

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 11, 2024

Karen Olson

Tasman Geosciences

6855 W. 119th Ave.

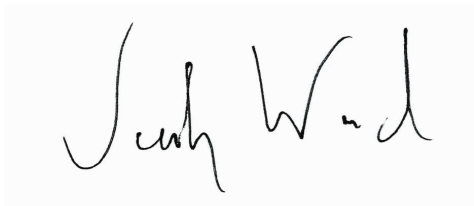
Broomfield, CO 80020

RE: PDC - Hoffman B 33-19 Flowline

Work Order #2405175

Enclosed are the results of analyses for samples received by Summit Scientific on 05/10/24 17:52. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Jacob Wood". The signature is written in a cursive, flowing style.

Jacob Wood For Paul Shrewsbury

President



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

Project: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01R-W@6'	2405175-01	Soil	05/10/24 11:03	05/10/24 17:52
FL01-03@4'	2405175-02	Soil	05/10/24 11:36	05/10/24 17:52
FL01-04@4'	2405175-03	Soil	05/10/24 11:40	05/10/24 17:52
FL01-05@4'	2405175-04	Soil	05/10/24 11:47	05/10/24 17:52
FL01-06@4'	2405175-05	Soil	05/10/24 12:52	05/10/24 17:52
FL01R-S@6'	2405175-06	Soil	05/10/24 11:51	05/10/24 17:52
BKG01@4'	2405175-07	Soil	05/10/24 13:00	05/10/24 17:52
BKG01@6'	2405175-08	Soil	05/10/24 13:05	05/10/24 17:52
BKG02@4'	2405175-09	Soil	05/10/24 12:51	05/10/24 17:52
BKG02@6'	2405175-10	Soil	05/10/24 12:54	05/10/24 17:52

Case Narrative

This project has been renamed per client request on 06/10/2024.

Hunter Merlo requested FL01R-W@5' be renamed on 6/11/2024.

This is a revision of the report originally sent on 06/10/2024 at 10:51 AM MT.

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.

Client: PDC / Tasman		Send Data To: Project Manager: Mark Longhurst <u>Karen Olson</u>		Send Invoice To: Company: PDC Energy	
Address: 6855 W 119th Ave		E-Mail: <u>mark.longhurst@PDCE.com</u>		Project Name/Location:	
City/State/Zip: Broomfield / CO / 80220		<u>karen.olson@pdce.com</u>		AFE#:	
Phone: 303-487-1228		Project Name: <u>Hoffman D33-10</u>		PO/Billing Codes: <u>PX-900208</u>	
Sampler Name: <u>Shannon Wadsworth</u>		Project Number: <u>Flowline</u>		Contact: <u>Mark Longhurst</u> <u>Karen Olson</u>	

				Preservative				Matrix				Analysis Requested						Special Instructions			
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	metals-q15	VOC-q15	TPH-q15	PAH-q15	SAR EC, PH	BOXON-HMS			
1	FLOIR-WQW	5/10/24	1103	3			X			X			X	X	X	X	X	X			
2	FLOI-03W4'		1136																		
3	FLOI-01W4'		1140																		
4	FLOI-05W4'		1147																		
5	FLOI-06W4'		1252																		
6	FLOIR-SWG'		1151																		
7	BH6101W4'		1300																		
8	BH6101W6'		1305																		
9	BH6102W4'		1251																		
10	BH6102W6'		1254																		
11																					
12																					
13																					
14																					
15																					

Relinquished by: <u>Shannon Wadsworth</u>	Date/Time: <u>5/10/24 1500</u>	Received by: <u>Tasman Lockbox</u>	Date/Time: <u>5/10/24 1500</u>	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: <u>Tasman Lockbox</u>	Date/Time: <u>5/10/24 1752</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/10/24 1752</u>	1 Day	Field ORP	
				2 Days	Field pH	
				3 Days	Field Temp.	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Standard	X Field Turb.	
Temperature Upon Receipt: <u>9.4</u>	Corrected Temperature: <u>0</u>	IR gun #: <u>1</u>	HNO3 lot #:			

PH 6.5

S2

Sample Receipt Checklist

S2 Work Order# 2405175Client: Pociazman Client Project ID: Hoffman D33-19 flandineShipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐ Airbill #: ☐

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Matrix (Check all that apply) Air ☐ Soil/Solid ☒ Water ☐ Other ☐Temp (°C) 9.4Thermometer # 1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature $< 6^{\circ}\text{C}$? ⁽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"/>	
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 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"/>	
Is the COC properly relinquished by the client w/ date and time recorded? ⁽¹⁾	<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"/>	
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_2SO_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.
SN
 Custodian Printed Name

5/9/24
 Date/Time



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

Project: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01R-W@6'
2405175-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/10/24 11:03**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHE0403	05/13/24	05/14/24	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: **05/10/24 11:03**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0393	98.2 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0391	97.7 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0371	92.8 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/10/24 11:03**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHE0405	05/13/24	05/16/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **05/10/24 11:03**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	10.4	83.4 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01R-W@6'
2405175-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/10/24 11:03**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BHE0427	05/14/24	05/14/24	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: **05/10/24 11:03**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	0.0226	67.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0213	64.0 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/10/24 11:03**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Boron	ND	2.00	mg/L	1	BHE0413	05/13/24	06/06/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/10/24 11:03**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01R-W@6'
2405175-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	1.96	0.200	mg/kg dry	1	BHE0391	05/13/24	05/15/24	EPA 6020B
Barium	47.0	0.400	"	"	"	"	"	"
Cadmium	0.362	0.200	"	"	"	"	"	"
Copper	5.32	0.400	"	"	"	"	"	"
Lead	4.55	0.200	"	"	"	"	"	"
Nickel	3.01	0.400	"	"	"	"	"	"
Silver	ND	0.0200	"	"	"	"	"	"
Zinc	20.4	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/10/24 11:03**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHE0388	05/13/24	05/13/24	EPA 7196A	

