

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 11, 2024

Karen Olson

Tasman Geosciences

6855 W. 119th Ave.

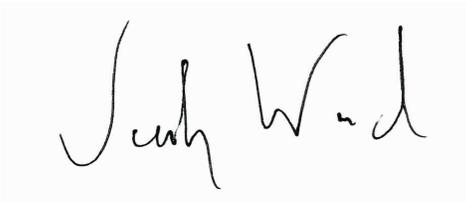
Broomfield, CO 80020

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 blue ink that reads "Jacob Wood". The signature is written in a cursive style with a large initial "J" and a distinct "W".

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



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Client: PDC / Tasman		Send Data To: Project Manager: <del>Mark Longhurst</del> <sup>SW</sup> <u>KAREN OLSON</u>		Send Invoice To: Company: PDC Energy	
Address: 6855 W 119th Ave		E-Mail: <del>mark.longhurst@PDCE.com</del> <sup>SW</sup> <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: <del>Mark Longhurst</del> <sup>SW</sup> <u>KAREN OLSON</u>	

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested						Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	Metal-915	VOC-915	TPH-915	PAH-915	SAR EC, PH		BARON-HMS
1	FLOOR-W@4'	5/10/24	1103	3			X			X			X	X	X	X	X	X	
2	FLO1-03@4'		1136																
3	FLO1-04@4'		1140																
4	FLO1-05@4'		1147																
5	FLO1-06@4'		1252																
6	FLOOR-SW@6'		1151																
7	BH701@4'		1300																
8	BH701@6'		1305																
9	BH702@4'		1251																
10	BH702@6'		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	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
Temperature Upon Receipt: <u>9.4</u>	Corrected Temperature: <u>0</u>	IR gun #: <u>1</u>	HNO3 lot #:	Standard	<input checked="" type="checkbox"/> Field Turb.	

4/16/24

S2

Sample Receipt Checklist

S2 Work Order# 2405175

Client: Pocianman Client Project ID: Hoffman D33-19 flange

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? <sup>(1)</sup> 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? <sup>(1)</sup>	<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 <sup>2+</sup> ), Hexavalent Chromium (Cr <sup>6+</sup> , 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? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? <sup>(1)</sup>	<input 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)? <sup>(1)</sup> Note the type of preservative in the comments column - HCl, H <sub>2</sub> SO <sub>4</sub> , NaOH, HNO <sub>3</sub> , etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2? <sup>(1)</sup> 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):				

<sup>(1)</sup> 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		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
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		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
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		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
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		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl	10.4	83.4 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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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 Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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 Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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 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 11:03**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
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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**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**

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Project Number: [none]  
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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		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	<b>90.9</b>			%	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		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	<b>0.243</b>	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		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	<b>8.51</b>			pH Units	1	BHE0408	05/13/24	05/14/24	EPA 9045D	

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

**PAH by EPA Method 8270D SIM**

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Project Number: [none]  
Project Manager: Karen Olson

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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 Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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	"	"	"	"	"	"	
<b>Fluoranthene</b>	<b>0.00756</b>	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
<b>Pyrene</b>	<b>0.00609</b>	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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 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 11:36**

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

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**

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

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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**

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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 Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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 Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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 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 11:40**

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

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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**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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
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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
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**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	

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

**PAH by EPA Method 8270D SIM**

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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	

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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**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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	

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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 Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	<b>0.929</b>	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 Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>pH</b>	<b>8.46</b>		pH Units	1	BHE0408	05/13/24	05/14/24	EPA 9045D	

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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**

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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 Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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 Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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 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 12:52**

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

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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**

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

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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**

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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 Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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 Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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 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 11:51**

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

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
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**

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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	

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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	

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

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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						
<b>Arsenic</b>	<b>1.95</b>	0.200	mg/kg dry	1	BHE0391	05/13/24	05/15/24	EPA 6020B	
<b>Barium</b>	<b>48.3</b>	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
<b>Copper</b>	<b>4.18</b>	0.400	"	"	"	"	"	"	
<b>Lead</b>	<b>4.36</b>	0.200	"	"	"	"	"	"	
<b>Nickel</b>	<b>3.50</b>	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
<b>Zinc</b>	<b>17.1</b>	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						
<b>Calcium</b>	<b>2690</b>	0.0500	mg/L dry	1	BHE0385	05/13/24	05/25/24	EPA 6020B	
<b>Magnesium</b>	<b>277</b>	0.0500	"	"	"	"	"	"	
<b>Sodium</b>	<b>77.7</b>	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

