



PDC Energy, Inc.
First Quarter 2023 Groundwater Monitoring Summary

November 23, 2022

Fagerberg Pad
SWSW Section 12 T6N R66W
Remediation # 24464

This groundwater monitoring summary has been prepared by Tasman, Inc. for the Fagerberg Pad.

Site History and Background

On April 6, 2022, approximately 2 barrels (bbls) of produced water were released from a nipple pin hole leak at the Fagerberg Pad. Following the discovery, mitigation activities were initiated and approximately 40 cubic yards of impacted material were removed from location. During excavation activities, groundwater was encountered within the excavation at approximately 7 feet below ground surface (bgs). On October 7, 2022, seven monitoring wells (BH01 – BH07) were installed to delineate dissolved-phase hydrocarbon impacts surrounding the former excavation extent (Figure 1).

Groundwater Monitoring Activities

On January 31, 2023, groundwater monitoring was conducted at all seven monitoring wells (BH01 – BH07). Seven groundwater samples were submitted to Summit Scientific Laboratory 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.

First quarter 2023 analytical results indicated that organic compound concentrations were in compliance with the applicable COGCC Table 915-1 regulatory standards in all seven monitoring well locations. Additionally, inorganic parameters were in compliance with the applicable regulatory standards or within 1.25x the background concentrations of the up- and cross-gradient monitoring wells (BH05 and BH06) in all monitoring well locations. 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 A.

Current Remediation Activities and Path Forward

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

Additionally, based on analytical results received for samples collected during confirmation soil sampling activities in April 2022, further sampling is necessary to vertically and horizontally delineate EC exceedances recorded in soil samples SS07 and SS08, as well as confirm the absence of hydrocarbon impacts in the vicinity of soil sample SS04.

Second quarter 2023 groundwater sampling will be conducted in April 2023.

BH04		
Compound (µg/L)	10/13/2022	1/31/2023
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)	7.97	5.41

BH03		
Compound (µg/L)	10/13/2022	1/31/2023
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)	7.79	6.89

BH02		
Compound (µg/L)	10/13/2022	1/31/2023
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)	8.08	8.01

BH05		
Compound (µg/L)	10/13/2022	1/31/2023
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)	6.73	5.87

BH01		
Compound (µg/L)	10/13/2022	1/31/2023
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)	8.22	8.29

BH06		
Compound (µg/L)	10/13/2022	1/31/2023
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)	6.93	6.55

BH07		
Compound (µg/L)	10/13/2022	1/31/2023
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)	8.10	8.36

Legend

- Monitoring Well Location (Collected via Trimble GPS)
- Secondary Containment (Collected via Trimble GPS)
- Release Extent (Collected via Trimble GPS)
- Excavation Extent (Collected via Trimble GPS)
- Excavation Groundwater Sample Location
- Groundwater Flow Direction (1Q23)

Notes

All locations are approximate unless otherwise noted.

TMB – Trimethylbenzene

µg/L – Micrograms per liter

ft. bgs – Feet below ground surface

GPS – Global Positioning System

0 ft. 25 ft. 50 ft.

Image Source: Google Earth; June 2021
Projection: WGS 84 UTM Zone 13 North

DATE: October 31, 2022

DESIGNED BY: C. Hamlin

DRAWN BY: G. Semenza



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

PDC Energy, Inc. – DJ Basin
Fagerberg Pad
SWSW, Section 12, Township 6 North, Range 66 West
Weld County, Colorado

GROUNDWATER
ANALYTICAL RESULTS
MAP

FIGURE
1

BH04		
Compound (mg/L)	10/13/2022	1/31/2023
Chloride	83.4	73.6
Sulfate	1,710	1,240
TDS	1,920	2,330
Depth to Water (ft. bgs)	7.97	5.41

BH03		
Compound (mg/L)	10/13/2022	1/31/2023
Chloride	79.2	81.8
Sulfate	1,940	1,540
TDS	2,100	2,410
Depth to Water (ft. bgs)	7.79	6.89

