

PDC Energy, Inc.
First Quarter 2022 Groundwater Monitoring Summary

March 22, 2022

Former LH Miller Unit 1 Tank Battery
NWNW Section 25 T4N R66W
Remediation # 16033

This groundwater monitoring summary has been prepared by Tasman, Inc. for the former LH Miller Unit 1 Tank Battery.

Site History and Background

On January 6, 2021, a historic hydrocarbon release was discovered beneath a buried produced water vessel during ACM abatement activities. Following the discovery, mitigation activities were initiated and between January 6 and January 13, 2021, approximately 360 cubic yards of impacted material were removed from the former excavation. During excavation activities, groundwater was encountered at approximately 6 feet below ground surface (bgs). On April 9, 2021, five monitoring wells (BH01-BH05) were installed within and adjacent to the former excavation extent to confirm the absence of dissolved phase hydrocarbon impacts.

Groundwater Monitoring Activities

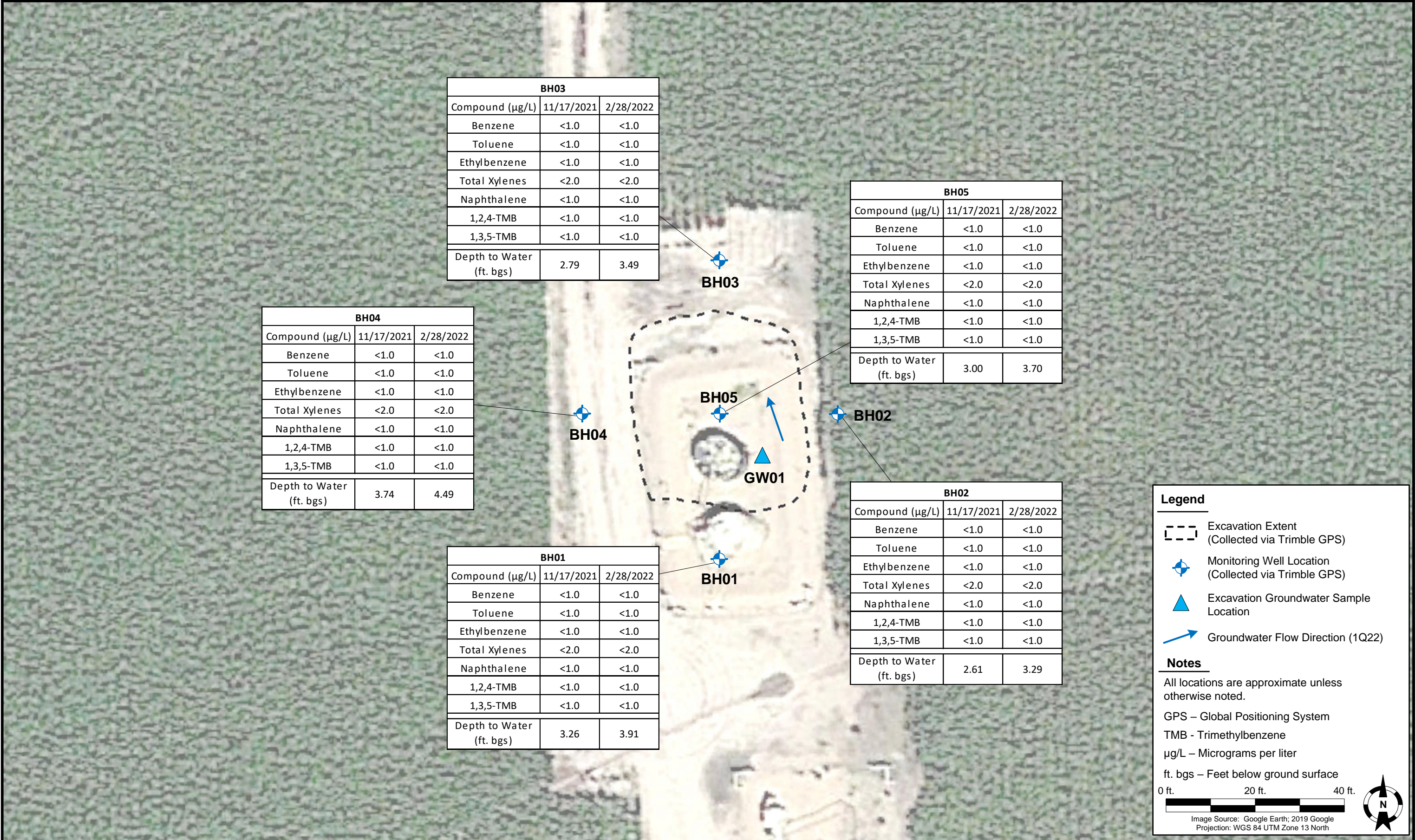
On February 28, 2022, groundwater monitoring was conducted at all five monitoring wells (BH01 – BH05). Five groundwater samples were submitted to Summit Scientific Laboratories for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, 1,2,4-trimethylbenzene (TMB), and 1,3,5-TMB by EPA Method 8260B, chloride and sulfate anions by EPA Method 300.0, and total dissolved solids (TDS) by Method SM 2540C.

