

**PDC Energy, Inc.**  
**Third Quarter 2019 Groundwater Monitoring Summary**

September 9, 2019

Former Mark 11, 12, 14-35 Tank Battery  
NWSW Section 35 T4N R65W  
Remediation # 12170

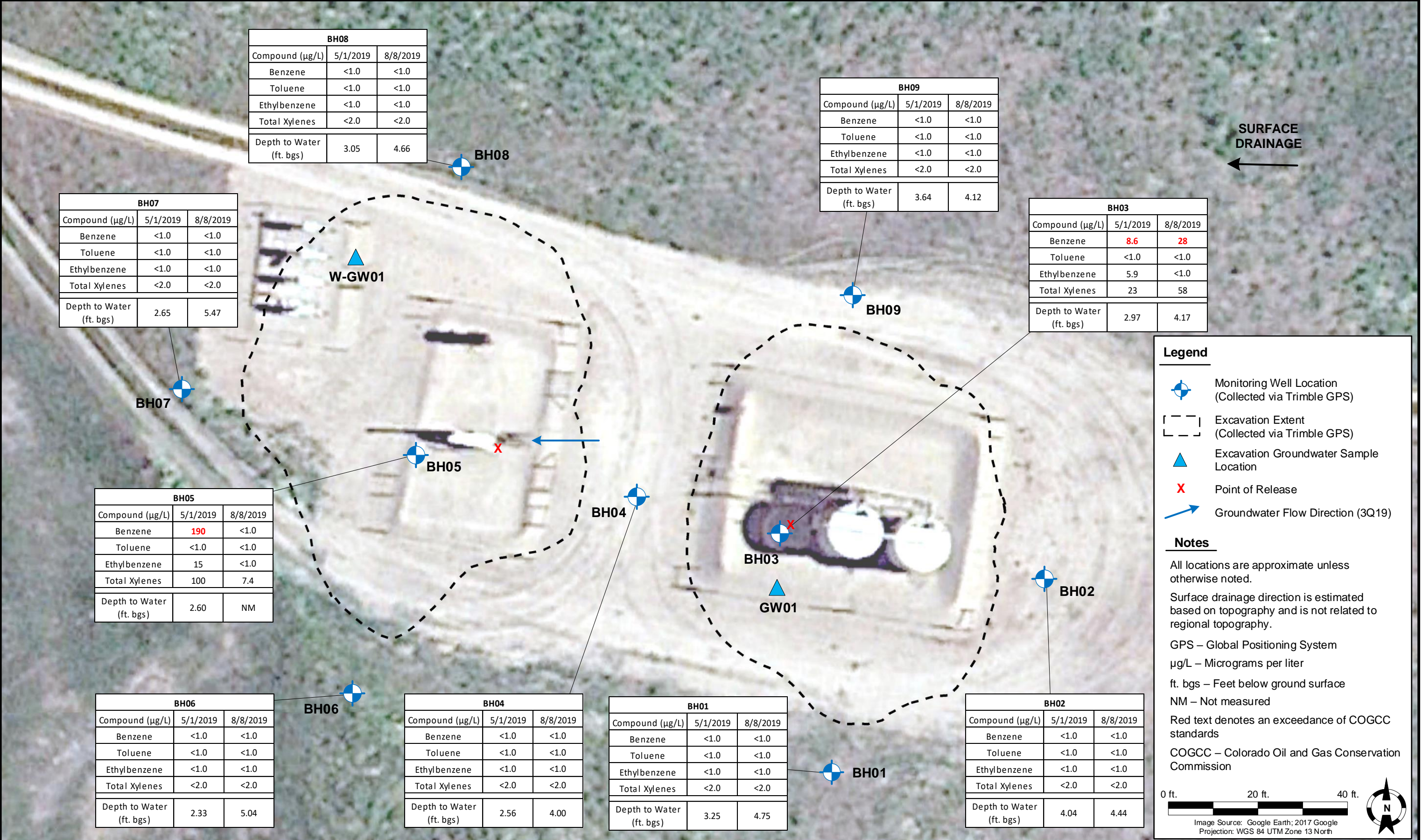
This groundwater monitoring summary has been prepared by Tasman Geosciences, Inc. for the former Mark 11, 12, 14-35 tank battery. On August 8, 2019, groundwater monitoring was conducted at all nine monitoring well locations (BH01 – BH09). Nine groundwater samples were submitted to Summit Scientific Laboratory for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by USEPA Method 8260B.