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

Date Sampled: **05/10/24 11:03**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	115	0.0500	mg/L dry	1	BHE0385	05/13/24	05/25/24	EPA 6020B	
Magnesium	38.5	0.0500	"	"	"	"	"	"	
Sodium	11.0	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/10/24 11:03**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.227	0.00100	units	1	BHE0837	05/28/24	05/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01R-W@6'
2405175-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/10/24 11:03**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	90.9		%	1	BHE0387	05/13/24	05/13/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/10/24 11:03**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.243	0.0100	mmhos/cm	1	BHE0409	05/13/24	05/14/24	EPA 120.1	

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

Date Sampled: **05/10/24 11:03**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.51		pH Units	1	BHE0408	05/13/24	05/14/24	EPA 9045D	

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01-03@4'
2405175-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/10/24 11:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BHE0403	05/13/24	05/14/24	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: **05/10/24 11:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0387	96.7 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0387	96.7 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0375	93.8 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/10/24 11:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BHE0405	05/13/24	05/16/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/10/24 11:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	5.25	42.0 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01-03@4'
2405175-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/10/24 11:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BHE0427	05/14/24	05/14/24	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	0.00756	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	0.00609	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/10/24 11:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	0.0187	56.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0165	49.5 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/10/24 11:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Boron	ND	2.00	mg/L	1	BHE0413	05/13/24	06/06/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/10/24 11:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01-03@4'
2405175-02 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	3.48	0.200	mg/kg dry	1	BHE0391	05/13/24	05/15/24	EPA 6020B
Barium	98.9	0.400	"	"	"	"	"	"
Cadmium	ND	0.200	"	"	"	"	"	"
Copper	7.18	0.400	"	"	"	"	"	"
Lead	7.26	0.200	"	"	"	"	"	"
Nickel	4.65	0.400	"	"	"	"	"	"
Silver	0.0253	0.0200	"	"	"	"	"	"
Zinc	34.5	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/10/24 11:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHE0388	05/13/24	05/13/24	EPA 7196A	

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

Date Sampled: **05/10/24 11:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	61.9	0.0500	mg/L dry	1	BHE0385	05/13/24	05/25/24	EPA 6020B	
Magnesium	16.8	0.0500	"	"	"	"	"	"	
Sodium	54.9	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/10/24 11:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.60	0.00100	units	1	BHE0837	05/28/24	05/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01-03@4'
2405175-02 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/10/24 11:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	83.8		%	1	BHE0387	05/13/24	05/13/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/10/24 11:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.488	0.0100	mmhos/cm	1	BHE0409	05/13/24	05/14/24	EPA 120.1	

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

Date Sampled: **05/10/24 11:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.47		pH Units	1	BHE0408	05/13/24	05/14/24	EPA 9045D	

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01-04@4'
2405175-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/10/24 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BHE0403	05/13/24	05/14/24	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: **05/10/24 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0382	95.4 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0388	96.9 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0370	92.4 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/10/24 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BHE0405	05/13/24	05/16/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/10/24 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	9.02	72.2 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01-04@4'
2405175-03 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/10/24 11:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Acenaphthene	0.0164	0.00500		mg/kg	1	BHE0427	05/14/24	05/14/24	EPA 8270D SIM	
Anthracene	0.0345	0.00500		"	"	"	"	"	"	
Benzo (a) anthracene	0.0750	0.00500		"	"	"	"	"	"	
Benzo (a) pyrene	0.0462	0.00500		"	"	"	"	"	"	
Benzo (b) fluoranthene	0.0794	0.00500		"	"	"	"	"	"	
Benzo (k) fluoranthene	0.0369	0.00500		"	"	"	"	"	"	
Chrysene	0.0711	0.00500		"	"	"	"	"	"	
Dibenz (a,h) anthracene	0.00554	0.00500		"	"	"	"	"	"	
Fluoranthene	0.184	0.00500		"	"	"	"	"	"	E
Fluorene	0.0172	0.00500		"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	0.0323	0.00500		"	"	"	"	"	"	
Pyrene	0.205	0.00500		"	"	"	"	"	"	E
1-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500		"	"	"	"	"	"	

Date Sampled: **05/10/24 11:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	0.0163	49.0 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0169	50.7 %		40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/10/24 11:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Boron	ND	2.00		mg/L	1	BHE0413	05/13/24	06/06/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/10/24 11:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Arsenic	3.67	0.200		mg/kg dry	1	BHE0391	05/13/24	05/15/24	EPA 6020B	

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01-04@4'
2405175-03 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Barium	84.1	0.400	mg/kg dry	1	BHE0391	05/13/24	05/15/24	EPA 6020B
Cadmium	ND	0.200	"	"	"	"	"	"
Copper	8.50	0.400	"	"	"	"	"	"
Lead	7.72	0.200	"	"	"	"	"	"
Nickel	5.68	0.400	"	"	"	"	"	"
Silver	0.0680	0.0200	"	"	"	"	"	"
Zinc	32.6	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/10/24 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHE0388	05/13/24	05/13/24	EPA 7196A	