First quarter 2022 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. Additionally, TDS and sulfate anion concentrations were in exceedance of the applicable regulatory standards and above 1.25x the background concentration of the up-gradient monitoring well (BH01) in monitoring well BH05. Inorganic parameters were below the applicable regulatory standards or within 1.25x the background concentration in the remaining four 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 second quarter 2021 and will remain the selected remediation strategy through the second quarter 2022.

Second quarter 2022 groundwater sampling will be conducted in May 2022.



DATE:	March 22, 2022
DESIGNED BY:	C. Hamlin
DRAWN BY:	M. Connolly

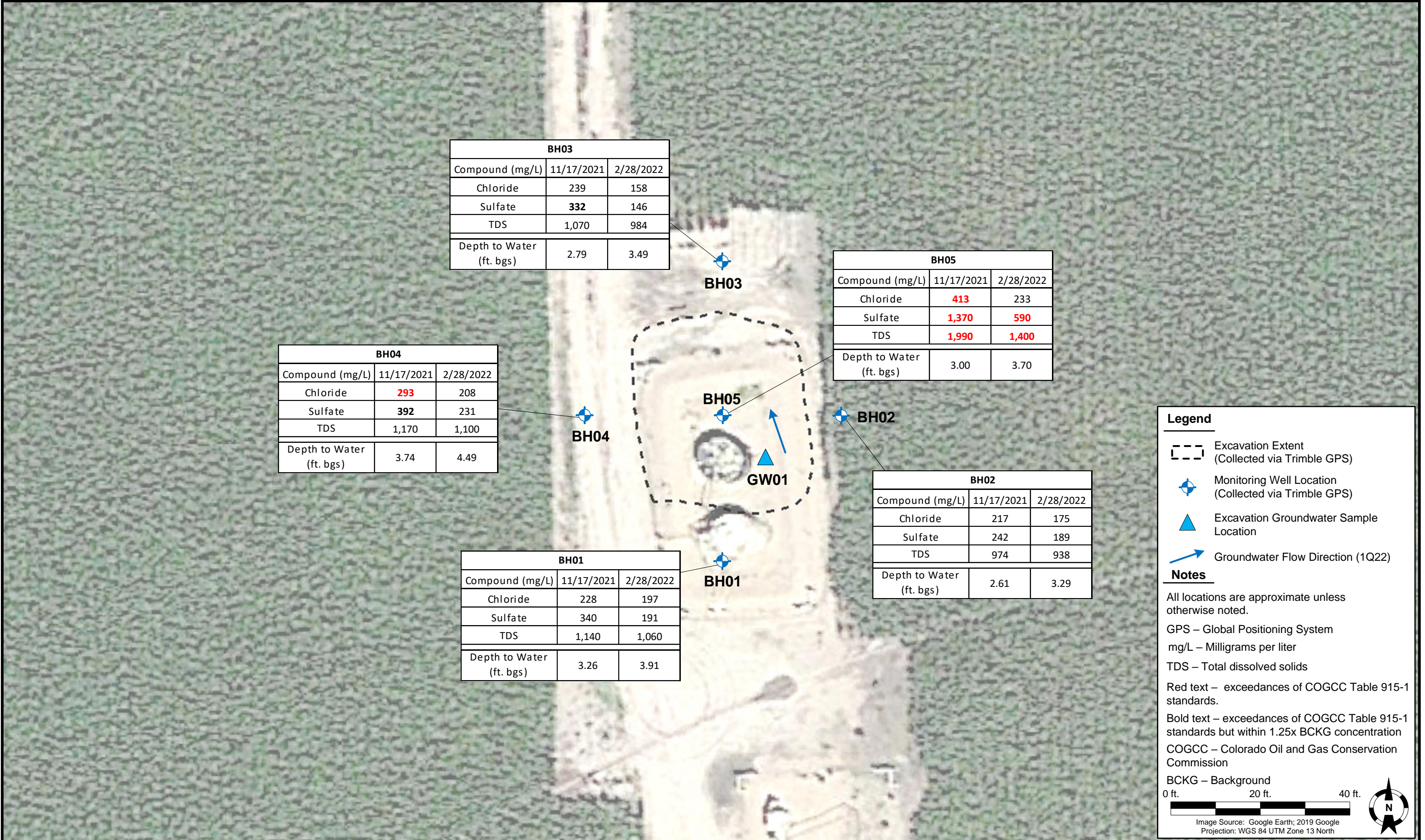


Tasman, Inc.
6855 W. 119th Ave.
Broomfield, CO 80020

PDC Energy, Inc. – DJ Basin
Former LH Miller Unit 1 Tank Battery
NWNW, Section 25, Township 4 North, Range 66 West
Weld County, Colorado

**GROUNDWATER
ANALYTICAL RESULTS
MAP**

**FIGURE
1**



DATE:	March 22, 2022
DESIGNED BY:	C. Hamlin
DRAWN BY:	M. Connolly



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

PDC Energy, Inc. – DJ Basin
Former LH Miller Unit 1 Tank Battery
NWNW, Section 25, Township 4 North, Range 66 West
Weld County, Colorado

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

**FIGURE
2**



TABLE 1
FORMER LH MILLER UNIT 1 TANK BATTERY
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	1/14/2021	<1.0	<1.0	<1.0	6.6	NA	NA	NA	~ 6	NM
BH01	5/27/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	4.17	4742.29
BH01	8/26/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.51	4744.95
BH01	11/17/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.26	4743.20
BH01	2/28/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.91	4742.55
BH02	5/27/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.52	4741.99
BH02	8/26/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.00	4744.51
BH02	11/17/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	2.61	4742.90
BH02	2/28/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.29	4742.22
BH03	5/27/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.72	4741.58
BH03	8/26/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.03	4744.27
BH03	11/17/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	2.79	4742.51
BH03	2/28/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.49	4741.81
BH04	5/27/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	4.69	4741.90
BH04	8/26/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.84	4744.75
BH04	11/17/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.74	4742.85
BH04	2/28/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	4.49	4742.10
BH05	5/27/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	4.14	4741.74
BH05	8/26/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.98	4743.90
BH05	11/17/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.00	4742.88
BH05	2/28/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.70	4742.18

