



PDC Energy, Inc.
First Quarter 2023 Groundwater Monitoring Summary

February 20, 2022

Former Eckhardt 43-34 Wellhead
NESE Section 34 T5N R64W
Remediation # 21647

This groundwater monitoring summary has been prepared by Tasman, Inc. for the former Eckhardt 43-34 wellhead.

Site History and Background

On March 11, 2022, a historic hydrocarbon release was discovered adjacent to the former wellhead during decommissioning activities. Following the discovery, mitigation activities were initiated and approximately 8 cubic yards of impacted material were removed from location. During excavation activities, groundwater was encountered within the excavation at approximately 6.5 feet below ground surface (bgs). On October 10, 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 (Figure 1). Per the approved Supplemental Form 27 (Document No. 403221432), chloride and sulfate anions and TDS were removed from the quarterly sampling and analysis plan following the fourth quarter 2022.

Groundwater Monitoring Activities

On January 19, 2023, groundwater monitoring was conducted at all five monitoring wells (BH01 – BH05). Five 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

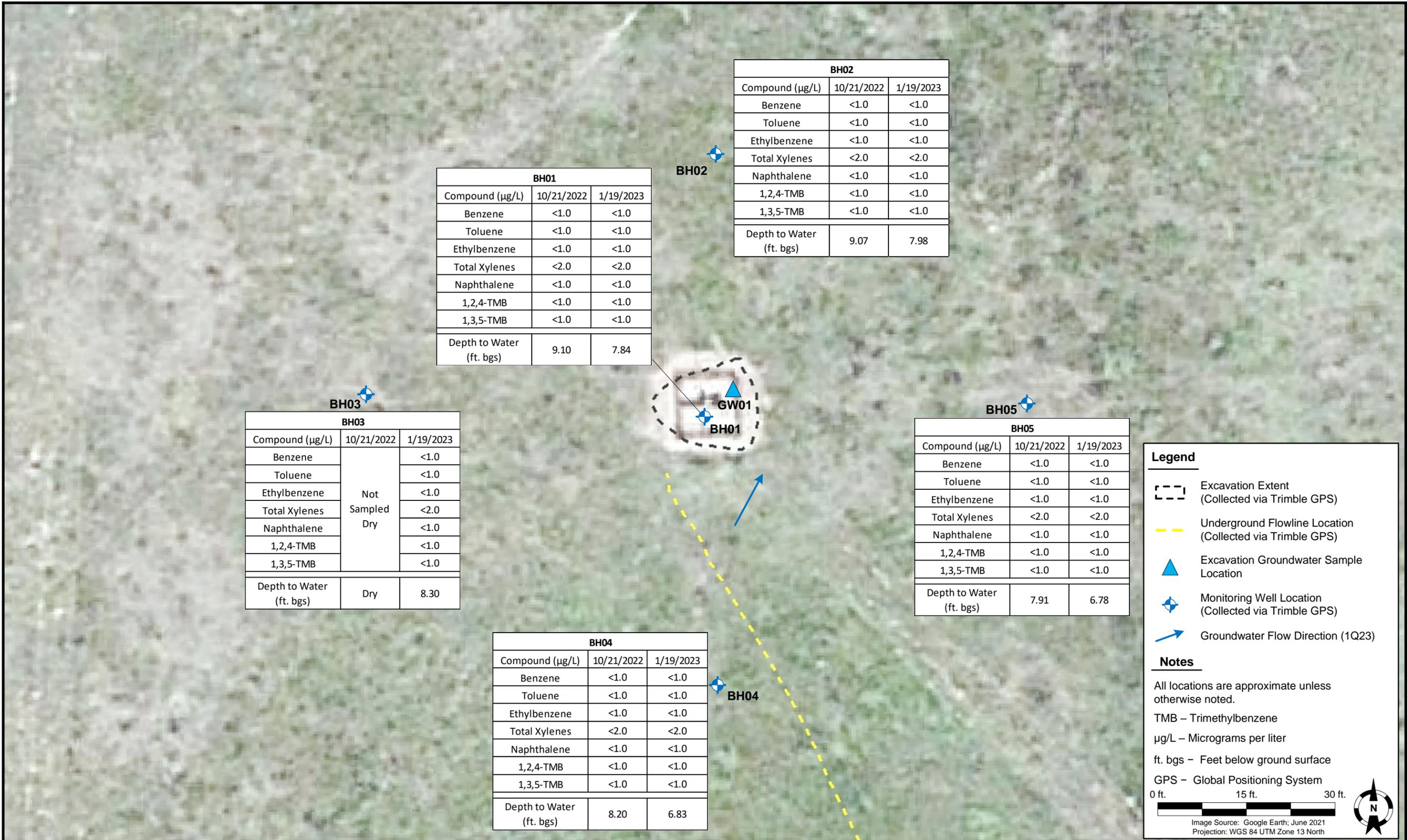
First quarter 2023 analytical results indicated that organic compound concentrations were in compliance with the applicable COGCC Table 915-1 groundwater standards in all five monitoring well locations. Sample locations and corresponding analytical results are illustrated on Figure 1. Groundwater elevation data is illustrated on Figure 2. Groundwater analytical results are summarized in Table 1. The laboratory analytical report is included in 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.

