

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

April 12, 2021

Max Knop

K.P. Kauffman

1675 Broadway

Denver, CO 80202

RE: Kiefer George W UT B #1A Flowline Release

Work Order #2103482

Enclosed are the results of analyses for samples received by Summit Scientific on 03/31/21 14:23. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Paul Shrewsbury', written in a cursive style.

Paul Shrewsbury

President



K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
W Sample #1	2103482-01	Soil	03/30/21 13:00	03/31/21 14:23
S Sample #2	2103482-02	Soil	03/30/21 13:00	03/31/21 14:23
N Sample #3	2103482-03	Soil	03/30/21 13:00	03/31/21 14:23
Bottom Sample #4	2103482-04	Soil	03/30/21 13:00	03/31/21 14:23
SW Sample #5	2103482-05	Soil	03/30/21 13:00	03/31/21 14:23
NW Sample #6	2103482-06	Soil	03/30/21 13:00	03/31/21 14:23
NE Sample #7	2103482-07	Soil	03/30/21 13:00	03/31/21 14:23
SE Sample #8	2103482-08	Soil	03/30/21 13:00	03/31/21 14:23

Summit Scientific

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### Sample Receipt Checklist

S2 Work Order 2103482

Client: KP kauffman Client Project ID: Kieffer George W UT B #1A

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

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

Temp (°C)	9.1
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Thermometer ID: 61857155-K

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

MP  
Custodian Printed Name or Initials

*Muri Premer*  
Signature of Custodian

3/31/21  
Date/Time



K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**W Sample #1**  
**2103482-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BED0080	04/06/21	04/07/21	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: **03/30/21 13:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		106 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		94.6 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.7 %		21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BED0052	04/05/21	04/06/21	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		95.1 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**W Sample #1**  
**2103482-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BED0022	04/01/21	04/03/21	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: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		86.6 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		87.1 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.487</b>	0.0100	mg/L	1	BED0081	04/06/21	04/07/21	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**W Sample #1**  
**2103482-01 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	5.91	0.240	mg/kg dry	1	BED0041	04/02/21	04/03/21	EPA 6020B
Barium	214	0.479	"	"	"	"	"	"
Cadmium	0.316	0.240	"	"	"	"	"	"
Copper	18.7	0.479	"	"	"	"	"	"
Lead	13.4	0.240	"	"	"	"	"	"
Nickel	18.5	0.479	"	"	"	"	"	"
Selenium	1.36	0.312	"	"	"	"	"	"
Silver	0.144	0.0240	"	"	"	"	"	"
Zinc	74.3	0.479	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BED0029	04/02/21	04/05/21	EPA 7196A	

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	58.8	0.0599	mg/L dry	1	BED0121	04/07/21	04/09/21	EPA 6020B	
Magnesium	20.8	0.0599	"	"	"	"	"	"	
Sodium	33.6	0.0599	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.959	0.100	units	1	BED0169	04/09/21	04/09/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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K.P. Kauffman  
 1675 Broadway  
 Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
 Project Manager: Max Knop

**Reported:**  
 04/12/21 13:39

**W Sample #1**  
**2103482-01 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

% Solids	83.4	%	1	BED0053	04/05/21	04/06/21	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.362	0.0100	mmhos/cm	1	BED0151	04/08/21	04/08/21	EPA 120.1	

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.60		pH Units	1	BED0152	04/08/21	04/08/21	EPA 9045D	

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1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**S Sample #2**  
**2103482-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BED0080	04/06/21	04/07/21	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: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.6 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BED0052	04/05/21	04/06/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.2 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**S Sample #2**  
**2103482-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BED0022	04/01/21	04/03/21	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: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		81.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		87.0 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.305</b>	0.0100	mg/L	1	BED0081	04/06/21	04/07/21	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**S Sample #2**  
**2103482-02 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	10.3	0.242	mg/kg dry	1	BED0041	04/02/21	04/03/21	EPA 6020B	
Barium	255	0.485	"	"	"	"	"	"	
Cadmium	0.608	0.242	"	"	"	"	"	"	
Copper	25.8	0.485	"	"	"	"	"	"	
Lead	19.1	0.242	"	"	"	"	"	"	
Nickel	27.5	0.485	"	"	"	"	"	"	
Selenium	1.95	0.315	"	"	"	"	"	"	
Silver	0.189	0.0242	"	"	"	"	"	"	
Zinc	101	0.485	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BED0029	04/02/21	04/05/21	EPA 7196A	

