

TABLE 1  
FORMER WELLS RANCH 11, 12, 21, 22-36, 36A, J, F, K 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)	pH (units)	EC (mmhos/cm)
COGCC standards for soil (mg/kg) <sup>(1)</sup>			0.17	85	100	175	23	500	6-9	<4
SS01 @ 5'	6/13/2019	5	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	8.41	0.462
SS02 @ 3'	6/13/2019	3	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	NA	NA
SS03 @ 3'	6/13/2019	3	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	NA	NA
SS04 @ 3'	6/13/2019	3	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	NA	NA
SS05 @ 3'	6/13/2019	3	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	NA	NA

Notes:

1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective May 1, 2018.
2. 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
- EC = Electrical conductivity
- mmhos/cm = millimhos per centimeter
- NA = Constituent not analyzed

**TABLE 2**  
**FORMER WELLS RANCH 11, 12, 21, 22-36, 36A, J, F, K TANK BATTERY**  
**VOC CONCENTRATIONS SUMMARY TABLE**

Sample ID	Date Sampled	Depth (feet bgs)	Sample Location <sup>(1)</sup>	Field Measured VOC Concentration <sup>(2)</sup> (ppm)
SS01 @ 5'	6/13/2019	5	Excavation Base	1.0
SS02 @ 3'	6/13/2019	3	North Sidewall	0.0
SS03 @ 3'	6/13/2019	3	West Sidewall	0.0
SS04 @ 3'	6/13/2019	3	South Sidewall	1.8
SS05 @ 3'	6/13/2019	3	East Sidewall	0.8

**Notes:**

1. Refers to the sample location within the excavation area below the former produced water vessel.

2. Volatile organic compound (VOC) concentrations are measured in the field using a photoionization detector (PID).

bgs = Below ground surface

ppm = Parts per million

= Sample submitted for laboratory analysis.

## **ATTACHMENT A**

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 20, 2019

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Wells Ranch 11,12,21,22-36,36A J,F,K

Work Order # 1906165

Enclosed are the results of analyses for samples received by Summit Scientific on 06/13/19 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 'P. Shrewsbury', written in a cursive style.

Paul Shrewsbury For Ben Shrewsbury

Laboratory Manager



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

Project: Wells Ranch 11,12,21,22-36,36A J,F,K

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
06/20/19 13:27

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@5'	1906165-01	Soil	06/13/19 12:45	06/13/19 17:30
SS02@3'	1906165-02	Soil	06/13/19 12:48	06/13/19 17:30
SS03@3'	1906165-03	Soil	06/13/19 12:51	06/13/19 17:30
SS04@3'	1906165-04	Soil	06/13/19 13:05	06/13/19 17:30
SS05@3'	1906165-05	Soil	06/13/19 13:08	06/13/19 17:30

Summit Scientific

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# Summit Scientific

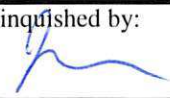
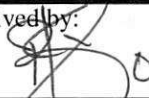
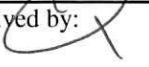
1906165

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

Page 1 of 1

Client: PDC  
Address: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Sampler Name: Jake McCarver

Project Manager: Mark Longhurst  
E-Mail: Mark.Longhurst@pdce.com  
Project Name: Wells Ranch 11, 12, 21, 22-36, 36A J, F, K  
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 (8260)	TPH - DRO	EC/pH										
SS01 @ 5'	6/13/2019	12:45	1			X			X				X	X	X									
SS02 @ 3'	6/13/2019	12:48	1			X			X				X	X										
SS03 @ 3'	6/13/2019	12:51	1			X			X				X	X										
SS04 @ 3'	6/13/2019	1:05	1			X			X				X	X										
SS05 @ 3'	6/13/2019	1:08	1			X			X				X	X										
Relinquished by: 	6/13/19	Date/Time: 1730		Received by: 				Date/Time: 6/13/19 1730				Turn Around Time (Check)												
				Received by: 				Date/Time:				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"/>												
				Received in Lab by:				Date/Time:				Sample Integrity: Temperature Upon Receipt: 3.6 Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>												

## Sample Receipt Checklist

S2 Work Order

Client:

PDC

Client Project ID:

WELLS Ranch 11, 12, 21, 22-36  
36A J, F, K

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

Airbill #:

Matrix (check all that apply):

Air

☒

Soil/Solid

Water

Other:

(Describe)

Temp (°C)

3.6

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.	<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 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 <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> ? 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.

Custodian Printed Name or Initials

Signature of Custodian

Date/Time

1825



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

Project: Wells Ranch 11,12,21,22-36,36A J,F,K

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/20/19 13:27

**SS01@5'**  
**1906165-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **06/13/19 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1906208	06/17/19	06/19/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/13/19 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		81.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		89.7 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **06/13/19 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1906207	06/17/19	06/18/19	EPA 8015M	

Date Sampled: **06/13/19 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		89.2 %	30-150		"	"	"	"	

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

Date Sampled: **06/13/19 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.41		pH Units	1	1906190	06/14/19	06/18/19	EPA 9045D	

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

Project: Wells Ranch 11,12,21,22-36,36A J,F,K

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/20/19 13:27

**SS01@5'**  
**1906165-01 (Soil)**

**Summit Scientific**

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

**Specific Conductance by EPA Method 120.1**

Date Sampled: **06/13/19 12:45**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	<b>0.462</b>	0.0100		mmhos/cm	1	1906192	06/14/19	06/18/19	EPA 120.1	

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1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Wells Ranch 11,12,21,22-36,36A J,F,K

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/20/19 13:27

**SS02@3'**  
**1906165-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **06/13/19 12:48**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1906208	06/17/19	06/19/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/13/19 12:48**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		78.1 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		90.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.5 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **06/13/19 12:48**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1906207	06/17/19	06/18/19	EPA 8015M	

Date Sampled: **06/13/19 12:48**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		87.4 %	30-150		"	"	"	"	

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

Project: Wells Ranch 11,12,21,22-36,36A J,F,K

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/20/19 13:27

**SS03@3'**  
**1906165-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **06/13/19 12:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1906208	06/17/19	06/19/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/13/19 12:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		78.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		91.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.0 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **06/13/19 12:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1906207	06/17/19	06/18/19	EPA 8015M	

Date Sampled: **06/13/19 12:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		88.5 %	30-150		"	"	"	"	

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

Project: Wells Ranch 11,12,21,22-36,36A J,F,K

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/20/19 13:27

**SS04@3'**  
**1906165-04 (Soil)**

**Summit Scientific**

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

Date Sampled: **06/13/19 13:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1906208	06/17/19	06/19/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/13/19 13:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		80.1 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		86.7 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **06/13/19 13:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1906207	06/17/19	06/18/19	EPA 8015M	

Date Sampled: **06/13/19 13:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		92.1 %	30-150		"	"	"	"	

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

Project: Wells Ranch 11,12,21,22-36,36A J,F,K

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/20/19 13:27

**SS05@3'**  
**1906165-05 (Soil)**

**Summit Scientific**

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

Date Sampled: **06/13/19 13:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1906208	06/17/19	06/19/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/13/19 13:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		77.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.6 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **06/13/19 13:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1906207	06/17/19	06/18/19	EPA 8015M	

Date Sampled: **06/13/19 13:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		93.5 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Wells Ranch 11,12,21,22-36,36A J,F,K

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/20/19 13:27

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

### Summit Scientific

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

#### Batch 1906208 - EPA 5030 Soil MS

##### Blank (1906208-BLK1)

Prepared: 06/17/19 Analyzed: 06/19/19

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Naphthalene	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0318		"	0.0400		79.6	23-173			
Surrogate: Toluene-d8	0.0366		"	0.0400		91.5	20-170			
Surrogate: 4-Bromofluorobenzene	0.0371		"	0.0400		92.7	21-167			

##### LCS (1906208-BS1)

Prepared: 06/17/19 Analyzed: 06/19/19

Benzene	0.107	0.0020	mg/kg	0.100		107	70-130			
Toluene	0.109	0.0050	"	0.100		109	70-130			
Ethylbenzene	0.121	0.0050	"	0.100		121	70-130			
m,p-Xylene	0.240	0.010	"	0.200		120	70-130			
o-Xylene	0.122	0.0050	"	0.100		122	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0315		"	0.0400		78.8	23-173			
Surrogate: Toluene-d8	0.0364		"	0.0400		91.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0357		"	0.0400		89.2	21-167			

##### Matrix Spike (1906208-MS1)

Source: 1906164-02

Prepared: 06/17/19 Analyzed: 06/19/19

Benzene	0.111	0.0020	mg/kg	0.100	ND	111	70-130			
Toluene	0.113	0.0050	"	0.100	ND	113	70-130			
Ethylbenzene	0.126	0.0050	"	0.100	ND	126	70-130			
m,p-Xylene	0.252	0.010	"	0.200	ND	126	70-130			
o-Xylene	0.125	0.0050	"	0.100	ND	125	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0314		"	0.0400		78.5	23-173			
Surrogate: Toluene-d8	0.0365		"	0.0400		91.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0354		"	0.0400		88.5	21-167			

Summit Scientific

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

Project: Wells Ranch 11,12,21,22-36,36A J,F,K

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/20/19 13:27

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

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

**Batch 1906208 - EPA 5030 Soil MS**

Matrix Spike Dup (1906208-MSD1)		Source: 1906164-02			Prepared: 06/17/19 Analyzed: 06/19/19					
Benzene	0.105	0.0020	mg/kg	0.100	ND	105	70-130	5.79	30	
Toluene	0.109	0.0050	"	0.100	ND	109	70-130	3.85	30	
Ethylbenzene	0.119	0.0050	"	0.100	ND	119	70-130	5.86	30	
m,p-Xylene	0.239	0.010	"	0.200	ND	119	70-130	5.55	30	
o-Xylene	0.118	0.0050	"	0.100	ND	118	70-130	5.85	30	
Surrogate: 1,2-Dichloroethane-d4	0.0316		"	0.0400		79.1	23-173			
Surrogate: Toluene-d8	0.0370		"	0.0400		92.5	20-170			
Surrogate: 4-Bromofluorobenzene	0.0352		"	0.0400		87.9	21-167			

Summit Scientific

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

Project: Wells Ranch 11,12,21,22-36,36A J,F,K

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/20/19 13:27

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

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

**Batch 1906207 - EPA 3550A**

**Blank (1906207-BLK1)**

Prepared: 06/17/19 Analyzed: 06/18/19

C10-C28 (DRO) ND 50 mg/kg

**LCS (1906207-BS1)**

Prepared: 06/17/19 Analyzed: 06/18/19

C10-C28 (DRO) 464 50 mg/kg 500 92.8 70-130

**Matrix Spike (1906207-MS1)**

**Source: 1906164-02**

Prepared: 06/17/19 Analyzed: 06/18/19

C10-C28 (DRO) 432 50 mg/kg 500 23.5 81.8 70-130

**Matrix Spike Dup (1906207-MSD1)**

**Source: 1906164-02**

Prepared: 06/17/19 Analyzed: 06/18/19

C10-C28 (DRO) 435 50 mg/kg 500 23.5 82.3 70-130 0.660 20

Summit Scientific

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

Project: Wells Ranch 11,12,21,22-36,36A J,F,K

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/20/19 13:27

### Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

#### Summit Scientific

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

#### Batch 1906190 - General Preparation

##### LCS (1906190-BS1)

Prepared: 06/14/19 Analyzed: 06/18/19

pH	9.45	pH Units	9.23	102	95-105
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##### Duplicate (1906190-DUP1)

Source: 1906164-05

Prepared: 06/14/19 Analyzed: 06/18/19

pH	8.75	pH Units	8.72	0.343	20
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Summit Scientific

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

Project: Wells Ranch 11,12,21,22-36,36A J,F,K

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/20/19 13:27

**Specific Conductance by EPA Method 120.1 - Quality Control**  
**Summit Scientific**

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

**Batch 1906192 - General Preparation**

**Blank (1906192-BLK1)**

Prepared: 06/14/19 Analyzed: 06/18/19

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (1906192-BS1)**

Prepared: 06/14/19 Analyzed: 06/18/19

Specific Conductance (EC) 0.761 0.0100 mmhos/cm 0.750 101 90-110

**Duplicate (1906192-DUP1)**

**Source: 1906164-05**

Prepared: 06/14/19 Analyzed: 06/18/19

Specific Conductance (EC) 0.163 0.0100 mmhos/cm 0.167 2.48 20

Summit Scientific

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

Project: Wells Ranch 11,12,21,22-36,36A J,F,K

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/20/19 13:27

### 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