

PDC Energy, Inc.
First Quarter 2019 Groundwater Monitoring Summary

April 4, 2019

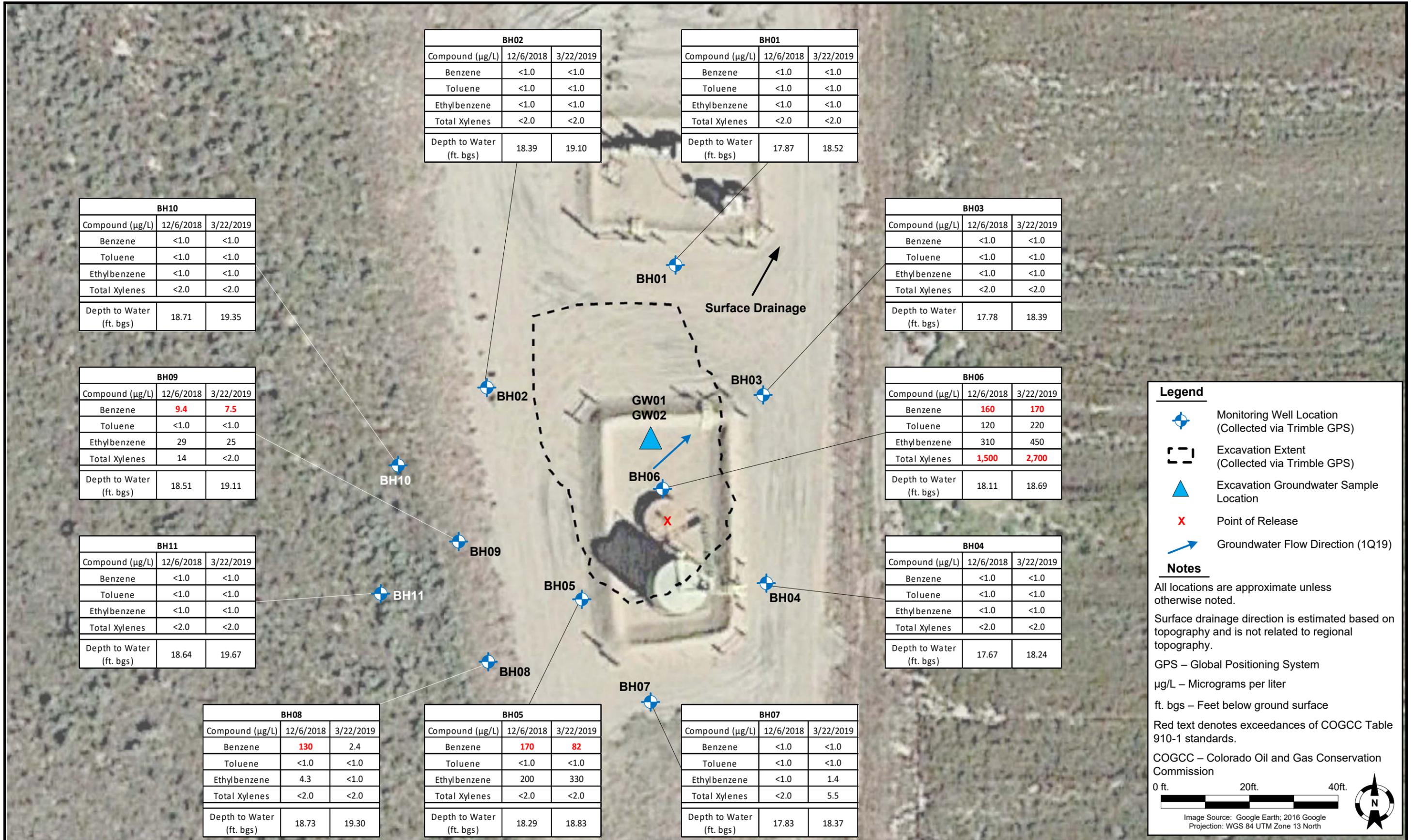
Former J&L Farms 14, 24-29 Tank Battery
SWSW Section 29 T6N R63W
Spill Point ID # 451446
Remediation # 10537

This groundwater monitoring summary has been prepared by Tasman Geosciences, Inc. for the former J&L Farms 14, 24-29 tank battery. On March 22, 2019, groundwater monitoring was conducted at all 11 monitoring well locations (BH01 – BH11). Eleven groundwater samples were submitted to Summit Scientific Laboratory for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by USEPA Method 8260B.

First quarter 2019 analytical results indicate that BTEX concentrations are above the applicable COGCC Table 910-1 groundwater standards in monitoring wells BH05, BH06, and BH09. BTEX concentrations are below applicable regulatory standards in eight monitoring wells.

Monitored natural attenuation (MNA) was selected as the remediation strategy for this site during the fourth quarter 2017 and will remain as the selected remediation strategy through the second quarter 2019.

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



DATE: April 4, 2019

DESIGNED BY: C. Hamlin

DRAWN BY: T. Blessing

TASMAN
GEOSCIENCES

Tasman Geosciences, Inc.
6899 Pecos Street – Unit C
Denver, CO 80221

PDC Energy, Inc. – DJ Basin
Former J&L Farms 14, 24-29 Tank Battery
SWSW, Section 29, Township 6 North, Range 63 West
Weld County, Colorado

GROUNDWATER
ANALYTICAL RESULTS
MAP

FIGURE
1



Legend

- Monitoring Well Location (Collected via Trimble GPS)
- Excavation Groundwater Sample Location
- Point of Release
- Excavation Extent (Collected via Trimble GPS)
- Groundwater Elevation Contour (Dashed where inferred)

4642.60 Measured Groundwater Elevation (feet AMSL)

Groundwater Flow Direction (1Q19)

Notes

All locations are approximate unless otherwise noted.

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

GPS – Global Positioning System

feet AMSL – Feet Above Mean Seal Level

0 ft. 20 ft. 40 ft.

Image Source: Google Earth; 2016 Google
Projection: WGS 84 UTM Zone 13 North

DATE: April 5, 2019

DESIGNED BY: C. Hamlin

DRAWN BY: C. Olson



Tasman Geosciences, Inc.
6899 Pecos Street – Unit C
Denver, CO 80221

PDC Energy, Inc. – DJ Basin
Former J&L Farms 14, 24-29 Tank Battery
SWSW, Section 29, Township 6 North, Range 63 West
Weld County, Colorado