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	551	0.0606	mg/L dry	1	BED0121	04/07/21	04/09/21	EPA 6020B	
Magnesium	173	0.0606	"	"	"	"	"	"	
Sodium	361	0.0606	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	3.44	0.100	units	1	BED0169	04/09/21	04/09/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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K.P. Kauffman  
 1675 Broadway  
 Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
 Project Manager: Max Knop

**Reported:**  
 04/12/21 13:39

**S Sample #2**  
**2103482-02 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

<b>% Solids</b>	<b>82.6</b>	%	1	BED0053	04/05/21	04/06/21	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>4.19</b>	0.0100	mmhos/cm	1	BED0151	04/08/21	04/08/21	EPA 120.1	

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>pH</b>	<b>7.84</b>		pH Units	1	BED0152	04/08/21	04/08/21	EPA 9045D	

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1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**N Sample #3**  
**2103482-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BED0080	04/06/21	04/07/21	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: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		91.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.6 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BED0052	04/05/21	04/06/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		102 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**N Sample #3**  
**2103482-03 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BED0022	04/01/21	04/03/21	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: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		81.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		82.2 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.423</b>	0.0100	mg/L	1	BED0081	04/06/21	04/07/21	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**N Sample #3**  
**2103482-03 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	5.66	0.223	mg/kg dry	1	BED0041	04/02/21	04/03/21	EPA 6020B	
Barium	165	0.446	"	"	"	"	"	"	
Cadmium	0.445	0.223	"	"	"	"	"	"	
Copper	20.9	0.446	"	"	"	"	"	"	
Lead	19.4	0.223	"	"	"	"	"	"	
Nickel	15.0	0.446	"	"	"	"	"	"	
Selenium	1.35	0.290	"	"	"	"	"	"	
Silver	0.220	0.0223	"	"	"	"	"	"	
Zinc	81.7	0.446	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BED0029	04/02/21	04/05/21	EPA 7196A	

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	466	0.0558	mg/L dry	1	BED0121	04/07/21	04/09/21	EPA 6020B	
Magnesium	127	0.0558	"	"	"	"	"	"	
Sodium	355	0.0558	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	3.76	0.100	units	1	BED0169	04/09/21	04/09/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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K.P. Kauffman  
 1675 Broadway  
 Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
 Project Manager: Max Knop

**Reported:**  
 04/12/21 13:39

**N Sample #3**  
**2103482-03 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

% Solids	89.6	%	1	BED0053	04/05/21	04/06/21	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	3.91	0.0100	mmhos/cm	1	BED0151	04/08/21	04/08/21	EPA 120.1	

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.08		pH Units	1	BED0152	04/08/21	04/08/21	EPA 9045D	

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**Bottom Sample #4**  
**2103482-04 (Soil)**

**Summit Scientific**

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BED0080	04/06/21	04/07/21	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: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BED0052	04/05/21	04/06/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		88.2 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**Bottom Sample #4**  
**2103482-04 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BED0022	04/01/21	04/03/21	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: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		79.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		82.5 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.355</b>	0.0100	mg/L	1	BED0081	04/06/21	04/07/21	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**Bottom Sample #4**  
**2103482-04 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	4.55	0.252	mg/kg dry	1	BED0041	04/02/21	04/03/21	EPA 6020B	
Barium	175	0.503	"	"	"	"	"	"	
Cadmium	0.286	0.252	"	"	"	"	"	"	
Copper	14.8	0.503	"	"	"	"	"	"	
Lead	9.26	0.252	"	"	"	"	"	"	
Nickel	15.3	0.503	"	"	"	"	"	"	
Selenium	1.26	0.327	"	"	"	"	"	"	
Silver	0.0596	0.0252	"	"	"	"	"	"	
Zinc	61.1	0.503	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BED0029	04/02/21	04/05/21	EPA 7196A	

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	80.6	0.0629	mg/L dry	1	BED0121	04/07/21	04/09/21	EPA 6020B	
Magnesium	23.5	0.0629	"	"	"	"	"	"	
Sodium	104	0.0629	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.62	0.100	units	1	BED0169	04/09/21	04/09/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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K.P. Kauffman  
 1675 Broadway  
 Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
 Project Manager: Max Knop

**Reported:**  
 04/12/21 13:39

**Bottom Sample #4**  
**2103482-04 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

% Solids	79.5	%	1	BED0053	04/05/21	04/06/21	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	<b>0.909</b>	0.0100	mmhos/cm	1	BED0151	04/08/21	04/08/21	EPA 120.1	

