02/22

Benzene	0.0721	0.0020	mg/kg	0.100		72.1	70-130			
Toluene	0.0707	0.0050	"	0.100		70.7	70-130			
Ethylbenzene	0.0728	0.0050	"	0.100		72.8	70-130			
m,p-Xylene	0.147	0.010	"	0.200		73.5	70-130			
o-Xylene	0.0760	0.0050	"	0.100		76.0	70-130			
1,2,4-Trimethylbenzene	0.0822	0.0050	"	0.100		82.2	70-130			
1,3,5-Trimethylbenzene	0.0824	0.0050	"	0.100		82.4	70-130			
Naphthalene	0.112	0.0038	"	0.100		112	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0342		"	0.0400		85.4	50-150			
<i>Surrogate: Toluene-d8</i>	0.0445		"	0.0400		111	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0413		"	0.0400		103	50-150			

Matrix Spike (BFK0053-MS1)

Source: 2210530-01

Prepared & Analyzed: 11/02/22

Benzene	0.0711	0.0020	mg/kg	0.100	ND	71.1	70-130			
Toluene	0.0733	0.0050	"	0.100	ND	73.3	70-130			
Ethylbenzene	0.0736	0.0050	"	0.100	ND	73.6	70-130			
m,p-Xylene	0.170	0.010	"	0.200	ND	84.8	70-130			
o-Xylene	0.0751	0.0050	"	0.100	ND	75.1	70-130			
1,2,4-Trimethylbenzene	0.105	0.0050	"	0.100	ND	105	70-130			
1,3,5-Trimethylbenzene	0.100	0.0050	"	0.100	ND	100	70-130			
Naphthalene	0.116	0.0038	"	0.100	ND	116	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0344		"	0.0400		86.1	50-150			
<i>Surrogate: Toluene-d8</i>	0.0417		"	0.0400		104	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0424		"	0.0400		106	50-150			

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Broomfield CO, 80020

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

Volatile Organic Compounds by EPA Method 8260B - Quality Control

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

Batch BFK0053 - EPA 5030 Soil MS

Matrix Spike Dup (BFK0053-MSD1)	Source: 2210530-01			Prepared & Analyzed: 11/02/22						
Benzene	0.0736	0.0020	mg/kg	0.100	ND	73.6	70-130	3.48	30	
Toluene	0.0781	0.0050	"	0.100	ND	78.1	70-130	6.30	30	
Ethylbenzene	0.0759	0.0050	"	0.100	ND	75.9	70-130	3.05	30	
m,p-Xylene	0.185	0.010	"	0.200	ND	92.5	70-130	8.65	30	
o-Xylene	0.0745	0.0050	"	0.100	ND	74.5	70-130	0.762	30	
1,2,4-Trimethylbenzene	0.101	0.0050	"	0.100	ND	101	70-130	4.26	30	
1,3,5-Trimethylbenzene	0.108	0.0050	"	0.100	ND	108	70-130	7.83	30	
Naphthalene	0.106	0.0038	"	0.100	ND	106	70-130	9.08	30	
Surrogate: 1,2-Dichloroethane-d4	0.0378		"	0.0400		94.4	50-150			
Surrogate: Toluene-d8	0.0442		"	0.0400		111	50-150			
Surrogate: 4-Bromofluorobenzene	0.0437		"	0.0400		109	50-150			

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Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BFK0054 - EPA 3550A

Blank (BFK0054-BLK1)

Prepared & Analyzed: 11/02/22

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	13.4		"	12.5	108	30-150					

LCS (BFK0054-BS1)

Prepared & Analyzed: 11/02/22

C10-C28 (DRO)	457	50	mg/kg	500	91.5	70-130					
Surrogate: <i>o</i> -Terphenyl	12.4		"	12.5	99.0	30-150					

Matrix Spike (BFK0054-MS1)

Source: 2210516-01

Prepared & Analyzed: 11/02/22

C10-C28 (DRO)	483	50	mg/kg	500	44.4	87.7	70-130				
Surrogate: <i>o</i> -Terphenyl	13.0		"	12.5	104	30-150					

Matrix Spike Dup (BFK0054-MSD1)

Source: 2210516-01

Prepared & Analyzed: 11/02/22

C10-C28 (DRO)	429	50	mg/kg	500	44.4	76.9	70-130	11.9	20		
Surrogate: <i>o</i> -Terphenyl	12.3		"	12.5	98.7	30-150					

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Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFJ0787 - EPA 5030 Soil MS

Blank (BFJ0787-BLK1)

