

**TABLE 1**  
**FORMER BOOTH 11, 12, 21, 22-31U & 31AU TANK BATTERY**  
**SOIL ANALYTICAL RESULTS SUMMARY TABLE**

Sample ID	Date Sampled	Depth (ft. 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)
<b>COGCC Table 910-1 Soil Standard (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>	<b>6-9</b>	<b>&lt;4</b>
SS01 @ 5'	5/22/2020	5	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	7.59	0.280

**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

ft. = Feet

bgs = Below ground surface

EC = Electrical conductivity

mmhos/cm = millimhos per centimeter

**TABLE 2**  
**FORMER BOOTH 11, 12, 21, 22-31U & 31AU TANK BATTERY**  
**VOC CONCENTRATIONS SUMMARY TABLE**

Sample ID	Date Sampled	Depth (ft. bgs)	Sample Location <sup>(1)</sup>	Field Measured VOC Concentration <sup>(2)</sup> (ppm)
SS01 @ 5'	5/22/2020	5	Base	7.3
SS02 @ 3'	5/22/2020	3	North Sidewall	3.5
SS03 @ 3'	5/22/2020	3	West Sidewall	4.6
SS04 @ 3'	5/22/2020	3	South Sidewall	2.7
SS05 @ 3'	5/22/2020	3	East Sidewall	2.3

**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).

ft. = Feet

bgs = Below ground surface

ppm = Parts per million

= Sample submitted for laboratory analysis.

## **ATTACHMENT A**

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 01, 2020

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Booth 11,12,21,22-31U&31AU

Work Order #2005244

Enclosed are the results of analyses for samples received by Summit Scientific on 05/22/20 16:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Muri Premer", is displayed on a light purple rectangular background.

Muri Premer For Paul Shrewsbury  
President



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

Project: Booth 11,12,21,22-31U&31AU

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
06/01/20 16:03

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@5'	2005244-01	Soil	05/22/20 10:40	05/22/20 16:00

Summit Scientific

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

# Summit Scientific

2005244

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

Client: PDC/Tasman Project Manager: Mark Longhurst Page 1 of 1  
Address: \_\_\_\_\_ E-Mail: mark.longhurst@pdc.com  
City/State/Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_ Project Name: Booth 11, 12, 21, 22-3U, 3AU  
Sampler Name: Max Dahlgren Project Number: \_\_\_\_\_

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	GBTEXN	TPH-DRO	PH, EC	On Hold					
1	SS01 @ 5'	5/22/20	1040	1			X			X				X	X	X					
2	SS02 @ 3'		1045	1			X			X							X				
3	SS03 @ 3'		1050	1			X			X							X				
4	SS04 @ 3'		1055	1			X			X							X				
5	SS05 @ 3'		1100	1			X			X							X				
6																					
7																					
8																					
9																					
10																					

Relinquished by: <u>[Signature]</u>	Date/Time: <u>5/22/20 1230</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/22/2020 1600</u>	Turn Around Time (Check) Same Day _____ 72 hours _____ 24 hours _____ Standard <u>X</u> 48 hours _____	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity: Temperature Upon Receipt: <u>42</u> Samples Intact: <u>Yes</u> No	
Relinquished by:	Date/Time:	Received by:	Date/Time:		

# Sample Receipt Checklist

S2 Work Order 2005244

Client: PDC / Hasman Client Project ID: Booth 11, 12, 21, 22, 31, 4, 31, 4

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

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

Temp (°C)	<u>4.2</u>
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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? <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> ? 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

5/22/20



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

Project: Booth 11,12,21,22-31U&31AU  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/01/20 16:03

**SS01@5'**  
**2005244-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **05/22/20 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2005355	05/29/20	05/29/20	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: **05/22/20 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		65.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.8 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **05/22/20 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2005356	05/29/20	05/30/20	EPA 8015M	

Date Sampled: **05/22/20 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		117 %	30-150		"	"	"	"	

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

Date Sampled: **05/22/20 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.59		pH Units	1	2005313	05/27/20	05/27/20	EPA 9045D	

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

Project: Booth 11,12,21,22-31U&31AU  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/01/20 16:03

**SS01@5'**  
**2005244-01 (Soil)**

**Summit Scientific**

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

**Specific Conductance by EPA Method 120.1**

Date Sampled: **05/22/20 10:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	<b>0.280</b>	0.0100		mmhos/cm	1	2005314	05/27/20	05/27/20	EPA 120.1	

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

Project: Booth 11,12,21,22-31U&31AU

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/01/20 16:03

## 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 2005355 - EPA 5030 Soil MS

##### Blank (2005355-BLK1)

Prepared & Analyzed: 05/29/20

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	0.0228		"	0.0400		56.9	23-173			
Surrogate: Toluene-d8	0.0413		"	0.0400		103	20-170			
Surrogate: 4-Bromofluorobenzene	0.0358		"	0.0400		89.6	21-167			

##### LCS (2005355-BS1)

Prepared & Analyzed: 05/29/20

Benzene	0.0878	0.0020	mg/kg	0.100		87.8	70-130			
Toluene	0.0881	0.0050	"	0.100		88.1	70-130			
Ethylbenzene	0.0892	0.0050	"	0.100		89.2	70-130			
m,p-Xylene	0.164	0.010	"	0.200		81.9	70-130			
o-Xylene	0.0810	0.0050	"	0.100		81.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0199		"	0.0400		49.8	23-173			
Surrogate: Toluene-d8	0.0428		"	0.0400		107	20-170			
Surrogate: 4-Bromofluorobenzene	0.0371		"	0.0400		92.8	21-167			

##### Matrix Spike (2005355-MS1)

Source: 2005244-01

Prepared & Analyzed: 05/29/20

Benzene	0.0880	0.0020	mg/kg	0.100	ND	88.0	70-130			
Toluene	0.0854	0.0050	"	0.100	ND	85.4	70-130			
Ethylbenzene	0.0856	0.0050	"	0.100	ND	85.6	70-130			
m,p-Xylene	0.153	0.010	"	0.200	0.00333	74.9	70-130			
o-Xylene	0.0773	0.0050	"	0.100	ND	77.3	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0185		"	0.0400		46.3	23-173			
Surrogate: Toluene-d8	0.0418		"	0.0400		105	20-170			
Surrogate: 4-Bromofluorobenzene	0.0357		"	0.0400		89.3	21-167			

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1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Booth 11,12,21,22-31U&31AU

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/01/20 16:03

**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 2005355 - EPA 5030 Soil MS**

Matrix Spike Dup (2005355-MSD1)		Source: 2005244-01			Prepared & Analyzed: 05/29/20					
Benzene	0.0861	0.0020	mg/kg	0.100	ND	86.1	70-130	2.14	30	
Toluene	0.0839	0.0050	"	0.100	ND	83.9	70-130	1.84	30	
Ethylbenzene	0.0819	0.0050	"	0.100	ND	81.9	70-130	4.48	30	
m,p-Xylene	0.150	0.010	"	0.200	0.00333	73.5	70-130	1.80	30	
o-Xylene	0.0766	0.0050	"	0.100	ND	76.6	70-130	0.897	30	
Surrogate: 1,2-Dichloroethane-d4	0.0185		"	0.0400		46.2	23-173			
Surrogate: Toluene-d8	0.0411		"	0.0400		103	20-170			
Surrogate: 4-Bromofluorobenzene	0.0352		"	0.0400		88.0	21-167			

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

Project: Booth 11,12,21,22-31U&31AU

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/01/20 16:03

**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 2005356 - EPA 3550A**

**Blank (2005356-BLK1)**

Prepared: 05/29/20 Analyzed: 05/30/20

C10-C28 (DRO) ND 50 mg/kg

**LCS (2005356-BS1)**

Prepared: 05/29/20 Analyzed: 05/30/20

C10-C28 (DRO) 607 50 mg/kg 500 121 70-130

**Matrix Spike (2005356-MS1)**

**Source: 2005244-01**

Prepared: 05/29/20 Analyzed: 05/30/20

C10-C28 (DRO) 597 50 mg/kg 500 42.6 111 70-130

**Matrix Spike Dup (2005356-MSD1)**

**Source: 2005244-01**

Prepared: 05/29/20 Analyzed: 05/30/20

C10-C28 (DRO) 616 50 mg/kg 500 42.6 115 70-130 3.09 20

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1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Booth 11,12,21,22-31U&31AU

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**

06/01/20 16:03

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

**Summit Scientific**

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

**Batch 2005313 - General Preparation**

**LCS (2005313-BS1)**

Prepared & Analyzed: 05/27/20

pH	9.19	pH Units	9.18	100	95-105
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**Duplicate (2005313-DUP1)**

**Source: 2005244-01**

Prepared & Analyzed: 05/27/20

pH	7.57	pH Units	7.59	0.264	20
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1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Booth 11,12,21,22-31U&31AU

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/01/20 16:03

**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 2005314 - General Preparation**

**Blank (2005314-BLK1)**

Prepared & Analyzed: 05/27/20

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (2005314-BS1)**

Prepared & Analyzed: 05/27/20

Specific Conductance (EC) 0.772 0.0100 mmhos/cm 0.750 103 90-110

**Duplicate (2005314-DUP1)**

**Source: 2005244-01**

Prepared & Analyzed: 05/27/20

Specific Conductance (EC) 0.289 0.0100 mmhos/cm 0.280 3.18 20

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1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Booth 11,12,21,22-31U&31AU

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/01/20 16:03

### 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