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	<b>8.38</b>		pH Units	1	BED0152	04/08/21	04/08/21	EPA 9045D	

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**SW Sample #5**  
**2103482-05 (Soil)**

**Summit Scientific**

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BED0080	04/06/21	04/07/21	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: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		89.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.4 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BED0052	04/05/21	04/06/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		96.4 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**SW Sample #5**  
**2103482-05 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BED0022	04/01/21	04/03/21	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: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		79.6 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		79.0 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.487</b>	0.0100	mg/L	1	BED0081	04/06/21	04/07/21	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **03/30/21 13:00**

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

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**SW Sample #5**  
**2103482-05 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	9.57	0.225	mg/kg dry	1	BED0041	04/02/21	04/03/21	EPA 6020B	
Barium	268	0.450	"	"	"	"	"	"	
Cadmium	0.697	0.225	"	"	"	"	"	"	
Copper	28.2	0.450	"	"	"	"	"	"	
Lead	20.8	0.225	"	"	"	"	"	"	
Nickel	24.7	0.450	"	"	"	"	"	"	
Selenium	2.18	0.293	"	"	"	"	"	"	
Silver	0.207	0.0225	"	"	"	"	"	"	
Zinc	116	0.450	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BED0029	04/02/21	04/05/21	EPA 7196A	

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	339	0.0563	mg/L dry	1	BED0121	04/07/21	04/09/21	EPA 6020B	
Magnesium	131	0.0563	"	"	"	"	"	"	
Sodium	448	0.0563	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	5.24	0.100	units	1	BED0169	04/09/21	04/09/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**SW Sample #5**  
**2103482-05 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

% Solids	88.8	%	1	BED0053	04/05/21	04/06/21	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	3.91	0.0100	mmhos/cm	1	BED0151	04/08/21	04/08/21	EPA 120.1	

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.17		pH Units	1	BED0152	04/08/21	04/08/21	EPA 9045D	

Summit Scientific

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1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**NW Sample #6**  
**2103482-06 (Soil)**

**Summit Scientific**

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BED0080	04/06/21	04/07/21	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: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.0 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BED0052	04/05/21	04/07/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		85.1 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**NW Sample #6**  
**2103482-06 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BED0022	04/01/21	04/03/21	EPA 8270D SIM	
<b>Anthracene</b>	<b>0.0109</b>	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>0.00570</b>	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
<b>Pyrene</b>	<b>0.00537</b>	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		91.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		90.2 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.336</b>	0.0100	mg/L	1	BED0081	04/06/21	04/07/21	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **03/30/21 13:00**

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

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**NW Sample #6**  
**2103482-06 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	9.71	0.249	mg/kg dry	1	BED0041	04/02/21	04/03/21	EPA 6020B	
Barium	266	0.497	"	"	"	"	"	"	
Cadmium	0.439	0.249	"	"	"	"	"	"	
Copper	25.5	0.497	"	"	"	"	"	"	
Lead	18.5	0.249	"	"	"	"	"	"	
Nickel	27.3	0.497	"	"	"	"	"	"	
Selenium	2.04	0.323	"	"	"	"	"	"	
Silver	0.183	0.0249	"	"	"	"	"	"	
Zinc	107	0.497	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BED0029	04/02/21	04/05/21	EPA 7196A	

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	67.3	0.0622	mg/L dry	1	BED0121	04/07/21	04/09/21	EPA 6020B	
Magnesium	30.6	0.0622	"	"	"	"	"	"	
Sodium	182	0.0622	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	4.62	0.100	units	1	BED0169	04/09/21	04/09/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **03/30/21 13:00**

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

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K.P. Kauffman  
 1675 Broadway  
 Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
 Project Manager: Max Knop

**Reported:**  
 04/12/21 13:39

**NW Sample #6**  
**2103482-06 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

<b>% Solids</b>	<b>80.4</b>	%	1	BED0053	04/05/21	04/06/21	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>1.62</b>	0.0100	mmhos/cm	1	BED0151	04/08/21	04/08/21	EPA 120.1	

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>pH</b>	<b>8.45</b>		pH Units	1	BED0152	04/08/21	04/08/21	EPA 9045D	

Summit Scientific

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**NE Sample #7**  
**2103482-07 (Soil)**