Third quarter 2019 analytical results indicated that the benzene concentration was above the applicable COGCC Table 910-1 groundwater standard in monitoring well BH03. BTEX concentrations were below regulatory standards in the remaining eight monitoring well locations.

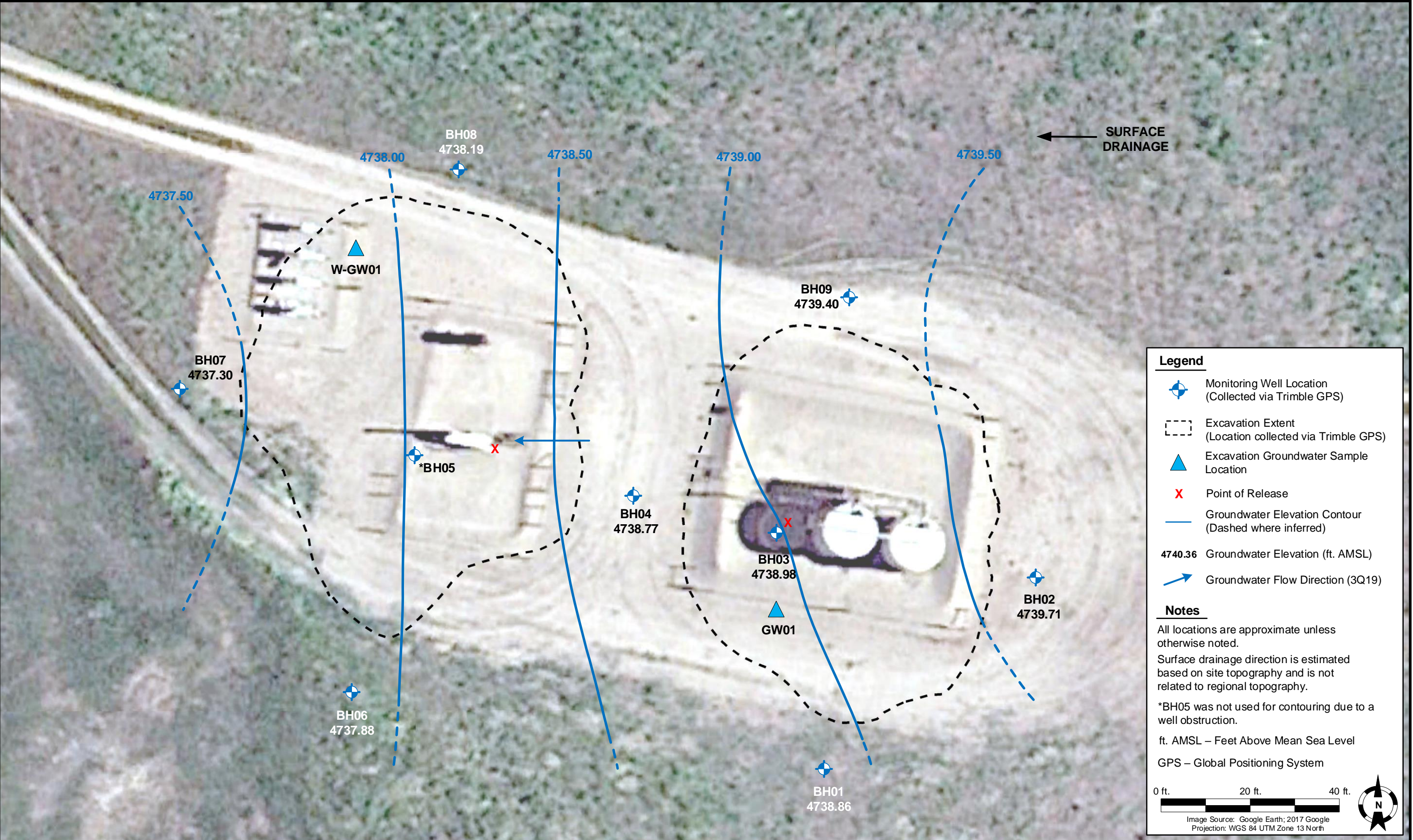
Monitored natural attenuation (MNA) was selected as the remediation strategy for this site during the first quarter 2019 and will remain the selected remediation strategy for the fourth quarter 2019.

Fourth quarter 2019 groundwater sampling will be conducted during November 2019. Sample locations and corresponding analytical results are illustrated on Figure 1. Groundwater elevation data is illustrated in Figure 2. Analytical results are summarized in Table 1 and the laboratory report is included as Attachment A.









