



**PDC Energy, Inc.**  
Fourth Quarter 2022 Groundwater Monitoring Summary

October 27, 2022

Former Von Feldt 13-12 Wellhead  
SWSW Section 12 T6N R65W  
Remediation # 19634

This groundwater monitoring summary has been prepared by Tasman, Inc. for the former Von Feldt 13-12 Wellhead.

### Site History and Background

On September 2, 2021, a historic hydrocarbon release was discovered at the former wellhead during wellhead decommissioning activities. Following the discovery, mitigation activities were initiated and approximately 8 cubic yards of impacted material were removed from the former excavation. During excavation activities, groundwater was encountered within the excavation at approximately 6 feet below ground surface (bgs). On January 21, 2022, five monitoring wells (BH01 – BH05) were installed to confirm the absence of dissolved-phase hydrocarbon impacts within and adjacent to the former excavation extent.

### Groundwater Monitoring Activities

On October 13, 2022, groundwater monitoring was conducted at all five monitoring wells (BH01 – BH05). Five (5) groundwater samples were submitted to Summit Scientific Laboratories for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, 1,2,4-trimethylbenzene (TMB), and 1,3,5-TMB by EPA Method 8260B, chloride and sulfate anions by EPA Method 300.0 and total dissolved solids (TDS) by Method SM 2540C.

Fourth quarter 2022 analytical results indicated that organic compound concentrations were below the applicable COGCC Table 915-1 groundwater standards in all five monitoring well locations. TDS concentrations were in compliance with the applicable COGCC Table 915-1 regulatory standards in all five monitoring well locations. Chloride and sulfate anion concentrations were in exceedance of the applicable regulatory standards and above 1.25x the background concentrations of the up- and cross-gradient monitoring wells (BH02 - BH04) in monitoring well BH05. In addition, sulfate and chloride anion concentration trends were examined over time and compared to historic background data and groundwater flow direction. Based on the results, historic anion concentrations in all monitoring wells were below the 125% threshold of the historic maximum background concentration recorded during the third quarter of 2022. The graphs illustrating the data are included as Attachment A. Sample locations and corresponding analytical results are illustrated on Figures 1 and 2. Groundwater elevation data is illustrated on Figure 3. Groundwater analytical results are summarized in Tables 1 and 2. The laboratory analytical report is included as Attachment B.

## Current Remediation Activities and Path Forward

Monitored natural attenuation (MNA) was selected as the remediation strategy for this site during the first quarter 2022 and will remain the selected remediation strategy through the first quarter 2023.

During the fourth quarter 2022, four consecutive quarters of organic compound and TDS concentrations in compliance with the applicable COGCC Table 915-1 groundwater standards were achieved.

First quarter 2023 groundwater sampling will be conducted in January 2023.

BH02		
Compound (µg/L)	7/5/2022	10/13/2022
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0
1,3,5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	2.93	5.54

BH05		
Compound (µg/L)	7/5/2022	10/13/2022
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0
1,3,5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	3.04	5.63

BH03		
Compound (µg/L)	7/5/2022	10/13/2022
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0
1,3,5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	3.03	5.64

BH04		
Compound (µg/L)	7/5/2022	10/13/2022
Benzene	1.1	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0
1,3,5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	2.90	5.50

BH01		
Compound (µg/L)	7/5/2022	10/13/2022
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0
1,3,5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	3.04	5.66

**Legend**

- Underground Flowline Location (Collected via Trimble GPS)
- Excavation Extent (Collected via Trimble GPS)
- Groundwater Sample Location
- Monitoring Well Location (Collected via Trimble GPS)
- Groundwater Flow Direction (4Q22)

**Notes**

All locations are approximate unless otherwise noted.

µg/L – Micrograms per liter

TMB – Trimethylbenzene

ft. bgs – Feet below ground surface

GPS – Global Positioning System

0 ft. 10 ft. 20 ft.