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

Date Sampled: **05/10/24 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	49.3	0.0500	mg/L dry	1	BHE0385	05/13/24	05/25/24	EPA 6020B	
Magnesium	16.5	0.0500	"	"	"	"	"	"	
Sodium	156	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/10/24 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	4.91	0.00100	units	1	BHE0837	05/28/24	05/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/10/24 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	-------

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01-04@4'
2405175-03 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	82.6	%	1	BHE0387	05/13/24	05/13/24	Calculation
----------	------	---	---	---------	----------	----------	-------------

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/10/24 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.02	0.0100	mmhos/cm	1	BHE0409	05/13/24	05/14/24	EPA 120.1	

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

Date Sampled: **05/10/24 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.25		pH Units	1	BHE0408	05/13/24	05/14/24	EPA 9045D	

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01-05@4'
2405175-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/10/24 11:47**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BHE0403	05/13/24	05/14/24	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: **05/10/24 11:47**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0403	101 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0398	99.4 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0376	94.0 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/10/24 11:47**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BHE0405	05/13/24	05/17/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/10/24 11:47**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	7.66	61.2 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01-05@4'
2405175-04 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/10/24 11:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	0.0126	0.00500	mg/kg	1	BHE0427	05/14/24	05/14/24	EPA 8270D SIM	
Anthracene	0.0204	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	0.0172	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	0.0122	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	0.0170	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	0.00729	0.00500	"	"	"	"	"	"	
Chrysene	0.0189	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	0.0534	0.00500	"	"	"	"	"	"	
Fluorene	0.0146	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	0.00709	0.00500	"	"	"	"	"	"	
Pyrene	0.0825	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/10/24 11:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0186	55.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0161	48.3 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/10/24 11:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHE0413	05/13/24	06/06/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/10/24 11:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	3.20	0.200	mg/kg dry	1	BHE0391	05/13/24	05/15/24	EPA 6020B	

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01-05@4'
2405175-04 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Barium	122	0.400	mg/kg dry	1	BHE0391	05/13/24	05/15/24	EPA 6020B
Cadmium	0.240	0.200	"	"	"	"	"	"
Copper	7.01	0.400	"	"	"	"	"	"
Lead	7.23	0.200	"	"	"	"	"	"
Nickel	5.08	0.400	"	"	"	"	"	"
Silver	0.0337	0.0200	"	"	"	"	"	"
Zinc	28.9	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/10/24 11:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHE0388	05/13/24	05/13/24	EPA 7196A	

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

Date Sampled: **05/10/24 11:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	36.6	0.0500	mg/L dry	1	BHE0385	05/13/24	05/25/24	EPA 6020B	
Magnesium	15.2	0.0500	"	"	"	"	"	"	
Sodium	153	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/10/24 11:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	5.37	0.00100	units	1	BHE0837	05/28/24	05/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/10/24 11:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	81.3		%	1	BHE0387	05/13/24	05/13/24	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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01-05@4'
2405175-04 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/10/24 11:47**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.929	0.0100		mmhos/cm	1	BHE0409	05/13/24	05/14/24	EPA 120.1	

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

Date Sampled: **05/10/24 11:47**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.46			pH Units	1	BHE0408	05/13/24	05/14/24	EPA 9045D	

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01-06@4'
2405175-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/10/24 12:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BHE0403	05/13/24	05/14/24	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: **05/10/24 12:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0388	97.0 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0388	97.0 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0366	91.5 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/10/24 12:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BHE0405	05/13/24	05/17/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/10/24 12:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	6.33	50.6 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01-06@4'
2405175-05 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/10/24 12:52**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Acenaphthene	0.278	0.0500	mg/kg	10	BHE0427	05/14/24	05/15/24	EPA 8270D SIM	
Anthracene	0.463	0.0500	"	"	"	"	"	"	
Benzo (a) anthracene	0.359	0.0500	"	"	"	"	"	"	
Benzo (a) pyrene	0.260	0.0500	"	"	"	"	"	"	
Benzo (b) fluoranthene	0.433	0.0500	"	"	"	"	"	"	
Benzo (k) fluoranthene	0.202	0.0500	"	"	"	"	"	"	
Chrysene	0.452	0.0500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	0.0473	0.00500	"	1	"	"	05/14/24	"	
Fluoranthene	1.27	0.0500	"	10	"	"	05/15/24	"	
Fluorene	0.328	0.0500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	0.285	0.0500	"	"	"	"	"	"	
Pyrene	1.94	0.0500	"	"	"	"	"	"	E
1-Methylnaphthalene	0.0423	0.00500	"	1	"	"	05/14/24	"	
2-Methylnaphthalene	0.0733	0.00500	"	"	"	"	"	"	

Date Sampled: **05/10/24 12:52**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 2-Methylnaphthalene-d10	0.0240	72.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0273	81.8 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/10/24 12:52**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Boron	ND	2.00	mg/L	1	BHE0413	05/13/24	06/06/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/10/24 12:52**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	3.13	0.200	mg/kg dry	1	BHE0391	05/13/24	05/15/24	EPA 6020B	

