

TABLE 1  
FORMER HIRD TRUST 11-10, FOSS 1-10 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)
COGCC Table 910-1 Soil Standard (mg/kg) <sup>(1)</sup>			0.17	85	100	175	23	500	6-9	<4
SS01 @ 5'	1/24/2020	5	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	8.71	0.365

**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 HIRD TRUST 11-10, FOSS 1-10 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'	1/24/2020	5	Base	0.0
SS02 @ 3'	1/24/2020	3	North Sidewall	0.0
SS03 @ 3'	1/24/2020	3	West Sidewall	0.0
SS04 @ 3'	1/24/2020	3	South Sidewall	0.0
SS05 @ 3'	1/24/2020	3	East Sidewall	0.0

**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

February 03, 2020

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Hird Trust 11-10, Foss 1-10

Work Order #2001297

Enclosed are the results of analyses for samples received by Summit Scientific on 01/24/20 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', with a stylized, cursive script.

Paul Shrewsbury

President



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

Project: Hird Trust 11-10, Foss 1-10

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
02/03/20 09:01

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@5'	2001297-01	Soil	01/24/20 11:05	01/24/20 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.*

# Summit Scientific

S<sub>2</sub>

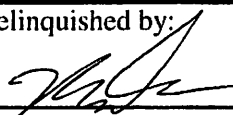
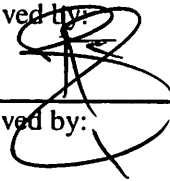
200297

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

Page 1 of 1

Client: PDC / Tasman Project Manager: Mark Longhurst  
Address: 6855 W 119th Ave E-Mail: mark.longhurst@PDCE.com  
City/State/Zip: Broomfield/ CO/ 80020  
Phone: 303-487-1228 Project Name: Hird trust 11-10, Foss 1-10  
Sampler Name: Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions
					HCl	HNO <sub>3</sub>	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	8260B GBTEXN	8015 DRO	pH / EC	Hold		
1	SS01 @ 5'	1/24/20	1105	1			X			X				X	X	X			
2	SS02 @ 3'		1110														X		
3	SS03 @ 3'		1115														X		
4	SS04 @ 3'		1120														X		
5	SS05 @ 3'		1125														X		
6																			
7																			
8																			
9																			
10																			

Relinquished by: 	Date/Time: 1/24/20 1500	Received by: Tasman's Lock Box	Date/Time:	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/>	Notes:
Relinquished by: Tasman's Lock Box	Date/Time: 6/24/2020 1730	Received by: 	Date/Time: 6/24/2020 1730	Sample Integrity: S.4	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Temperature Upon Receipt: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

# Sample Receipt Checklist

S2 Work Order 200297

Client: PDC / TASMAN

Client Project ID: HIRD TRUST 11-10, FOSS 1-10

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

☐ ☒ ☐ ☐ ☐

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

Temp (°C)	5.4
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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"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<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.

RZ

Custodian Printed Name or Initials

Signature of Custodian

1/24/20

Date/Time



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

Project: Hird Trust 11-10, Foss 1-10

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
02/03/20 09:01

**SS01@5'**  
**2001297-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **01/24/20 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2001353	01/27/20	01/28/20	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: **01/24/20 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/24/20 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2001354	01/27/20	01/27/20	EPA 8015M	

Date Sampled: **01/24/20 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		98.4 %	30-150		"	"	"	"	

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

Date Sampled: **01/24/20 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.71		pH Units	1	2001366	01/28/20	01/28/20	EPA 9045D	

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

Project: Hird Trust 11-10, Foss 1-10  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
02/03/20 09:01

**SS01@5'**  
**2001297-01 (Soil)**

**Summit Scientific**

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

**Specific Conductance by EPA Method 120.1**

Date Sampled: **01/24/20 11:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	<b>0.365</b>	0.0100		mmhos/cm	1	2001367	01/28/20	01/28/20	EPA 120.1	

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1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Hird Trust 11-10, Foss 1-10

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
02/03/20 09:01

## 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 2001353 - EPA 5030 Soil MS

##### Blank (2001353-BLK1)

Prepared: 01/27/20 Analyzed: 01/28/20

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	0.0457		"	0.0400		114	23-173			
Surrogate: Toluene-d8	0.0376		"	0.0400		93.9	20-170			
Surrogate: 4-Bromofluorobenzene	0.0441		"	0.0400		110	21-167			

##### LCS (2001353-BS1)

Prepared: 01/27/20 Analyzed: 01/28/20

Benzene	0.0991	0.0020	mg/kg	0.100		99.1	70-130			
Toluene	0.103	0.0050	"	0.100		103	70-130			
Ethylbenzene	0.101	0.0050	"	0.100		101	70-130			
m,p-Xylene	0.183	0.010	"	0.200		91.5	70-130			
o-Xylene	0.0961	0.0050	"	0.100		96.1	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0394		"	0.0400		98.4	23-173			
Surrogate: Toluene-d8	0.0460		"	0.0400		115	20-170			
Surrogate: 4-Bromofluorobenzene	0.0389		"	0.0400		97.4	21-167			

##### Matrix Spike (2001353-MS1)

Source: 2001297-01

Prepared: 01/27/20 Analyzed: 01/28/20

Benzene	0.112	0.0020	mg/kg	0.100	ND	112	70-130			
Toluene	0.115	0.0050	"	0.100	ND	115	70-130			
Ethylbenzene	0.116	0.0050	"	0.100	ND	116	70-130			
m,p-Xylene	0.209	0.010	"	0.200	ND	105	70-130			
o-Xylene	0.110	0.0050	"	0.100	ND	110	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0444		"	0.0400		111	23-173			
Surrogate: Toluene-d8	0.0437		"	0.0400		109	20-170			
Surrogate: 4-Bromofluorobenzene	0.0397		"	0.0400		99.3	21-167			

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

Project: Hird Trust 11-10, Foss 1-10

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
02/03/20 09:01

**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 2001353 - EPA 5030 Soil MS**

**Matrix Spike Dup (2001353-MSD1)**

**Source: 2001297-01**

Prepared: 01/27/20 Analyzed: 01/28/20

Benzene	0.116	0.0020	mg/kg	0.100	ND	116	70-130	3.69	30	
Toluene	0.120	0.0050	"	0.100	ND	120	70-130	3.81	30	
Ethylbenzene	0.125	0.0050	"	0.100	ND	125	70-130	7.39	30	
m,p-Xylene	0.224	0.010	"	0.200	ND	112	70-130	6.81	30	
o-Xylene	0.118	0.0050	"	0.100	ND	118	70-130	6.54	30	
Surrogate: 1,2-Dichloroethane-d4	0.0455		"	0.0400		114	23-173			
Surrogate: Toluene-d8	0.0422		"	0.0400		106	20-170			
Surrogate: 4-Bromofluorobenzene	0.0404		"	0.0400		101	21-167			

Summit Scientific

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

Project: Hird Trust 11-10, Foss 1-10

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
02/03/20 09:01

**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 2001354 - EPA 3550A**

**Blank (2001354-BLK1)**

Prepared & Analyzed: 01/27/20

C10-C28 (DRO) ND 50 mg/kg

**LCS (2001354-BS1)**

Prepared & Analyzed: 01/27/20

C10-C28 (DRO) 524 50 mg/kg 500 105 70-130

**Matrix Spike (2001354-MS1)**

**Source: 2001297-01**

Prepared & Analyzed: 01/27/20

C10-C28 (DRO) 547 50 mg/kg 500 8.48 108 70-130

**Matrix Spike Dup (2001354-MSD1)**

**Source: 2001297-01**

Prepared & Analyzed: 01/27/20

C10-C28 (DRO) 516 50 mg/kg 500 8.48 102 70-130 5.84 20

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

Project: Hird Trust 11-10, Foss 1-10

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
02/03/20 09:01

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

**Summit Scientific**

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

**Batch 2001366 - General Preparation**

**LCS (2001366-BS1)**

Prepared & Analyzed: 01/28/20

pH	9.20	pH Units	9.18	100	95-105
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**Duplicate (2001366-DUP1)**

**Source: 2001278-05**

Prepared & Analyzed: 01/28/20

pH	9.71	pH Units	9.46	2.61	20
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Summit Scientific

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

Project: Hird Trust 11-10, Foss 1-10

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
02/03/20 09:01

### Specific Conductance by EPA Method 120.1 - Quality Control

#### Summit Scientific

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

#### Batch 2001367 - General Preparation

##### Blank (2001367-BLK1)

Prepared & Analyzed: 01/28/20

Specific Conductance (EC) ND 0.0100 mmhos/cm

##### LCS (2001367-BS1)

Prepared & Analyzed: 01/28/20

Specific Conductance (EC) 0.801 0.0100 mmhos/cm 0.750 107 90-110

##### Duplicate (2001367-DUP1)

Source: 2001278-05

Prepared & Analyzed: 01/28/20

Specific Conductance (EC) 0.806 0.0100 mmhos/cm 0.807 0.186 20

Summit Scientific

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

Project: Hird Trust 11-10, Foss 1-10

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
02/03/20 09:01

### 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