Image Source: Google Earth; July 2019  
Projection: WGS 84 UTM Zone 13 North

DATE: October 27, 2022

DESIGNED BY: C. Hamlin

DRAWN BY: C. Jonjak

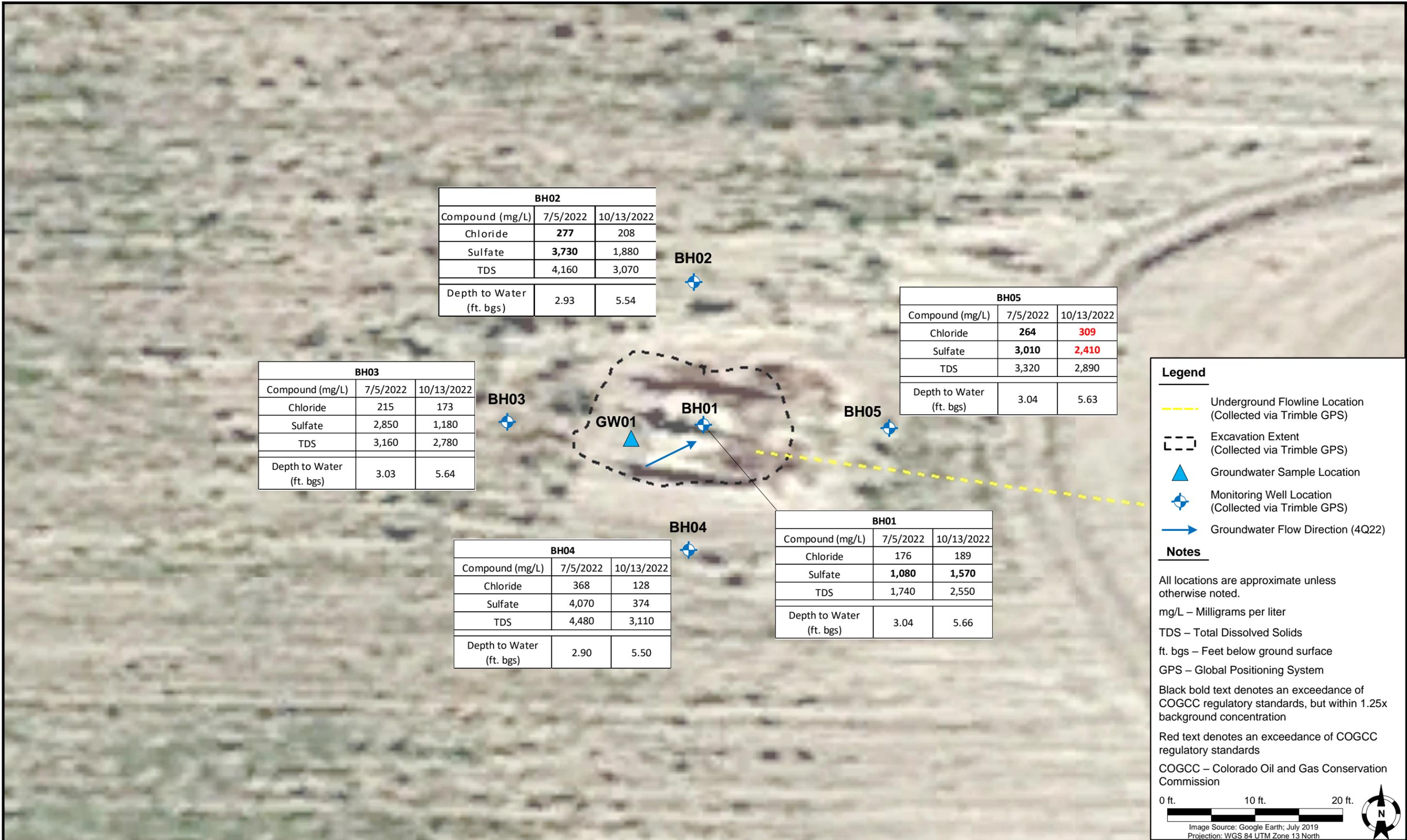


**Tasman, Inc.**  
6855 W. 119<sup>th</sup> Ave.  
Broomfield, CO 80020

**PDC Energy, Inc. – DJ Basin**  
**Former Von Feldt 13-12 Wellhead**  
SWSW, Section 12, Township 6 North, Range 65 West  
Weld County, Colorado

**GROUNDWATER**  
**ANALYTICAL RESULTS**  
**MAP**

**FIGURE**  
**1**



BH02		
Compound (mg/L)	7/5/2022	10/13/2022
Chloride	<b>277</b>	208
Sulfate	<b>3,730</b>	1,880
TDS	4,160	3,070
Depth to Water (ft. bgs)		
	2.93	5.54

BH05		
Compound (mg/L)	7/5/2022	10/13/2022
Chloride	<b>264</b>	<b>309</b>
Sulfate	<b>3,010</b>	<b>2,410</b>
TDS	3,320	2,890
Depth to Water (ft. bgs)		
	3.04	5.63

BH03		
Compound (mg/L)	7/5/2022	10/13/2022
Chloride	215	173
Sulfate	2,850	1,180
TDS	3,160	2,780
Depth to Water (ft. bgs)		
	3.03	5.64

BH01		
Compound (mg/L)	7/5/2022	10/13/2022
Chloride	176	189
Sulfate	<b>1,080</b>	<b>1,570</b>
TDS	1,740	2,550
Depth to Water (ft. bgs)		
	3.04	5.66