**Summit Scientific**

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BED0080	04/06/21	04/07/21	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: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		115 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		90.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.7 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BED0052	04/05/21	04/07/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		88.5 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**NE Sample #7**  
**2103482-07 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BED0022	04/01/21	04/03/21	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: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		84.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		93.3 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.368</b>	0.0100	mg/L	1	BED0081	04/06/21	04/07/21	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **03/30/21 13:00**

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

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**NE Sample #7**  
**2103482-07 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	7.23	0.261	mg/kg dry	1	BED0041	04/02/21	04/03/21	EPA 6020B	
Barium	227	0.523	"	"	"	"	"	"	
Cadmium	0.383	0.261	"	"	"	"	"	"	
Copper	19.2	0.523	"	"	"	"	"	"	
Lead	13.9	0.261	"	"	"	"	"	"	
Nickel	20.4	0.523	"	"	"	"	"	"	
Selenium	1.48	0.340	"	"	"	"	"	"	
Silver	0.145	0.0261	"	"	"	"	"	"	
Zinc	82.4	0.523	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BED0029	04/02/21	04/05/21	EPA 7196A	

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	72.2	0.0653	mg/L dry	1	BED0121	04/07/21	04/09/21	EPA 6020B	
Magnesium	30.7	0.0653	"	"	"	"	"	"	
Sodium	187	0.0653	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	4.65	0.100	units	1	BED0169	04/09/21	04/09/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **03/30/21 13:00**

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

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K.P. Kauffman  
 1675 Broadway  
 Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
 Project Manager: Max Knop

**Reported:**  
 04/12/21 13:39

**NE Sample #7**  
**2103482-07 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

% Solids	76.5	%	1	BED0053	04/05/21	04/06/21	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.26	0.0100	mmhos/cm	1	BED0151	04/08/21	04/08/21	EPA 120.1	

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.44		pH Units	1	BED0152	04/08/21	04/08/21	EPA 9045D	

Summit Scientific

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**SE Sample #8**  
**2103482-08 (Soil)**

**Summit Scientific**

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BED0080	04/06/21	04/07/21	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: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		90.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.5 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BED0052	04/05/21	04/07/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		87.7 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**SE Sample #8**  
**2103482-08 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BED0022	04/01/21	04/03/21	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: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		80.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		82.8 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.450</b>	0.0100	mg/L	1	BED0081	04/06/21	04/07/21	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **03/30/21 13:00**

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

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**SE Sample #8**  
**2103482-08 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	8.92	0.227	mg/kg dry	1	BED0041	04/02/21	04/03/21	EPA 6020B	
Barium	222	0.455	"	"	"	"	"	"	
Cadmium	0.547	0.227	"	"	"	"	"	"	
Copper	24.0	0.455	"	"	"	"	"	"	
Lead	16.6	0.227	"	"	"	"	"	"	
Nickel	26.0	0.455	"	"	"	"	"	"	
Selenium	1.82	0.296	"	"	"	"	"	"	
Silver	0.154	0.0227	"	"	"	"	"	"	
Zinc	97.7	0.455	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BED0029	04/02/21	04/05/21	EPA 7196A	

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	234	0.0569	mg/L dry	1	BED0121	04/07/21	04/09/21	EPA 6020B	
Magnesium	108	0.0569	"	"	"	"	"	"	
Sodium	494	0.0569	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	6.70	0.100	units	1	BED0169	04/09/21	04/09/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**SE Sample #8**  
**2103482-08 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

% Solids	87.9	%	1	BED0053	04/05/21	04/06/21	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	3.59	0.0100	mmhos/cm	1	BED0151	04/08/21	04/08/21	EPA 120.1	

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

Date Sampled: **03/30/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.34		pH Units	1	BED0152	04/08/21	04/08/21	EPA 9045D	

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

### 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 BED0080 - EPA 5030 Soil MS

##### Blank (BED0080-BLK1)

Prepared: 04/06/21 Analyzed: 04/07/21

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>	0.0353		"	0.0400		88.2	23-173			
<i>Surrogate: Toluene-d8</i>	0.0411		"	0.0400		103	20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0394		"	0.0400		98.4	21-167			