Prepared & Analyzed: 10/31/22

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0360</i>		<i>"</i>	<i>0.0333</i>		<i>108</i>		<i>40-150</i>		
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0304</i>		<i>"</i>	<i>0.0333</i>		<i>91.2</i>		<i>40-150</i>		

LCS (BFJ0787-BS1)

Prepared & Analyzed: 10/31/22

Acenaphthene	0.0362	0.00500	mg/kg	0.0333	109	31-137
Anthracene	0.0369	0.00500	"	0.0333	111	30-120
Benzo (a) anthracene	0.0315	0.00500	"	0.0333	94.6	30-120
Benzo (a) pyrene	0.0336	0.00500	"	0.0333	101	30-120
Benzo (b) fluoranthene	0.0347	0.00500	"	0.0333	104	30-120
Benzo (k) fluoranthene	0.0380	0.00500	"	0.0333	114	30-120
Chrysene	0.0331	0.00500	"	0.0333	99.2	30-120
Dibenz (a,h) anthracene	0.0334	0.00500	"	0.0333	100	30-120
Fluoranthene	0.0391	0.00500	"	0.0333	117	30-120
Fluorene	0.0367	0.00500	"	0.0333	110	30-120
Indeno (1,2,3-cd) pyrene	0.0290	0.00500	"	0.0333	87.1	30-120
Pyrene	0.0330	0.00500	"	0.0333	99.1	35-142
1-Methylnaphthalene	0.0340	0.00500	"	0.0333	102	35-142
2-Methylnaphthalene	0.0365	0.00500	"	0.0333	109	35-142
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0338</i>		<i>"</i>	<i>0.0333</i>	<i>101</i>	<i>40-150</i>
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0400</i>		<i>"</i>	<i>0.0333</i>	<i>120</i>	<i>40-150</i>

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Tasman Geosciences
6855 W. 119th Ave.
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Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFJ0787 - EPA 5030 Soil MS

Matrix Spike (BFJ0787-MS1)		Source: 2210321-03			Prepared: 10/31/22		Analyzed: 11/01/22	
Acenaphthene	0.0195	0.00500	mg/kg	0.0333	ND	58.4	31-137	
Anthracene	0.0171	0.00500	"	0.0333	ND	51.2	30-120	
Benzo (a) anthracene	0.0190	0.00500	"	0.0333	ND	56.9	30-120	
Benzo (a) pyrene	0.0190	0.00500	"	0.0333	ND	56.9	30-120	
Benzo (b) fluoranthene	0.0234	0.00500	"	0.0333	ND	70.2	30-120	
Benzo (k) fluoranthene	0.0214	0.00500	"	0.0333	ND	64.2	30-120	
Chrysene	0.0165	0.00500	"	0.0333	ND	49.6	30-120	
Dibenz (a,h) anthracene	0.0134	0.00500	"	0.0333	ND	40.1	30-120	
Fluoranthene	0.0179	0.00500	"	0.0333	ND	53.8	30-120	
Fluorene	0.0189	0.00500	"	0.0333	ND	56.7	30-120	
Indeno (1,2,3-cd) pyrene	0.0135	0.00500	"	0.0333	ND	40.6	30-120	
Pyrene	0.0187	0.00500	"	0.0333	ND	56.2	35-142	
1-Methylnaphthalene	0.0165	0.00500	"	0.0333	ND	49.4	15-130	
2-Methylnaphthalene	0.0162	0.00500	"	0.0333	ND	48.7	15-130	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0167</i>		"	<i>0.0333</i>		<i>50.2</i>	<i>40-150</i>	
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0183</i>		"	<i>0.0333</i>		<i>54.8</i>	<i>40-150</i>	

Matrix Spike Dup (BFJ0787-MSD1)		Source: 2210321-03			Prepared: 10/31/22		Analyzed: 11/01/22	
Acenaphthene	0.0242	0.00500	mg/kg	0.0333	ND	72.7	31-137	21.8 30
Anthracene	0.0229	0.00500	"	0.0333	ND	68.6	30-120	28.9 30
Benzo (a) anthracene	0.0241	0.00500	"	0.0333	ND	72.4	30-120	24.0 30
Benzo (a) pyrene	0.0258	0.00500	"	0.0333	ND	77.4	30-120	30.5 30 QR-02
Benzo (b) fluoranthene	0.0301	0.00500	"	0.0333	ND	90.2	30-120	25.0 30
Benzo (k) fluoranthene	0.0265	0.00500	"	0.0333	ND	79.6	30-120	21.5 30
Chrysene	0.0214	0.00500	"	0.0333	ND	64.1	30-120	25.6 30
Dibenz (a,h) anthracene	0.0182	0.00500	"	0.0333	ND	54.6	30-120	30.5 30 QR-02
Fluoranthene	0.0222	0.00500	"	0.0333	ND	66.7	30-120	21.4 30
Fluorene	0.0243	0.00500	"	0.0333	ND	72.9	30-120	24.9 30
Indeno (1,2,3-cd) pyrene	0.0156	0.00500	"	0.0333	ND	46.9	30-120	14.4 30
Pyrene	0.0225	0.00500	"	0.0333	ND	67.6	35-142	18.3 30
1-Methylnaphthalene	0.0237	0.00500	"	0.0333	ND	71.2	15-130	36.2 50
2-Methylnaphthalene	0.0211	0.00500	"	0.0333	ND	63.3	15-130	26.1 50
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0237</i>		"	<i>0.0333</i>		<i>71.0</i>	<i>40-150</i>	
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0235</i>		"	<i>0.0333</i>		<i>70.6</i>	<i>40-150</i>	