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
NM = Not measured

TABLE 2
FORMER LH MILLER UNIT 1 TANK BATTERY
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) ⁽¹⁾		<1.25 x BCKG	250 or <1.25 x BCKG	250 or <1.25 x BCKG	-	-
BH01	5/27/2021	1,020	120	122	4.17	4742.29
BH01	8/26/2021	1,020	159	286	1.51	4744.95
BH01	11/17/2021	1,140	228	340	3.26	4743.20
BH01	2/28/2022	1,060	197	191	3.91	4742.55
BH02	8/26/2021	1,020	163	241	1.00	4744.51
BH02	11/17/2021	974	217	242	2.61	4742.90
BH02	2/28/2022	938	175	189	3.29	4742.22
BH03	5/27/2021	957	112	118	3.72	4741.58
BH03	8/26/2021	933	155	246	1.03	4744.27
BH03	11/17/2021	1070	239	332	2.79	4742.51
BH03	2/28/2022	984	158	146	3.49	4741.81
BH04	5/27/2021	1,090	134	147	4.69	4741.90
BH04	8/26/2021	1,060	182	316	1.84	4744.75
BH04	11/17/2021	1,170	293	392	3.74	4742.85
BH04	2/28/2022	1,100	208	231	4.49	4742.10
BH05	5/27/2021	1,310	251	1,090	4.14	4741.74
BH05	8/26/2021	1,970	299	1,240	1.98	4743.90
BH05	11/17/2021	1,990	413	1,370	3.00	4742.88
BH05	2/28/2022	1,400	233	590	3.70	4742.18

TABLE 2
FORMER LH MILLER UNIT 1 TANK BATTERY
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) ⁽¹⁾		<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

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

ft. = Feet

AMSL = Above Mean Sea Level

 = Up-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.

Attachment A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

March 08, 2022

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: LH Miller Unit 1

Work Order #2202364

Enclosed are the results of analyses for samples received by Summit Scientific on 02/28/22 15:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, reading "Muri Premer", is displayed on a light purple rectangular background.

Muri Premer

Project Manager



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

Project: LH Miller Unit 1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
03/08/22 15:42

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2202364-01	Water	02/28/22 13:14	02/28/22 15:30
BH02	2202364-02	Water	02/28/22 13:33	02/28/22 15:30
BH03	2202364-03	Water	02/28/22 13:20	02/28/22 15:30
BH04	2202364-04	Water	02/28/22 13:40	02/28/22 15:30
BH05	2202364-05	Water	02/28/22 13:27	02/28/22 15:30

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

2702364

4653 Table Mountain Drive ♦ Golden, Colorado 80403

303-277-9310

Page 1 of 1

Client: PDC / Tasman Geosciences

Project Manager: MARK LONGHURST

Address: 6855 W. 119th Ave.

E-Mail: mark.longhurst@pdce.com

City/State/Zip: Broomfield / CO/ 80020

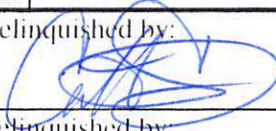
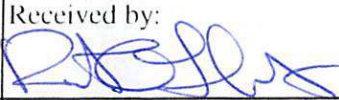
Phone: 303-487-1228

Project Name: LH MILLER UNIT 1

Sampler Name: COLETTE RAMEY

Project Number: N/A

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested							Special Instructions					
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEX	Naphthalene	1,2,4-TMB	1,3,5-TMB	TDS	Chloride	Sulfate						
1	BH01	2/28/22	1314	4	3																				
2	BH02		1333	1																					
3	BH03		1320	1																					
4	BH04		1340	1																					
5	BH05		1327	1																					
6																									
7																									
8																									
9																									
10																									

Relinquished by: 	Date/Time: <u>2/28/22</u> <u>1530</u>	Received by: <u>Tasman's Lock Box</u>	Date/Time: <u>2/28/22</u> <u>1530</u>	Turn Around Time (Check) ___ Same Day ___ 24 hours <input checked="" type="checkbox"/> ___ 48 hours Sample Integrity: Temperature Upon Receipt: <u>0.7</u> Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	Notes:
Relinquished by: <u>Tasman's Lock Box</u>	Date/Time: <u>2/28/22</u> <u>1530</u>	Received by: 	Date/Time: <u>2/28/22</u> <u>1530</u>		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

S₂

Sample Receipt Checklist

S2 Work Order#

2202364

Client: DOC / TasmaniaClient Project ID: LH Miller unitShipped Via: H.D./P.U./FedEx/UPS/USPS/Other

Airbill #:

Matrix (check all that apply):

☐ Air☐ Soil/Solid☒ Water☐ Other:

(Describe)

Temp (°C)

07

Thermometer ID: G86A9201901378

	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 if there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ON ICE
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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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, H ₂ SO ₄ , NaOH, HNO ₃ , etc.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HCl
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.

