

PDC Energy, Inc.
Third Quarter 2021 Groundwater Monitoring Summary

August 16, 2021

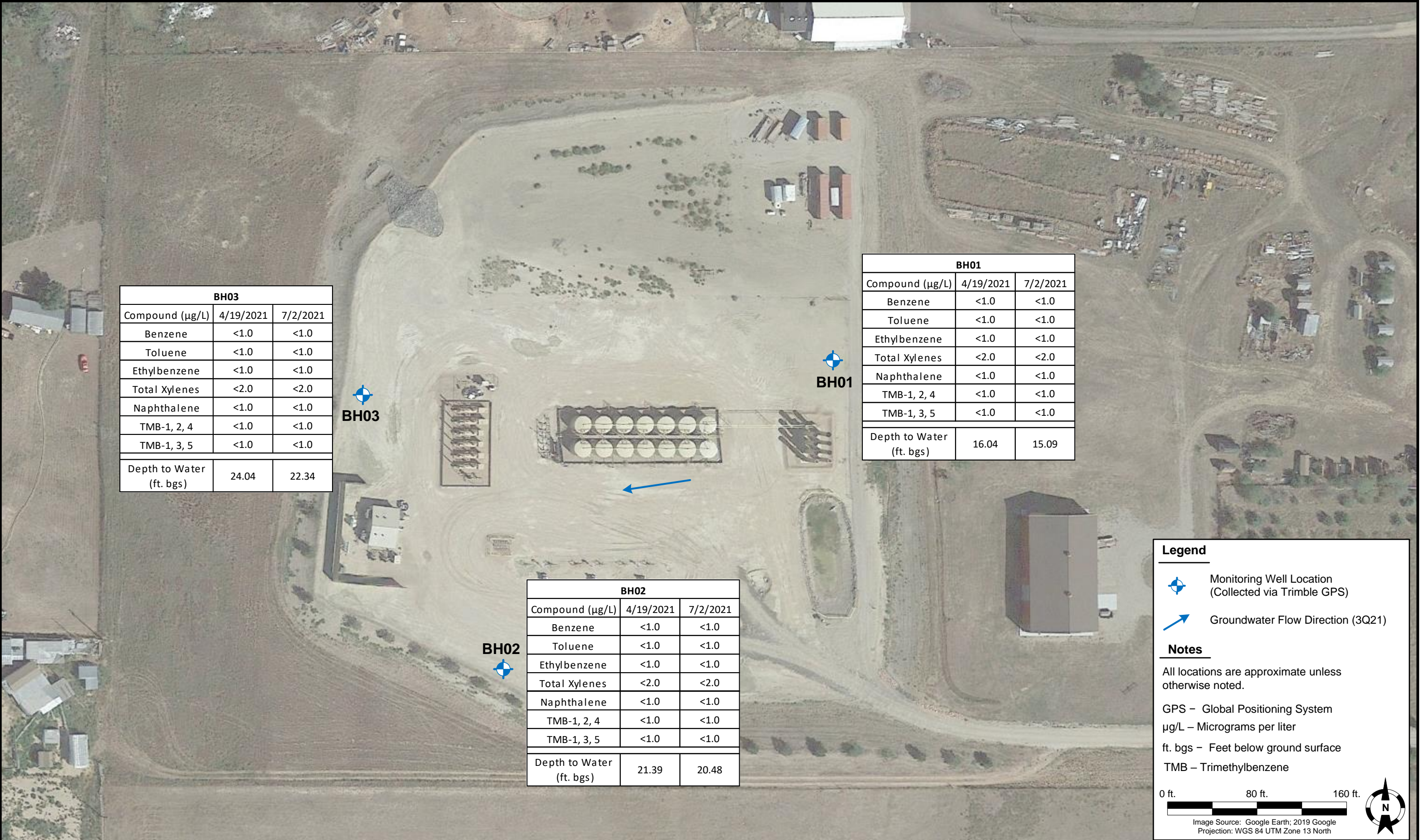
Eberle 13-32 CHZ Facility
NESE Section 32 T1N R66W
Remediation # 15999

This groundwater monitoring summary has been prepared by Tasman Geosciences, Inc. for the Eberle 13-32 CHZ Facility. On July 2, 2021, groundwater monitoring was conducted at all three monitoring wells (BH01 – BH03). Three 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. In addition, the samples were submitted for laboratory analysis of total dissolved solids (TDS) by Method SM 2540C, and chloride and sulfate anions by EPA Method 300.0.

Third quarter 2021 analytical results indicated that organic concentrations were below the applicable COGCC Table 915-1 standards in all three monitoring well locations. Based on an evaluation of the Table 915-1 inorganic concentrations, the laboratory results were determined to be potentially erroneous and were subsequently removed from the analytical report. Please refer to the case narrative provided in the associated laboratory report for additional details. Sample locations and corresponding analytical results are illustrated on Figure 1. Groundwater elevation data is illustrated on Figure 2. Analytical results are summarized in Tables 1 and 2. The laboratory analytical report is included in Attachment A.