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01-06@4'
2405175-05 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Barium	76.4	0.400	mg/kg dry	1	BHE0391	05/13/24	05/15/24	EPA 6020B
Cadmium	ND	0.200	"	"	"	"	"	"
Copper	6.04	0.400	"	"	"	"	"	"
Lead	6.56	0.200	"	"	"	"	"	"
Nickel	4.58	0.400	"	"	"	"	"	"
Silver	0.0620	0.0200	"	"	"	"	"	"
Zinc	27.1	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/10/24 12:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHE0388	05/13/24	05/13/24	EPA 7196A	

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

Date Sampled: **05/10/24 12:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	58.6	0.0500	mg/L dry	1	BHE0385	05/13/24	05/25/24	EPA 6020B	
Magnesium	37.6	0.0500	"	"	"	"	"	"	
Sodium	299	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/10/24 12:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	7.50	0.00100	units	1	BHE0837	05/28/24	05/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/10/24 12:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	-------

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01-06@4'
2405175-05 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	87.4	%	1	BHE0387	05/13/24	05/13/24	Calculation
----------	------	---	---	---------	----------	----------	-------------

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/10/24 12:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	2.01	0.0100	mmhos/cm	1	BHE0409	05/13/24	05/14/24	EPA 120.1	

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

Date Sampled: **05/10/24 12:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.28		pH Units	1	BHE0408	05/13/24	05/14/24	EPA 9045D	

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01R-S@6'
2405175-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/10/24 11:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BHE0403	05/13/24	05/14/24	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: **05/10/24 11:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0397	99.3 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0388	97.0 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0374	93.4 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/10/24 11:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BHE0405	05/13/24	05/20/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/10/24 11:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	5.19	41.5 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01R-S@6'
2405175-06 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/10/24 11:51**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Acenaphthene	0.00686	0.00500	mg/kg	1	BHE0427	05/14/24	05/14/24	EPA 8270D SIM	
Anthracene	0.0251	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	0.0105	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	0.00993	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	0.00506	0.00500	"	"	"	"	"	"	
Chrysene	0.0120	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	0.0296	0.00500	"	"	"	"	"	"	
Fluorene	0.00919	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	0.0502	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/10/24 11:51**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 2-Methylnaphthalene-d10	0.0223	66.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0182	54.6 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/10/24 11:51**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Boron	ND	2.00	mg/L	1	BHE0413	05/13/24	06/06/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/10/24 11:51**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01R-S@6'
2405175-06 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	1.78	0.200	mg/kg dry	1	BHE0391	05/13/24	05/15/24	EPA 6020B
Barium	48.6	0.400	"	"	"	"	"	"
Cadmium	ND	0.200	"	"	"	"	"	"
Copper	6.14	0.400	"	"	"	"	"	"
Lead	7.14	0.200	"	"	"	"	"	"
Nickel	3.32	0.400	"	"	"	"	"	"
Silver	0.0219	0.0200	"	"	"	"	"	"
Zinc	23.7	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/10/24 11:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHE0388	05/13/24	05/13/24	EPA 7196A	

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

Date Sampled: **05/10/24 11:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	66.0	0.0500	mg/L dry	1	BHE0385	05/13/24	05/25/24	EPA 6020B	
Magnesium	16.0	0.0500	"	"	"	"	"	"	
Sodium	6.10	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/10/24 11:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.175	0.00100	units	1	BHE0837	05/28/24	05/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

FL01R-S@6'
2405175-06 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/10/24 11:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	86.6		%	1	BHE0387	05/13/24	05/13/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/10/24 11:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.206	0.0100	mmhos/cm	1	BHE0409	05/13/24	05/14/24	EPA 120.1	

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

Date Sampled: **05/10/24 11:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.48		pH Units	1	BHE0408	05/13/24	05/14/24	EPA 9045D	

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

BKG01@4'
2405175-07 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **05/10/24 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.60	0.200	mg/kg dry	1	BHE0391	05/13/24	05/15/24	EPA 6020B	
Barium	39.2	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	6.40	0.400	"	"	"	"	"	"	
Lead	5.80	0.200	"	"	"	"	"	"	
Nickel	3.31	0.400	"	"	"	"	"	"	
Silver	0.0256	0.0200	"	"	"	"	"	"	
Zinc	24.0	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/10/24 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHE0388	05/13/24	05/13/24	EPA 7196A	

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

Date Sampled: **05/10/24 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	39.2	0.0500	mg/L dry	1	BHE0385	05/13/24	05/25/24	EPA 6020B	
Magnesium	10.5	0.0500	"	"	"	"	"	"	
Sodium	71.3	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/10/24 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	2.61	0.00100	units	1	BHE0837	05/28/24	05/28/24	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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

BKG01@4'
2405175-07 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/10/24 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	91.8		%	1	BHE0387	05/13/24	05/13/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/10/24 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.611	0.0100	mmhos/cm	1	BHE0409	05/13/24	05/14/24	EPA 120.1	

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

Date Sampled: **05/10/24 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.90		pH Units	1	BHE0408	05/13/24	05/14/24	EPA 9045D	

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

BKG01@6'
2405175-08 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **05/10/24 13:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.95	0.200	mg/kg dry	1	BHE0391	05/13/24	05/15/24	EPA 6020B	
Barium	48.3	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	4.18	0.400	"	"	"	"	"	"	
Lead	4.36	0.200	"	"	"	"	"	"	
Nickel	3.50	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
Zinc	17.1	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/10/24 13:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHE0388	05/13/24	05/13/24	EPA 7196A	