##### LCS (BED0080-BS1)

Prepared: 04/06/21 Analyzed: 04/07/21

Benzene	0.0779	0.0020	mg/kg	0.100		77.9	70-130			
Toluene	0.0825	0.0050	"	0.100		82.5	70-130			
Ethylbenzene	0.0891	0.0050	"	0.100		89.1	70-130			
m,p-Xylene	0.155	0.010	"	0.200		77.5	70-130			
o-Xylene	0.0776	0.0050	"	0.100		77.6	70-130			
1,2,4-Trimethylbenzene	0.0820	0.0050	"	0.100		82.0	70-130			
1,3,5-Trimethylbenzene	0.0771	0.0050	"	0.100		77.1	70-130			
Naphthalene	0.0865	0.0038	"	0.100		86.5	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0313		"	0.0400		78.2	23-173			
<i>Surrogate: Toluene-d8</i>	0.0382		"	0.0400		95.6	20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0380		"	0.0400		94.9	21-167			

##### Matrix Spike (BED0080-MS1)

Source: 2103472-01

Prepared: 04/06/21 Analyzed: 04/07/21

Benzene	0.0854	0.0020	mg/kg	0.100	ND	85.4	70-130			
Toluene	0.0826	0.0050	"	0.100	ND	82.6	70-130			
Ethylbenzene	0.0969	0.0050	"	0.100	ND	96.9	70-130			
m,p-Xylene	0.166	0.010	"	0.200	ND	83.0	70-130			
o-Xylene	0.0833	0.0050	"	0.100	ND	83.3	70-130			
1,2,4-Trimethylbenzene	0.0851	0.0050	"	0.100	ND	85.1	70-130			
1,3,5-Trimethylbenzene	0.0801	0.0050	"	0.100	ND	80.1	70-130			
Naphthalene	0.0931	0.0038	"	0.100	ND	93.1	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0332		"	0.0400		83.0	23-173			
<i>Surrogate: Toluene-d8</i>	0.0344		"	0.0400		86.0	20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0374		"	0.0400		93.5	21-167			

Summit Scientific

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**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 BED0080 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (BED0080-MSD1)</b>	<b>Source: 2103472-01</b>			Prepared: 04/06/21 Analyzed: 04/07/21						
Benzene	0.0878	0.0020	mg/kg	0.100	ND	87.8	70-130	2.77	30	
Toluene	0.0856	0.0050	"	0.100	ND	85.6	70-130	3.57	30	
Ethylbenzene	0.0973	0.0050	"	0.100	ND	97.3	70-130	0.463	30	
m,p-Xylene	0.165	0.010	"	0.200	ND	82.7	70-130	0.435	30	
o-Xylene	0.0848	0.0050	"	0.100	ND	84.8	70-130	1.75	30	
1,2,4-Trimethylbenzene	0.0874	0.0050	"	0.100	ND	87.4	70-130	2.64	30	
1,3,5-Trimethylbenzene	0.0819	0.0050	"	0.100	ND	81.9	70-130	2.15	30	
Naphthalene	0.0946	0.0038	"	0.100	ND	94.6	70-130	1.57	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0364</i>		<i>"</i>	<i>0.0400</i>		<i>91.0</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0351</i>		<i>"</i>	<i>0.0400</i>		<i>87.8</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0382</i>		<i>"</i>	<i>0.0400</i>		<i>95.5</i>	<i>21-167</i>			

Summit Scientific

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**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 BED0052 - EPA 3550A**

**Blank (BED0052-BLK1)**

Prepared: 04/05/21 Analyzed: 04/06/21

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							

**LCS (BED0052-BS1)**

Prepared: 04/05/21 Analyzed: 04/06/21

C10-C28 (DRO)	569	50	mg/kg	500	114	70-130				
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**Matrix Spike (BED0052-MS1)**

Source: 2103113-05

Prepared: 04/05/21 Analyzed: 04/06/21

C10-C28 (DRO)	472	50	mg/kg	500	27.0	89.0	70-130			
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**Matrix Spike Dup (BED0052-MSD1)**

Source: 2103113-05

Prepared: 04/05/21 Analyzed: 04/06/21

C10-C28 (DRO)	472	50	mg/kg	500	27.0	89.0	70-130	0.0778	20	
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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**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 BED0022 - EPA 5030 Soil MS**

**Blank (BED0022-BLK1)**

Prepared: 04/01/21 Analyzed: 04/02/21

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>0.0310</i>		<i>"</i>	<i>0.0333</i>		<i>92.9</i>		<i>40-150</i>		
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0301</i>		<i>"</i>	<i>0.0333</i>		<i>90.2</i>		<i>40-150</i>		