Per the Condition of Approval (COA) issued by the State and City of Brighton, groundwater monitoring will continue on a quarterly basis to assess and confirm the absence of dissolved-phase impacts at the Eberle 13-32 CHZ production facility.

Fourth quarter 2021 groundwater sampling will be conducted in October 2021.



DATE: August 16, 2021

DESIGNED BY: C. Hamlin

DRAWN BY: T. Murrel



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

PDC Energy, Inc. – DJ Basin
Eberle 13-32 CHZ Facility
NESE, Section 32, Township 1 North, Range 66 West
Weld County, Colorado

**GROUNDWATER
ANALYTICAL RESULTS
MAP**

**FIGURE
1**



DATE: July 6, 2021

DESIGNED BY: B. Nelson

DRAWN BY: A. Dahl



TASMAN
GEOSCIENCES

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

PDC Energy, Inc. – DJ Basin
Eberle 13-32 CHZ Facility
NESE, Section 32, Township 1 North, Range 66 West
Weld County, Colorado

**GROUNDWATER
ELEVATION CONTOUR
MAP (07/02/2021)**

**FIGURE
2**

TABLE 1
EBERLE 13-32 CHZ FACILITY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400		
BH01	10/23/2020	<1.0	<1.0	<1.0	<2.0	15.19	5007.90
BH01	1/15/2021	<1.0	<1.0	<1.0	<2.0	15.45	5007.64
BH02	10/23/2020	<1.0	1.2	<1.0	<2.0	20.01	5003.10
BH02	1/15/2021	<1.0	<1.0	<1.0	<2.0	20.56	5002.55
BH03	10/23/2020	<1.0	<1.0	<1.0	<2.0	23.51	4999.27
BH03	1/15/2021	<1.0	<1.0	<1.0	<2.0	23.91	4998.87

Notes:

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective May 1, 2018.
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.

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

TABLE 2
EBERLE 13-32 CHZ FACILITY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE
INORGANIC PARAMETERS

Sample ID	Date Sampled	TDS (unit)	Chloride Ion (mg/L)	Sulfate Ion (mg/L)
COGCC Table 915-1 Groundwater Standard (mg/L) ⁽¹⁾		<1.25 x BCKG	250 or <1.25 x BCKG	250 or <1.25 x BCKG
BH01	4/19/2021	NR	NR	NR
BH01	7/2/2021	NR	NR	NR
BH02	4/19/2021	NR	NR	NR
BH02	7/2/2021	NR	NR	NR
BH03	4/19/2021	NR	NR	NR
BH03	7/2/2021	NR	NR	NR

Notes:

1. Groundwater standards referenced from 2 CCR 404-1, Table 915-1, January 15, 2021.

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.

NR = Not Reported. Inorganic groundwater analytical results omitted due to laboratory error. Case narrative provided in the attached laboratory report.

Attachment A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

September 09, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Eberle 13-32 CHZ Facility

Work Order #2107044

Enclosed are the results of analyses for samples received by Summit Scientific on 07/02/21 18:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury

President



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

Project: Eberle 13-32 CHZ Facility

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/09/21 16:48

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2107044-01	Water	07/02/21 10:57	07/02/21 18:30
BH02	2107044-02	Water	07/02/21 11:40	07/02/21 18:30
BH03	2107044-03	Water	07/02/21 11:20	07/02/21 18:30

CASE NARRATIVE

The inorganics data (anions and TDS) were removed from this report due to lab error

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

S₂

2107044

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310

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: Eberle 13-32 CHZ facility
Sampler Name: Brandon VanHorn	Project Number: N/A

					Preservative				Matrix				Analysis Requested								Special Instructions	
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other _____	Water	Soil	Air-Canister #	Other _____	BTEX	Naphthalene	1,2,4/1,3,5 TMB	Chloride	Sulfate	TDS				
1	BH01	7/2/2021	1057	4			x		x				x	x	x	x	x	x				
2	BH02	7/2/2021	1140	4			x		x				x	x	x	x	x	x				
3	BH03	7/2/2021	1120	4			x		x				x	x	x	x	x	x				
4																						
5																						
6																						
7																						
8																						
9																						
10																						

Relinquished by: <u>Brandon V.</u>	Date/Time: <u>7/2/21 1300</u>	Received by: <u>Tasman lockbox</u>	Date/Time: <u>7/2/21 1300</u>	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"/>	Notes:
Relinquished by: <u>Tasman lockbox</u>	Date/Time: <u>7-2-21 18:30</u>	Received by: <u>[Signature]</u>	Date/Time: <u>7-2-21 18:30</u>	Sample Integrity: Temperature Upon Receipt: <u>3.2</u> Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	
Relinquished by:	Date/Time:	Received by:	Date/Time:		

2107044

Sample Receipt Checklist

S2 Work Order _____

Client: PDC/TASMANClient Project ID: EBERLE 13-22 CH2Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other