Based on soil analytical results, further site investigation is required to delineate arsenic exceedances recorded in soil samples collected from the final excavation extent. Site investigation activities will be completed pending landowner negotiations.

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



Legend

- Excavation Extent (Collected via Trimble GPS)
- Underground Flowline Location (Collected via Trimble GPS)
- Excavation Groundwater Sample Location
- Monitoring Well Location (Collected via Trimble GPS)
- 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. 15 ft. 30 ft.

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

DATE: February 2, 2023

DESIGNED BY: C. Hamlin

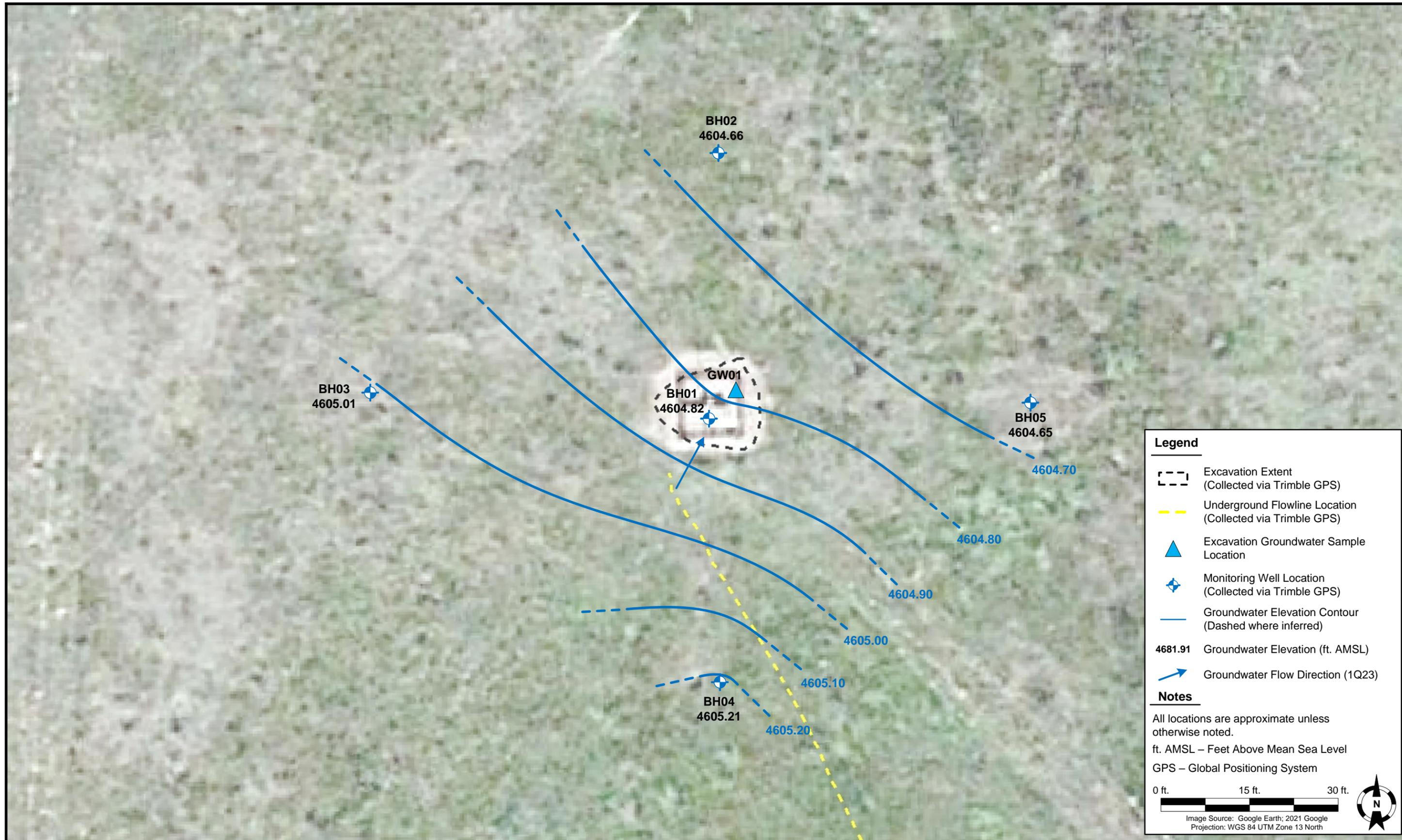
DRAWN BY: D. Vigil

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

PDC Energy, Inc. – DJ Basin
Former Eckhardt 43-34 Wellhead
NESE, Section 34, Township 5 North, Range 64 West
Weld County, Colorado

GROUNDWATER ANALYTICAL RESULTS MAP

FIGURE 1



DATE: February 24, 2023

DESIGNED BY: C. Hamlin

DRAWN BY: L. Reed



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

PDC Energy, Inc. – DJ Basin
Former Eckhardt 43-34 Wellhead
 NESE Section 34, Township 5 North, Range 64 West
 Weld County, Colorado

**GROUNDWATER
 ELEVATION CONTOUR
 MAP (01/19/2022)**

**FIGURE
 2**

TABLE 1
FORMER ECKHARDT 43-34 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 ⁽²⁾ (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 915-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	140	67	67	-	-
GW01	3/11/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	~6.5	NA
BH01	10/21/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.10	4603.56
BH01	1/19/2023	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.84	4604.82
BH02	10/21/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	9.07	4603.57
BH02	1/19/2023	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.98	4604.66
BH03	10/21/2022	Dry - Not Sampled							Dry	Dry
BH03	1/19/2023	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.3	4605.01
BH04	10/21/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.20	4603.84
BH04	1/19/2023	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	6.83	4605.21
BH05	10/21/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.91	4603.52
BH05	1/19/2023	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	6.78	4604.65

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.