**LCS (BED0022-BS1)**

Prepared: 04/01/21 Analyzed: 04/02/21

Acenaphthene	0.0357	0.00500	mg/kg	0.0333	107	31-137
Anthracene	0.0355	0.00500	"	0.0333	107	30-120
Benzo (a) anthracene	0.0334	0.00500	"	0.0333	100	30-120
Benzo (a) pyrene	0.0367	0.00500	"	0.0333	110	30-120
Benzo (b) fluoranthene	0.0381	0.00500	"	0.0333	114	30-120
Benzo (k) fluoranthene	0.0359	0.00500	"	0.0333	108	30-120
Chrysene	0.0341	0.00500	"	0.0333	102	30-120
Dibenz (a,h) anthracene	0.0310	0.00500	"	0.0333	92.9	30-120
Fluoranthene	0.0270	0.00500	"	0.0333	80.9	30-120
Fluorene	0.0217	0.00500	"	0.0333	65.0	30-120
Indeno (1,2,3-cd) pyrene	0.0398	0.00500	"	0.0333	119	30-120
Pyrene	0.0262	0.00500	"	0.0333	78.5	35-142
1-Methylnaphthalene	0.0298	0.00500	"	0.0333	89.3	35-142
2-Methylnaphthalene	0.0310	0.00500	"	0.0333	93.0	35-142
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0314</i>		<i>"</i>	<i>0.0333</i>	<i>94.1</i>	<i>40-150</i>
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0339</i>		<i>"</i>	<i>0.0333</i>	<i>102</i>	<i>40-150</i>

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**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 BED0022 - EPA 5030 Soil MS**

<b>Matrix Spike (BED0022-MS1)</b>	<b>Source: 2103466-01</b>			<b>Prepared: 04/01/21 Analyzed: 04/02/21</b>							
Acenaphthene	0.0356	0.00500	mg/kg	0.0333	ND	107	31-137				
Anthracene	0.0367	0.00500	"	0.0333	ND	110	30-120				
Benzo (a) anthracene	0.0333	0.00500	"	0.0333	ND	99.9	30-120				
Benzo (a) pyrene	0.0375	0.00500	"	0.0333	ND	112	30-120				
Benzo (b) fluoranthene	0.0392	0.00500	"	0.0333	ND	118	30-120				
Benzo (k) fluoranthene	0.0374	0.00500	"	0.0333	ND	112	30-120				
Chrysene	0.0347	0.00500	"	0.0333	ND	104	30-120				
Dibenz (a,h) anthracene	0.0324	0.00500	"	0.0333	ND	97.2	30-120				
Fluoranthene	0.0274	0.00500	"	0.0333	ND	82.3	30-120				
Fluorene	0.0199	0.00500	"	0.0333	ND	59.6	30-120				
Indeno (1,2,3-cd) pyrene	0.0340	0.00500	"	0.0333	ND	102	30-120				
Pyrene	0.0261	0.00500	"	0.0333	ND	78.3	35-142				
1-Methylnaphthalene	0.0294	0.00500	"	0.0333	ND	88.2	15-130				
2-Methylnaphthalene	0.0323	0.00500	"	0.0333	ND	96.8	15-130				
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0315</i>		<i>"</i>	<i>0.0333</i>		<i>94.5</i>	<i>40-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0343</i>		<i>"</i>	<i>0.0333</i>		<i>103</i>	<i>40-150</i>				

<b>Matrix Spike Dup (BED0022-MSD1)</b>	<b>Source: 2103466-01</b>			<b>Prepared: 04/01/21 Analyzed: 04/02/21</b>							
Acenaphthene	0.0397	0.00500	mg/kg	0.0333	ND	119	31-137	11.0	30		
Anthracene	0.0380	0.00500	"	0.0333	ND	114	30-120	3.27	30		
Benzo (a) anthracene	0.0361	0.00500	"	0.0333	ND	108	30-120	8.09	30		
Benzo (a) pyrene	0.0382	0.00500	"	0.0333	ND	115	30-120	1.84	30		
Benzo (b) fluoranthene	0.0350	0.00500	"	0.0333	ND	105	30-120	11.3	30		
Benzo (k) fluoranthene	0.0325	0.00500	"	0.0333	ND	97.5	30-120	13.9	30		
Chrysene	0.0373	0.00500	"	0.0333	ND	112	30-120	7.08	30		
Dibenz (a,h) anthracene	0.0306	0.00500	"	0.0333	ND	91.7	30-120	5.85	30		
Fluoranthene	0.0284	0.00500	"	0.0333	ND	85.2	30-120	3.54	30		
Fluorene	0.0238	0.00500	"	0.0333	ND	71.3	30-120	17.9	30		
Indeno (1,2,3-cd) pyrene	0.0350	0.00500	"	0.0333	ND	105	30-120	2.88	30		
Pyrene	0.0285	0.00500	"	0.0333	ND	85.6	35-142	8.94	30		
1-Methylnaphthalene	0.0323	0.00500	"	0.0333	ND	96.9	15-130	9.41	50		
2-Methylnaphthalene	0.0344	0.00500	"	0.0333	ND	103	15-130	6.41	50		
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0326</i>		<i>"</i>	<i>0.0333</i>		<i>97.9</i>	<i>40-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0351</i>		<i>"</i>	<i>0.0333</i>		<i>105</i>	<i>40-150</i>				