Airbill #: _____

FACILITYMatrix (check all that apply): ☐ Air☐ Soil/Solid☐ Water☐ Other: _____

(Describe)

Temp (°C)

3.2

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>3.2</u>
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<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) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? 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):

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.Murci P.
Custodian Printed Name or Initials[Signature]
Signature of Custodian7-2-21
Date/Time



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

Project: Eberle 13-32 CHZ Facility
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/09/21 16:48

BH01
2107044-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/02/21 10:57**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BEG0065	07/06/21	07/07/21	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: **07/02/21 10:57**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		93.2 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		133 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %		21-167		"	"	"	"	

Summit Scientific

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1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Eberle 13-32 CHZ Facility
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/09/21 16:48

BH02
2107044-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/02/21 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BEG0065	07/06/21	07/07/21	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: **07/02/21 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		84.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		141 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

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1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Eberle 13-32 CHZ Facility
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/09/21 16:48

BH03
2107044-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/02/21 11:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BEG0065	07/06/21	07/07/21	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: **07/02/21 11:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		87.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		135 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

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Project: Eberle 13-32 CHZ Facility
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/09/21 16:48

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BEG0065 - EPA 5030 Water MS

Blank (BEG0065-BLK1)

Prepared & Analyzed: 07/06/21

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	16.2		"	13.3		122	23-173			
Surrogate: Toluene-d8	17.1		"	13.3		129	20-170			
Surrogate: 4-Bromofluorobenzene	14.1		"	13.3		106	21-167			

LCS (BEG0065-BS1)

Prepared & Analyzed: 07/06/21

Benzene	33.5	1.0	ug/l	33.3		100	51-132			
Toluene	45.1	1.0	"	33.3		135	51-138			
Ethylbenzene	36.8	1.0	"	33.3		110	58-146			
m,p-Xylene	70.8	2.0	"	66.7		106	57-144			
o-Xylene	36.2	1.0	"	33.3		109	53-146			
Naphthalene	30.5	1.0	"	33.3		91.5	70-130			
1,2,4-Trimethylbenzene	34.9	1.0	"	33.3		105	70-130			
1,3,5-Trimethylbenzene	33.7	1.0	"	33.3		101	70-130			
Surrogate: 1,2-Dichloroethane-d4	12.4		"	13.3		92.8	23-173			
Surrogate: Toluene-d8	16.7		"	13.3		125	20-170			
Surrogate: 4-Bromofluorobenzene	14.6		"	13.3		109	21-167			

Matrix Spike (BEG0065-MS1)

Source: 2107018-01

Prepared & Analyzed: 07/06/21

Benzene	41.2	1.0	ug/l	33.3	3.71	113	34-141			
Toluene	42.2	1.0	"	33.3	ND	127	27-151			
Ethylbenzene	47.9	1.0	"	33.3	3.62	133	29-160			
m,p-Xylene	112	2.0	"	66.7	14.1	147	20-166			
o-Xylene	38.8	1.0	"	33.3	ND	116	33-159			
Naphthalene	41.8	1.0	"	33.3	1.91	120	70-130			
1,2,4-Trimethylbenzene	63.2	1.0	"	33.3	6.69	169	70-130			QM-07
1,3,5-Trimethylbenzene	39.8	1.0	"	33.3	ND	119	70-130			
Surrogate: 1,2-Dichloroethane-d4	9.65		"	13.3		72.4	23-173			
Surrogate: Toluene-d8	14.5		"	13.3		109	20-170			
Surrogate: 4-Bromofluorobenzene	14.4		"	13.3		108	21-167			

Summit Scientific

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Denver CO, 80203

Project: Eberle 13-32 CHZ Facility
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/09/21 16:48

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

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

Batch BEG0065 - EPA 5030 Water MS

Matrix Spike Dup (BEG0065-MSD1)	Source: 2107018-01			Prepared & Analyzed: 07/06/21						
Benzene	40.6	1.0	ug/l	33.3	3.71	111	34-141	1.51	30	
Toluene	44.4	1.0	"	33.3	ND	133	27-151	5.06	30	
Ethylbenzene	43.6	1.0	"	33.3	3.62	120	29-160	9.58	30	
m,p-Xylene	101	2.0	"	66.7	14.1	130	20-166	11.0	30	
o-Xylene	37.5	1.0	"	33.3	ND	113	33-159	3.43	30	
Naphthalene	39.5	1.0	"	33.3	1.91	113	70-130	5.78	30	
1,2,4-Trimethylbenzene	53.9	1.0	"	33.3	6.69	142	70-130	15.8	30	QM-07
1,3,5-Trimethylbenzene	37.4	1.0	"	33.3	ND	112	70-130	6.11	30	
Surrogate: 1,2-Dichloroethane-d4	14.7		"	13.3		110	23-173			
Surrogate: Toluene-d8	14.9		"	13.3		112	20-170			
Surrogate: 4-Bromofluorobenzene	14.9		"	13.3		111	21-167			

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

Project: Eberle 13-32 CHZ Facility

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/09/21 16:48

Notes and Definitions

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.

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