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

Attachment A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 24, 2023

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Eckhardt 43-34 Wellhead

Work Order #2301339

Enclosed are the results of analyses for samples received by Summit Scientific on 01/19/23 18:05. 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: Eckhardt 43-34 Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/24/23 13:11

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2301339-01	Water	01/19/23 13:55	01/19/23 18:05
BH02	2301339-02	Water	01/19/23 13:35	01/19/23 18:05
BH03	2301339-03	Water	01/19/23 13:40	01/19/23 18:05
BH04	2301339-04	Water	01/19/23 13:45	01/19/23 18:05
BH05	2301339-05	Water	01/19/23 13:50	01/19/23 18:05

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.

2301339

Summit Scientific

S₂

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

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: Eckhardt 43-34 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		TDS, Cl, SO ₄	
1	BH01	01/19/23	1355	4	3		1		X					X	X						X	
2	BH02		1335																			
3	BH03		1340																			
4	BH04		1345																			
5	BH05		1350				*															
6																						
7																						
8																						
9																						
10																						

Relinquished by: <i>Chase J</i> Date/Time: 01/19/23 1539	Received by: <i>Tasman Lockbox</i> Date/Time: 01/19/23 1539	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours <input type="checkbox"/> 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/> Sample Integrity: Temperature Upon Receipt: <u>3.7</u> Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	Notes: * Inorganics (TDS, Cl, SO ₄) <u>on hold</u>
Relinquished by: <i>Tasman Lockbox</i> Date/Time: 1/19/23 1805	Received by: <i>John B...</i> Date/Time: 1/19/23 1805		
Relinquished by: _____ Date/Time: _____	Received by: _____ Date/Time: _____		



Sample Receipt Checklist

S2 Work Order# 2301339

Client: PDC/Tasman Client Project ID: Eckhardt 43-34 Wellheard

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

[] [x] [] [] []

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

Temp (°C) 3.7 Thermometer # []

Table with 5 columns: Question, Yes, No, N/A, Comments (if any). Rows include questions about temperature, custody seals, sample age, analysis types, COC forms, sample integrity, volume, and preservation.