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control
Summit Scientific

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

Batch BFJ0794 - EPA 3050B

Blank (BFJ0794-BLK1)

Prepared: 10/28/22 Analyzed: 10/29/22

Boron ND 0.0100 mg/L

LCS (BFJ0794-BS1)

Prepared: 10/28/22 Analyzed: 10/29/22

Boron 5.52 0.0100 mg/L 5.00 110 80-120

Duplicate (BFJ0794-DUP1)

Source: 2210442-06

Prepared: 10/28/22 Analyzed: 10/29/22

Boron 0.0575 0.0100 mg/L 0.0663 14.2 20

Matrix Spike (BFJ0794-MS1)

Source: 2210442-06

Prepared: 10/28/22 Analyzed: 10/29/22

Boron 5.75 0.0100 mg/L 5.00 0.0663 114 75-125

Matrix Spike Dup (BFJ0794-MSD1)

Source: 2210442-06

Prepared: 10/28/22 Analyzed: 10/29/22

Boron 5.56 0.0100 mg/L 5.00 0.0663 110 75-125 3.36 25

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Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BFJ0790 - EPA 3050B

Blank (BFJ0790-BLK1)

Prepared & Analyzed: 10/28/22

Arsenic	ND	0.200	mg/kg wet							
Barium	ND	0.400	"							
Cadmium	ND	0.200	"							
Copper	ND	0.400	"							
Lead	ND	0.200	"							
Nickel	ND	0.400	"							
Selenium	ND	0.260	"							
Silver	ND	0.0200	"							
Zinc	ND	0.400	"							

LCS (BFJ0790-BS1)

Prepared & Analyzed: 10/28/22

Arsenic	36.5	0.200	mg/kg wet	40.0	91.3	80-120
Barium	38.3	0.400	"	40.0	95.8	80-120
Cadmium	1.96	0.200	"	2.00	97.9	80-120
Copper	39.5	0.400	"	40.0	98.8	80-120
Lead	19.6	0.200	"	20.0	97.9	80-120
Nickel	37.9	0.400	"	40.0	94.9	80-120
Selenium	3.27	0.260	"	4.00	81.8	80-120
Silver	1.66	0.0200	"	2.00	83.2	80-120
Zinc	38.0	0.400	"	40.0	94.9	80-120

Duplicate (BFJ0790-DUP1)

Source: 2210521-01

Prepared & Analyzed: 10/28/22

Arsenic	2.39	0.265	mg/kg dry	2.38	0.645	20
Barium	127	0.530	"	127	0.0571	20
Cadmium	0.311	0.265	"	0.263	16.6	20
Copper	6.55	0.530	"	6.37	2.80	20
Lead	10.6	0.265	"	10.6	0.310	20
Nickel	4.48	0.530	"	4.33	3.40	20
Selenium	0.246	0.345	"	0.240	2.62	20
Silver	0.0371	0.0265	"	0.0302	20.5	20
Zinc	21.3	0.530	"	20.6	3.34	20

QR-01

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BFJ0790 - EPA 3050B

Matrix Spike (BFJ0790-MS1)	Source: 2210521-01			Prepared & Analyzed: 10/28/22							
Arsenic	15.6	0.265	mg/kg dry	53.0	2.38	25.0	75-125				QM-05
Barium	178	0.530	"	53.0	127	96.4	75-125				
Cadmium	2.29	0.265	"	2.65	0.263	76.3	75-125				
Copper	41.2	0.530	"	53.0	6.37	65.7	75-125				QM-05
Lead	30.3	0.265	"	26.5	10.6	74.2	75-125				QM-05
Nickel	37.2	0.530	"	53.0	4.33	61.9	75-125				QM-05
Selenium	4.35	0.345	"	5.30	0.240	77.6	75-125				
Silver	2.05	0.0265	"	2.65	0.0302	76.4	75-125				
Zinc	57.4	0.530	"	53.0	20.6	69.3	75-125				QM-05