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**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 BED0081 - EPA 3050B**

**Blank (BED0081-BLK1)**

Prepared: 04/06/21 Analyzed: 04/07/21

Boron ND 0.0100 mg/L

**LCS (BED0081-BS1)**

Prepared: 04/06/21 Analyzed: 04/07/21

Boron 5.31 0.0100 mg/L 5.00 106 80-120

**Duplicate (BED0081-DUP1)**

Source: 2103289-01

Prepared: 04/06/21 Analyzed: 04/07/21

Boron 0.0469 0.0100 mg/L 0.0490 4.36 20

**Matrix Spike (BED0081-MS1)**

Source: 2103289-01

Prepared: 04/06/21 Analyzed: 04/07/21

Boron 5.38 0.0100 mg/L 5.00 0.0490 107 75-125

**Matrix Spike Dup (BED0081-MSD1)**

Source: 2103289-01

Prepared: 04/06/21 Analyzed: 04/07/21

Boron 5.30 0.0100 mg/L 5.00 0.0490 105 75-125 1.47 25

Summit Scientific

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

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

**Batch BED0041 - EPA 3050B**

**Blank (BED0041-BLK1)**

Prepared: 04/02/21 Analyzed: 04/03/21

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

**LCS (BED0041-BS1)**

Prepared: 04/02/21 Analyzed: 04/03/21

Arsenic	45.2	0.200	mg/kg wet	40.0	113	80-120
Barium	35.0	0.400	"	40.0	87.5	80-120
Cadmium	1.96	0.200	"	2.00	98.0	80-120
Copper	38.7	0.400	"	40.0	96.8	80-120
Lead	16.1	0.200	"	20.0	80.7	80-120
Nickel	39.1	0.400	"	40.0	97.6	80-120
Selenium	3.94	0.260	"	4.00	98.5	80-120
Silver	1.81	0.0200	"	2.00	90.5	80-120
Zinc	47.4	0.400	"	40.0	119	80-120

**Duplicate (BED0041-DUP1)**

Source: 2103482-01

Prepared: 04/02/21 Analyzed: 04/03/21

Arsenic	6.64	0.240	mg/kg dry	5.91	11.6	30
Barium	235	0.479	"	214	9.18	30
Cadmium	0.323	0.240	"	0.316	2.15	30
Copper	20.3	0.479	"	18.7	8.28	30
Lead	14.3	0.240	"	13.4	6.74	30
Nickel	20.2	0.479	"	18.5	8.87	30
Selenium	1.43	0.312	"	1.36	5.33	30
Silver	0.162	0.0240	"	0.144	12.0	30
Zinc	81.1	0.479	"	74.3	8.73	30

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**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 BED0041 - EPA 3050B**

**Matrix Spike (BED0041-MS1)**

Source: 2103482-01

Prepared: 04/02/21 Analyzed: 04/03/21

Arsenic	56.8	0.240	mg/kg dry	47.9	5.91	106	75-125			
Barium	253	0.479	"	47.9	214	79.9	75-125			
Cadmium	2.61	0.240	"	2.40	0.316	95.7	75-125			
Copper	62.7	0.479	"	47.9	18.7	91.9	75-125			
Lead	32.0	0.240	"	24.0	13.4	77.9	75-125			
Nickel	64.4	0.479	"	47.9	18.5	95.7	75-125			
Selenium	5.02	0.312	"	4.79	1.36	76.4	75-125			
Silver	2.26	0.0240	"	2.40	0.144	88.4	75-125			
Zinc	128	0.479	"	47.9	74.3	112	75-125			