Custodian Printed Name or Initials

Date/Time



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

Project: LH Miller Unit 1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
03/08/22 15:42

BH01
2202364-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/28/22 13:14**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	BFC0066	03/03/22	03/04/22	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: **02/28/22 13:14**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.9 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **02/28/22 13:14**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chloride	197	12.0	mg/L	200	BFC0084	03/04/22	03/04/22	EPA 300.0	
Sulfate	191	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **02/28/22 13:14**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Total Dissolved Solids	1060	10.0	mg/L	1	BFC0008	03/01/22	03/01/22	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: LH Miller Unit 1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
03/08/22 15:42

BH02
2202364-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/28/22 13:33**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFC0066	03/03/22	03/04/22	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: **02/28/22 13:33**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **02/28/22 13:33**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	175	12.0	mg/L	200	BFC0084	03/04/22	03/04/22	EPA 300.0	
Sulfate	189	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **02/28/22 13:33**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	938	10.0	mg/L	1	BFC0008	03/01/22	03/01/22	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: LH Miller Unit 1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
03/08/22 15:42

BH03
2202364-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/28/22 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	BFC0066	03/03/22	03/04/22	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: **02/28/22 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **02/28/22 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	158	12.0	mg/L	200	BFC0084	03/04/22	03/04/22	EPA 300.0	
Sulfate	146	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **02/28/22 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	984	10.0	mg/L	1	BFC0008	03/01/22	03/01/22	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: LH Miller Unit 1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
03/08/22 15:42

BH04
2202364-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/28/22 13:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFC0066	03/03/22	03/04/22	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: **02/28/22 13:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.9 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **02/28/22 13:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	208	12.0	mg/L	200	BFC0084	03/04/22	03/04/22	EPA 300.0	
Sulfate	231	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **02/28/22 13:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	1100	10.0	mg/L	1	BFC0008	03/01/22	03/01/22	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: LH Miller Unit 1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
03/08/22 15:42

BH05
2202364-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/28/22 13:27**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFC0066	03/03/22	03/04/22	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: **02/28/22 13:27**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **02/28/22 13:27**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	233	12.0	mg/L	200	BFC0084	03/04/22	03/05/22	EPA 300.0	
Sulfate	590	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **02/28/22 13:27**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	1400	10.0	mg/L	1	BFC0008	03/01/22	03/01/22	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: LH Miller Unit 1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
03/08/22 15:42

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 BFC0066 - EPA 5030 Water MS

Blank (BFC0066-BLK1)

Prepared: 03/03/22 Analyzed: 03/04/22

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	5.73		"	13.3		43.0	23-173			
Surrogate: Toluene-d8	13.0		"	13.3		97.8	20-170			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.7	21-167			

LCS (BFC0066-BS1)

Prepared: 03/03/22 Analyzed: 03/04/22

Benzene	35.1	1.0	ug/l	41.7		84.3	51-132			
Toluene	39.8	1.0	"	41.7		95.4	51-138			
Ethylbenzene	41.6	1.0	"	41.7		99.8	58-146			
m,p-Xylene	82.5	2.0	"	83.3		99.0	57-144			
o-Xylene	42.0	1.0	"	41.7		101	53-146			
Naphthalene	40.8	1.0	"	41.7		98.0	70-130			
1,2,4-Trimethylbenzene	42.7	1.0	"	41.7		102	70-130			
1,3,5-Trimethylbenzene	46.9	1.0	"	41.7		112	70-130			
Surrogate: 1,2-Dichloroethane-d4	14.5		"	13.3		109	23-173			
Surrogate: Toluene-d8	13.6		"	13.3		102	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		98.9	21-167			