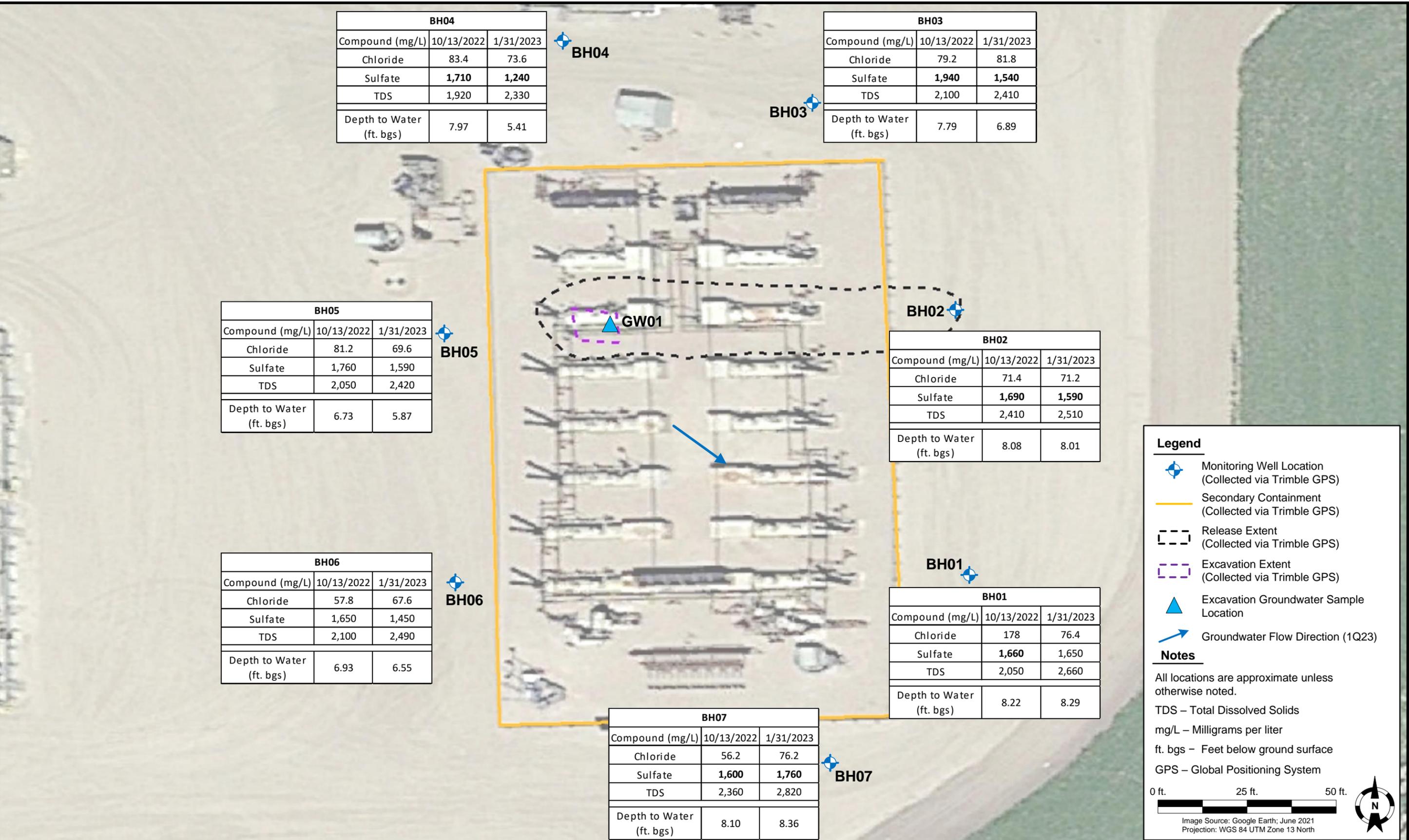
BH05		
Compound (mg/L)	10/13/2022	1/31/2023
Chloride	81.2	69.6
Sulfate	1,760	1,590
TDS	2,050	2,420
Depth to Water (ft. bgs)	6.73	5.87