Additional Comments (if any):

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

CS 1.19.23
Custodian Printed Name Date/Time



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

Project: Eckhardt 43-34 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 01/24/23 13:11

BH01
2301339-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/19/23 13:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	BGA0507	01/20/23	01/21/23	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: **01/19/23 13:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4	11.2	84.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	13.1	98.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	12.0	90.2 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Eckhardt 43-34 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 01/24/23 13:11

BH02
2301339-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/19/23 13:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGA0507	01/20/23	01/21/23	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: **01/19/23 13:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	11.5	86.1 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	12.7	95.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	12.9	96.9 %		21-167		"	"	"	"	

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

Project: Eckhardt 43-34 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 01/24/23 13:11

BH03
2301339-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/19/23 13:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGA0507	01/20/23	01/21/23	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: **01/19/23 13:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	12.6	94.8 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	13.1	98.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	12.1	90.9 %		21-167		"	"	"	"	

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

Project: Eckhardt 43-34 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 01/24/23 13:11

BH04
2301339-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/19/23 13:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGA0507	01/20/23	01/21/23	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: **01/19/23 13:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	12.4	93.2 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	13.3	99.8 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	12.9	96.8 %		21-167		"	"	"	"	

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

Project: Eckhardt 43-34 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 01/24/23 13:11

BH05
2301339-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/19/23 13:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGA0507	01/20/23	01/21/23	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: **01/19/23 13:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	10.2	76.9 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	13.5	101 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	12.5	93.5 %		21-167		"	"	"	"	

Summit Scientific

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

Project: Eckhardt 43-34 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/23 13:11

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 BGA0507 - EPA 5030 Water MS

Blank (BGA0507-BLK1)

Prepared: 01/20/23 Analyzed: 01/21/23

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	"								
Surrogate: 1,2-Dichloroethane-d4	14.9		"	13.3		112		23-173			
Surrogate: Toluene-d8	13.4		"	13.3		101		20-170			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		101		21-167			

LCS (BGA0507-BS1)

Prepared: 01/20/23 Analyzed: 01/21/23

Benzene	48.7	1.0	ug/l	50.0		97.5		51-132			
Toluene	47.3	1.0	"	50.0		94.6		51-138			
Ethylbenzene	47.4	1.0	"	50.0		94.7		58-146			
m,p-Xylene	94.4	2.0	"	100		94.4		57-144			
o-Xylene	47.1	1.0	"	50.0		94.2		53-146			
Naphthalene	47.4	1.0	"	50.0		94.9		70-130			
1,2,4-Trimethylbenzene	47.1	1.0	"	50.0		94.3		70-130			
1,3,5-Trimethylbenzene	46.7	1.0	"	50.0		93.4		70-130			
Surrogate: 1,2-Dichloroethane-d4	14.7		"	13.3		110		23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.5		20-170			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.9		21-167			

Matrix Spike (BGA0507-MS1)

Source: 2301311-01

Prepared: 01/20/23 Analyzed: 01/21/23

Benzene	55.4	1.0	ug/l	50.0	ND	111		34-141			
Toluene	53.4	1.0	"	50.0	ND	107		27-151			
Ethylbenzene	54.8	1.0	"	50.0	ND	110		29-160			
m,p-Xylene	109	2.0	"	100	ND	109		20-166			
o-Xylene	54.0	1.0	"	50.0	ND	108		33-159			
Naphthalene	46.8	1.0	"	50.0	ND	93.7		70-130			
1,2,4-Trimethylbenzene	55.7	1.0	"	50.0	ND	111		70-130			
1,3,5-Trimethylbenzene	56.0	1.0	"	50.0	ND	112		70-130			
Surrogate: 1,2-Dichloroethane-d4	13.3		"	13.3		99.6		23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.8		20-170			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.7		21-167			

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

Project: Eckhardt 43-34 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 01/24/23 13:11

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BGA0507 - EPA 5030 Water MS

Matrix Spike Dup (BGA0507-MSD1)	Source: 2301311-01			Prepared: 01/20/23 Analyzed: 01/21/23					
Benzene	57.0	1.0	ug/l	50.0	ND	114	34-141	2.92	30
Toluene	54.7	1.0	"	50.0	ND	109	27-151	2.39	30
Ethylbenzene	55.6	1.0	"	50.0	ND	111	29-160	1.39	30
m,p-Xylene	112	2.0	"	100	ND	112	20-166	2.37	30
o-Xylene	54.6	1.0	"	50.0	ND	109	33-159	1.01	30
Naphthalene	47.4	1.0	"	50.0	ND	94.7	70-130	1.13	30
1,2,4-Trimethylbenzene	56.0	1.0	"	50.0	ND	112	70-130	0.430	30
1,3,5-Trimethylbenzene	55.8	1.0	"	50.0	ND	112	70-130	0.268	30
Surrogate: 1,2-Dichloroethane-d4	14.0		"	13.3		105	23-173		
Surrogate: Toluene-d8	13.3		"	13.3		99.6	20-170		
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.3	21-167		

Summit Scientific

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

Project: Eckhardt 43-34 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/23 13:11

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