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

Date Sampled: **05/10/24 13:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	2690	0.0500	mg/L dry	1	BHE0385	05/13/24	05/25/24	EPA 6020B	
Magnesium	277	0.0500	"	"	"	"	"	"	
Sodium	77.7	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/10/24 13:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	0.381	0.00100	units	1	BHE0837	05/28/24	05/28/24	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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

BKG01@6'
2405175-08 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/10/24 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	95.0		%	1	BHE0387	05/13/24	05/13/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/10/24 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.597	0.0100	mmhos/cm	1	BHE0409	05/13/24	05/14/24	EPA 120.1	

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

Date Sampled: **05/10/24 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.39		pH Units	1	BHE0408	05/13/24	05/14/24	EPA 9045D	

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

BKG02@4'
2405175-09 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **05/10/24 12:51**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	4.31	0.200	mg/kg dry	1	BHE0391	05/13/24	05/15/24	EPA 6020B	
Barium	66.3	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	6.00	0.400	"	"	"	"	"	"	
Lead	7.14	0.200	"	"	"	"	"	"	
Nickel	5.04	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
Zinc	31.1	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/10/24 12:51**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHE0388	05/13/24	05/13/24	EPA 7196A	

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

Date Sampled: **05/10/24 12:51**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	41.5	0.0500	mg/L dry	1	BHE0385	05/13/24	05/25/24	EPA 6020B	
Magnesium	23.2	0.0500	"	"	"	"	"	"	
Sodium	255	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/10/24 12:51**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	7.86	0.00100	units	1	BHE0837	05/28/24	05/28/24	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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

BKG02@4'
2405175-09 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/10/24 12:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	84.6		%	1	BHE0387	05/13/24	05/13/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/10/24 12:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.50	0.0100	mmhos/cm	1	BHE0409	05/13/24	05/14/24	EPA 120.1	

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

Date Sampled: **05/10/24 12:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.38		pH Units	1	BHE0408	05/13/24	05/14/24	EPA 9045D	

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

BKG02@6'
2405175-10 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **05/10/24 12:54**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	3.25	0.200	mg/kg dry	1	BHE0391	05/13/24	05/15/24	EPA 6020B	
Barium	74.8	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	6.16	0.400	"	"	"	"	"	"	
Lead	7.61	0.200	"	"	"	"	"	"	
Nickel	4.92	0.400	"	"	"	"	"	"	
Silver	0.0524	0.0200	"	"	"	"	"	"	
Zinc	27.4	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/10/24 12:54**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHE0388	05/13/24	05/13/24	EPA 7196A	

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

Date Sampled: **05/10/24 12:54**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	86.5	0.0500	mg/L dry	1	BHE0385	05/13/24	05/25/24	EPA 6020B	
Magnesium	72.5	0.0500	"	"	"	"	"	"	
Sodium	695	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/10/24 12:54**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	13.3	0.00100	units	1	BHE0837	05/28/24	05/28/24	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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

BKG02@6'
2405175-10 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/10/24 12:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	85.6		%	1	BHE0387	05/13/24	05/13/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/10/24 12:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	4.09	0.0100	mmhos/cm	1	BHE0409	05/13/24	05/14/24	EPA 120.1	

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

Date Sampled: **05/10/24 12:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.09		pH Units	1	BHE0408	05/13/24	05/14/24	EPA 9045D	

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BHE0403 - EPA 5030 Soil MS

Blank (BHE0403-BLK1)

Prepared & Analyzed: 05/13/24

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	"							
Surrogate: 1,2-Dichloroethane-d4	0.0397		"	0.0400		99.2	50-150			
Surrogate: Toluene-d8	0.0395		"	0.0400		98.8	50-150			
Surrogate: 4-Bromofluorobenzene	0.0380		"	0.0400		95.0	50-150			

LCS (BHE0403-BS1)

Prepared & Analyzed: 05/13/24

Benzene	0.103	0.0020	mg/kg	0.100		103	70-130			
Toluene	0.100	0.0050	"	0.100		100	70-130			
Ethylbenzene	0.103	0.0050	"	0.100		103	70-130			
m,p-Xylene	0.208	0.010	"	0.200		104	70-130			
o-Xylene	0.104	0.0050	"	0.100		104	70-130			
1,2,4-Trimethylbenzene	0.100	0.0050	"	0.100		100	70-130			
1,3,5-Trimethylbenzene	0.101	0.0050	"	0.100		101	70-130			
Naphthalene	0.0976	0.0038	"	0.100		97.6	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0409		"	0.0400		102	50-150			
Surrogate: Toluene-d8	0.0394		"	0.0400		98.4	50-150			
Surrogate: 4-Bromofluorobenzene	0.0394		"	0.0400		98.5	50-150			

Matrix Spike (BHE0403-MS1)

Source: 2405169-01

Prepared & Analyzed: 05/13/24

Benzene	0.0995	0.0020	mg/kg	0.100	ND	99.5	70-130			
Toluene	0.0979	0.0050	"	0.100	ND	97.9	70-130			
Ethylbenzene	0.0985	0.0050	"	0.100	ND	98.5	70-130			
m,p-Xylene	0.202	0.010	"	0.200	ND	101	70-130			
o-Xylene	0.100	0.0050	"	0.100	ND	100	70-130			
1,2,4-Trimethylbenzene	0.0961	0.0050	"	0.100	ND	96.1	70-130			
1,3,5-Trimethylbenzene	0.0961	0.0050	"	0.100	ND	96.1	70-130			
Naphthalene	0.100	0.0038	"	0.100	ND	100	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0398		"	0.0400		99.6	50-150			
Surrogate: Toluene-d8	0.0397		"	0.0400		99.2	50-150			
Surrogate: 4-Bromofluorobenzene	0.0393		"	0.0400		98.3	50-150			