BH02		
Compound (mg/L)	10/13/2022	1/31/2023
Chloride	71.4	71.2
Sulfate	1,690	1,590
TDS	2,410	2,510
Depth to Water (ft. bgs)	8.08	8.01

BH06		
Compound (mg/L)	10/13/2022	1/31/2023
Chloride	57.8	67.6
Sulfate	1,650	1,450
TDS	2,100	2,490
Depth to Water (ft. bgs)	6.93	6.55

BH01		
Compound (mg/L)	10/13/2022	1/31/2023
Chloride	178	76.4
Sulfate	1,660	1,650
TDS	2,050	2,660
Depth to Water (ft. bgs)	8.22	8.29

BH07		
Compound (mg/L)	10/13/2022	1/31/2023
Chloride	56.2	76.2
Sulfate	1,600	1,760
TDS	2,360	2,820
Depth to Water (ft. bgs)	8.10	8.36



DATE: March 2, 2023

DESIGNED BY: C. Hamlin

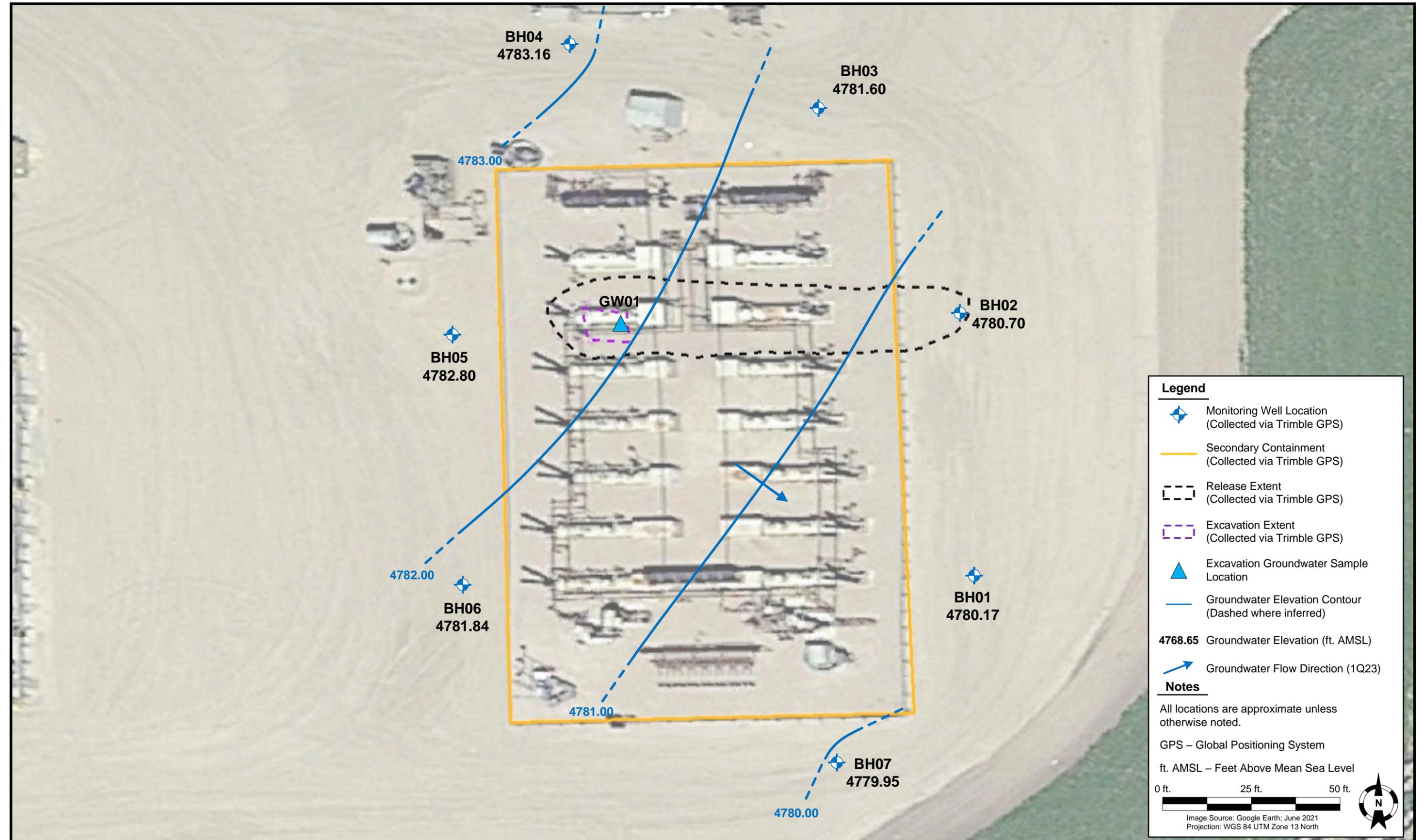
DRAWN BY: J. Marcus



**PDC Energy, Inc. – DJ Basin
Fagerberg Pad**
SWSW, Section 12, Township 6 North, Range 66 West
Weld County, Colorado

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

**FIGURE
2**



DATE: March 1, 2023

DESIGNED BY: C. Hamlin

DRAWN BY: L. Reed



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

PDC Energy, Inc. – DJ Basin
Fagerberg Pad
SWSW, Section 12, Township 6 North, Range 66 West
Weld County, Colorado

**GROUNDWATER
ELEVATION CONTOUR
MAP (01/31/2023)**

**FIGURE
3**

TABLE 1
FAGERBERG PAD
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 ⁽²⁾ (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 915-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	140	67	67	-	-
GW01	4/15/2022	120	690	84	700	23	150	56	~8	NA
BH01	10/13/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.22	4780.24
BH01	1/31/2023	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.29	4780.17
BH02	10/13/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.08	4780.63
BH02	1/31/2023	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.01	4780.70
BH03	10/13/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.79	4780.70
BH03	1/31/2023	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	6.89	4781.60
BH04	10/13/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.97	4780.60
BH04	1/31/2023	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	5.41	4783.16
