

PDC Energy, Inc.
Third Quarter 2019 Groundwater Monitoring Summary

August 1, 2019

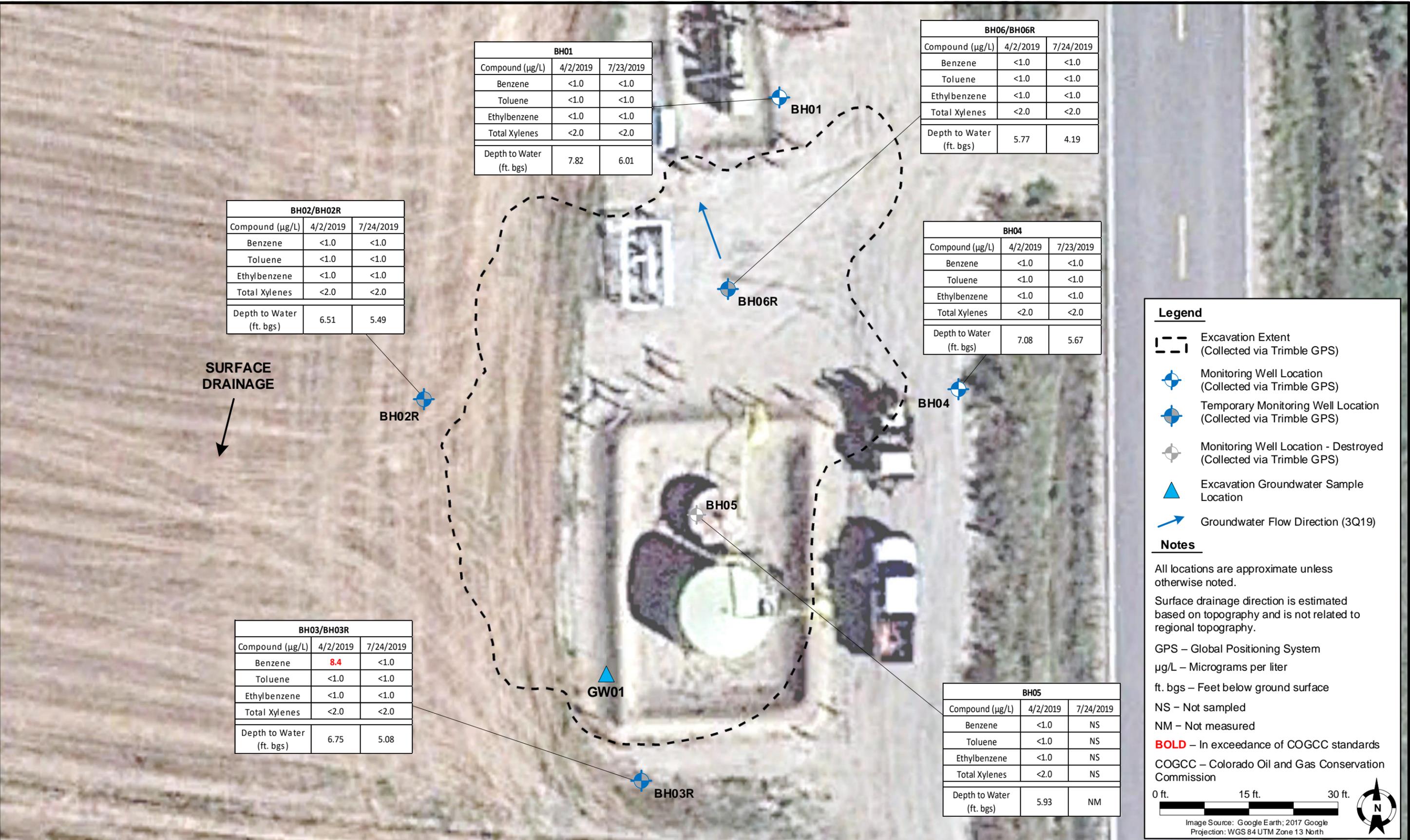
Former McIntosh 43, 44-23 Tank Battery
SESE Section 23 T6N R64W
Remediation # 12678