Summit Scientific

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



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

Project: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BHE0403 - EPA 5030 Soil MS

Matrix Spike Dup (BHE0403-MSD1)	Source: 2405169-01			Prepared & Analyzed: 05/13/24						
Benzene	0.113	0.0020	mg/kg	0.100	ND	113	70-130	12.7	30	
Toluene	0.110	0.0050	"	0.100	ND	110	70-130	11.8	30	
Ethylbenzene	0.111	0.0050	"	0.100	ND	111	70-130	12.1	30	
m,p-Xylene	0.227	0.010	"	0.200	ND	113	70-130	11.6	30	
o-Xylene	0.113	0.0050	"	0.100	ND	113	70-130	11.9	30	
1,2,4-Trimethylbenzene	0.109	0.0050	"	0.100	ND	109	70-130	12.7	30	
1,3,5-Trimethylbenzene	0.109	0.0050	"	0.100	ND	109	70-130	12.6	30	
Naphthalene	0.112	0.0038	"	0.100	ND	112	70-130	11.1	30	
Surrogate: 1,2-Dichloroethane-d4	0.0399		"	0.0400		99.8	50-150			
Surrogate: Toluene-d8	0.0394		"	0.0400		98.6	50-150			
Surrogate: 4-Bromofluorobenzene	0.0392		"	0.0400		98.1	50-150			

Summit Scientific

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



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

Project: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BHE0405 - EPA 3550A

Blank (BHE0405-BLK1)

Prepared: 05/13/24 Analyzed: 05/15/24

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							
Surrogate: o-Terphenyl	11.6		"	12.5		92.7	30-150			

LCS (BHE0405-BS1)

Prepared: 05/13/24 Analyzed: 05/15/24

C10-C28 (DRO)	479	50	mg/kg	500		95.7	70-130			
Surrogate: o-Terphenyl	12.0		"	12.5		96.3	30-150			

Matrix Spike (BHE0405-MS1)

Source: 2405169-01

Prepared: 05/13/24 Analyzed: 05/15/24

C10-C28 (DRO)	556	50	mg/kg	500	12.7	109	70-130			
Surrogate: o-Terphenyl	12.5		"	12.5		100	30-150			

Matrix Spike Dup (BHE0405-MSD1)

Source: 2405169-01

Prepared: 05/13/24 Analyzed: 05/15/24

C10-C28 (DRO)	586	50	mg/kg	500	12.7	115	70-130	5.09	20	
Surrogate: o-Terphenyl	8.98		"	12.5		71.8	30-150			

Summit Scientific

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



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

Project: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BHE0427 - EPA 5030 Soil MS

Blank (BHE0427-BLK1)

Prepared & Analyzed: 05/14/24

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	"								
Surrogate: 2-Methylnaphthalene-d10	0.0340		"	0.0333		102		40-150			
Surrogate: Fluoranthene-d10	0.0312		"	0.0333		93.7		40-150			

LCS (BHE0427-BS1)

Prepared & Analyzed: 05/14/24

Acenaphthene	0.0356	0.00500	mg/kg	0.0333		107		31-137			
Anthracene	0.0315	0.00500	"	0.0333		94.6		30-120			
Benzo (a) anthracene	0.0297	0.00500	"	0.0333		89.1		30-120			
Benzo (a) pyrene	0.0332	0.00500	"	0.0333		99.7		30-120			
Benzo (b) fluoranthene	0.0317	0.00500	"	0.0333		95.0		30-120			
Benzo (k) fluoranthene	0.0239	0.00500	"	0.0333		71.8		30-120			
Chrysene	0.0337	0.00500	"	0.0333		101		30-120			
Dibenz (a,h) anthracene	0.0259	0.00500	"	0.0333		77.6		30-120			
Fluoranthene	0.0256	0.00500	"	0.0333		76.9		30-120			
Fluorene	0.0303	0.00500	"	0.0333		91.0		30-120			
Indeno (1,2,3-cd) pyrene	0.0268	0.00500	"	0.0333		80.3		30-120			
Pyrene	0.0283	0.00500	"	0.0333		84.8		35-142			
1-Methylnaphthalene	0.0333	0.00500	"	0.0333		99.9		35-142			
2-Methylnaphthalene	0.0337	0.00500	"	0.0333		101		35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0383		"	0.0333		115		40-150			
Surrogate: Fluoranthene-d10	0.0281		"	0.0333		84.3		40-150			

Summit Scientific

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



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

Project: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BHE0427 - EPA 5030 Soil MS