**Matrix Spike Dup (BED0041-MSD1)**

Source: 2103482-01

Prepared: 04/02/21 Analyzed: 04/03/21

Arsenic	61.2	0.240	mg/kg dry	47.9	5.91	115	75-125	7.45	25
Barium	251	0.479	"	47.9	214	76.2	75-125	0.713	25
Cadmium	3.13	0.240	"	2.40	0.316	118	75-125	18.3	25
Copper	70.7	0.479	"	47.9	18.7	108	75-125	11.9	25
Lead	38.3	0.240	"	24.0	13.4	104	75-125	17.9	25
Nickel	68.1	0.479	"	47.9	18.5	103	75-125	5.62	25
Selenium	6.38	0.312	"	4.79	1.36	105	75-125	23.7	25
Silver	2.72	0.0240	"	2.40	0.144	107	75-125	18.2	25
Zinc	116	0.479	"	47.9	74.3	86.7	75-125	10.1	25

Summit Scientific

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

**Hexavalent Chromium by EPA Method 7196 - Quality Control**  
**Summit Scientific**

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

**Batch BED0029 - 3060A Mod**

**Blank (BED0029-BLK1)**

Prepared: 04/02/21 Analyzed: 04/05/21

Chromium, Hexavalent ND 0.30 mg/kg wet

**LCS (BED0029-BS1)**

Prepared: 04/02/21 Analyzed: 04/05/21

Chromium, Hexavalent 22.9 0.30 mg/kg wet 25.0 91.6 80-120

**Duplicate (BED0029-DUP1)**

**Source: 2102086-05**

Prepared: 04/02/21 Analyzed: 04/05/21

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

**Matrix Spike (BED0029-MS1)**

**Source: 2102086-05**

Prepared: 04/02/21 Analyzed: 04/05/21

Chromium, Hexavalent 27.4 0.30 mg/kg dry 28.3 ND 97.0 75-125

**Matrix Spike Dup (BED0029-MSD1)**

**Source: 2102086-05**

Prepared: 04/02/21 Analyzed: 04/05/21

Chromium, Hexavalent 27.3 0.30 mg/kg dry 28.3 ND 96.4 75-125 0.620 20

Summit Scientific

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

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

**Summit Scientific**

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

**Batch BED0121 - General Preparation**

**Blank (BED0121-BLK1)**

Prepared: 04/07/21 Analyzed: 04/09/21

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

**LCS (BED0121-BS1)**

Prepared: 04/07/21 Analyzed: 04/09/21

Calcium	6.09	0.0500	mg/L wet	5.00	122	70-130
Magnesium	6.50	0.0500	"	5.00	130	70-130
Sodium	6.08	0.0500	"	5.00	122	70-130

Summit Scientific

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K.P. Kauffman  
 1675 Broadway  
 Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
 Project Manager: Max Knop

**Reported:**  
 04/12/21 13:39

**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 BED0053 - General Preparation**

<b>Duplicate (BED0053-DUP1)</b>		<b>Source: 2103388-07</b>		Prepared: 04/05/21 Analyzed: 04/06/21	
% Solids	95.5	%		95.5	0.00469 20

Summit Scientific

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K.P. Kauffman  
 1675 Broadway  
 Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
 Project Manager: Max Knop

**Reported:**  
 04/12/21 13:39

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

**Summit Scientific**

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

**Batch BED0151 - General Preparation**

**Blank (BED0151-BLK1)**

Prepared & Analyzed: 04/08/21

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BED0151-BS1)**

Prepared & Analyzed: 04/08/21

Specific Conductance (EC) 0.152 0.0100 mmhos/cm 0.150 101 90-110

**Duplicate (BED0151-DUP1)**

Source: 2103341-03

Prepared & Analyzed: 04/08/21

Specific Conductance (EC) 4.61 0.0100 mmhos/cm 4.50 2.42 20

Summit Scientific

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K.P. Kauffman  
 1675 Broadway  
 Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
 Project Manager: Max Knop

**Reported:**  
 04/12/21 13:39

**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 BED0152 - General Preparation**

**LCS (BED0152-BS1)**

Prepared & Analyzed: 04/08/21

pH	9.29	pH Units	9.21	101	95-105
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**Duplicate (BED0152-DUP1)**

Source: 2103341-03

Prepared & Analyzed: 04/08/21

pH	8.18	pH Units	8.11	0.859	20
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Summit Scientific

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K.P. Kauffman  
1675 Broadway  
Denver CO, 80202

Project: Kiefer George W UT B #1A Flowline Release

Project Number: [none]  
Project Manager: Max Knop

**Reported:**  
04/12/21 13:39

### Notes and Definitions

DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference