

**TABLE 1**  
**J&L FARMS 14, 24-29 TANK BATTERY**  
**SOIL ANALYTICAL RESULTS SUMMARY TABLE**

Sample ID	Date Sampled	Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH <sup>(2)</sup> (mg/kg)
<b>COGCC standards for soil (mg/kg) <sup>(1)</sup></b>			<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	<b>23</b>	<b>500</b>
SS01 @ 15'	7/17/2017	15	0.0069	<0.0050	0.62	6.1	0.92	<b>2,310</b>
SS02 @ 23'	7/19/2017	23	<0.0020	<0.0050	<0.0050	<0.010	<0.010	0.53
SS03 @ 16'	8/22/2017	16	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS04 @ 16'	8/22/2017	16	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS05 @ 16'	8/22/2017	16	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS06 @ 16'	8/23/2017	16	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS07 @ 16'	8/23/2017	16	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS08 @ 16'	8/24/2017	16	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS09 @ 16'	8/24/2017	16	<0.0020	<0.0050	<0.0050	<0.010	<0.010	120
SS10 @ 16'	8/24/2017	16	<0.0020	<0.0050	<0.0050	<0.010	<0.010	100

**Notes:**

- Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective January 30, 2015.
- TPH - Total volatile and extractable petroleum hydrocarbons. Value calculated by adding GRO and DRO concentrations.

COGCC = Colorado Oil and Gas Conservation Commission

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

GRO = Total volatile petroleum hydrocarbons - gasoline range organics

DRO = Total extractable petroleum hydrocarbons - diesel range organics

mg/kg = Milligrams per kilogram

bgs = Below ground surface

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

**TABLE 2**  
**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 (feet bgs) <sup>(2)</sup>
<b>COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	
GW01	8/31/2017	<b>6.4</b>	<1.0	<1.0	<2.0	~ 18
GW02	9/5/2017	<b>60</b>	3.4	2.2	170	~ 18

**Notes:**

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective January 30, 2015.

2. Depth to groundwater measured from ground surface.

COGCC = Colorado Oil and Gas Conservation Commission

µg/L= Micrograms per liter

bgs = Below ground surface

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

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

## **ATTACHMENT A**

# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

July 18, 2017

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 07/17/17 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury  
President



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:**  
07/18/17 07:21

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@15'	1707112-01	Soil	07/17/17 13:17	07/17/17 17:30

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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:  
 07/18/17 07:21

# Summit Scientific 1707112

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

Page 1 of 1

Client: PDC Energy  
 Address:  
 City/State/Zip:  
 Phone: Fax:  
 Sampler Name: Tyler Blessing

Project Manager: Mark Longhurst  
 E-Mail: Mark.Longhurst@pdce.com  
 Project Name: J & L Farms 14, 24-29  
 Project Number:

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions	
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	GBTEXN (8280)	DRO (TPH)	EC		pH
SS01 @ 15'	7/17/2017	13:17	1		X			X				X	X	X	X	
Relinquished by:		Date/Time: 7/17/17 1700	Received by:		Date/Time: 7/17/17 1700		Turn Around Time (Check)				Notes:					
Relinquished by:		Date/Time: 7/17/17 1730	Received by:		Date/Time:		Same Day	<input checked="" type="checkbox"/>	72 Hours	<input type="checkbox"/>	on ice					
Relinquished by:		Date/Time:	Received in Lab by:		Date/Time:		24 Hours	<input type="checkbox"/>	Standard	<input type="checkbox"/>						
Relinquished by:		Date/Time:	Received in Lab by:		Date/Time:		48 Hours	<input type="checkbox"/>								
Sample Integrity:							Temperature Upon Receipt: 4.3°C		Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

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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:  
07/18/17 07:21

**Sample Receipt Checklist**

S2 Work Order: 1307112  
Client: PDC Energy Client Project ID: J+L Farms 14, 24-29  
Shipped Via: PIU Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)  
Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Cooler ID					
Temp (°C)	4.3				

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> ?	<input checked="" type="checkbox"/>			
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 <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?				
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<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) <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<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.

Nakita  
Custodian Printed Name

[Signature]  
Signature or initials of Custodian

7/17/17 1730  
Date/Time

[Signature]



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:  
07/18/17 07:21

SS01@15'  
1707112-01 (Soil)

Summit Scientific

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: 07/17/17 13:17

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Analyst	Method	Notes
		Limit	Units							
C10-C28 (DRO)	1900	50	mg/kg	1	1707135	07/17/17	07/18/17	LS	8015M	

Date Sampled: 07/17/17 13:17

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Analyst	Method	Notes
		Limit	Units							
Surrogate: o-Terphenyl		140 %		30-150		"	"	"	"	

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

Date Sampled: 07/17/17 13:17

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Analyst	Method	Notes
		Limit	Units							
Naphthalene	0.92	0.10	mg/kg	10	1707128	"	07/18/17	LS	EPA 8260B	
Benzene	0.0069	0.0020	"	1	"	"	"	LS	"	
Toluene	ND	0.0050	"	"	"	"	"	LS	"	
Ethylbenzene	0.62	0.50	"	100	"	"	"	LS	"	
Xylenes (total)	6.1	1.0	"	"	"	"	"	LS	"	
Gasoline Range Hydrocarbons	410	50	"	"	"	"	07/18/17	LS	"	

Date Sampled: 07/17/17 13:17

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Analyst	Method	Notes
		Limit	Units							
Surrogate: 1,2-Dichloroethane-d4		119 %		23-173		"	"	07/18/17	"	
Surrogate: Toluene-d8		107 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %		21-167		"	"	"	"	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: 07/17/17 13:17

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Analyst	Method	Notes
		Limit	Units							

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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:**  
 07/18/17 07:21

**SS01@15'**  
**1707112-01 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

<b>pH</b>	<b>8.71</b>	0.100pH Units	1	1707139	07/17/17	07/17/17	LS	EPA 9045
<b>Specific Conductance (EC)</b>	<b>0.810</b>	0.0100mhos/cm	"	1707138	07/17/17	"	LS	SM 2510B

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Project: J&L Farms 14, 24-29

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 07/18/17 07:21

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch 1707135 - EPA 3550A**

<b>Blank (1707135-BLK1)</b>				Prepared & Analyzed: 07/17/17							
C10-C28 (DRO)	ND	50	mg/kg								
Surrogate: <i>o</i> -Terphenyl	14.2		"	12.5		113	30-150				
<b>LCS (1707135-BS1)</b>				Prepared & Analyzed: 07/17/17							
C10-C28 (DRO)	564	50	mg/kg	499		113	73-134				
Surrogate: <i>o</i> -Terphenyl	15.3		"	12.5		122	30-150				
<b>Matrix Spike (1707135-MS1)</b>				Source: 1707110-01		Prepared & Analyzed: 07/17/17					
C10-C28 (DRO)	1010	50	mg/kg	998	37.1	97.2	50-148				
Surrogate: <i>o</i> -Terphenyl	14.7		"	12.5		117	30-150				
<b>Matrix Spike Dup (1707135-MSD1)</b>				Source: 1707110-01		Prepared & Analyzed: 07/17/17					
C10-C28 (DRO)	516	50	mg/kg	499	37.1	96.0	50-148	64.5	20		QR-02
Surrogate: <i>o</i> -Terphenyl	13.7		"	12.5		109	30-150				

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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:  
07/18/17 07:21

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

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

**Batch 1707128 - EPA 5030 Soil MS**

**Blank (1707128-BLK1)**

Prepared & Analyzed: 07/17/17

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0463</i>		<i>"</i>	<i>0.0400</i>		<i>116</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0382</i>		<i>"</i>	<i>0.0400</i>		<i>95.5</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0398</i>		<i>"</i>	<i>0.0400</i>		<i>99.5</i>	<i>21-167</i>			

**LCS (1707128-BS1)**

Prepared & Analyzed: 07/17/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.106	0.0020	"	0.100		106	58-130			
Toluene	0.117	0.0050	"	0.100		117	61-134			
Ethylbenzene	0.135	0.0050	"	0.0992		136	74-139			
m,p-Xylene	0.250	0.010	"	0.200		125	73-137			
o-Xylene	0.126	0.0050	"	0.0980		129	73-141			
Xylenes (total)	0.376	0.010	"				0-200			
Gasoline Range Hydrocarbons	2.94	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0477</i>		<i>"</i>	<i>0.0400</i>		<i>119</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0393</i>		<i>"</i>	<i>0.0400</i>		<i>98.3</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0398</i>		<i>"</i>	<i>0.0400</i>		<i>99.5</i>	<i>21-167</i>			

**Matrix Spike (1707128-MS1)**

Source: 1707108-07

Prepared & Analyzed: 07/17/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.107	0.0020	"	0.100	ND	107	30-131			
Toluene	0.118	0.0050	"	0.100	ND	118	30-134			
Ethylbenzene	0.137	0.0050	"	0.0992	ND	139	22-153			
m,p-Xylene	0.256	0.010	"	0.200	ND	128	10-159			
o-Xylene	0.130	0.0050	"	0.0980	ND	132	31-151			
Xylenes (total)	0.386	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	3.01	0.50	"		ND		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0495</i>		<i>"</i>	<i>0.0400</i>		<i>124</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0392</i>		<i>"</i>	<i>0.0400</i>		<i>97.9</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0410</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>21-167</i>			

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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:**  
 07/18/17 07:21

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

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

**Batch 1707128 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1707128-MSD1)</b>	<b>Source: 1707108-07</b>			<b>Prepared &amp; Analyzed: 07/17/17</b>						
Naphthalene	ND	0.010	mg/kg	ND	ND	107	10-158		0.617	42
Benzene	0.107	0.0020	"	0.100	ND	118	30-134		0.280	34
Toluene	0.118	0.0050	"	0.100	ND	140	22-153		1.28	24
Ethylbenzene	0.139	0.0050	"	0.0992	ND	129	10-159		0.817	68
m,p-Xylene	0.132	0.0050	"	0.0980	ND	134	31-151		1.61	38
Xylenes (total)	0.390	0.010	"		ND		30-160		1.08	30
Gasoline Range Hydrocarbons	3.08	0.50	"		ND		30-160		2.57	30
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0481</i>		<i>"</i>	<i>0.0400</i>		<i>120</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0386</i>		<i>"</i>	<i>0.0400</i>		<i>96.4</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0408</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>21-167</i>			

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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:**  
 07/18/17 07:21

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**  
**Summit Scientific**

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

**Batch 1707138 - General Preparation**

<b>Blank (1707138-BLK1)</b>			Prepared & Analyzed: 07/17/17								
Specific Conductance (EC)	ND	0.0100	mmhos/cm								
<b>LCS (1707138-BS1)</b>			Prepared & Analyzed: 07/17/17								
Specific Conductance (EC)	0.500	0.0100	mmhos/cm	0.500	100	90-110					
<b>Duplicate (1707138-DUP1)</b>			<b>Source: 1707112-01</b>		Prepared & Analyzed: 07/17/17						
Specific Conductance (EC)	0.813	0.0100	mmhos/cm		0.810			0.431	20		

**Batch 1707139 - General Preparation**

<b>LCS (1707139-BS1)</b>			Prepared & Analyzed: 07/17/17								
pH	6.00	0.100	pH Units	6.00	100	95-105					
<b>Duplicate (1707139-DUP1)</b>			<b>Source: 1707112-01</b>		Prepared & Analyzed: 07/17/17						
pH	8.65	0.100	pH Units		8.71			0.691	20		

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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:**  
07/18/17 07:21

### Notes and Definitions

- QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
- 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

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

July 20, 2017

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 07/19/17 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury  
President



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:**  
07/20/17 06:04

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS02@23'	1707134-01	Soil	07/19/17 11:45	07/19/17 16:30

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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:  
07/20/17 06:04

# Summit Scientific 1707134

741 Corporate Circle Suite I • Golden, Colorado 80401  
303-277-9310 • 303-374-5933 Fax

Page 1 of 1

Client: PDC	Project Manager: Mark Longhurst
Address:	E-Mail: Mark.Longhurst@pdce.com
City/State/Zip:	Project Name: J&L Farms 14,24-29
Phone: Fax:	Project Number:
Sampler Name: Chris Armbruster	

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions		
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	GBTEXN (8260)	DRO (TPH)				
SS02@23'	7/19/2017	11:45	1		X			X				X	X				
Relinquished by: <i>Chris Armbruster</i>	Date/Time: 7/19/17 1630	Received by: <i>MA</i>	Date/Time: 7/19/17 1630	Turn Around Time (Check)				Notes:									
Relinquished by: <i>MA</i>	Date/Time: 7/19/17 1735	Received by:	Date/Time:	Same Day	<input checked="" type="checkbox"/>	72 Hours	<input type="checkbox"/>	24 Hours	<input type="checkbox"/>	Standard	<input type="checkbox"/>	on ice					
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:	48 Hours	<input type="checkbox"/>	Sample Integrity:		Temperature Upon Receipt: 8.6°C									
				Intact:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No											

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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:  
 07/20/17 06:04

**Sample Receipt Checklist**

S2 Work Order: 1707134  
 Client: PDC Client Project ID: J + L Farms 14, 24-29  
 Shipped Via: P/U Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Cooler ID					
Temp (°C)	8.6				

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.	✓			
Were all samples received intact <sup>(1)</sup> ?	✓			
Was adequate sample volume provided <sup>(1)</sup> ?	✓			
If custody seals are present, are they intact <sup>(1)</sup> ?			✓	
Are short holding time analytes or samples with HTs due within 48 hours present?			✓	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	✓			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	✓			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	✓			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			✓	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?			✓	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			✓	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			✓	
Record the pH in Comments.			✓	
If dissolved metals are requested, were samples field filtered?			✓	
Additional Comments (if any):				

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

Nakita Custodian Printed Name      [Signature] Signature or Initials of Custodian      7/19/17 1735 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:  
07/20/17 06:04

**SS02@23'**  
**1707134-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/19/17 11:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Analyst	Method	Notes
		Limit	Units							
C10-C28 (DRO)	ND	50	mg/kg	1	1707175	07/19/17	07/19/17	LS	8015M	

Date Sampled: **07/19/17 11:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Analyst	Method	Notes
		Limit	Units							
Surrogate: <i>o</i> -Terphenyl		114 %		30-150		"	"	"	"	

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

Date Sampled: **07/19/17 11:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Analyst	Method	Notes
		Limit	Units							
Naphthalene	ND	0.010	mg/kg	1	1707174	07/19/17	07/19/17	LS	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	LS	"	
Toluene	ND	0.0050	"	"	"	"	"	LS	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	LS	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	LS	"	
<b>Gasoline Range Hydrocarbons</b>	<b>0.53</b>	0.50	"	"	"	"	"	LS	"	

Date Sampled: **07/19/17 11:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Analyst	Method	Notes
		Limit	Units							
Surrogate: 1,2-Dichloroethane-d4		107 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.8 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.1 %		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:**  
07/20/17 06:04

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch 1707175 - EPA 3550A**

**Blank (1707175-BLK1)**

Prepared & Analyzed: 07/19/17

C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	16.9		"	12.5		135	30-150				

**LCS (1707175-BS1)**

Prepared & Analyzed: 07/19/17

C10-C28 (DRO)	609	50	mg/kg	499		122	73-134				
<i>Surrogate: o-Terphenyl</i>	15.2		"	12.5		121	30-150				

**Matrix Spike (1707175-MS1)**

Source: 1707134-01

Prepared & Analyzed: 07/19/17

C10-C28 (DRO)	553	50	mg/kg	499	41.1	103	50-148				
<i>Surrogate: o-Terphenyl</i>	14.6		"	12.5		117	30-150				

**Matrix Spike Dup (1707175-MSD1)**

Source: 1707134-01

Prepared & Analyzed: 07/19/17

C10-C28 (DRO)	562	50	mg/kg	499	41.1	104	50-148	1.64		20	
<i>Surrogate: o-Terphenyl</i>	14.7		"	12.5		117	30-150				

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:  
07/20/17 06:04

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

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

**Batch 1707174 - EPA 5030 Soil MS**

**Blank (1707174-BLK1)**

Prepared & Analyzed: 07/19/17

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0413</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0399</i>		<i>"</i>	<i>0.0400</i>		<i>99.7</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0386</i>		<i>"</i>	<i>0.0400</i>		<i>96.5</i>	<i>21-167</i>			

**LCS (1707174-BS1)**

Prepared & Analyzed: 07/19/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.0840	0.0020	"	0.100		84.0	58-130			
Toluene	0.0982	0.0050	"	0.100		98.2	61-134			
Ethylbenzene	0.115	0.0050	"	0.0992		116	74-139			
m,p-Xylene	0.218	0.010	"	0.200		109	73-137			
o-Xylene	0.108	0.0050	"	0.0980		110	73-141			
Xylenes (total)	0.326	0.010	"				0-200			
Gasoline Range Hydrocarbons	3.50	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0416</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0388</i>		<i>"</i>	<i>0.0400</i>		<i>97.1</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0387</i>		<i>"</i>	<i>0.0400</i>		<i>96.7</i>	<i>21-167</i>			

**Matrix Spike (1707174-MS1)**

Source: 1707134-01

Prepared & Analyzed: 07/19/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.0849	0.0020	"	0.100	ND	84.9	30-131			
Toluene	0.0996	0.0050	"	0.100	ND	99.6	30-134			
Ethylbenzene	0.114	0.0050	"	0.0992	ND	115	22-153			
m,p-Xylene	0.216	0.010	"	0.200	ND	108	10-159			
o-Xylene	0.108	0.0050	"	0.0980	ND	111	31-151			
Xylenes (total)	0.325	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	3.62	0.50	"		0.535		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0405</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0387</i>		<i>"</i>	<i>0.0400</i>		<i>96.8</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0377</i>		<i>"</i>	<i>0.0400</i>		<i>94.4</i>	<i>21-167</i>			

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:**  
 07/20/17 06:04

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

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

**Batch 1707174 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1707174-MSD1)</b>	<b>Source: 1707134-01</b>			<b>Prepared &amp; Analyzed: 07/19/17</b>						
Naphthalene	ND	0.010	mg/kg	ND	ND	10-158			42	
Benzene	0.0855	0.0020	"	0.100	ND	85.5	30-131	0.739	34	
Toluene	0.102	0.0050	"	0.100	ND	102	30-134	2.38	30	
Ethylbenzene	0.114	0.0050	"	0.0992	ND	115	22-153	0.158	24	
m,p-Xylene	0.219	0.010	"	0.200	ND	110	10-159	1.14	68	
o-Xylene	0.109	0.0050	"	0.0980	ND	111	31-151	0.249	38	
Xylenes (total)	0.328	0.010	"		ND		30-160	0.846	30	
Gasoline Range Hydrocarbons	3.94	0.50	"		0.535		30-160	8.30	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0392</i>		<i>"</i>	<i>0.0400</i>		<i>98.0</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0396</i>		<i>"</i>	<i>0.0400</i>		<i>98.9</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0384</i>		<i>"</i>	<i>0.0400</i>		<i>96.0</i>	<i>21-167</i>			

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:**  
07/20/17 06:04

### 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

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

August 23, 2017

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 08/22/17 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury  
President



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:**  
08/23/17 07:11

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS03@16'	1708192-01	Soil	08/22/17 11:21	08/22/17 16:30
SS04@16'	1708192-02	Soil	08/22/17 12:31	08/22/17 16:30
SS05@16'	1708192-03	Soil	08/22/17 13:37	08/22/17 16:30

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:  
 08/23/17 07:11

# Summit Scientific 1768192

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

Page 1 of 1

Client: PDC  
 Address: \_\_\_\_\_  
 City/State/Zip: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 Sampler Name: Chris Armbruster

Project Manager: Mark Longhurst  
 E-Mail: Mark.Longhurst@pdce.com  
 Project Name: J&L Farms 14, 24-29  
 Project Number: \_\_\_\_\_

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative			Matrix			Analyze For:						Special Instructions		
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	GBTEXN (9260)	DRO (TPH)					
SS03@16'	8/22/2017	11:21	1		X			X				X	X					
SS04@16'	8/22/2017	12:31	1		X			X				X	X					
SS05@16'	8/22/2017	1:37	1		X			X				X	X					
Relinquished by: <u>Chris Armbruster</u>	Date/Time: <u>8/22/17 1630</u>	Received by: <u>MA</u>	Date/Time: <u>8/22/17 1630</u>	Turn Around Time (Check)				Notes:										
				Same Day	<input checked="" type="checkbox"/>	72 Hours	<input type="checkbox"/>	on ice										
				24 Hours	<input type="checkbox"/>	Standard	<input type="checkbox"/>											
				48 Hours	<input type="checkbox"/>													
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity:														
				Temperature Upon Receipt:	<u>1.8°C</u>													
				Intact:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No												

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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:  
08/23/17 07:11

**Sample Receipt Checklist**

S2 Work Order: 1708192  
Client: PDC Client Project ID: J&L Farms 14, 24 29  
Shipped Via: P/U (UPS, FedEx, Hand Delivered, Pick-up, etc.) Airbill #: \_\_\_\_\_  
Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_ (Describe)

Cooler ID					
Temp (°C)	1.8				

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> ?	<input checked="" type="checkbox"/>			
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 <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<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) <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
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):				

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

Nakita  
Custodian Printed Name

[Signature]  
Signature or Initials of Custodian

8/22/17 1700  
Date/Time

[Signature]



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:**  
08/23/17 07:11

**SS03@16'**  
**1708192-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/22/17 11:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1708211	08/22/17	08/23/17	8015M	

Date Sampled: **08/22/17 11:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		94.0 %	30-150		"	"	"	"	

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

Date Sampled: **08/22/17 11:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1708210	08/22/17	08/22/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/22/17 11:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		115 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	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:**  
08/23/17 07:11

**SS04@16'**  
**1708192-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/22/17 12:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1708211	08/22/17	08/23/17	8015M	

Date Sampled: **08/22/17 12:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		99.6 %	30-150		"	"	"	"	

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

Date Sampled: **08/22/17 12:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1708210	08/22/17	08/22/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/22/17 12:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	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:**  
08/23/17 07:11

**SS05@16'**  
**1708192-03 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/22/17 13:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1708211	08/22/17	08/23/17	8015M	

Date Sampled: **08/22/17 13:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		96.4 %	30-150		"	"	"	"	

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

Date Sampled: **08/22/17 13:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1708210	08/22/17	08/22/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/22/17 13:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		120 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	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:**  
08/23/17 07:11

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch 1708211 - EPA 3550A**

<b>Blank (1708211-BLK1)</b>				Prepared & Analyzed: 08/22/17						
C10-C28 (DRO)	ND	50	mg/kg							
<i>Surrogate: o-Terphenyl</i>	11.5		"	12.5		92.3	30-150			
<b>LCS (1708211-BS1)</b>				Prepared & Analyzed: 08/22/17						
C10-C28 (DRO)	461	50	mg/kg	499		92.4	73-134			
<i>Surrogate: o-Terphenyl</i>	11.5		"	12.5		91.9	30-150			
<b>Matrix Spike (1708211-MS1)</b>				<b>Source: 1708192-01</b>		Prepared & Analyzed: 08/22/17				
C10-C28 (DRO)	477	50	mg/kg	499	41.9	87.3	50-148			
<i>Surrogate: o-Terphenyl</i>	11.6		"	12.5		92.6	30-150			
<b>Matrix Spike Dup (1708211-MSD1)</b>				<b>Source: 1708192-01</b>		Prepared & Analyzed: 08/22/17				
C10-C28 (DRO)	476	50	mg/kg	499	41.9	87.1	50-148	0.226	20	
<i>Surrogate: o-Terphenyl</i>	11.5		"	12.5		92.1	30-150			

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:  
08/23/17 07:11

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

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

**Batch 1708210 - EPA 5030 Soil MS**

**Blank (1708210-BLK1)**

Prepared & Analyzed: 08/22/17

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0435</i>		<i>"</i>	<i>0.0400</i>		<i>109</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0407</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0399</i>		<i>"</i>	<i>0.0400</i>		<i>99.8</i>	<i>21-167</i>			

**LCS (1708210-BS1)**

Prepared & Analyzed: 08/22/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.107	0.0020	"	0.100		107	58-130			
Toluene	0.110	0.0050	"	0.100		110	61-134			
Ethylbenzene	0.103	0.0050	"	0.0992		104	74-139			
m,p-Xylene	0.190	0.010	"	0.200		95.3	73-137			
o-Xylene	0.0958	0.0050	"	0.0980		97.7	73-141			
Xylenes (total)	0.286	0.010	"				0-200			
Gasoline Range Hydrocarbons	2.16	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0429</i>		<i>"</i>	<i>0.0400</i>		<i>107</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0466</i>		<i>"</i>	<i>0.0400</i>		<i>117</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0423</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>21-167</i>			