Matrix Spike Dup (BFJ0790-MSD1)	Source: 2210521-01			Prepared & Analyzed: 10/28/22							
Arsenic	15.6	0.265	mg/kg dry	53.0	2.38	25.0	75-125	0.0780	25		QM-05
Barium	176	0.530	"	53.0	127	93.0	75-125	1.04	25		
Cadmium	2.26	0.265	"	2.65	0.263	75.4	75-125	1.14	25		
Copper	41.0	0.530	"	53.0	6.37	65.3	75-125	0.613	25		QM-05
Lead	29.8	0.265	"	26.5	10.6	72.3	75-125	1.66	25		QM-05
Nickel	37.1	0.530	"	53.0	4.33	61.9	75-125	0.0656	25		QM-05
Selenium	4.37	0.345	"	5.30	0.240	78.0	75-125	0.535	25		
Silver	2.03	0.0265	"	2.65	0.0302	75.5	75-125	1.12	25		
Zinc	56.8	0.530	"	53.0	20.6	68.3	75-125	0.915	25		QM-05

Summit Scientific

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

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

Batch BFJ0800 - 3060A Mod

Blank (BFJ0800-BLK1)

Prepared & Analyzed: 10/28/22

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BFJ0800-BS1)

Prepared & Analyzed: 10/28/22

Chromium, Hexavalent 25.2 0.30 mg/kg wet 25.0 101 80-120

Duplicate (BFJ0800-DUP1)

Source: 2210530-01

Prepared & Analyzed: 10/28/22

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BFJ0800-MS1)

Source: 2210530-01

Prepared & Analyzed: 10/28/22

Chromium, Hexavalent 30.4 0.30 mg/kg dry 31.8 ND 95.6 75-125

Matrix Spike Dup (BFJ0800-MSD1)

Source: 2210530-01

Prepared & Analyzed: 10/28/22

Chromium, Hexavalent 30.8 0.30 mg/kg dry 31.8 ND 96.8 75-125 1.25 20

Summit Scientific

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control

Summit Scientific

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

Batch BFJ0818 - General Preparation

Blank (BFJ0818-BLK1)

Prepared: 10/28/22 Analyzed: 10/31/22

Calcium	ND	0.0500	mg/L wet							
Magnesium	ND	0.0500	"							
Sodium	ND	0.0500	"							

LCS (BFJ0818-BS1)

Prepared: 10/28/22 Analyzed: 10/31/22

Calcium	5.00	0.0500	mg/L wet	5.00	100	70-130				
Magnesium	5.54	0.0500	"	5.00	111	70-130				
Sodium	5.55	0.0500	"	5.00	111	70-130				

Summit Scientific

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
 Project Manager: Jacob Whritenour

Reported:
 11/07/22 09:34

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

Summit Scientific

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

Batch BFJ0798 - General Preparation

Duplicate (BFJ0798-DUP1)

Source: 2210535-01

Prepared & Analyzed: 10/28/22

% Solids	97.3		%		97.5			0.172	20	
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Summit Scientific

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control

Summit Scientific

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

Batch BFJ0827 - General Preparation

Blank (BFJ0827-BLK1)

Prepared: 10/28/22 Analyzed: 10/31/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BFJ0827-BS1)

Prepared: 10/28/22 Analyzed: 10/31/22

Specific Conductance (EC) 0.154 0.0100 mmhos/cm 0.150 103 95-105

Duplicate (BFJ0827-DUP1)

Source: 2210478-01

Prepared: 10/28/22 Analyzed: 10/31/22

Specific Conductance (EC) 0.809 0.0100 mmhos/cm 0.834 3.13 20

Summit Scientific

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



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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control

Summit Scientific

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

Batch BFJ0826 - General Preparation

LCS (BFJ0826-BS1)

Prepared: 10/28/22 Analyzed: 10/31/22

pH	9.03		pH Units	9.18		98.4	95-105			
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Duplicate (BFJ0826-DUP1)

Source: 2210478-01

Prepared: 10/28/22 Analyzed: 10/31/22

pH	8.34		pH Units	8.28		0.722	20			
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Summit Scientific

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

Project: Noble - O'Connell C31-18WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
11/07/22 09:34

Notes and Definitions

- QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
- QR-01 Analyses are not controlled on RPD values from sample concentrations less than 10 times the reporting limit. QC batch accepted based on LCS and/or LCSD QC results.
- QM-05 The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The associated LCS and/or LCSD were within acceptance limits, therefore the data are considered valid.
- 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