DATE:	August 13, 2019
DESIGNED BY:	C. Hamlin
DRAWN BY:	L. Martin



**TASMAN**  
GEOSCIENCES

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

**PDC Energy, Inc. – DJ Basin**  
**Former Mark 11, 12, 14-35 Tank Battery**  
NWSW, Section 35, Township 4 North, Range 65 West  
Weld County, Colorado

**GROUNDWATER  
ELEVATION CONTOUR  
MAP (08/08/2019)**

**FIGURE  
2**



**TABLE 1**  
**FORMER MARK 11, 12, 14-35 TANK BATTERY**  
**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 <sup>(2)</sup> (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup>		5	560	700	1,400		
GW01	11/19/2018	21	4.5	3.6	710	~ 7	NM
W-GW01	11/27/2018	2.9	<1.0	<1.0	22	~ 7	NM
BH01	2/11/2019	<1.0	<1.0	<1.0	<2.0	3.28	4740.33
BH01	5/1/2019	<1.0	<1.0	<1.0	<2.0	3.25	4740.36
BH01	8/8/2019	<1.0	<1.0	<1.0	<2.0	4.75	4738.86
BH02	2/11/2019	<1.0	<1.0	<1.0	<2.0	4.08	4740.07
BH02	5/1/2019	<1.0	<1.0	<1.0	<2.0	4.04	4740.11
BH02	8/8/2019	<1.0	<1.0	<1.0	<2.0	4.44	4739.71
BH03	2/11/2019	18	<1.0	8.3	76	2.96	4740.19
BH03	5/1/2019	8.6	<1.0	5.9	23	2.97	4740.18
BH03	8/8/2019	28	<1.0	<1.0	58	4.17	4738.98
BH04	2/11/2019	<1.0	<1.0	<1.0	<2.0	2.59	4740.18
BH04	5/1/2019	<1.0	<1.0	<1.0	<2.0	2.56	4740.21
BH04	8/8/2019	<1.0	<1.0	<1.0	<2.0	4.00	4738.77
BH05	2/11/2019	420	<1.0	50	360	2.62	4740.07
BH05	5/1/2019	190	<1.0	15	100	2.60	4740.09
BH05 <sup>(3)</sup>	8/8/2019	<1.0	<1.0	<1.0	7.4	NM	NM
BH06	2/11/2019	<1.0	<1.0	<1.0	<2.0	2.42	4740.50
BH06	5/1/2019	<1.0	<1.0	<1.0	<2.0	2.33	4740.59
BH06	8/8/2019	<1.0	<1.0	<1.0	<2.0	5.04	4737.88
BH07	2/11/2019	<1.0	<1.0	<1.0	<2.0	2.79	4739.98
BH07	5/1/2019	<1.0	<1.0	<1.0	<2.0	2.65	4740.12
BH07	8/8/2019	<1.0	<1.0	<1.0	<2.0	5.47	4737.30
BH08	2/11/2019	<1.0	<1.0	<1.0	<2.0	3.10	4739.75
BH08	5/1/2019	<1.0	<1.0	<1.0	<2.0	3.05	4739.80
BH08	8/8/2019	<1.0	<1.0	<1.0	<2.0	4.66	4738.19
BH09	2/11/2019	<1.0	<1.0	<1.0	<2.0	3.63	4739.89
BH09	5/1/2019	<1.0	<1.0	<1.0	<2.0	3.64	4739.88
BH09	8/8/2019	<1.0	<1.0	<1.0	<2.0	4.12	4739.40

**TABLE 1**  
**FORMER MARK 11, 12, 14-35 TANK BATTERY**  
**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 <sup>(2)</sup> (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup>		5	560	700	1,400		

**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.
3. Obstruction prevented water level measurement.

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

**BOLD** = Analytical result is in exceedance of COGCC groundwater standards.

NM = Not measured

## Attachment A

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 12, 2019

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

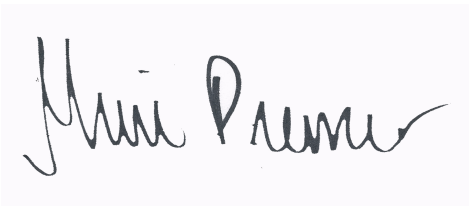
Denver, CO 80203

RE: Mark 11,12,14-35

Work Order # 1908093

Enclosed are the results of analyses for samples received by Summit Scientific on 08/08/19 17:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink on a light blue background. The signature is written in a cursive style and reads "Muri Premer".