**Matrix Spike (1708210-MS1)**

Source: 1708192-01

Prepared & Analyzed: 08/22/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.111	0.0020	"	0.100	ND	111	30-131			
Toluene	0.112	0.0050	"	0.100	ND	112	30-134			
Ethylbenzene	0.117	0.0050	"	0.0992	ND	118	22-153			
m,p-Xylene	0.217	0.010	"	0.200	ND	108	10-159			
o-Xylene	0.107	0.0050	"	0.0980	ND	110	31-151			
Xylenes (total)	0.324	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	2.56	0.50	"		ND		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0459</i>		<i>"</i>	<i>0.0400</i>		<i>115</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0421</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0415</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>21-167</i>			

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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:**  
08/23/17 07:11

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

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

**Batch 1708210 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1708210-MSD1)</b>	<b>Source: 1708192-01</b>			<b>Prepared &amp; Analyzed: 08/22/17</b>						
Naphthalene	ND	0.010	mg/kg	ND	ND	10-158			42	
Benzene	0.123	0.0020	"	0.100	ND	123	30-131	9.72	34	
Toluene	0.125	0.0050	"	0.100	ND	125	30-134	10.8	30	
Ethylbenzene	0.133	0.0050	"	0.0992	ND	134	22-153	12.9	24	
m,p-Xylene	0.244	0.010	"	0.200	ND	122	10-159	11.9	68	
o-Xylene	0.122	0.0050	"	0.0980	ND	124	31-151	12.7	38	
Xylenes (total)	0.366	0.010	"		ND		30-160	12.2	30	
Gasoline Range Hydrocarbons	3.03	0.50	"		ND		30-160	16.6	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0467</i>		<i>"</i>	<i>0.0400</i>		<i>117</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0410</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0408</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>21-167</i>			

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:**  
08/23/17 07:11

### 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

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

August 24, 2017

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 08/23/17 17:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury  
President



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:**  
08/24/17 06:46

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS06@16'	1708206-01	Soil	08/23/17 11:15	08/23/17 17:00
SS07@16'	1708206-02	Soil	08/23/17 11:25	08/23/17 17:00

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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:  
08/24/17 06:46

**Sample Receipt Checklist**

S2 Work Order: 1708206

Client: PDC Client Project ID: J & L Farms 14, 24-29

Shipped Via: PKU Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

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

Cooler ID					
Temp (°C)	<u>9.8</u>				

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> ?	<input checked="" type="checkbox"/>			
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 <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
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):				

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

Nakita  
Custodian Printed Name

[Signature]  
Signature or Initials of Custodian

8/23/17 1715  
Date/Time

[Signature]



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:**  
08/24/17 06:46

**SS06@16'**  
**1708206-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/23/17 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1708216	08/23/17	08/23/17	8015M	

Date Sampled: **08/23/17 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		102 %	30-150		"	"	"	"	

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

Date Sampled: **08/23/17 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1708215	08/23/17	08/24/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/23/17 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		116 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.3 %	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:**  
08/24/17 06:46

**SS07@16'**  
**1708206-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/23/17 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1708216	08/23/17	08/23/17	8015M	

Date Sampled: **08/23/17 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		103 %	30-150		"	"	"	"	

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

Date Sampled: **08/23/17 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1708215	08/23/17	08/24/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/23/17 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		118 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	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:**  
 08/24/17 06:46

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch 1708216 - EPA 3550A**

<b>Blank (1708216-BLK1)</b>				Prepared & Analyzed: 08/23/17							
C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	13.2		"	12.5		106	30-150				
<b>LCS (1708216-BS1)</b>				Prepared & Analyzed: 08/23/17							
C10-C28 (DRO)	540	50	mg/kg	499		108	73-134				
<i>Surrogate: o-Terphenyl</i>	13.1		"	12.5		105	30-150				
<b>Matrix Spike (1708216-MS1)</b>				<b>Source: 1708195-01</b>		Prepared & Analyzed: 08/23/17					
C10-C28 (DRO)	1470	50	mg/kg	499	1180	58.7	50-148				
<i>Surrogate: o-Terphenyl</i>	12.4		"	12.5		99.1	30-150				
<b>Matrix Spike Dup (1708216-MSD1)</b>				<b>Source: 1708195-01</b>		Prepared & Analyzed: 08/23/17					
C10-C28 (DRO)	1430	50	mg/kg	499	1180	50.6	50-148	2.78		20	
<i>Surrogate: o-Terphenyl</i>	12.2		"	12.5		97.3	30-150				

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:  
08/24/17 06:46

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

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

**Batch 1708215 - EPA 5030 Soil MS**

**Blank (1708215-BLK1)**

Prepared & Analyzed: 08/23/17

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0460</i>		<i>"</i>	<i>0.0400</i>		<i>115</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0404</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0406</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>21-167</i>			

**LCS (1708215-BS1)**

Prepared & Analyzed: 08/23/17

Naphthalene	ND	0.010	mg/kg					66-138		
Benzene	0.111	0.0020	"	0.100		111		58-130		
Toluene	0.112	0.0050	"	0.100		112		61-134		
Ethylbenzene	0.109	0.0050	"	0.0992		110		74-139		
m,p-Xylene	0.201	0.010	"	0.200		100		73-137		
o-Xylene	0.100	0.0050	"	0.0980		102		73-141		
Xylenes (total)	0.301	0.010	"					0-200		
Gasoline Range Hydrocarbons	2.30	0.50	"					30-150		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0437</i>		<i>"</i>	<i>0.0400</i>		<i>109</i>		<i>23-173</i>		
<i>Surrogate: Toluene-d8</i>	<i>0.0446</i>		<i>"</i>	<i>0.0400</i>		<i>112</i>		<i>20-170</i>		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0411</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>		<i>21-167</i>		

**Matrix Spike (1708215-MS1)**

Source: 1708205-01

Prepared & Analyzed: 08/23/17

Naphthalene	ND	0.010	mg/kg		ND			10-158		
Benzene	0.120	0.0020	"	0.100	0.00669	114		30-131		
Toluene	0.123	0.0050	"	0.100	0.00822	115		30-134		
Ethylbenzene	0.123	0.0050	"	0.0992	ND	124		22-153		
m,p-Xylene	0.227	0.010	"	0.200	ND	114		10-159		
o-Xylene	0.115	0.0050	"	0.0980	ND	117		31-151		
Xylenes (total)	0.342	0.010	"		ND			30-160		
Gasoline Range Hydrocarbons	2.67	0.50	"		ND			30-160		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0461</i>		<i>"</i>	<i>0.0400</i>		<i>115</i>		<i>23-173</i>		
<i>Surrogate: Toluene-d8</i>	<i>0.0419</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>		<i>20-170</i>		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0422</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>		<i>21-167</i>		

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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:**  
08/24/17 06:46

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

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

**Batch 1708215 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1708215-MSD1)</b>	<b>Source: 1708205-01</b>			<b>Prepared &amp; Analyzed: 08/23/17</b>						
Naphthalene	ND	0.010	mg/kg	ND			10-158		42	
Benzene	0.121	0.0020	"	0.100	0.00669	114	30-131	0.249	34	
Toluene	0.126	0.0050	"	0.100	0.00822	118	30-134	2.16	30	
Ethylbenzene	0.127	0.0050	"	0.0992	ND	128	22-153	3.08	24	
m,p-Xylene	0.234	0.010	"	0.200	ND	117	10-159	3.00	68	
o-Xylene	0.116	0.0050	"	0.0980	ND	119	31-151	1.38	38	
Xylenes (total)	0.350	0.010	"		ND		30-160	2.45	30	
Gasoline Range Hydrocarbons	2.85	0.50	"		ND		30-160	6.38	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0470</i>		<i>"</i>	<i>0.0400</i>		<i>117</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0413</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0412</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>21-167</i>			

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:**  
08/24/17 06:46

### 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

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

August 25, 2017

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 08/24/17 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury  
President



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:**  
08/25/17 05:31

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS08@16'	1708214-01	Soil	08/24/17 11:57	08/24/17 17:30
SS09@16'	1708214-02	Soil	08/24/17 12:45	08/24/17 17:30
SS10@16'	1708214-03	Soil	08/24/17 13:01	08/24/17 17:30

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:  
08/25/17 05:31

# Summit Scientific 1708214

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

Page 1 of 1

Client: PDC  
Address: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Sampler Name: Chris Armbruster

Project Manager: Mark Longhurst  
E-Mail: Mark.Longhurst@pdce.com  
Project Name: J&L Farms 14, 24-29  
Project Number: \_\_\_\_\_

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:						Special Instructions						
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	GBTEXN (9260)	DRO (TPH)										
SS08@16'	8/24/2017	11:57	1		X			X				X	X										
SS09@16'	8/24/2017	12:45	1		X			X				X	X										
SS10@16'	8/24/2017	1:01	1		X			X				X	X										
Relinquished by: <i>Chris Armbruster</i> 8/24/17 1:30				Date/Time: 8/24/17 1:30				Received by: <i>ML</i> 8/24/17 1:30				Date/Time: 8/24/17 1:30				Turn Around Time (Check)				Notes:			
												Same Day <input checked="" type="checkbox"/>				72 Hours <input type="checkbox"/>				in ice			
												24 Hours <input type="checkbox"/>				Standard <input type="checkbox"/>							
												48 Hours <input type="checkbox"/>											
																Sample Integrity:							
																Temperature Upon Receipt: 4.1°C							
																Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>							

www.s2scientific.com

S2

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:  
08/25/17 05:31

Sample Receipt Checklist

S2 Work Order: 1708214  
Client: PDC Client Project ID: J&L Farms 14, 24-29  
Shipped Via: P/U Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)  
Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Cooler ID				
Temp (°C)	4.1			

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> ?	<input checked="" type="checkbox"/>			
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 <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
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):				

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

Nakita  
Custodian Printed Name

[Signature]  
Signature or Initials of Custodian

8/24/17 1830  
Date/Time

[Signature]



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:**  
08/25/17 05:31

**SS08@16'**  
**1708214-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/24/17 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1708236	08/24/17	08/24/17	8015M	

Date Sampled: **08/24/17 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		97.6 %	30-150		"	"	"	"	

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

Date Sampled: **08/24/17 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1708235	"	08/24/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/24/17 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	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:**  
08/25/17 05:31

**SS09@16'**  
**1708214-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/24/17 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>120</b>	50	mg/kg	1	1708236	08/24/17	08/24/17	8015M	D-04

Date Sampled: **08/24/17 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		100 %	30-150		"	"	"	"	

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

Date Sampled: **08/24/17 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1708235	"	08/24/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/24/17 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		117 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		101 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		104 %	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:**  
08/25/17 05:31

**SS10@16'**  
**1708214-03 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/24/17 13:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>100</b>	50	mg/kg	1	1708236	08/24/17	08/24/17	8015M	D-04

Date Sampled: **08/24/17 13:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		95.8 %	30-150		"	"	"	"	

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

Date Sampled: **08/24/17 13:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1708235	"	08/24/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/24/17 13:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		115 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		100 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		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:**  
08/25/17 05:31

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch 1708236 - EPA 3550A**

<b>Blank (1708236-BLK1)</b>				Prepared & Analyzed: 08/24/17							
C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	12.2		"	12.5		97.5	30-150				
<b>LCS (1708236-BS1)</b>				Prepared & Analyzed: 08/24/17							
C10-C28 (DRO)	578	50	mg/kg	499		116	73-134				
<i>Surrogate: o-Terphenyl</i>	12.2		"	12.5		97.3	30-150				
<b>Matrix Spike (1708236-MS1)</b>				<b>Source: 1708214-01</b>		Prepared & Analyzed: 08/24/17					
C10-C28 (DRO)	507	50	mg/kg	499	ND	102	50-148				
<i>Surrogate: o-Terphenyl</i>	12.0		"	12.5		96.0	30-150				
<b>Matrix Spike Dup (1708236-MSD1)</b>				<b>Source: 1708214-01</b>		Prepared & Analyzed: 08/24/17					
C10-C28 (DRO)	527	50	mg/kg	499	ND	106	50-148	3.93		20	
<i>Surrogate: o-Terphenyl</i>	12.5		"	12.5		100	30-150				

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:  
08/25/17 05:31

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

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

**Batch 1708235 - EPA 5030 Soil MS**

**Blank (1708235-BLK1)**

Prepared & Analyzed: 08/24/17

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0450</i>		<i>"</i>	<i>0.0400</i>		<i>112</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0406</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0407</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>21-167</i>			

**LCS (1708235-BS1)**

Prepared & Analyzed: 08/24/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.107	0.0020	"	0.100		107	58-130			
Toluene	0.110	0.0050	"	0.100		110	61-134			
Ethylbenzene	0.107	0.0050	"	0.0992		108	74-139			
m,p-Xylene	0.198	0.010	"	0.200		99.0	73-137			
o-Xylene	0.0989	0.0050	"	0.0980		101	73-141			
Xylenes (total)	0.296	0.010	"				0-200			
Gasoline Range Hydrocarbons	2.34	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0437</i>		<i>"</i>	<i>0.0400</i>		<i>109</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0450</i>		<i>"</i>	<i>0.0400</i>		<i>112</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0403</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>21-167</i>			

**Matrix Spike (1708235-MS1)**

Source: 1708214-01

Prepared & Analyzed: 08/24/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.118	0.0020	"	0.100	ND	118	30-131			
Toluene	0.119	0.0050	"	0.100	ND	119	30-134			
Ethylbenzene	0.127	0.0050	"	0.0992	ND	128	22-153			
m,p-Xylene	0.232	0.010	"	0.200	ND	116	10-159			
o-Xylene	0.118	0.0050	"	0.0980	ND	120	31-151			
Xylenes (total)	0.350	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	2.79	0.50	"		ND		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0465</i>		<i>"</i>	<i>0.0400</i>		<i>116</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0415</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0400</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>21-167</i>			

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:**  
 08/25/17 05:31

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

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

**Batch 1708235 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1708235-MSD1)</b>	<b>Source: 1708214-01</b>			<b>Prepared &amp; Analyzed: 08/24/17</b>						
Naphthalene	ND	0.010	mg/kg	ND	ND	10-158			42	
Benzene	0.121	0.0020	"	0.100	ND	121	30-131	2.43	34	
Toluene	0.123	0.0050	"	0.100	ND	123	30-134	3.34	30	
Ethylbenzene	0.133	0.0050	"	0.0992	ND	134	22-153	4.61	24	
m,p-Xylene	0.245	0.010	"	0.200	ND	123	10-159	5.56	68	
o-Xylene	0.123	0.0050	"	0.0980	ND	125	31-151	3.79	38	
Xylenes (total)	0.368	0.010	"		ND		30-160	4.97	30	
Gasoline Range Hydrocarbons	2.98	0.50	"		ND		30-160	6.65	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0464</i>		<i>"</i>	<i>0.0400</i>		<i>116</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0411</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0416</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>21-167</i>			

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:**  
08/25/17 05:31

### Notes and Definitions

D-04      The hydrocarbons present are a complex mixture of diesel range and heavy oil range organics.

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

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

August 31, 2017

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 08/31/17 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ben Shrewsbury', with a long, sweeping horizontal line extending to the right.

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:**  
08/31/17 23:52

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW01	1708284-01	Water	08/31/17 12:10	08/31/17 17:30

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.*





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:  
08/31/17 23:52

**Sample Receipt Checklist**

S2 Work Order: 1708284  
 Client: PDC Client Project ID: J & L Farms 14, 24-29  
 Shipped Via: P/U (UPS, FedEx, Hand Delivered, Pick-up, etc.) Airbill #: \_\_\_\_\_  
 Matrix (check all that apply): \_\_\_\_\_ Air \_\_\_\_\_ Soil/Solid \_\_\_\_\_  Water \_\_\_\_\_ Other: \_\_\_\_\_ (Describe)

Cooler ID					
Temp (°C)	<u>1.9</u>				

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> ?	<input checked="" type="checkbox"/>			
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 <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<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) <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? 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):				

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

Nakitz  
Custodian Printed Name

[Signature]  
Signature or Initials of Custodian

8/31/17 18:00  
Date/Time

[Signature]



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:**  
 08/31/17 23:52

**GW01**  
**1708284-01 (Water)**

**Summit Scientific**

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

Date Sampled: **08/31/17 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>6.4</b>	1.0	ug/l	1	1708304	08/31/17	08/31/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **08/31/17 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		115 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		101 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		99.1 %	45-146		"	"	"	"	

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:  
08/31/17 23:52

### Volatile Organic Compounds by EPA Method 8260B - Quality Control

#### Summit Scientific

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

#### Batch 1708304 - EPA 5030 Water MS

##### Blank (1708304-BLK1)

Prepared & Analyzed: 08/31/17

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	14.1		"	13.3		106	37-154			
Surrogate: Toluene-d8	13.4		"	13.3		101	45-149			
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		101	45-146			

##### LCS (1708304-BS1)

Prepared & Analyzed: 08/31/17

Benzene	38.2	1.0	ug/l	33.3		115	51-132			
Toluene	38.1	1.0	"	33.3		114	51-138			
Ethylbenzene	37.6	1.0	"	33.1		114	58-146			
m,p-Xylene	68.5	2.0	"	66.5		103	57-144			
o-Xylene	34.8	1.0	"	32.7		106	53-146			
Surrogate: 1,2-Dichloroethane-d4	14.7		"	13.3		110	37-154			
Surrogate: Toluene-d8	14.8		"	13.3		111	45-149			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		101	45-146			

##### Matrix Spike (1708304-MS1)

Source: 1708270-01

Prepared & Analyzed: 08/31/17

Benzene	40.7	1.0	ug/l	33.3	ND	122	34-141			
Toluene	40.0	1.0	"	33.3	ND	120	27-151			
Ethylbenzene	42.6	1.0	"	33.1	ND	129	29-160			
m,p-Xylene	78.2	2.0	"	66.5	ND	118	20-166			
o-Xylene	39.5	1.0	"	32.7	ND	121	33-159			
Surrogate: 1,2-Dichloroethane-d4	15.4		"	13.3		116	37-154			
Surrogate: Toluene-d8	13.7		"	13.3		103	45-149			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		101	45-146			

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:**  
 08/31/17 23:52

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

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

**Batch 1708304 - EPA 5030 Water MS**

<b>Matrix Spike Dup (1708304-MSD1)</b>	<b>Source: 1708270-01</b>			<b>Prepared &amp; Analyzed: 08/31/17</b>						
Benzene	40.7	1.0	ug/l	33.3	ND	122	34-141	0.197	32	
Toluene	40.6	1.0	"	33.3	ND	122	27-151	1.49	25	
Ethylbenzene	43.4	1.0	"	33.1	ND	131	29-160	1.84	50	
m,p-Xylene	79.2	2.0	"	66.5	ND	119	20-166	1.27	36	
o-Xylene	40.5	1.0	"	32.7	ND	124	33-159	2.40	26	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>15.7</i>		<i>"</i>	<i>13.3</i>		<i>118</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.4</i>		<i>"</i>	<i>13.3</i>		<i>101</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.2</i>		<i>"</i>	<i>13.3</i>		<i>99.2</i>	<i>45-146</i>			

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:**  
08/31/17 23:52

### 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

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

September 06, 2017

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 09/05/17 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury  
President



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:**  
09/06/17 06:44

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW02	1709013-01	Water	09/05/17 12:54	09/05/17 16:30

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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:  
09/06/17 06:44

# Summit Scientific 1709013

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

Page 1 of 1

Client: PDC / Tanna  
Address: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Sampler Name: Tyler Blegen

Project Manager: Mark Longhurst  
E-Mail: Mark.Longhurst@PDC.com  
Project Name: J&L Farms 14, 24-29  
Project Number: \_\_\_\_\_

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:						Special Instructions		
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTEX (8260)							
<u>Gravel</u>	<u>9/5/17</u>	<u>12:54</u>	<u>3</u>		<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>							
Relinquished by: _____	Date/Time: _____	Received by: _____	Date/Time: _____	Turn Around Time (Check)				Notes:											
_____	<u>9/5/17 16:30</u>	<u>ML</u>	<u>9/5/17 16:30</u>	Same Day	<input checked="" type="checkbox"/>	72 Hours	<input type="checkbox"/>	<u>on ice</u>											
Relinquished by: _____	Date/Time: _____	Received by: _____	Date/Time: _____	24 Hours	<input type="checkbox"/>	Standard	<input type="checkbox"/>												
Relinquished by: _____	Date/Time: _____	Received in Lab by: _____	Date/Time: _____	48 Hours	<input type="checkbox"/>		<input type="checkbox"/>												
Sample Integrity:				Temperature Upon Receipt: <u>9.0°C</u>						Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No									

www.s2scientific.com

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:  
09/06/17 06:44

**Sample Receipt Checklist**

S2 Work Order: 1709013

Client: PDC/Tarman Client Project ID: J&L Farms 14, 24-29

Shipped Via: P/U Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

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

Cooler ID					
Temp (°C)	<u>9.0</u>				

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"/>			
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<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) <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			HCl
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<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.

Nakita  
Custodian Printed Name

[Signature]  
Signature or Initials of Custodian

9/5/17 1710  
Date/Time

[Signature]



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:**  
 09/06/17 06:44

**GW02**  
**1709013-01 (Water)**

**Summit Scientific**

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

Date Sampled: **09/05/17 12:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>60</b>	1.0	ug/l	1	1709027	09/05/17	09/05/17	EPA 8260B	
<b>Toluene</b>	<b>3.4</b>	1.0	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>2.2</b>	1.0	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>170</b>	2.0	"	"	"	"	"	"	

Date Sampled: **09/05/17 12:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		97.6 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		95.9 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.3 %	45-146		"	"	"	"	

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:  
09/06/17 06:44

### Volatile Organic Compounds by EPA Method 8260B - Quality Control

#### Summit Scientific

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

#### Batch 1709027 - EPA 5030 Water MS

##### Blank (1709027-BLK1)

Prepared & Analyzed: 09/05/17

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	12.8		"	13.3		96.3	37-154			
Surrogate: Toluene-d8	13.6		"	13.3		102	45-149			
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		96.1	45-146			

##### LCS (1709027-BS1)

Prepared & Analyzed: 09/05/17

Benzene	27.0	1.0	ug/l	33.3		81.1	51-132			
Toluene	41.8	1.0	"	33.3		125	51-138			
Ethylbenzene	36.7	1.0	"	33.1		111	58-146			
m,p-Xylene	71.0	2.0	"	66.5		107	57-144			
o-Xylene	34.5	1.0	"	32.7		105	53-146			
Surrogate: 1,2-Dichloroethane-d4	12.8		"	13.3		96.0	37-154			
Surrogate: Toluene-d8	17.5		"	13.3		131	45-149			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		98.6	45-146			

##### Matrix Spike (1709027-MS1)

Source: 1709012-01

Prepared & Analyzed: 09/05/17

Benzene	34.4	1.0	ug/l	33.3	2.65	95.3	34-141			
Toluene	33.5	1.0	"	33.3	ND	100	27-151			
Ethylbenzene	40.3	1.0	"	33.1	1.01	119	29-160			
m,p-Xylene	86.8	2.0	"	66.5	5.51	122	20-166			
o-Xylene	43.8	1.0	"	32.7	5.17	118	33-159			
Surrogate: 1,2-Dichloroethane-d4	13.0		"	13.3		97.4	37-154			
Surrogate: Toluene-d8	13.0		"	13.3		97.8	45-149			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.5	45-146			

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:**  
 09/06/17 06:44

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

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

**Batch 1709027 - EPA 5030 Water MS**

<b>Matrix Spike Dup (1709027-MSD1)</b>	<b>Source: 1709012-01</b>			<b>Prepared &amp; Analyzed: 09/05/17</b>						
Benzene	34.2	1.0	ug/l	33.3	2.65	94.7	34-141	0.525	32	
Toluene	34.1	1.0	"	33.3	ND	102	27-151	1.75	25	
Ethylbenzene	39.3	1.0	"	33.1	1.01	116	29-160	2.61	50	
m,p-Xylene	82.1	2.0	"	66.5	5.51	115	20-166	5.58	36	
o-Xylene	41.1	1.0	"	32.7	5.17	110	33-159	6.40	26	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>15.2</i>		<i>"</i>	<i>13.3</i>		<i>114</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.3</i>		<i>"</i>	<i>13.3</i>		<i>99.7</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.4</i>		<i>"</i>	<i>13.3</i>		<i>100</i>	<i>45-146</i>			

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:**  
09/06/17 06:44

### 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