Matrix Spike (BFC0066-MS1)

Source: 2202364-01

Prepared: 03/03/22 Analyzed: 03/04/22

Benzene	35.5	1.0	ug/l	41.7	ND	85.1	34-141			
Toluene	39.6	1.0	"	41.7	ND	95.0	27-151			
Ethylbenzene	42.3	1.0	"	41.7	ND	102	29-160			
m,p-Xylene	83.0	2.0	"	83.3	ND	99.6	20-166			
o-Xylene	42.1	1.0	"	41.7	ND	101	33-159			
Naphthalene	44.2	1.0	"	41.7	ND	106	70-130			
1,2,4-Trimethylbenzene	43.1	1.0	"	41.7	ND	104	70-130			
1,3,5-Trimethylbenzene	47.5	1.0	"	41.7	ND	114	70-130			
Surrogate: 1,2-Dichloroethane-d4	14.3		"	13.3		107	23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.8	20-170			
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102	21-167			

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: LH Miller Unit 1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
03/08/22 15:42

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 BFC0066 - EPA 5030 Water MS

Matrix Spike Dup (BFC0066-MSD1)		Source: 2202364-01			Prepared: 03/03/22 Analyzed: 03/04/22					
Benzene	35.9	1.0	ug/l	41.7	ND	86.2	34-141	1.26	30	
Toluene	40.7	1.0	"	41.7	ND	97.7	27-151	2.76	30	
Ethylbenzene	42.2	1.0	"	41.7	ND	101	29-160	0.308	30	
m,p-Xylene	82.7	2.0	"	83.3	ND	99.2	20-166	0.350	30	
o-Xylene	42.0	1.0	"	41.7	ND	101	33-159	0.0713	30	
Naphthalene	44.8	1.0	"	41.7	ND	108	70-130	1.35	30	
1,2,4-Trimethylbenzene	43.1	1.0	"	41.7	ND	104	70-130	0.00	30	
1,3,5-Trimethylbenzene	47.4	1.0	"	41.7	ND	114	70-130	0.0632	30	
<hr/>										
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	13.6		"	13.3		102	21-167			

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: LH Miller Unit 1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
03/08/22 15:42

Anions by EPA Method 300.0 - Quality Control

Summit Scientific

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

Batch BFC0084 - General Preparation

Blank (BFC0084-BLK1)

Prepared & Analyzed: 03/04/22

Chloride	ND	0.0600	mg/L
Sulfate	ND	0.300	"

LCS (BFC0084-BS1)

Prepared & Analyzed: 03/04/22

Chloride	2.82	0.0600	mg/L	3.00	94.0	90-110
Sulfate	14.1	0.300	"	15.0	94.2	90-110

Duplicate (BFC0084-DUP1)

Source: 2202364-01

Prepared & Analyzed: 03/04/22

Chloride	224	12.0	mg/L	197	12.7	20
Sulfate	230	60.0	"	191	18.6	20

Matrix Spike (BFC0084-MS1)

Source: 2202364-01

Prepared & Analyzed: 03/04/22

Chloride	821	12.0	mg/L	600	197	104	80-120
Sulfate	3340	60.0	"	3000	191	105	80-120

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: LH Miller Unit 1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
03/08/22 15:42

Total Dissolved Solids by SM2540C - Quality Control
Summit Scientific

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

Batch BFC0008 - General Preparation

Blank (BFC0008-BLK1)

Prepared & Analyzed: 03/01/22

Total Dissolved Solids ND 10.0 mg/L

Duplicate (BFC0008-DUP1)

Source: 2202360-01

Prepared & Analyzed: 03/01/22

Total Dissolved Solids 1430 10.0 mg/L 1430 0.350 20

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: LH Miller Unit 1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
03/08/22 15:42

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