This groundwater monitoring summary has been prepared by Tasman Geosciences, Inc. for the former McIntosh 43, 44-23 tank battery. On July 23, 2019, groundwater monitoring was conducted at two monitoring wells (BH01 and BH04). During monitoring activities, monitoring wells BH02, BH03, BH05, and BH06 were found destroyed by agriculture operations. On July 24, 2019, three temporary monitoring wells (BH02R, BH03R, and BH06R) were installed using a hand auger in cultivated land. Monitoring well BH05 could not be installed due to geologic refusal. The wells were purged, sampled, and subsequently abandoned. A GPS point was collected from the temporary monitoring well locations to ensure the groundwater sample location remains consistent between quarters. Five groundwater samples were submitted to Summit Scientific Laboratory for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX) by USEPA Method 8260B.

Third quarter 2019 analytical results indicated that BTEX concentrations were below the applicable COGCC Table 910-1 groundwater standards in all five monitoring well locations.

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

Fourth quarter 2019 groundwater sampling will be conducted during October 2019. 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 reports are included in Attachment A.



DATE: August 1, 2019

DESIGNED BY: B. Nelson

DRAWN BY: M. Dahlgren

TASMAN
GEOSCIENCES

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

PDC Energy, Inc. – DJ Basin
Former McIntosh 43, 44-23 Tank Battery
SESE, Section 23, Township 6 North, Range 64 West
Weld County, Colorado

GROUNDWATER
ANALYTICAL RESULTS
MAP

FIGURE
1



Legend

- Excavation Extent (Collected Via Trimble GPS)
- Monitoring Well Location (Collected via Trimble GPS)
- Temporary Monitoring Well Location (Collected via Trimble GPS)
- Monitoring Well Location - Destroyed (Collected via Trimble GPS)
- Groundwater Elevation Contour (Dashed where inferred)
- 4626.27** Groundwater Elevation (ft. AMSL)
- Excavation Groundwater Sample Location
- Groundwater Flow Direction (3Q19)

Notes

All locations are approximate unless otherwise noted.

Surface drainage direction is estimated based on site topography and is not related to regional topography.

No data was collected from BH05 because it was destroyed

ft. AMSL – Feet Above Mean Sea Level
GPS – Global Positioning System

0 ft. 15 ft. 30 ft.

Image Source: Google Earth; 2017 Google
Projection: WGS 84 UTM Zone 13 North

DATE:	August 12, 2019
DESIGNED BY:	C. Hamlin
DRAWN BY:	L. Martin



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

PDC Energy, Inc. – DJ Basin
Former McIntosh 43, 44-23 Tank Battery
SESE, Section 23, Township 6 North, Range 64 West
Weld County, Colorado

GROUNDWATER ELEVATION CONTOUR MAP (07/23/2019 & 07/24/2019)

FIGURE 2

TABLE 1
FORMER McINTOSH 43, 44-23 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 ⁽²⁾ (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400		
GW01	2/22/2019	<1.0	<1.0	<1.0	<2.0	~ 8	NM
BH01	4/2/2019	<1.0	<1.0	<1.0	<2.0	7.81	4626.27
BH01	7/23/2019	<1.0	<1.0	<1.0	<2.0	6.01	4628.07
BH02	4/2/2019	<1.0	<1.0	<1.0	<2.0	6.51	4626.98
BH02	7/24/2019	Destroyed					
BH02R	7/24/2019	<1.0	<1.0	<1.0	<2.0	5.49	4628.00
BH03	4/2/2019	8.4	<1.0	<1.0	<2.0	6.75	4626.83
BH03	7/24/2019	Destroyed					
BH03R	7/24/2019	<1.0	<1.0	<1.0	<2.0	5.08	4628.50
BH04	4/2/2019	<1.0	<1.0	<1.0	<2.0	7.08	4626.97
BH04	7/23/2019	<1.0	<1.0	<1.0	<2.0	5.67	4628.38
BH05	4/2/2019	1.0	<1.0	2.0	6.8	5.93	4626.87
BH05 ⁽³⁾	7/24/2019	Destroyed					
BH06	4/2/2019	<1.0	<1.0	<1.0	<2.0	5.77	4627.08
BH06	7/24/2019	Destroyed					
BH06R	7/24/2019	<1.0	<1.0	<1.0	<2.0	4.19	4628.66

Notes:

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective May 1, 2018.
2. Groundwater measurements for excavation samples were estimated from ground surface. Depth to water measurements were collected from top of casing and adjusted using survey data and product thickness to reflect depth of water from ground surface.
3. BH05 not sampled due to geologic refusal of hand auger in the third quarter 2019.

COGCC = Colorado Oil and Gas Conservation Commission

µg/L = Micrograms per liter

NS = Not sampled

NM = Not measured

(<) = 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.

Attachment A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

July 30, 2019

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: McIntosh 43,44-23

Work Order # 1907273

Enclosed are the results of analyses for samples received by Summit Scientific on 07/23/19 17:10. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large initial "M" and a long, sweeping underline.

Muri Premer For Ben Shrewsbury

Laboratory Manager



PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: McIntosh 43,44-23 Project Number: [none] Project Manager: Mark Longhurst	Reported: 07/30/19 09:47
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ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	1907273-01	Water	07/23/19 14:48	07/23/19 17:10
BH04	1907273-02	Water	07/23/19 14:42	07/23/19 17:10

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

1907273

741 Corporate Circle Suite 1 ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 1

Client: PDC / Tasman Geosciences
Address: 6899 Pecos St, Unit C
City/State/Zip: Denver, CO 80221
Phone: 303-487-1228 Fax: _____
Sampler Name: Brian G., Brandon V.

Project Manager: Mark Longhurst
E-Mail: mark.longhurst@pdce.com
Project Name: McIntosh 43,44-23
Project Number: N/A

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions		
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTEX - 8260					
BH01	7/23/19	1448	2	X				X				X					
BH04	7/23/19	1442	3	X				X				X					
Relinquished by: <u>Brandon V.</u>		Date/Time: <u>7/23/19 1700</u>		Received by: <u>Tasman Lock Box</u>		Date/Time: <u>7/23/19 1700</u>		Turn Around Time (Check)				Notes:					
								Same Day <input type="checkbox"/> 72 Hours <input checked="" type="checkbox"/> 24 Hours <input type="checkbox"/> Standard 48 Hours <input type="checkbox"/>									
Relinquished by: <u>Tasman Lock Box</u>		Date/Time: <u>7-23-19 17:10</u>		Received by: <u>[Signature]</u>		Date/Time: <u>7-23-19 17:10</u>		Sample Integrity:									
								Temperature Upon Receipt: <u>1.7</u>									
Relinquished by:		Date/Time:		Received in Lab by:		Date/Time:		Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>									

Sample Receipt Checklist

1907273

S2 Work Order _____

Client: Tasman/PDC Client Project ID: McIntosh 43,44-23

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

Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

Temp (°C)	1.7
-----------	-----

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.	✓			
Were all samples received intact ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
If custody seals are present, are they intact ⁽¹⁾ ?			✓	
Are samples with holding times due within 48 hours sample due within 48 hours present?			✓	
Is a chain-of-custody (COC) form present and filled out completely ⁽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⁾ ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded ⁽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, H2SO4, NaOH, HNO3, ect	✓			HCl
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.

MP
Custodian Printed Name or Initials

Muri Premer
Signature of Custodian

7/23/19
Date/Time



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

Project: McIntosh 43,44-23

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 07/30/19 09:47

BH01
1907273-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/23/19 14:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1907342	07/24/19	07/27/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **07/23/19 14:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		156 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.4 %		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: McIntosh 43,44-23

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 07/30/19 09:47

BH04
1907273-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/23/19 14:42**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1907342	07/24/19	07/27/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **07/23/19 14:42**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		100 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		99.2 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.7 %		21-167		"	"	"	"	

Summit Scientific



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

Project: McIntosh 43,44-23

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/30/19 09:47

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1907342 - EPA 5030 Water MS

Blank (1907342-BLK1)

Prepared: 07/24/19 Analyzed: 07/27/19

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	16.5		"	13.3		124		23-173		
Surrogate: Toluene-d8	13.1		"	13.3		98.5		20-170		
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		95.9		21-167		

LCS (1907342-BS1)

Prepared: 07/24/19 Analyzed: 07/27/19

Benzene	37.2	1.0	ug/l	33.3		112		51-132		
Toluene	38.8	1.0	"	33.3		116		51-138		
Ethylbenzene	44.8	1.0	"	33.3		134		58-146		
m,p-Xylene	83.3	2.0	"	66.7		125		57-144		
o-Xylene	40.7	1.0	"	33.3		122		53-146		
Surrogate: 1,2-Dichloroethane-d4	17.5		"	13.3		131		23-173		
Surrogate: Toluene-d8	13.0		"	13.3		97.5		20-170		
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.3		21-167		

Matrix Spike (1907342-MS1)

Source: 1907259-01

Prepared: 07/24/19 Analyzed: 07/27/19

Benzene	42.8	1.0	ug/l	33.3	ND	128		34-141		
Toluene	42.2	1.0	"	33.3	ND	127		27-151		
Ethylbenzene	49.1	1.0	"	33.3	ND	147		29-160		
m,p-Xylene	91.9	2.0	"	66.7	ND	138		20-166		
o-Xylene	46.4	1.0	"	33.3	ND	139		33-159		
Surrogate: 1,2-Dichloroethane-d4	19.1		"	13.3		144		23-173		
Surrogate: Toluene-d8	13.0		"	13.3		97.8		20-170		
Surrogate: 4-Bromofluorobenzene	14.0		"	13.3		105		21-167		

Summit Scientific

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

Project: McIntosh 43,44-23

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 07/30/19 09:47

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		

Batch 1907342 - EPA 5030 Water MS

Matrix Spike Dup (1907342-MSD1)

Source: 1907259-01

Prepared: 07/24/19 Analyzed: 07/27/19

Benzene	40.1	1.0	ug/l	33.3	ND	120	34-141	6.56	30	
Toluene	40.4	1.0	"	33.3	ND	121	27-151	4.33	30	
Ethylbenzene	49.0	1.0	"	33.3	ND	147	29-160	0.285	30	
m,p-Xylene	90.2	2.0	"	66.7	ND	135	20-166	1.88	30	
o-Xylene	45.9	1.0	"	33.3	ND	138	33-159	1.02	30	
Surrogate: 1,2-Dichloroethane-d4	18.6		"	13.3		140	23-173			
Surrogate: Toluene-d8	12.7		"	13.3		95.6	20-170			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		100	21-167			

Summit Scientific

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

Project: McIntosh 43,44-23

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/30/19 09:47

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

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 22, 2019

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: McIntosh 43,44-23

Work Order # 1907310

Enclosed are the results of analyses for samples received by Summit Scientific on 07/24/19 18:00. 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', written in a cursive style.

Paul Shrewsbury

President



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

Project: McIntosh 43,44-23

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/19 12:30

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH02R	1907310-01	Water	07/24/19 13:30	07/24/19 18:00
BH03R	1907310-02	Water	07/24/19 12:57	07/24/19 18:00
BH06R	1907310-03	Water	07/24/19 12:46	07/24/19 18:00

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.

1907310

Summit Scientific

741 Corporate Circle Suite 1 ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 1

Client: PDC / Tasman Geosciences
Address: 6899 Pecos St, Unit C
City/State/Zip: Denver, CO 80221
Phone: 303-487-1228 Fax:
Sampler Name: Max Dahlgren

Project Manager: Mark Longhurst
E-Mail: mark.longhurst@pdce.com
Project Name: McIntosh 43, 44-23
Project Number: N/A

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions		
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTEX - 8260					
BH02	7/24/19	1330	3			X		X					X				
BH03	↓	1257	↓	X				↓					↓				
BH06		1246		X													
Relinquished by: <u>Ali Hall</u>			Date/Time: <u>7/24/19 1615</u>		Received by: <u>Tasman Lock Box</u>			Date/Time: <u>7/24/19 1615</u>		Turn Around Time (Check)				Notes:			
Tasman Lock Box			<u>07/24/19 1800</u>					<u>07/24/19 1800</u>		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"/>							
Relinquished by:			Date/Time:		Received in Lab by:			Date/Time:		Sample Integrity: <u>2.8</u> Temperature Upon Receipt: Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>							

Sample Receipt Checklist

S2 Work Order 1907310

Client: PDC / TASMAN GEOSCIENCE Client Project ID: McINTOSH 43,44-23

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

Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

Temp (°C)	2.8
-----------	-----

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.	✓			
Were all samples received intact ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
If custody seals are present, are they intact ⁽¹⁾ ?			✓	
Are samples with holding times due within 48 hours sample due within 48 hours present?		✓		
Is a chain-of-custody (COC) form present and filled out completely ⁽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⁾ ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded ⁽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, H2SO4, NaOH, HNO3, ect	✓			HCl
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.

RZ
Custodian Printed Name or Initials

RZ
Signature of Custodian

7/24/19
Date/Time



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

Project: McIntosh 43,44-23

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 08/22/19 12:30

BH02R
1907310-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/24/19 13:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1907358	07/29/19	07/30/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **07/24/19 13:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		116 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		96.2 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.4 %		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: McIntosh 43,44-23

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 08/22/19 12:30

BH03R
1907310-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/24/19 12:57**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1907358	07/29/19	07/30/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **07/24/19 12:57**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		118 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		96.6 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		89.9 %		21-167		"	"	"	"	

Summit Scientific

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

Project: McIntosh 43,44-23

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 08/22/19 12:30

BH06R
1907310-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/24/19 12:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1907358	07/29/19	07/30/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **07/24/19 12:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		120 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		94.4 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.9 %		21-167		"	"	"	"	

Summit Scientific

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

Project: McIntosh 43,44-23

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/19 12:30

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 1907358 - EPA 5030 Water MS

Blank (1907358-BLK1)

Prepared: 07/29/19 Analyzed: 07/30/19

Benzene	ND	1.0	ug/l								
Toluene	ND	1.0	"								
Ethylbenzene	ND	1.0	"								
Xylenes (total)	ND	2.0	"								
Surrogate: 1,2-Dichloroethane-d4	16.2		"	13.3		122		23-173			
Surrogate: Toluene-d8	13.1		"	13.3		98.1		20-170			
Surrogate: 4-Bromofluorobenzene	14.0		"	13.3		105		21-167			

LCS (1907358-BS1)

Prepared: 07/29/19 Analyzed: 07/30/19

Benzene	38.2	1.0	ug/l	33.3		115		51-132			
Toluene	38.4	1.0	"	33.3		115		51-138			
Ethylbenzene	40.6	1.0	"	33.3		122		58-146			
m,p-Xylene	78.1	2.0	"	66.7		117		57-144			
o-Xylene	38.3	1.0	"	33.3		115		53-146			
Surrogate: 1,2-Dichloroethane-d4	16.5		"	13.3		124		23-173			
Surrogate: Toluene-d8	13.4		"	13.3		101		20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		98.6		21-167			

Matrix Spike (1907358-MS1)

Source: 1907251-01

Prepared: 07/29/19 Analyzed: 07/30/19

Benzene	37.1	1.0	ug/l	33.3	ND	111		34-141			
Toluene	37.6	1.0	"	33.3	ND	113		27-151			
Ethylbenzene	42.7	1.0	"	33.3	ND	128		29-160			
m,p-Xylene	81.2	2.0	"	66.7	1.48	120		20-166			
o-Xylene	38.8	1.0	"	33.3	ND	117		33-159			
Surrogate: 1,2-Dichloroethane-d4	17.8		"	13.3		133		23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.8		20-170			
Surrogate: 4-Bromofluorobenzene	13.9		"	13.3		104		21-167			

Summit Scientific

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

Project: McIntosh 43,44-23

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 08/22/19 12:30

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1907358 - EPA 5030 Water MS

Matrix Spike Dup (1907358-MSD1)

Source: 1907251-01

Prepared: 07/29/19 Analyzed: 07/30/19

Benzene	41.0	1.0	ug/l	33.3	ND	123	34-141	10.1	30	
Toluene	41.1	1.0	"	33.3	ND	123	27-151	9.00	30	
Ethylbenzene	46.9	1.0	"	33.3	ND	141	29-160	9.36	30	
m,p-Xylene	88.9	2.0	"	66.7	1.48	131	20-166	9.06	30	
o-Xylene	42.8	1.0	"	33.3	ND	128	33-159	9.63	30	
Surrogate: 1,2-Dichloroethane-d4	17.1		"	13.3		129	23-173			
Surrogate: Toluene-d8	12.8		"	13.3		95.6	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.0	21-167			

Summit Scientific

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

Project: McIntosh 43,44-23

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/22/19 12:30

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