Matrix Spike (BHE0427-MS1)			Source: 2405175-01			Prepared & Analyzed: 05/14/24					
Acenaphthene	0.0199	0.00500	mg/kg	0.0333	ND	59.8	31-137				
Anthracene	0.0194	0.00500	"	0.0333	ND	58.3	30-120				
Benzo (a) anthracene	0.0195	0.00500	"	0.0333	ND	58.5	30-120				
Benzo (a) pyrene	0.0199	0.00500	"	0.0333	ND	59.7	30-120				
Benzo (b) fluoranthene	0.0210	0.00500	"	0.0333	ND	62.9	30-120				
Benzo (k) fluoranthene	0.0220	0.00500	"	0.0333	ND	66.0	30-120				
Chrysene	0.0187	0.00500	"	0.0333	ND	56.1	30-120				
Dibenz (a,h) anthracene	0.0152	0.00500	"	0.0333	ND	45.7	30-120				
Fluoranthene	0.0191	0.00500	"	0.0333	ND	57.3	30-120				
Fluorene	0.0195	0.00500	"	0.0333	ND	58.6	30-120				
Indeno (1,2,3-cd) pyrene	0.0150	0.00500	"	0.0333	ND	45.1	30-120				
Pyrene	0.0182	0.00500	"	0.0333	ND	54.5	35-142				
1-Methylnaphthalene	0.0186	0.00500	"	0.0333	ND	55.9	15-130				
2-Methylnaphthalene	0.0186	0.00500	"	0.0333	ND	55.9	15-130				
Surrogate: 2-Methylnaphthalene-d10	0.0208		"	0.0333		62.4	40-150				
Surrogate: Fluoranthene-d10	0.0224		"	0.0333		67.1	40-150				

Matrix Spike Dup (BHE0427-MSD1)			Source: 2405175-01			Prepared & Analyzed: 05/14/24					
Acenaphthene	0.0183	0.00500	mg/kg	0.0333	ND	55.0	31-137	8.29	30		
Anthracene	0.0188	0.00500	"	0.0333	ND	56.5	30-120	3.03	30		
Benzo (a) anthracene	0.0187	0.00500	"	0.0333	ND	56.1	30-120	4.31	30		
Benzo (a) pyrene	0.0188	0.00500	"	0.0333	ND	56.5	30-120	5.44	30		
Benzo (b) fluoranthene	0.0206	0.00500	"	0.0333	ND	61.9	30-120	1.48	30		
Benzo (k) fluoranthene	0.0192	0.00500	"	0.0333	ND	57.5	30-120	13.8	30		
Chrysene	0.0184	0.00500	"	0.0333	ND	55.1	30-120	1.74	30		
Dibenz (a,h) anthracene	0.0155	0.00500	"	0.0333	ND	46.4	30-120	1.56	30		
Fluoranthene	0.0169	0.00500	"	0.0333	ND	50.8	30-120	12.0	30		
Fluorene	0.0181	0.00500	"	0.0333	ND	54.3	30-120	7.59	30		
Indeno (1,2,3-cd) pyrene	0.0152	0.00500	"	0.0333	ND	45.6	30-120	1.26	30		
Pyrene	0.0221	0.00500	"	0.0333	ND	66.4	35-142	19.7	30		
1-Methylnaphthalene	0.0185	0.00500	"	0.0333	ND	55.4	15-130	0.981	50		
2-Methylnaphthalene	0.0183	0.00500	"	0.0333	ND	54.9	15-130	1.83	50		
Surrogate: 2-Methylnaphthalene-d10	0.0208		"	0.0333		62.4	40-150				
Surrogate: Fluoranthene-d10	0.0200		"	0.0333		59.9	40-150				

Summit Scientific

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



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

Project: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

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

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

Batch BHE0413 - EPA 3050B

Blank (BHE0413-BLK1)

Prepared: 05/13/24 Analyzed: 06/06/24

Boron ND 2.00 mg/L

LCS (BHE0413-BS1)

Prepared: 05/13/24 Analyzed: 06/06/24

Boron 4.95 2.00 mg/L 5.00 99.0 80-120

Duplicate (BHE0413-DUP1)

Source: 2405167-01

Prepared: 05/13/24 Analyzed: 06/06/24

Boron 0.105 2.00 mg/L 0.122 14.8 20

Matrix Spike (BHE0413-MS1)

Source: 2405167-01

Prepared: 05/13/24 Analyzed: 06/06/24

Boron 4.76 2.00 mg/L 4.99 0.122 92.9 75-125

Matrix Spike Dup (BHE0413-MSD1)

Source: 2405167-01

Prepared: 05/13/24 Analyzed: 06/06/24

Boron 5.07 2.00 mg/L 4.99 0.122 99.2 75-125 6.48 25

Summit Scientific

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



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

Project: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BHE0391 - EPA 3050B

Blank (BHE0391-BLK1)

Prepared: 05/13/24 Analyzed: 05/15/24

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	"
Silver	ND	0.0200	"
Zinc	ND	0.400	"
Selenium	ND	0.260	"

LCS (BHE0391-BS1)

Prepared: 05/13/24 Analyzed: 05/15/24

Arsenic	44.9	0.200	mg/kg wet	40.0	112	80-120
Barium	46.1	0.400	"	40.0	115	80-120
Cadmium	2.31	0.200	"	2.00	115	80-120
Copper	45.8	0.400	"	40.0	114	80-120
Lead	22.8	0.200	"	20.0	114	80-120
Nickel	40.1	0.400	"	40.0	100	80-120
Silver	2.26	0.0200	"	2.00	113	80-120
Zinc	45.4	0.400	"	40.0	113	80-120
Selenium	4.69	0.260	"	4.00	117	80-120

Duplicate (BHE0391-DUP1)