**GROUNDWATER
ELEVATION CONTOUR
MAP**

**FIGURE
2**

TABLE 1
FORMER J&L FARMS 14, 24-29 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⁾ (feet)	Groundwater Elevation (ft AMSL)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400		
GW01	8/31/2017	6.4	<1.0	<1.0	<2.0	~ 18	NM
GW02	9/5/2017	60	3.4	2.2	170	~ 18	NM
BH01	12/13/2017	<1.0	<1.0	<1.0	<2.0	16.91	4644.06
BH01	3/28/2018	<1.0	<1.0	<1.0	<2.0	17.94	4643.18
BH01	6/20/2018	<1.0	<1.0	<1.0	<2.0	18.00	4643.12
BH01	9/4/2018	<1.0	<1.0	<1.0	<2.0	17.48	4643.64
BH01	12/6/2018	<1.0	<1.0	<1.0	<2.0	17.87	4643.25
BH01	3/22/2019	<1.0	<1.0	<1.0	<2.0	18.52	4642.60
BH02	12/13/2017	<1.0	<1.0	<1.0	<2.0	17.91	4643.82
BH02	3/28/2018	<1.0	<1.0	<1.0	<2.0	18.61	4642.97
BH02	6/20/2018	<1.0	<1.0	<1.0	<2.0	18.61	4642.97
BH02	9/4/2018	<1.0	<1.0	<1.0	<2.0	18.10	4643.48
BH02	12/6/2018	<1.0	<1.0	<1.0	<2.0	18.39	4643.19
BH02	3/22/2019	<1.0	<1.0	<1.0	<2.0	19.10	4642.48
BH03	12/13/2017	<1.0	<1.0	<1.0	<2.0	16.93	4644.07
BH03	3/28/2018	<1.0	<1.0	<1.0	<2.0	17.79	4643.22
BH03	6/20/2018	<1.0	<1.0	<1.0	<2.0	17.87	4643.14
BH03	9/4/2018	<1.0	<1.0	<1.0	<2.0	17.40	4643.61
BH03	12/6/2018	<1.0	<1.0	<1.0	<2.0	17.78	4643.23
BH03	3/22/2019	<1.0	<1.0	<1.0	<2.0	18.39	4642.62
BH04	12/13/2017	<1.0	<1.0	<1.0	<2.0	16.78	4643.99
BH04	3/28/2018	<1.0	<1.0	<1.0	<2.0	17.63	4643.15
BH04	6/20/2018	<1.0	<1.0	<1.0	<2.0	17.74	4643.04
BH04	9/4/2018	<1.0	<1.0	<1.0	<2.0	17.42	4643.36
BH04	12/6/2018	<1.0	<1.0	<1.0	<2.0	17.67	4643.11
BH04	3/22/2019	<1.0	<1.0	<1.0	<2.0	18.24	4642.54
BH05	12/13/2017	67	<1.0	260	300	17.44	4643.74
BH05	3/28/2018	<1.0	<1.0	<1.0	<2.0	18.31	4642.90
BH05	6/20/2018	6.7	<1.0	18	8.8	18.35	4642.86
BH05	9/4/2018	120	<1.0	200	<2.0	18.03	4643.18
BH05	12/6/2018	170	<1.0	200	<2.0	18.29	4642.92
BH05	3/22/2019	82	<1.0	330	<2.0	18.83	4642.38
BH06 ⁽³⁾	12/13/2017	490	540	600	2,700	17.26	4643.96
BH06 ⁽³⁾	3/28/2018	250	48	220	1,200	18.11	4643.09
BH06 ⁽³⁾	6/20/2018	240	170	390	2,100	18.22	4642.98
BH06 ⁽³⁾	9/4/2018	240	230	370	2,100	17.79	4643.41
BH06 ^(3 4)	12/6/2018	160	120	310	1,500	18.11	4643.09

TABLE 1
FORMER J&L FARMS 14, 24-29 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⁾ (feet)	Groundwater Elevation (ft AMSL)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400		
BH06	3/22/2019	170	220	450	2,700	18.69	4642.51
BH07	3/28/2018	<1.0	<1.0	<1.0	<2.0	17.75	4642.99
BH07	6/20/2018	<1.0	<1.0	<1.0	<2.0	17.86	4642.88
BH07	9/4/2018	<1.0	<1.0	<1.0	<2.0	17.58	4643.16
BH07	12/6/2018	<1.0	<1.0	<1.0	<2.0	17.83	4642.91
BH07	3/22/2019	<1.0	<1.0	1.4	5.5	18.37	4642.37
BH08	3/28/2018	<1.0	<1.0	<1.0	<2.0	18.67	4642.89
BH08	6/20/2018	<1.0	<1.0	<1.0	<2.0	18.83	4642.73
BH08	9/4/2018	<1.0	<1.0	<1.0	<2.0	18.48	4643.08
BH08	12/6/2018	130	<1.0	4.3	<2.0	18.73	4642.83
BH08	3/22/2019	2.4	<1.0	<1.0	<2.0	19.30	4642.26
BH09	3/28/2018	<1.0	<1.0	<1.0	<2.0	18.52	4642.90
BH09	6/20/2018	46	<1.0	69	30	18.65	4642.77
BH09	9/4/2018	6.6	<1.0	45	53	18.26	4643.16
BH09	12/6/2018	9.4	<1.0	29	14	18.51	4642.91
BH09	3/22/2019	7.5	<1.0	25	<2.0	19.11	4642.31
BH10	12/6/2018	<1.0	<1.0	<1.0	<2.0	18.71	4642.93
BH10	3/22/2019	<1.0	<1.0	<1.0	<2.0	19.35	4642.29
BH11	12/6/2018	<1.0	<1.0	<1.0	<2.0	18.64	4643.27
BH11	3/22/2019	<1.0	<1.0	<1.0	<2.0	19.67	4642.24

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 top of casing or ground surface for monitoring well samples and excavation samples respectively. Subsequent monitoring well measurements were collected from top of casing and adjusted using survey data and product thickness to reflect depth of water from ground surface.
3. Sheen observed on groundwater.
4. The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.

COGCC = Colorado Oil and Gas Conservation Commission

µg/L = Micrograms per liter

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

ft AMSL = Feet Above Mean Sea Level

NM = Not measured

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

ATTACHMENT A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

April 01, 2019

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: J&L Farms 14-24-29

Enclosed are the results of analyses for samples received by Summit Scientific on 03/22/19 17:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Paul Shrewsbury', written in a cursive style.

Paul Shrewsbury For Ben Shrewsbury

Laboratory Manager



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

Project: J&L Farms 14-24-29

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/01/19 08:38

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	1903234-01	Water	03/22/19 12:48	03/22/19 17:40
BH02	1903234-02	Water	03/22/19 12:59	03/22/19 17:40
BH03	1903234-03	Water	03/22/19 12:34	03/22/19 17:40
BH04	1903234-04	Water	03/22/19 12:25	03/22/19 17:40
BH05	1903234-05	Water	03/22/19 13:57	03/22/19 17:40
BH06	1903234-06	Water	03/22/19 14:12	03/22/19 17:40
BH07	1903234-07	Water	03/22/19 12:10	03/22/19 17:40
BH08	1903234-08	Water	03/22/19 13:44	03/22/19 17:40
BH09	1903234-09	Water	03/22/19 13:34	03/22/19 17:40
BH10	1903234-10	Water	03/22/19 13:11	03/22/19 17:40
BH11	1903234-11	Water	03/22/19 13:22	03/22/19 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.

1903234.1

Summit Scientific

S₂

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

Client: PDC / Tasman Project Manager: Mark Longhurst
 Address: 6899 Pecos Street E-Mail: mark.longhurst@PDCE.com
 City/State/Zip: Denver / CO/ 80221
 Phone: 303-487-1228 Project Name: J+L Farms 14-24-29
 Sampler Name: Brian Gabel Project Number: —

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested				Special Instructions		
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	8260B GBTEXN	8015 DRO		pH, EC, SAR	
1	BH01	3/22/19	1248	3	X				X				X					
2	BH02		1259															
3	BH03		1234															
4	BH04		1225															
5	BH05		1357															
6	BH06		1412															
7	BH07		1210															
8	BH08		1344															
9	BH09		1334															
10	BH10		1311															

Relinquished by: <u>Brian Gabel</u> Date/Time: <u>3/22/19 1700</u>	Received by: <u>Tasman's Lock Box</u> Date/Time: <u>3/22/19 1700</u>	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/> Sample Integrity: Temperature Upon Receipt: <u>0.5°</u> Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	Notes:
Relinquished by: <u>Tasman's Lock Box</u> Date/Time: <u>3-22-19 17:40</u>	Received by: <u>[Signature]</u> Date/Time: <u>3-22-19 17:40</u>		
Relinquished by: _____ Date/Time: _____	Received by: _____ Date/Time: _____		

1903234.2

Summit Scientific

S₂

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

Client: PDC / Tasman	Project Manager: Mark Longhurst
Address: 6899 Pecos Street	E-Mail: mark.longhurst@PDCE.com
City/State/Zip: Denver / CO/ 80221	
Phone: 303-487-1228	Project Name: J+L Farms 14-24-29
Sampler Name: Brian Gabel	Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested				Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	8260B GBTEXN	8015 DRO	pH, EC, SAR		
1	BH11	3/22/19	1322	3	X				X				X					
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Relinquished by: <i>Brian Gabel</i> Date/Time: 3/22/19 1700	Received by: Tasman's Lock Box Date/Time: 3/22/19 1700	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: Tasman's Lock Box Date/Time: 3-22-19 17:40	Received by: <i>[Signature]</i> Date/Time: 3-22-19 17:40	Sample Integrity:	
Relinquished by:	Received by:	Temperature Upon Receipt: 0.5° Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	

Sample Receipt Checklist

S2 Work Order 1903234

Client: PDC/Tasman Client Project ID: J+L Farms 14-24-29

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

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

Temp (°C)	0.5°
-----------	------

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"/>			on ice
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		<input checked="" 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 checked="" type="checkbox"/>			HCl
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	

Additional Comments (if any):

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

AT
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

3-22-19 17:40
Date/Time



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

Project: J&L Farms 14-24-29

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 04/01/19 08:38

BH01
1903234-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/19 12:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1903290	03/25/19	03/30/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **03/22/19 12:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		113 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.1 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.2 %		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: J&L Farms 14-24-29

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 04/01/19 08:38

BH02
1903234-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/19 12:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1903290	03/25/19	03/30/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **03/22/19 12:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		117 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.1 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.1 %		21-167		"	"	"	"	

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

Project: J&L Farms 14-24-29

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 04/01/19 08:38

BH03
1903234-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/19 12:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1903290	03/25/19	03/30/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **03/22/19 12:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		116 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.2 %		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: J&L Farms 14-24-29

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 04/01/19 08:38

BH04
1903234-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/19 12:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1903290	03/25/19	03/30/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **03/22/19 12:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		111 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.6 %		21-167		"	"	"	"	

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

Project: J&L Farms 14-24-29

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 04/01/19 08:38

BH05
1903234-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/19 13:57**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	82	1.0		ug/l	1	1903290	03/25/19	03/30/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	330	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **03/22/19 13:57**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		112 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %		21-167		"	"	"	"	

Summit Scientific

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

Project: J&L Farms 14-24-29

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 04/01/19 08:38

BH06
1903234-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/19 14:12**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	170	10		ug/l	10	1903290	03/25/19	03/30/19	EPA 8260B	
Toluene	220	10		"	"	"	"	"	"	
Ethylbenzene	450	10		"	"	"	"	"	"	
Xylenes (total)	2700	20		"	"	"	"	"	"	

Date Sampled: **03/22/19 14:12**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<i>Surrogate: 1,2-Dichloroethane-d4</i>		130 %		23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		100 %		20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		101 %		21-167		"	"	"	"	

Summit Scientific

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

Project: J&L Farms 14-24-29

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 04/01/19 08:38

BH07
1903234-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/19 12:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1903290	03/25/19	03/30/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	1.4	1.0		"	"	"	"	"	"	
Xylenes (total)	5.5	2.0		"	"	"	"	"	"	

Date Sampled: **03/22/19 12:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		110 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.8 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.8 %		21-167		"	"	"	"	

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

Project: J&L Farms 14-24-29

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 04/01/19 08:38

BH08
1903234-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/19 13:44**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	2.4	1.0		ug/l	1	1903290	03/25/19	03/30/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **03/22/19 13:44**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		115 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		96.8 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %		21-167		"	"	"	"	

Summit Scientific

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

Project: J&L Farms 14-24-29

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 04/01/19 08:38

BH09
1903234-09 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/19 13:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	7.5	1.0		ug/l	1	1903290	03/25/19	03/30/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	25	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **03/22/19 13:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		111 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		99.2 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.3 %		21-167		"	"	"	"	

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 Denver CO, 80203

Project: J&L Farms 14-24-29

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 04/01/19 08:38

BH10
1903234-10 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/19 13:11**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1903290	03/25/19	03/31/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **03/22/19 13:11**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		116 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.4 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.5 %		21-167		"	"	"	"	

Summit Scientific

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

Project: J&L Farms 14-24-29

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 04/01/19 08:38

BH11
1903234-11 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/22/19 13:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1903290	03/25/19	03/31/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **03/22/19 13:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		106 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		99.7 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %		21-167		"	"	"	"	

Summit Scientific

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

Project: J&L Farms 14-24-29

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/01/19 08:38

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 1903290 - EPA 5030 Water MS

Blank (1903290-BLK1)

Prepared: 03/25/19 Analyzed: 03/30/19

Benzene	ND	1.0	ug/l								
Toluene	ND	1.0	"								
Ethylbenzene	ND	1.0	"								
Xylenes (total)	ND	2.0	"								
Surrogate: 1,2-Dichloroethane-d4	14.3		"	13.3		107		23-173			
Surrogate: Toluene-d8	13.6		"	13.3		102		20-170			
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.5		21-167			

LCS (1903290-BS1)

Prepared: 03/25/19 Analyzed: 03/30/19

Benzene	40.7	1.0	ug/l	50.0		81.3		70-130			
Toluene	43.7	1.0	"	50.0		87.3		70-130			
Ethylbenzene	45.5	1.0	"	50.0		91.0		70-130			
m,p-Xylene	88.2	2.0	"	100		88.2		70-130			
o-Xylene	42.4	1.0	"	50.0		84.7		70-130			
Surrogate: 1,2-Dichloroethane-d4	15.1		"	13.3		113		23-173			
Surrogate: Toluene-d8	13.2		"	13.3		99.2		20-170			
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.7		21-167			

Matrix Spike (1903290-MS1)

Source: 1903234-01

Prepared: 03/25/19 Analyzed: 03/30/19

Benzene	38.0	1.0	ug/l	50.0	ND	75.9		70-130			
Toluene	40.8	1.0	"	50.0	ND	81.5		70-130			
Ethylbenzene	44.1	1.0	"	50.0	ND	88.3		70-130			
m,p-Xylene	85.8	2.0	"	100	ND	85.8		70-130			
o-Xylene	41.4	1.0	"	50.0	ND	82.8		70-130			
Surrogate: 1,2-Dichloroethane-d4	14.5		"	13.3		109		23-173			
Surrogate: Toluene-d8	12.9		"	13.3		96.8		20-170			
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		96.0		21-167			

Summit Scientific

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

Project: J&L Farms 14-24-29

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 04/01/19 08:38

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 1903290 - EPA 5030 Water MS

Matrix Spike Dup (1903290-MSD1)

Source: 1903234-01

Prepared: 03/25/19 Analyzed: 03/30/19

Benzene	41.0	1.0	ug/l	50.0	ND	82.0	70-130	7.72	30	
Toluene	43.6	1.0	"	50.0	ND	87.2	70-130	6.78	30	
Ethylbenzene	45.7	1.0	"	50.0	ND	91.4	70-130	3.54	30	
m,p-Xylene	88.8	2.0	"	100	ND	88.8	70-130	3.40	30	
o-Xylene	43.4	1.0	"	50.0	ND	86.9	70-130	4.76	30	
Surrogate: 1,2-Dichloroethane-d4	15.0		"	13.3		113	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		99.1	20-170			
Surrogate: 4-Bromofluorobenzene	12.5		"	13.3		94.0	21-167			

Summit Scientific

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1775 Sherman St. STE. 3000
Denver CO, 80203

Project: J&L Farms 14-24-29

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/01/19 08:38

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