Muri Premer For Ben Shrewsbury

Laboratory Manager



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

Project: Mark 11,12,14-35

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
08/12/19 14:13

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	1908093-01	Water	08/08/19 13:40	08/08/19 17:40
BH02	1908093-02	Water	08/08/19 13:50	08/08/19 17:40
BH03	1908093-03	Water	08/08/19 13:59	08/08/19 17:40
BH04	1908093-04	Water	08/08/19 14:08	08/08/19 17:40
BH05	1908093-05	Water	08/08/19 15:00	08/08/19 17:40
BH06	1908093-06	Water	08/08/19 14:17	08/08/19 17:40
BH07	1908093-07	Water	08/08/19 14:36	08/08/19 17:40
BH08	1908093-08	Water	08/08/19 14:47	08/08/19 17:40
BH09	1908093-09	Water	08/08/19 14:56	08/08/19 17:40

Summit Scientific

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



# Summit Scientific

S<sub>2</sub>

1908093

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

Page 1 of 1

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: Mark 11,12,14-35  
Sampler: Alison Dahl Project Number: N/A

					Preservative				Matrix				Analysis Requested								Special Instructions
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO <sub>3</sub>	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	8260B GBTEXN	8015 DRO	pH, EC, SAR					
1	BH01	8/8/2019	1340	3			X		X				X								
2	BH02	8/8/2019	1350	3			X		X				X								
3	BH03	8/8/2019	1359	3			X		X				X								
4	BH04	8/8/2019	1408	3			X		X				X								
5	BH05	8/8/2019	1500	3			X		X				X								
6	BH06	8/8/2019	1417	3			X		X				X								
7	BH07	8/8/2019	1436	3			X		X				X								
8	BH08	8/8/2019	1447	3			X		X				X								
9	BH09	8/8/2019	<del>1458</del> 1456	3			X		X				X								
10																					

Relinquished by: <i>Alison Dahl</i>	Date/Time: 8/8/2019 1700	Received by: Tasman's Lock Box	Date/Time: 8/8/2019 1700	<b>Turn Around Time</b> (Check) Same Day _____ 72 hours _____ 24 hours _____ Standard <u>X</u> 48 hours _____ <b>Sample Integrity:</b> Temperature Upon Receipt: <u>45</u> Samples Intact: <u>Yes</u> No	<b>Notes:</b>
Relinquished by: Tasman's Lock Box	Date/Time: 8/8/19 1740	Received by: <i>[Signature]</i>	Date/Time: 8/8/19 1740		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

# Sample Receipt Checklist

S2 Work Order 1908093

Client: PDC / TASMAN

Client Project ID: MARK 11,12,14-35

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

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

Matrix (check all that apply):

☐ Air

☐ Soil/Solid

☒ Water

☐ Other: \_\_\_\_\_

(Describe)

Temp (°C)	4.5
-----------	-----

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ? 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"/>	
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<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 checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation <b>(excluding cooling)</b> <sup>(1)</sup> ? 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 <sup>(1)</sup> ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

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

RZ

Custodian Printed Name or Initials

Signature of Custodian

8/8/19

Date/Time



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

Project: Mark 11,12,14-35

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/12/19 14:13

**BH01**  
**1908093-01 (Water)**

**Summit Scientific**

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

Date Sampled: **08/08/19 13:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1908121	08/09/19	08/10/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **08/08/19 13:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		97.2 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.7 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.1 %		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: Mark 11,12,14-35

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/12/19 14:13

**BH02**  
**1908093-02 (Water)**

**Summit Scientific**

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

Date Sampled: **08/08/19 13:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1908121	08/09/19	08/10/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **08/08/19 13:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		99.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.6 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Mark 11,12,14-35

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/12/19 14:13

**BH03**  
**1908093-03 (Water)**

**Summit Scientific**

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

Date Sampled: **08/08/19 13:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Benzene</b>	<b>28</b>	1.0		ug/l	1	1908121	08/09/19	08/10/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>58</b>	2.0		"	"	"	"	"	"	

Date Sampled: **08/08/19 13:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		99.4 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		111 %		21-167		"	"	"	"	

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

Project: Mark 11,12,14-35

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/12/19 14:13

**BH04**  
**1908093-04 (Water)**

**Summit Scientific**

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

Date Sampled: **08/08/19 14:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1908121	08/09/19	08/10/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **08/08/19 14:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.1 %	21-167		"	"	"	"	

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

Project: Mark 11,12,14-35

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/12/19 14:13

**BH05**  
**1908093-05 (Water)**

**Summit Scientific**

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

Date Sampled: **08/08/19 15:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1908121	08/09/19	08/10/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>7.4</b>	2.0		"	"	"	"	"	"	

Date Sampled: **08/08/19 15:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		95.6 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.6 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.5 %		21-167		"	"	"	"	

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

Project: Mark 11,12,14-35

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/12/19 14:13

**BH06**  
**1908093-06 (Water)**

**Summit Scientific**

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

Date Sampled: **08/08/19 14:17**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1908121	08/09/19	08/10/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **08/08/19 14:17**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.3 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Mark 11,12,14-35

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/12/19 14:13

**BH07**  
**1908093-07 (Water)**

**Summit Scientific**

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

Date Sampled: **08/08/19 14:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1908121	08/09/19	08/10/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **08/08/19 14:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.9 %	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: Mark 11,12,14-35

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/12/19 14:13

**BH08**  
**1908093-08 (Water)**

**Summit Scientific**

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

Date Sampled: **08/08/19 14:47**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1908121	08/09/19	08/10/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **08/08/19 14:47**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.2 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Mark 11,12,14-35

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/12/19 14:13

**BH09**  
**1908093-09 (Water)**

**Summit Scientific**

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

Date Sampled: **08/08/19 14:56**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1908121	08/09/19	08/10/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **08/08/19 14:56**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.5 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Mark 11,12,14-35

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/12/19 14:13

## 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 1908121 - EPA 5030 Water MS

##### Blank (1908121-BLK1)

Prepared & Analyzed: 08/09/19

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.1		"	13.3		98.4	23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.6	20-170			
Surrogate: 4-Bromofluorobenzene	12.3		"	13.3		92.0	21-167			

##### LCS (1908121-BS1)

Prepared & Analyzed: 08/09/19

Benzene	25.6	1.0	ug/l	33.3		76.7	51-132			
Toluene	26.5	1.0	"	33.3		79.4	51-138			
Ethylbenzene	26.0	1.0	"	33.3		77.9	58-146			
m,p-Xylene	49.3	2.0	"	66.7		73.9	57-144			
o-Xylene	26.1	1.0	"	33.3		78.2	53-146			
Surrogate: 1,2-Dichloroethane-d4	12.9		"	13.3		96.5	23-173			
Surrogate: Toluene-d8	13.6		"	13.3		102	20-170			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.3	21-167			

##### Matrix Spike (1908121-MS1)

Source: 1908093-01

Prepared & Analyzed: 08/09/19

Benzene	28.6	1.0	ug/l	33.3	ND	85.8	34-141			
Toluene	30.4	1.0	"	33.3	ND	91.2	27-151			
Ethylbenzene	29.4	1.0	"	33.3	ND	88.2	29-160			
m,p-Xylene	56.1	2.0	"	66.7	ND	84.2	20-166			
o-Xylene	29.1	1.0	"	33.3	ND	87.4	33-159			
Surrogate: 1,2-Dichloroethane-d4	13.3		"	13.3		99.8	23-173			
Surrogate: Toluene-d8	13.5		"	13.3		101	20-170			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.4	21-167			

Summit Scientific

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

Project: Mark 11,12,14-35

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/12/19 14:13

**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 1908121 - EPA 5030 Water MS**

Matrix Spike Dup (1908121-MSD1)		Source: 1908093-01			Prepared & Analyzed: 08/09/19					
Benzene	24.9	1.0	ug/l	33.3	ND	74.8	34-141	13.7	30	
Toluene	26.7	1.0	"	33.3	ND	80.1	27-151	13.0	30	
Ethylbenzene	26.7	1.0	"	33.3	ND	80.2	29-160	9.55	30	
m,p-Xylene	50.8	2.0	"	66.7	ND	76.1	20-166	10.0	30	
o-Xylene	26.6	1.0	"	33.3	ND	79.8	33-159	9.04	30	
Surrogate: 1,2-Dichloroethane-d4	13.6		"	13.3		102	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		98.9	20-170			
Surrogate: 4-Bromofluorobenzene	12.7		"	13.3		95.6	21-167			

Summit Scientific

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PDC Energy

1775 Sherman St. STE. 3000

Denver CO, 80203

Project: Mark 11,12,14-35

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**

08/12/19 14:13

### 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