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

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>Sodium Adsorption Ratio</b>	<b>0.381</b>	0.00100	units	1	BHE0837	05/28/24	05/28/24	Calculation	

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

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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						
<b>Arsenic</b>	<b>4.31</b>	0.200	mg/kg dry	1	BHE0391	05/13/24	05/15/24	EPA 6020B	
<b>Barium</b>	<b>66.3</b>	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
<b>Copper</b>	<b>6.00</b>	0.400	"	"	"	"	"	"	
<b>Lead</b>	<b>7.14</b>	0.200	"	"	"	"	"	"	
<b>Nickel</b>	<b>5.04</b>	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
<b>Zinc</b>	<b>31.1</b>	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						
<b>Calcium</b>	<b>41.5</b>	0.0500	mg/L dry	1	BHE0385	05/13/24	05/25/24	EPA 6020B	
<b>Magnesium</b>	<b>23.2</b>	0.0500	"	"	"	"	"	"	
<b>Sodium</b>	<b>255</b>	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

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

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>Sodium Adsorption Ratio</b>	<b>7.86</b>	0.00100	units	1	BHE0837	05/28/24	05/28/24	Calculation	

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

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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	

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

Summit Scientific

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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		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

#### 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	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0397		"	0.0400		99.2	50-150			
<i>Surrogate: Toluene-d8</i>	0.0395		"	0.0400		98.8	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	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			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0409		"	0.0400		102	50-150			
<i>Surrogate: Toluene-d8</i>	0.0394		"	0.0400		98.4	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	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			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0398		"	0.0400		99.6	50-150			
<i>Surrogate: Toluene-d8</i>	0.0397		"	0.0400		99.2	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0393		"	0.0400		98.3	50-150			

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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		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**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			

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

**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: <i>o</i> -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: <i>o</i> -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: <i>o</i> -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: <i>o</i> -Terphenyl	8.98		"	12.5		71.8	30-150				

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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		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**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	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0340</i>		"	<i>0.0333</i>		<i>102</i>		<i>40-150</i>		
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0312</i>		"	<i>0.0333</i>		<i>93.7</i>		<i>40-150</i>		

**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
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0383</i>		"	<i>0.0333</i>	<i>115</i>	<i>40-150</i>
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0281</i>		"	<i>0.0333</i>	<i>84.3</i>	<i>40-150</i>

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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	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch BHE0427 - EPA 5030 Soil MS**

<b>Matrix Spike (BHE0427-MS1)</b>	<b>Source: 2405175-01</b>			<b>Prepared &amp; Analyzed: 05/14/24</b>						
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			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0208</i>		<i>"</i>	<i>0.0333</i>		<i>62.4</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0224</i>		<i>"</i>	<i>0.0333</i>		<i>67.1</i>	<i>40-150</i>			

<b>Matrix Spike Dup (BHE0427-MSD1)</b>	<b>Source: 2405175-01</b>			<b>Prepared &amp; Analyzed: 05/14/24</b>						
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	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0208</i>		<i>"</i>	<i>0.0333</i>		<i>62.4</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0200</i>		<i>"</i>	<i>0.0333</i>		<i>59.9</i>	<i>40-150</i>			

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

**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

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

**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				QR-01

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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		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit		

**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	

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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		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit		

**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

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

**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				

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 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	Source		%REC		RPD		Notes
		Limit	Units	Level	Result	%REC	Limits	RPD	Limit		

**Batch BHE0387 - General Preparation**

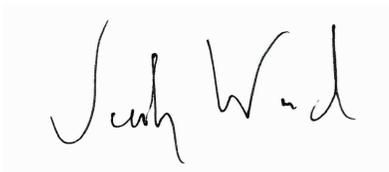
**Duplicate (BHE0387-DUP1)**

**Source: 2405175-01**

Prepared & Analyzed: 05/13/24

% Solids	89.4		%		90.9			1.62		20	
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Tasman Geosciences  
6855 W. 119th Ave.  
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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 Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

**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

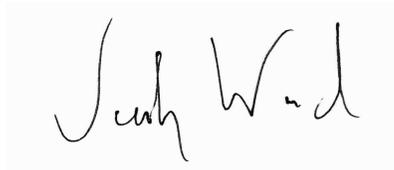
**Duplicate (BHE0409-DUP1)**

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

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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	Source	%REC		RPD		Notes
		Limit	Units	Level	Result	%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
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**Duplicate (BHE0408-DUP1)**

Source: 2405163-01

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

pH	8.43	pH Units	8.49	0.709	20
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6855 W. 119th Ave.  
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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