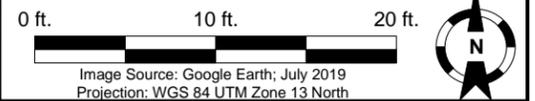
BH04		
Compound (mg/L)	7/5/2022	10/13/2022
Chloride	368	128
Sulfate	4,070	374
TDS	4,480	3,110
Depth to Water (ft. bgs)		
	2.90	5.50

**Legend**

- Underground Flowline Location (Collected via Trimble GPS)
- Excavation Extent (Collected via Trimble GPS)
- Groundwater Sample Location
- Monitoring Well Location (Collected via Trimble GPS)
- Groundwater Flow Direction (4Q22)

**Notes**

All locations are approximate unless otherwise noted.  
 mg/L – Milligrams per liter  
 TDS – Total Dissolved Solids  
 ft. bgs – Feet below ground surface  
 GPS – Global Positioning System  
 Black bold text denotes an exceedance of COGCC regulatory standards, but within 1.25x background concentration  
 Red text denotes an exceedance of COGCC regulatory standards  
 COGCC – Colorado Oil and Gas Conservation Commission



DATE: October 27, 2022  
 DESIGNED BY: C. Hamlin  
 DRAWN BY: C. Jonjak

**Tasman, Inc.**  
 6855 W. 119<sup>th</sup> Ave.  
 Broomfield, CO 80020

**PDC Energy, Inc. – DJ Basin**  
**Former Von Feldt 13-12 Wellhead**  
 SWSW, Section 12, Township 6 North, Range 65 West  
 Weld County, Colorado

**GROUNDWATER ANALYTICAL RESULTS MAP (INORGANIC PARAMETERS)**

**FIGURE 2**



**Legend**

- Monitoring Well Location (Collected via Trimble GPS)
- Excavation Extent (Collected via Trimble GPS)
- Underground Flowline Location (Collected via Trimble GPS)
- Groundwater Elevation Contour (Dashed where inferred)
- 4681.91** Groundwater Elevation (ft. AMSL)
- Groundwater Flow Direction (4Q22)

**Notes**

All locations are approximate unless otherwise noted.

ft. AMSL – Feet Above Mean Sea Level

GPS – Global Positioning System

0 ft.      10 ft.      20 ft.

Image Source: Google Earth; July 2019  
Projection: WGS 84 UTM Zone 13 North



DATE: November 7, 2022

DESIGNED BY: C. Hamlin

DRAWN BY: J. Marcus



**Tasman, Inc.**  
6855 West 119<sup>th</sup> Avenue  
Broomfield, CO 80020

**PDC Energy, Inc. – DJ Basin**  
**Former Von Feldt 13-12 Wellhead**  
SWSW, Section 12, Township 6 North, Range 65 West  
Weld County, Colorado

**GROUNDWATER  
ELEVATION CONTOUR  
MAP (10/13/2022)**

**FIGURE  
3**

**TABLE 1**  
**FORMER VON FELDT 13-12 WELLHEAD**  
**GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE**  
**ORGANIC COMPOUNDS**

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Naphthalene (µg/L)	1,2,4-TMB (µg/L)	1,3,5-TMB (µg/L)	Depth to Water <sup>(2)</sup> (ft.)	Groundwater Elevation (ft. AMSL)
<b>COGCC Table 915-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	<b>140</b>	<b>67</b>	<b>67</b>	-	-
GW01	9/2/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	~6	NA
BH01	1/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.77	4708.82
BH01	4/8/2022	Not Sampled - Dry							DRY	DRY
BH01	7/5/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.04	4715.72
BH01	10/13/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	5.66	4713.10
BH02	1/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.51	4708.70
BH02	4/8/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.26	4707.95
BH02	7/5/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	2.93	4715.70
BH02	10/13/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	5.54	4713.09
BH03	1/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.69	4708.87
BH03	4/8/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	NA	NA
BH03	7/5/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.03	4715.77
BH03	10/13/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	5.64	4713.16
BH04	1/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.56	4708.79
BH04	4/8/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	10.52	4707.83
BH04	7/5/2022	1.1	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	2.90	4715.73
BH04	10/13/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	5.50	4713.13
BH05	1/25/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.74	4708.70
BH05	4/8/2022	Not Sampled - Insufficient Water Column							10.53	4707.91
BH05	7/5/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.04	4715.62
BH05	10/13/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	5.63	4713.03

**Notes:**

- Groundwater standards referenced from 2 CCR 404-1, Table 915-1, January 15, 2021.
- Depth to water measurements were measured from ground surface for excavation samples. Monitoring well measurements were collected from top of casing and adjusted using survey data to reflect depth of water from ground surface.

TMB = Trimethylbenzene

COGCC = Colorado Oil and Gas Conservation Commission

µg/L = Micrograms per liter

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

ft. = Feet

AMSL = Above Mean Sea Level

NA = Survey data not available

**TABLE 2**  
**FORMER VON FELDT 13-12 WELLHEAD**  
**GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE**  
**INORGANIC PARAMETERS**

Sample ID	Date Sampled	TDS (unit)	Chloride Ion (mg/L)	Sulfate Ion (mg/L)	Depth to Water <sup>(2)</sup> (ft.)	Groundwater Elevation (ft. AMSL)
<b>COGCC Table 915-1 Groundwater Standard (mg/L) <sup>(1)</sup></b>		<b>&lt;1.25 x BCKG</b>	<b>250 or &lt;1.25 x BCKG</b>	<b>250 or &lt;1.25 x BCKG</b>	-	-
BH01	1/28/2022	3,410	173	<b>1,750</b>	9.77	4708.82
BH01	4/8/2022	Not Sampled - Dry			DRY	DRY
BH01	7/5/2022	1,740	176	<b>1,080</b>	3.04	4715.72
BH01	10/13/2022	2,550	189	<b>1,570</b>	5.66	4713.10
BH02	1/28/2022	4,530	244	<b>2,300</b>	9.51	4708.70
BH02	4/8/2022	Not Sampled - Insufficient Water Column			10.26	4707.95
BH02	7/5/2022	4,160	<b>277</b>	<b>3,730</b>	2.93	4715.70
BH02	10/13/2022	3,070	208	1,880	5.54	4713.09
BH03	1/28/2022	3,740	188	1,830	9.69	4708.87
BH03	4/8/2022	3,660	266	3,060	NA	NA
BH03	7/5/2022	3,160	215	2,850	3.03	4715.77
BH03	10/13/2022	2,780	173	1,180	5.64	4713.16
BH04	1/28/2022	3,030	113	1,450	9.56	4708.79
BH04	4/8/2022	2,960	155	<b>2,450</b>	10.52	4707.83
BH04	7/5/2022	4,480	368	4,070	2.90	4715.73
BH04	10/13/2022	3,110	128	374	5.50	4713.13
BH05	1/28/2022	2,910	126	<b>1,280</b>	9.74	4708.70
BH05	4/8/2022	Not Sampled - Insufficient Water Column			10.53	4707.91
BH05	7/5/2022	3,320	<b>264</b>	<b>3,010</b>	3.04	4715.62
BH05	10/13/2022	2,890	<b>309</b>	<b>2,410</b>	5.63	4713.03

**TABLE 2**  
**FORMER VON FELDT 13-12 WELLHEAD**  
**GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE**  
**INORGANIC PARAMETERS**

Sample ID	Date Sampled	TDS (unit)	Chloride Ion (mg/L)	Sulfate Ion (mg/L)	Depth to Water <sup>(2)</sup> (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 915-1 Groundwater Standard (mg/L) <sup>(1)</sup>		<1.25 x BCKG	250 or <1.25 x BCKG	250 or <1.25 x BCKG	-	-

**Notes:**

1. Groundwater standards referenced from 2 CCR 404-1, Table 915-1, January 15, 2021.
2. Depth to water measurements were measured from ground surface for excavation samples. Monitoring well measurements were collected from top of casing and adjusted using survey data to reflect depth of water from ground surface.

TDS = Total dissolved solids

COGCC = Colorado Oil and Gas Conservation Commission

BCKG = Background

mg/L = Milligrams per liter

ft. = Feet

AMSL = Above Mean Sea Level

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

NA = Survey data not available

  = Up- / cross-gradient well location used for background concentration.

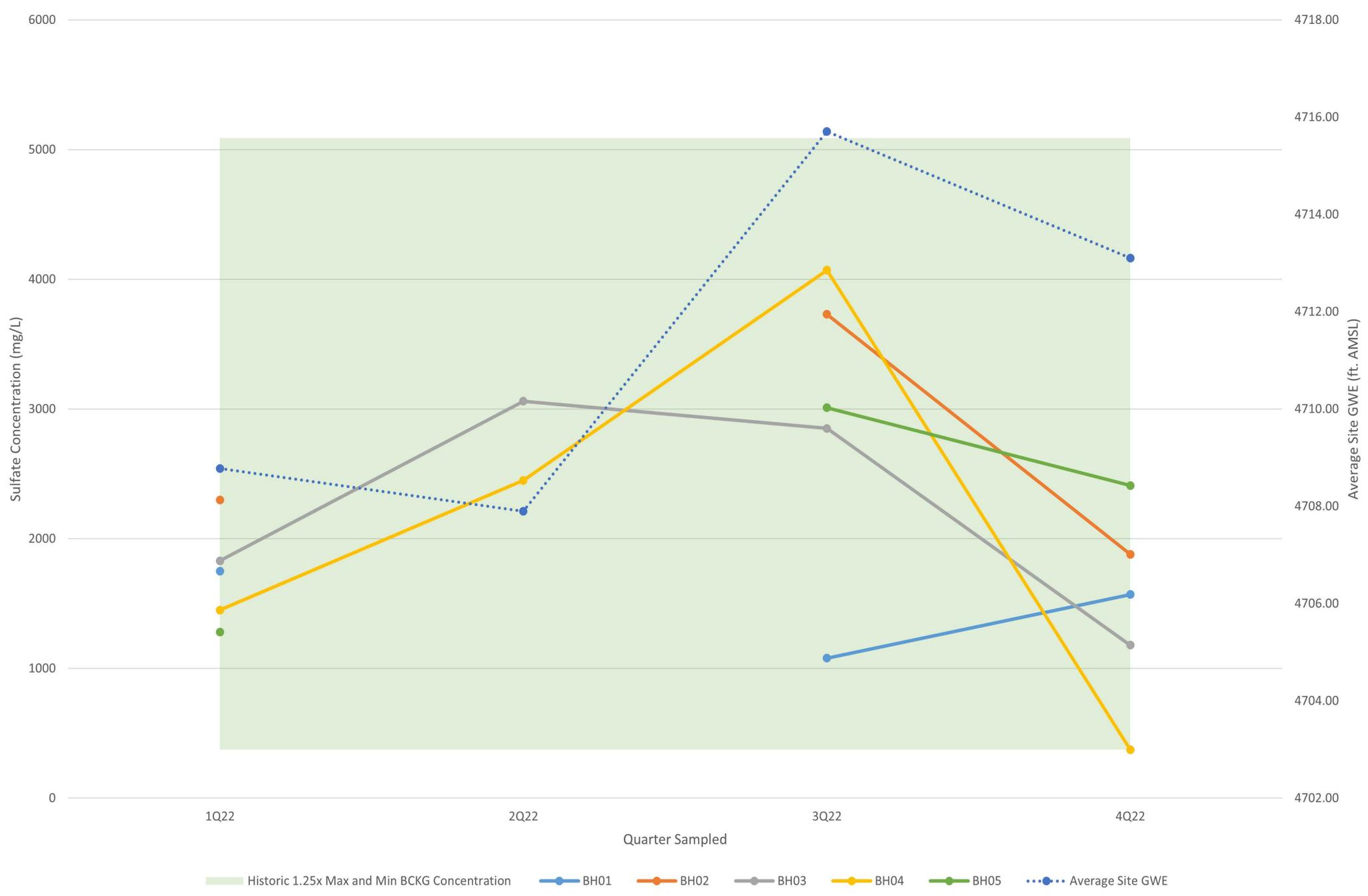
**BOLD** = Analytical result is in exceedance of applicable standard but within 1.25x background concentration.

**BOLD** = Analytical result is in exceedance of applicable standard and above 1.25x background concentration.

## Attachment A

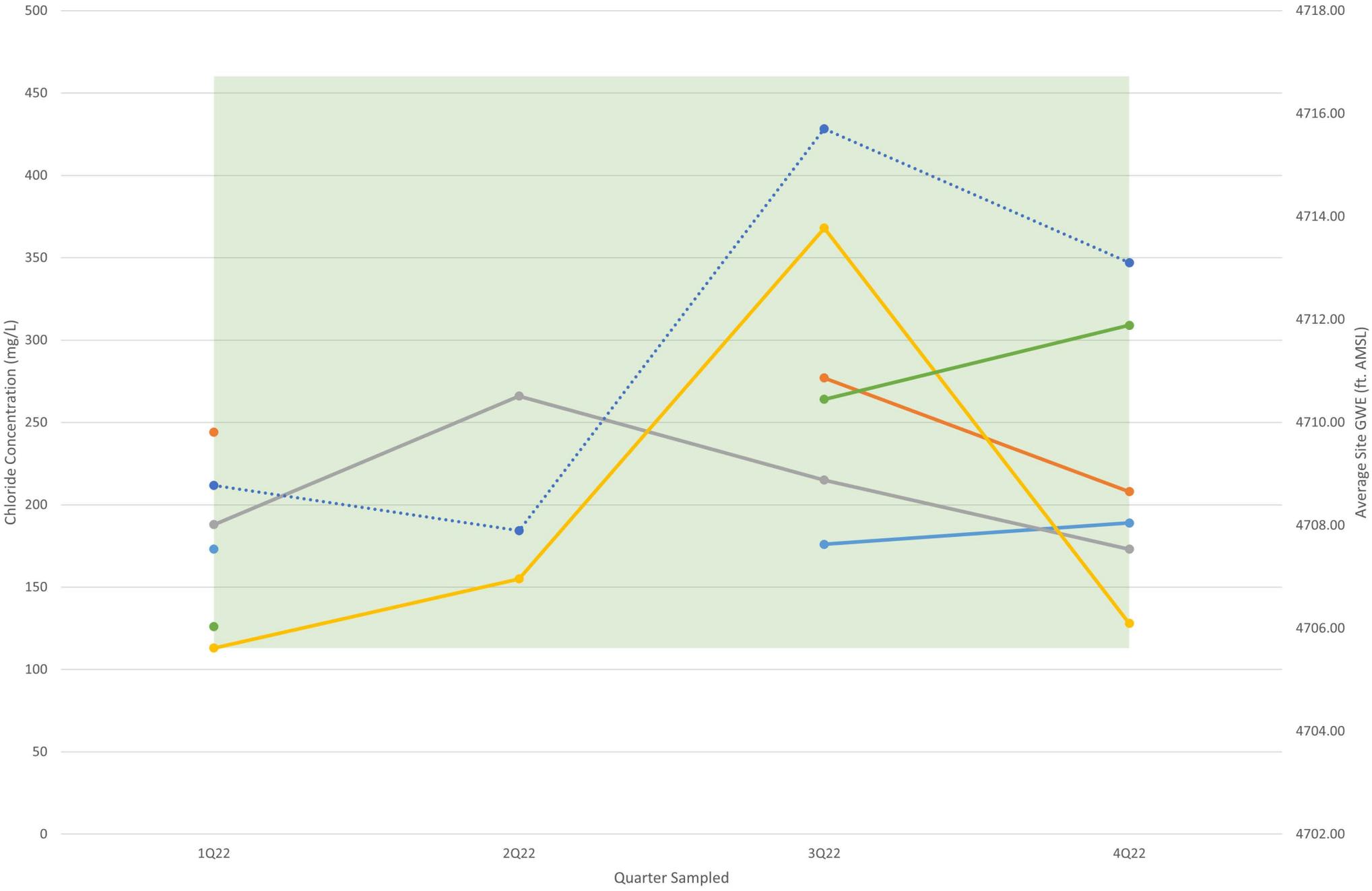
# Von Feldt 13-12 Wellhead

## Sulfate Concentration vs Historic Background



# Von Feldt 13-12 Wellhead

## Chloride Concentration vs Historic Background



Historic 1.25x Max and Min BCKG Concentration    BH01    BH02    BH03    BH04    BH05    Average Site GWE

## Attachment B

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

October 21, 2022

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Von Feldt 13-12 Wellhead

Work Order #2210221

Enclosed are the results of analyses for samples received by Summit Scientific on 10/13/22 17:47. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mikayla Axtell For Paul Shrewsbury

President



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Von Feldt 13-12 Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
10/21/22 14:51

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2210221-01	Water	10/13/22 10:59	10/13/22 17:47
BH02	2210221-02	Water	10/13/22 11:20	10/13/22 17:47
BH03	2210221-03	Water	10/13/22 10:38	10/13/22 17:47
BH04	2210221-04	Water	10/13/22 10:49	10/13/22 17:47
BH05	2210221-05	Water	10/13/22 11:11	10/13/22 17:47

Summit Scientific

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

# Summit Scientific

S<sub>2</sub>

2210221

4653 Table Mountain Drive ♦ Golden, Colorado 80403  
303-277-9310 ♦ 303-374-5933 (f)

Page | of |

Client: PDC/Tasman Project Manager: Mark Longhurst  
Address: 6855 W 119th Ave E-Mail: Mark.longhurst@pdce.com  
City/State/Zip: Broomfield CO 80020  
Phone: 303-487-1228 Project Name: Von Feldt 13-12 wellhead  
Sampler Name: Chase Jonjak Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested							Special Instructions
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEXN - 8260B	TPH-(C6-C36)	TMB's(1,2,4)&(1,3,5)	Boron - HWS	pH, EC, SAR	PAH - 915	Metals - 915	
1	BH01	10/13/2022	1059	4	3		2		X				X	X					X	
2	BH02		1120																	
3	BH03		1038																	
4	BH04		1049																	
5	BH05		1111																	
6																				
7																				
8																				
9																				
10																				
Relinquished by: Chase J		Date/Time: 10/13/2022 1346		Received by: Tasman Lockbox		Date/Time: 10/13/2022 1545		Turn Around Time (Check)				Notes:								
								Same Day _____ 72 hours												
								24 hours _____ Standard <input checked="" type="checkbox"/>												
								48 hours _____												
Relinquished by: Tasman Lockbox		Date/Time: 10/322 1747		Received by: [Signature]		Date/Time: 10/322 1747		Sample Integrity:												
								Temperature Upon Receipt: 6.8												
Relinquished by:		Date/Time:		Received by:		Date/Time:		Samples Intact: <input checked="" type="checkbox"/> Yes No												

S<sub>2</sub>

Sample Receipt Checklist

S2 Work Order# 2210221

Client: Pochrasman

Client Project ID: Unfeldt 13-12 wellhead

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

Airbill #: \_\_\_\_\_

-

Matrix (Check all that apply)

Air

Soil/Solid

Water

Other

Temp (°C)

6.8

Thermometer #

1

	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"/>	<u>on ICE</u>
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 type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>HCl</u>
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.

[Signature]  
Custodian Printed Name

10-13-22 24:00  
Date/Time



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Von Feldt 13-12 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/21/22 14:51

**BH01**  
**2210221-01 (Water)**

**Summit Scientific**

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

Date Sampled: **10/13/22 10:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BFJ0408	10/17/22	10/18/22	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **10/13/22 10:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		100 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		105 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %		21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **10/13/22 10:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	<b>189</b>	12.0		mg/L	200	BFJ0511	10/20/22	10/21/22	EPA 300.0	
Sulfate	<b>1570</b>	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **10/13/22 10:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>2550</b>	10.0		mg/L	1	BFJ0420	10/17/22	10/18/22	SM2540C	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Von Feldt 13-12 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/21/22 14:51

**BH02**  
**2210221-02 (Water)**

**Summit Scientific**

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

Date Sampled: **10/13/22 11:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BFJ0408	10/17/22	10/18/22	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **10/13/22 11:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		99.7 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		105 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %		21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **10/13/22 11:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	<b>208</b>	12.0		mg/L	200	BFJ0511	10/20/22	10/21/22	EPA 300.0	
Sulfate	<b>1880</b>	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **10/13/22 11:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	<b>3070</b>	10.0		mg/L	1	BFJ0420	10/17/22	10/18/22	SM2540C	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Von Feldt 13-12 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/21/22 14:51

**BH03**  
**2210221-03 (Water)**

**Summit Scientific**

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

Date Sampled: **10/13/22 10:38**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BFJ0408	10/17/22	10/18/22	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **10/13/22 10:38**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		100 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %		21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **10/13/22 10:38**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	<b>173</b>	12.0		mg/L	200	BFJ0511	10/20/22	10/21/22	EPA 300.0	
Sulfate	<b>1180</b>	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **10/13/22 10:38**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	<b>2780</b>	10.0		mg/L	1	BFJ0420	10/17/22	10/18/22	SM2540C	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Von Feldt 13-12 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/21/22 14:51

**BH04**  
**2210221-04 (Water)**

**Summit Scientific**

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

Date Sampled: **10/13/22 10:49**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BFJ0408	10/17/22	10/18/22	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **10/13/22 10:49**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		100 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %		21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **10/13/22 10:49**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	<b>128</b>	12.0		mg/L	200	BFJ0511	10/20/22	10/21/22	EPA 300.0	
Sulfate	<b>374</b>	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **10/13/22 10:49**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>3110</b>	10.0		mg/L	1	BFJ0420	10/17/22	10/18/22	SM2540C	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Von Feldt 13-12 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/21/22 14:51

**BH05**  
**2210221-05 (Water)**

**Summit Scientific**

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

Date Sampled: **10/13/22 11:11**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BFJ0408	10/17/22	10/18/22	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **10/13/22 11:11**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		99.7 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %		21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **10/13/22 11:11**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	<b>309</b>	12.0		mg/L	200	BFJ0511	10/20/22	10/21/22	EPA 300.0	
Sulfate	<b>2410</b>	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **10/13/22 11:11**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>2890</b>	10.0		mg/L	1	BFJ0420	10/17/22	10/18/22	SM2540C	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Von Feldt 13-12 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/21/22 14:51

### Volatile Organic Compounds by EPA Method 8260B - Quality Control

#### Summit Scientific

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

#### Batch BFJ0408 - EPA 5030 Water MS

##### Blank (BFJ0408-BLK1)

Prepared: 10/17/22 Analyzed: 10/18/22

Benzene	ND	1.0	ug/l								
Toluene	ND	1.0	"								
Ethylbenzene	ND	1.0	"								
Xylenes (total)	ND	2.0	"								
Naphthalene	ND	1.0	"								
1,2,4-Trimethylbenzene	ND	1.0	"								
1,3,5-Trimethylbenzene	ND	1.0	"								
Surrogate: 1,2-Dichloroethane-d4	13.3		"	13.3		99.7		23-173			
Surrogate: Toluene-d8	13.9		"	13.3		104		20-170			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		100		21-167			

##### LCS (BFJ0408-BS1)

Prepared: 10/17/22 Analyzed: 10/18/22

Benzene	30.1	1.0	ug/l	33.3		90.3		51-132			
Toluene	33.7	1.0	"	33.3		101		51-138			
Ethylbenzene	44.6	1.0	"	33.3		134		58-146			
m,p-Xylene	89.7	2.0	"	66.7		135		57-144			
o-Xylene	42.0	1.0	"	33.3		126		53-146			
Naphthalene	26.3	1.0	"	33.3		79.0		70-130			
1,2,4-Trimethylbenzene	42.3	1.0	"	33.3		127		70-130			
1,3,5-Trimethylbenzene	39.9	1.0	"	33.3		120		70-130			
Surrogate: 1,2-Dichloroethane-d4	13.3		"	13.3		100		23-173			
Surrogate: Toluene-d8	13.8		"	13.3		103		20-170			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.9		21-167			

##### Matrix Spike (BFJ0408-MS1)

Source: 2210213-01

Prepared: 10/17/22 Analyzed: 10/18/22

Benzene	30.7	1.0	ug/l	33.3	ND	92.2		34-141			
Toluene	34.2	1.0	"	33.3	ND	103		27-151			
Ethylbenzene	44.4	1.0	"	33.3	ND	133		29-160			
m,p-Xylene	91.7	2.0	"	66.7	ND	138		20-166			
o-Xylene	41.5	1.0	"	33.3	ND	124		33-159			
Naphthalene	32.3	1.0	"	33.3	ND	97.0		70-130			
1,2,4-Trimethylbenzene	33.7	1.0	"	33.3	ND	101		70-130			
1,3,5-Trimethylbenzene	35.4	1.0	"	33.3	ND	106		70-130			
Surrogate: 1,2-Dichloroethane-d4	13.4		"	13.3		100		23-173			
Surrogate: Toluene-d8	13.7		"	13.3		103		20-170			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		100		21-167			

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Von Feldt 13-12 Wellhead

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/21/22 14:51

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**

**Summit Scientific**

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

**Batch BFJ0408 - EPA 5030 Water MS**

Matrix Spike Dup (BFJ0408-MSD1)	Source: 2210213-01			Prepared: 10/17/22 Analyzed: 10/18/22					
Benzene	29.3	1.0	ug/l	33.3	ND	88.0	34-141	4.73	30
Toluene	32.9	1.0	"	33.3	ND	98.7	27-151	3.93	30
Ethylbenzene	43.7	1.0	"	33.3	ND	131	29-160	1.72	30
m,p-Xylene	88.6	2.0	"	66.7	ND	133	20-166	3.43	30
o-Xylene	41.1	1.0	"	33.3	ND	123	33-159	0.871	30
Naphthalene	34.5	1.0	"	33.3	ND	103	70-130	6.41	30
1,2,4-Trimethylbenzene	33.6	1.0	"	33.3	ND	101	70-130	0.327	30
1,3,5-Trimethylbenzene	35.4	1.0	"	33.3	ND	106	70-130	0.254	30
Surrogate: 1,2-Dichloroethane-d4	13.4		"	13.3		100	23-173		
Surrogate: Toluene-d8	13.8		"	13.3		103	20-170		
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.8	21-167		

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Von Feldt 13-12 Wellhead

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/21/22 14:51

**Anions by EPA Method 300.0 - Quality Control**  
**Summit Scientific**

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

**Batch BFJ0511 - General Preparation**

**Blank (BFJ0511-BLK1)**

Prepared & Analyzed: 10/20/22

Chloride	ND	0.0600	mg/L						
Sulfate	ND	0.300	"						

**LCS (BFJ0511-BS1)**

Prepared & Analyzed: 10/20/22

Chloride	3.13	0.0600	mg/L	3.00	104	90-110		
Sulfate	15.6	0.300	"	15.0	104	90-110		

**Duplicate (BFJ0511-DUP1)**

Source: 2210213-01

Prepared: 10/20/22 Analyzed: 10/21/22

Chloride	165	12.0	mg/L		194		16.4	20
Sulfate	343	60.0	"		395		14.1	20

**Matrix Spike (BFJ0511-MS1)**

Source: 2210213-01

Prepared: 10/20/22 Analyzed: 10/21/22

Chloride	817	12.0	mg/L	600	194	104	80-120	
Sulfate	3470	60.0	"	3000	395	102	80-120	

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Von Feldt 13-12 Wellhead

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/21/22 14:51

**Total Dissolved Solids by SM2540C - Quality Control**  
**Summit Scientific**

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

**Batch BFJ0420 - General Preparation**

**Blank (BFJ0420-BLK1)**

Prepared: 10/17/22 Analyzed: 10/18/22

Total Dissolved Solids      ND      10.0      mg/L

**Duplicate (BFJ0420-DUP1)**

Source: 2210221-01

Prepared: 10/17/22 Analyzed: 10/18/22

Total Dissolved Solids      2580      10.0      mg/L      2550      1.29      20

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Von Feldt 13-12 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/21/22 14:51

### 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