Source: 2402471-02RE1

Prepared: 05/13/24 Analyzed: 05/15/24

Arsenic	6.00	0.200	mg/kg wet	5.18	14.5	20	
Barium	243	0.400	"	232	4.55	20	
Cadmium	0.263	0.200	"	0.236	10.6	20	
Copper	9.81	0.400	"	8.42	15.2	20	
Lead	9.62	0.200	"	7.86	20.1	20	QR-04
Nickel	6.45	0.400	"	5.93	8.49	20	
Silver	0.0368	0.0200	"	0.0326	12.3	20	
Zinc	37.1	0.400	"	32.5	13.2	20	
Selenium	ND	0.260	"	ND	20	20	QR-01

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BHE0391 - EPA 3050B

Matrix Spike (BHE0391-MS1)

Source: 2402471-02RE1

Prepared: 05/13/24 Analyzed: 05/15/24

Arsenic	46.9	0.200	mg/kg wet	37.6	5.18	111	75-125			
Barium	250	0.400	"	37.6	232	47.2	75-125			QM-07
Cadmium	2.45	0.200	"	1.88	0.236	118	75-125			
Copper	50.6	0.400	"	37.6	8.42	112	75-125			
Lead	29.1	0.200	"	18.8	7.86	113	75-125			
Nickel	26.7	0.400	"	37.6	5.93	55.2	75-125			QM-07
Silver	2.13	0.0200	"	1.88	0.0326	111	75-125			
Zinc	79.7	0.400	"	37.6	32.5	126	75-125			QM-07
Selenium	3.91	0.260	"	3.76	ND	104	75-125			

Matrix Spike Dup (BHE0391-MSD1)

Source: 2402471-02RE1

Prepared: 05/13/24 Analyzed: 05/15/24

Arsenic	46.8	0.200	mg/kg wet	37.6	5.18	111	75-125	0.195	25	
Barium	253	0.400	"	37.6	232	55.3	75-125	1.20	25	QM-07
Cadmium	2.41	0.200	"	1.88	0.236	116	75-125	1.53	25	
Copper	50.3	0.400	"	37.6	8.42	111	75-125	0.563	25	
Lead	29.4	0.200	"	18.8	7.86	115	75-125	1.22	25	
Nickel	26.3	0.400	"	37.6	5.93	54.2	75-125	1.46	25	QM-07
Silver	2.10	0.0200	"	1.88	0.0326	110	75-125	1.26	25	
Zinc	78.9	0.400	"	37.6	32.5	124	75-125	1.01	25	
Selenium	4.17	0.260	"	3.76	ND	111	75-125	6.31	25	

Summit Scientific

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



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

Project: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

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

Batch BHE0388 - 3060A Mod

Blank (BHE0388-BLK1)

Prepared & Analyzed: 05/13/24

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BHE0388-BS1)

Prepared & Analyzed: 05/13/24

Chromium, Hexavalent 24.9 0.30 mg/kg wet 25.0 99.6 80-120

Duplicate (BHE0388-DUP1)

Source: 2405169-01

Prepared & Analyzed: 05/13/24

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BHE0388-MS1)

Source: 2405169-01

Prepared & Analyzed: 05/13/24

Chromium, Hexavalent 26.3 0.30 mg/kg dry 27.2 ND 96.6 75-125

Matrix Spike Dup (BHE0388-MSD1)

Source: 2405169-01

Prepared & Analyzed: 05/13/24

Chromium, Hexavalent 26.3 0.30 mg/kg dry 27.2 ND 96.8 75-125 0.207 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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

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

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

Batch BHE0385 - General Preparation

Blank (BHE0385-BLK1)

Prepared: 05/13/24 Analyzed: 05/25/24

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

LCS (BHE0385-BS1)

Prepared: 05/13/24 Analyzed: 05/25/24

Calcium	6.31	0.0500	mg/L wet	5.00	126	70-130
Magnesium	5.17	0.0500	"	5.00	103	70-130
Sodium	5.20	0.0500	"	5.00	104	70-130

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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

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

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

Batch BHE0387 - General Preparation

Duplicate (BHE0387-DUP1)		Source: 2405175-01			Prepared & Analyzed: 05/13/24					
% Solids	89.4		%		90.9		1.62		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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

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

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

Batch BHE0409 - General Preparation

Blank (BHE0409-BLK1)

Prepared: 05/13/24 Analyzed: 05/14/24

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BHE0409-BS1)

Prepared: 05/13/24 Analyzed: 05/14/24

Specific Conductance (EC) 0.156 0.0100 mmhos/cm 0.150 104 95-105

Duplicate (BHE0409-DUP1)

Source: 2405163-01

Prepared: 05/13/24 Analyzed: 05/14/24

Specific Conductance (EC) 0.238 0.0100 mmhos/cm 0.239 0.755 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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

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

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

Batch BHE0408 - General Preparation

LCS (BHE0408-BS1)

Prepared: 05/13/24 Analyzed: 05/14/24

pH	9.19	pH Units	9.18	100	95-105
----	------	----------	------	-----	--------

Duplicate (BHE0408-DUP1)

Source: 2405163-01

Prepared: 05/13/24 Analyzed: 05/14/24

pH	8.43	pH Units	8.49	0.709	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: PDC - Hoffman B 33-19 Flowline

Project Number: [none]
Project Manager: Karen Olson

Reported:
06/11/24 16:27

Notes and Definitions

QR-04	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
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-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
E	The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference