

**TABLE 1
FORMER KIRBY 29-11 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 ⁽²⁾ (mg/kg)	pH (units)	EC (mmhos/cm)
COGCC Table 910-1 Soil Standard (mg/kg) ⁽¹⁾			0.17	85	100	175	23	500	6-9	<4
SS01 @ 3.5'	11/17/2020	3.5	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	8.59	0.862

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 KIRBY 29-11 TANK BATTERY
SAMPLE DETAIL SUMMARY TABLE

Sample ID	Date Sampled	Depth (ft. bgs)	GPS Data ⁽¹⁾ Latitude / Longitude		VOC Concentration ⁽²⁾ (ppm)
SS01 @ 3.5'	11/17/2020	3.5	40.28907829	-104.9211278	0.3
SS02 @ 2.5'	11/17/2020	2.5	40.28909479	-104.9211271	0.1
SS03 @ 2.5'	11/17/2020	2.5	40.28907786	-104.9211484	0.1
SS04 @ 2.5'	11/17/2020	2.5	40.28905913	-104.9211242	0.0
SS05 @ 2.5'	11/17/2020	2.5	40.28907848	-104.9211084	0.2

Notes:

1. Global Positioning System (GPS) data is provided in decimal degrees using World Geodetic System (WGS) 84 UTM Zone 13 North.
 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

ATTACHMENT A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

November 24, 2020

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Kirby 29-11

Work Order #2011207

Enclosed are the results of analyses for samples received by Summit Scientific on 11/17/20 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large, stylized initial "M".

Muri Premer For Paul Shrewsbury
President



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

Project: Kirby 29-11

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
11/24/20 12:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@3.5'	2011207-01	Soil	11/17/20 09:10	11/17/20 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.

Sample Receipt Checklist

S2 Work Order 2011207

Client: PDC / TASMAN Client Project ID: KIRBY 29 - 11

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

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

Temp (°C)	3.4
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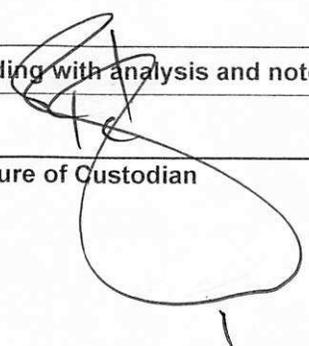
Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? 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 ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
If custody seals are present, are they intact ⁽¹⁾ ?			✓	
Are samples with holding times due within 48 hours sample due within 48 hours present?		✓		
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	✓			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	✓			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	✓			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		✓		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? 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 ⁽¹⁾ ? Record the pH in Comments.			✓	
If dissolved metals are requested, were samples field filtered?			✓	

Additional Comments (if any):

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

RZ
Custodian Printed Name or Initials


Signature of Custodian

11/17/20
Date/Time



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

Project: Kirby 29-11

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/24/20 12:23

SS01@3.5'
2011207-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/17/20 09:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BDK0261	11/20/20	11/20/20	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: **11/17/20 09:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		102 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		91.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/17/20 09:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BDK0262	11/20/20	11/21/20	EPA 8015M	

Date Sampled: **11/17/20 09:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		87.3 %		30-150		"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/17/20 09:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.59			pH Units	1	BDK0219	11/18/20	11/19/20	EPA 9045D	

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

Project: Kirby 29-11

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 11/24/20 12:23

SS01@3.5'
2011207-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Specific Conductance by EPA Method 120.1

Date Sampled: **11/17/20 09:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.862	0.0100		mmhos/cm	1	BDK0218	11/18/20	11/19/20	EPA 120.1	

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1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Kirby 29-11

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/24/20 12:23

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BDK0261 - EPA 5030 Soil MS

Blank (BDK0261-BLK1)

Prepared & Analyzed: 11/20/20

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	0.0403		"	0.0400		101		23-173			
Surrogate: Toluene-d8	0.0368		"	0.0400		92.0		20-170			
Surrogate: 4-Bromofluorobenzene	0.0404		"	0.0400		101		21-167			

LCS (BDK0261-BS1)

Prepared & Analyzed: 11/20/20

Benzene	0.154	0.0020	mg/kg	0.150		102		70-130			
Toluene	0.139	0.0050	"	0.150		92.5		70-130			
Ethylbenzene	0.147	0.0050	"	0.150		98.1		70-130			
m,p-Xylene	0.293	0.010	"	0.300		97.8		70-130			
o-Xylene	0.145	0.0050	"	0.150		96.7		70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0422		"	0.0400		105		23-173			
Surrogate: Toluene-d8	0.0378		"	0.0400		94.4		20-170			
Surrogate: 4-Bromofluorobenzene	0.0405		"	0.0400		101		21-167			

Matrix Spike (BDK0261-MS1)

Source: 2011207-01

Prepared & Analyzed: 11/20/20

Benzene	0.142	0.0020	mg/kg	0.150	ND	94.9		70-130			
Toluene	0.132	0.0050	"	0.150	ND	87.9		70-130			
Ethylbenzene	0.143	0.0050	"	0.150	ND	95.6		70-130			
m,p-Xylene	0.292	0.010	"	0.300	ND	97.3		70-130			
o-Xylene	0.141	0.0050	"	0.150	ND	94.2		70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0402		"	0.0400		101		23-173			
Surrogate: Toluene-d8	0.0364		"	0.0400		91.0		20-170			
Surrogate: 4-Bromofluorobenzene	0.0398		"	0.0400		99.6		21-167			

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 Denver CO, 80203

Project: Kirby 29-11

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 11/24/20 12:23

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

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

Batch BDK0261 - EPA 5030 Soil MS

Matrix Spike Dup (BDK0261-MSD1)	Source: 2011207-01			Prepared & Analyzed: 11/20/20						
Benzene	0.141	0.0020	mg/kg	0.150	ND	93.7	70-130	1.25	30	
Toluene	0.133	0.0050	"	0.150	ND	88.8	70-130	0.951	30	
Ethylbenzene	0.145	0.0050	"	0.150	ND	96.3	70-130	0.813	30	
m,p-Xylene	0.292	0.010	"	0.300	ND	97.4	70-130	0.113	30	
o-Xylene	0.142	0.0050	"	0.150	ND	94.8	70-130	0.635	30	
Surrogate: 1,2-Dichloroethane-d4	0.0392		"	0.0400		98.0	23-173			
Surrogate: Toluene-d8	0.0364		"	0.0400		91.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0400		"	0.0400		100	21-167			

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Project: Kirby 29-11

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 11/24/20 12:23

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BDK0262 - EPA 3550A

Blank (BDK0262-BLK1)

Prepared & Analyzed: 11/20/20

C10-C28 (DRO) ND 50 mg/kg

LCS (BDK0262-BS1)

Prepared & Analyzed: 11/20/20

C10-C28 (DRO) 493 50 mg/kg 500 98.6 70-130

Matrix Spike (BDK0262-MS1)

Source: 2011207-01

Prepared & Analyzed: 11/20/20

C10-C28 (DRO) 474 50 mg/kg 500 11.2 92.6 70-130

Matrix Spike Dup (BDK0262-MSD1)

Source: 2011207-01

Prepared & Analyzed: 11/20/20

C10-C28 (DRO) 435 50 mg/kg 500 11.2 84.8 70-130 8.64 20

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Project: Kirby 29-11

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 11/24/20 12:23

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 BDK0219 - General Preparation

LCS (BDK0219-BS1)

Prepared: 11/18/20 Analyzed: 11/19/20

pH	9.30	pH Units	9.21	101	95-105
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Duplicate (BDK0219-DUP1)

Source: 2011171-01

Prepared: 11/18/20 Analyzed: 11/19/20

pH	8.02	pH Units	8.02	0.00	20
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PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: Kirby 29-11

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 11/24/20 12:23

Specific Conductance by EPA Method 120.1 - Quality Control
Summit Scientific

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

Batch BDK0218 - General Preparation

Blank (BDK0218-BLK1)

Prepared: 11/18/20 Analyzed: 11/19/20

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BDK0218-BS1)

Prepared: 11/18/20 Analyzed: 11/19/20

Specific Conductance (EC) 0.787 0.0100 mmhos/cm 0.750 105 90-110

Duplicate (BDK0218-DUP1)

Source: 2011171-01

Prepared: 11/18/20 Analyzed: 11/19/20

Specific Conductance (EC) 14.4 0.0100 mmhos/cm 14.3 1.08 20

Summit Scientific

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

Project: Kirby 29-11

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/24/20 12:23

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