BH05	10/13/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	6.73	4781.94
BH05	1/31/2023	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	5.87	4782.80
BH06	10/13/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	6.93	4781.46
BH06	1/31/2023	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	6.55	4781.84
BH07	10/13/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.10	4780.21
BH07	1/31/2023	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.36	4779.95

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 = Not applicable
BOLD = Analytical result in exceedance of applicable standard.

TABLE 2
FAGERBERG PAD
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE
INORGANIC PARAMETERS

Sample ID	Date Sampled	TDS (unit)	Chloride Ion (mg/L)	Sulfate Ion (mg/L)	Depth to Water ⁽²⁾ (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 915-1 Groundwater Standard (mg/L) <small>(1)</small>		<1.25 x BCKG	250 or <1.25 x BCKG	250 or <1.25 x BCKG	-	-
BH01	10/13/2022	2,050	178	1,660	8.22	4780.24
BH01	1/31/2023	2,660	76.4	1,650	8.29	4780.17
BH02	10/13/2022	2,410	71.4	1,690	8.08	4780.63
BH02	1/31/2023	2,510	71.2	1,590	8.01	4780.70
BH03	10/13/2022	2,100	79.2	1,940	7.79	4780.70
BH03	1/31/2023	2,410	81.8	1,540	6.89	4781.60
BH04	10/13/2022	1,920	83.4	1,710	7.97	4780.60
BH04	1/31/2023	2,330	73.6	1,240	5.41	4783.16
BH05	10/13/2022	2,050	81.2	1,760	6.73	4781.94
BH05	1/31/2023	2,420	69.6	1,590	5.87	4782.80
BH06	10/13/2022	2,100	57.8	1,650	6.93	4781.46
BH06	1/31/2023	2,490	67.6	1,450	6.55	4781.84
BH07	10/13/2022	2,360	56.2	1,600	8.10	4780.21
BH07	1/31/2023	2,820	76.2	1,760	8.36	4779.95

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.

TDS = Total dissolved solids

COGCC = Colorado Oil and Gas Conservation Commission

BCKG = Background

mg/L = Milligrams per liter

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

ft. = Feet

AMSL = Above Mean Sea Level

BOLD = Analytical result in exceedance of applicable standard, but within 1.25x BCKG concentrations.

 = Up-gradient well locations used for background concentration.

Attachment A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

February 06, 2023

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Fagerberg Pad

Work Order #2301543

Enclosed are the results of analyses for samples received by Summit Scientific on 01/31/23 17:42. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Scott Sheely For Paul Shrewsbury

President



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

Project: Fagerberg Pad

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
02/06/23 11:24

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2301543-01	Water	01/31/23 11:15	01/31/23 17:42
BH02	2301543-02	Water	01/31/23 11:20	01/31/23 17:42
BH03	2301543-03	Water	01/31/23 11:25	01/31/23 17:42
BH04	2301543-04	Water	01/31/23 11:30	01/31/23 17:42
BH05	2301543-05	Water	01/31/23 11:35	01/31/23 17:42
BH06	2301543-06	Water	01/31/23 11:40	01/31/23 17:42
BH07	2301543-07	Water	01/31/23 11:45	01/31/23 17:42

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.

2301543

Summit Scientific

S₂

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

Client: PDC/Tasman Geosciences	Project Manager: Mark Longhurst
Address: 6855 W. 119 St.	E-Mail: mark.longhurst@pdce.com
City/State/Zip: Broomfield CO 80020	
Phone: 303-487-1228	Project Name: <u>Fagerberg Pad</u>
Sampler Name: Gabe Semenza	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	1,2,4 & 1,3,5 TMB	TPH (C6 - C36)	Table 915-1 PAH	pH, EC, SAR	Boron		TDS, Cl, SO4
1	BH01	1/31/23	1115	4	3		1		X				X	X					X	
2	BH02	↓	1120	↓	↓				↓				↓	↓					↓	
3	BH03		1125																	
4	BH04		1130																	
5	BH05		1135																	
6	BH06	↓	1140	↓	↓				↓				↓	↓					↓	
7	BH07		1145																	
8																				
9																				
10																				

Relinquished by: <u>G. Semenza</u>	Date/Time: <u>1/31/23 1550</u>	Received by: <u>Tasman Lockbox</u>	Date/Time: <u>1/31/23 1550</u>	Turn Around Time (Check)	Notes:
				Same Day <input type="checkbox"/> 72 hours	
				24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/>	
Relinquished by: <u>Tasman Lockbox</u>	Date/Time: <u>1/31/23 1742</u>	Received by: <u>[Signature]</u>	Date/Time: <u>1/31/23 1742</u>	48 hours <input type="checkbox"/>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity:	
				Temperature Upon Receipt: <u>5.8</u>	
				Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

S₂

Sample Receipt Checklist

S2 Work Order# 2301543

Client: PDC / Rasman Client Project ID: Fagerberg Pad

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

[] - [] [] []

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

Temp (°C) 58 Thermometer # 1

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

Additional Comments (if any):

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

AS
Custodian Printed Name

1/31/23
Date/Time



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

Project: Fagerberg Pad
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/06/23 11:24

BH01
2301543-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/31/23 11:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGB0005	02/01/23	02/01/23	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: **01/31/23 11:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	20.8	156 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	14.2	106 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	15.1	113 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **01/31/23 11:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	76.4	12.0		mg/L	200	BGB0091	02/03/23	02/03/23	EPA 300.0	
Sulfate	1650	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **01/31/23 11:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	2660	10.0		mg/L	1	BGB0041	02/02/23	02/02/23	SM2540C	

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.



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

Project: Fagerberg Pad
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/06/23 11:24

BH02
2301543-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/31/23 11:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGB0005	02/01/23	02/01/23	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: **01/31/23 11:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	18.8	141 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	13.9	105 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	15.4	116 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **01/31/23 11:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	71.2	12.0		mg/L	200	BGB0091	02/03/23	02/03/23	EPA 300.0	
Sulfate	1590	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **01/31/23 11:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	2510	10.0		mg/L	1	BGB0041	02/02/23	02/02/23	SM2540C	

Summit Scientific

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

Project: Fagerberg Pad
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/06/23 11:24

BH03
2301543-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/31/23 11:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGB0005	02/01/23	02/01/23	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: **01/31/23 11:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	18.6	139 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	13.9	104 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	15.3	115 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **01/31/23 11:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	81.8	12.0		mg/L	200	BGB0091	02/03/23	02/03/23	EPA 300.0	
Sulfate	1540	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **01/31/23 11:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	2410	10.0		mg/L	1	BGB0041	02/02/23	02/02/23	SM2540C	

Summit Scientific

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

Project: Fagerberg Pad
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/06/23 11:24

BH04
2301543-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/31/23 11:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGB0005	02/01/23	02/01/23	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: **01/31/23 11:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	19.0	142 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	14.1	106 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	15.1	114 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **01/31/23 11:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	73.6	12.0		mg/L	200	BGB0091	02/03/23	02/03/23	EPA 300.0	
Sulfate	1240	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **01/31/23 11:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	2330	10.0		mg/L	1	BGB0041	02/02/23	02/02/23	SM2540C	

Summit Scientific

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

Project: Fagerberg Pad
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/06/23 11:24

BH05
2301543-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/31/23 11:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGB0005	02/01/23	02/01/23	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: **01/31/23 11:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	18.3	137 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	13.9	104 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	15.3	115 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **01/31/23 11:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	69.6	12.0		mg/L	200	BGB0091	02/03/23	02/03/23	EPA 300.0	
Sulfate	1590	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **01/31/23 11:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	2420	10.0		mg/L	1	BGB0041	02/02/23	02/02/23	SM2540C	

Summit Scientific

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

Project: Fagerberg Pad
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/06/23 11:24

BH06
2301543-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/31/23 11:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGB0005	02/01/23	02/01/23	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: **01/31/23 11:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	19.1	144 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	14.0	105 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	15.1	113 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **01/31/23 11:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	67.6	12.0		mg/L	200	BGB0091	02/03/23	02/03/23	EPA 300.0	
Sulfate	1450	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **01/31/23 11:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	2490	10.0		mg/L	1	BGB0041	02/02/23	02/02/23	SM2540C	

Summit Scientific

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

Project: Fagerberg Pad
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/06/23 11:24

BH07
2301543-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/31/23 11:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGB0005	02/01/23	02/01/23	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: **01/31/23 11:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	18.9	142 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	14.2	106 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	15.4	115 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **01/31/23 11:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	76.2	12.0		mg/L	200	BGB0091	02/03/23	02/04/23	EPA 300.0	
Sulfate	1760	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **01/31/23 11:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	2820	10.0		mg/L	1	BGB0041	02/02/23	02/02/23	SM2540C	

Summit Scientific

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

Project: Fagerberg Pad

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/06/23 11:24

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 BGB0005 - EPA 5030 Water MS

Blank (BGB0005-BLK1)

Prepared & Analyzed: 02/01/23

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	"								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	18.2		"	13.3		137		23-173			
<i>Surrogate: Toluene-d8</i>	13.8		"	13.3		104		20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	15.3		"	13.3		115		21-167			

LCS (BGB0005-BS1)

Prepared & Analyzed: 02/01/23

Benzene	31.2	1.0	ug/l	41.7		74.8		51-132			
Toluene	42.7	1.0	"	41.7		102		51-138			
Ethylbenzene	44.8	1.0	"	41.7		108		58-146			
m,p-Xylene	86.3	2.0	"	83.3		104		57-144			
o-Xylene	42.4	1.0	"	41.7		102		53-146			
Naphthalene	44.2	1.0	"	41.7		106		70-130			
1,2,4-Trimethylbenzene	48.5	1.0	"	41.7		116		70-130			
1,3,5-Trimethylbenzene	47.5	1.0	"	41.7		114		70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	18.5		"	13.3		139		23-173			
<i>Surrogate: Toluene-d8</i>	14.0		"	13.3		105		20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	14.4		"	13.3		108		21-167			

Matrix Spike (BGB0005-MS1)

Source: 2301543-01

Prepared & Analyzed: 02/01/23

Benzene	30.2	1.0	ug/l	41.7	ND	72.6		34-141			
Toluene	42.0	1.0	"	41.7	ND	101		27-151			
Ethylbenzene	44.0	1.0	"	41.7	ND	106		29-160			
m,p-Xylene	83.4	2.0	"	83.3	ND	100		20-166			
o-Xylene	41.2	1.0	"	41.7	ND	98.9		33-159			
Naphthalene	54.1	1.0	"	41.7	ND	130		70-130			
1,2,4-Trimethylbenzene	47.2	1.0	"	41.7	ND	113		70-130			
1,3,5-Trimethylbenzene	46.3	1.0	"	41.7	ND	111		70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	20.1		"	13.3		151		23-173			
<i>Surrogate: Toluene-d8</i>	14.0		"	13.3		105		20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	14.6		"	13.3		109		21-167			

Summit Scientific

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

Project: Fagerberg Pad

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 02/06/23 11:24

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 BGB0005 - EPA 5030 Water MS

Matrix Spike Dup (BGB0005-MSD1)	Source: 2301543-01			Prepared & Analyzed: 02/01/23						
Benzene	29.9	1.0	ug/l	41.7	ND	71.8	34-141	1.13	30	
Toluene	42.2	1.0	"	41.7	ND	101	27-151	0.404	30	
Ethylbenzene	44.1	1.0	"	41.7	ND	106	29-160	0.340	30	
m,p-Xylene	84.0	2.0	"	83.3	ND	101	20-166	0.753	30	
o-Xylene	41.8	1.0	"	41.7	ND	100	33-159	1.54	30	
Naphthalene	51.6	1.0	"	41.7	ND	124	70-130	4.69	30	
1,2,4-Trimethylbenzene	47.6	1.0	"	41.7	ND	114	70-130	0.696	30	
1,3,5-Trimethylbenzene	46.6	1.0	"	41.7	ND	112	70-130	0.539	30	
Surrogate: 1,2-Dichloroethane-d4	19.4		"	13.3		146	23-173			
Surrogate: Toluene-d8	14.2		"	13.3		107	20-170			
Surrogate: 4-Bromofluorobenzene	14.3		"	13.3		108	21-167			

Summit Scientific

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

Project: Fagerberg Pad

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 02/06/23 11:24

Anions by EPA Method 300.0 - Quality Control
Summit Scientific

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

Batch BGB0091 - General Preparation

Blank (BGB0091-BLK1)

Prepared & Analyzed: 02/03/23

Chloride	ND	0.0600	mg/L							
Sulfate	ND	0.300	"							

LCS (BGB0091-BS1)

Prepared & Analyzed: 02/03/23

Chloride	2.99	0.0600	mg/L	3.00	76.4	75.6	80-110			
Sulfate	14.6	0.300	"	15.0	1650	79.0	80-110			

Duplicate (BGB0091-DUP1)

Source: 2301543-01

Prepared & Analyzed: 02/03/23

Chloride	74.8	12.0	mg/L	600	76.4	75.6	80-120	2.12	20	
Sulfate	1620	60.0	"	3000	1650	79.0	80-120	1.67	20	

Matrix Spike (BGB0091-MS1)

Source: 2301543-01

Prepared & Analyzed: 02/03/23

Chloride	530	12.0	mg/L	600	76.4	75.6	80-120			QM-02
Sulfate	4020	60.0	"	3000	1650	79.0	80-120			QM-02

Summit Scientific

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

Project: Fagerberg Pad

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 02/06/23 11:24

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 BGB0041 - General Preparation

Blank (BGB0041-BLK1)

Prepared & Analyzed: 02/02/23

Total Dissolved Solids ND 10.0 mg/L

Duplicate (BGB0041-DUP1)

Source: 2301543-01

Prepared & Analyzed: 02/02/23

Total Dissolved Solids 2710 10.0 mg/L 2660 2.09 20

Summit Scientific

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

Project: Fagerberg Pad
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/06/23 11:24

Notes and Definitions

- QM-02 The RPD and/or percent recovery for this QC sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
- 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