

TABLE 1
RIEDER 18 QT 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 ⁽²⁾ (mg/kg)	pH (units)	EC (mmhos/cm)
COGCC standards for soil (mg/kg) ⁽¹⁾			0.17	85	100	175	23	500	6-9	<4
SS01	5/5/2016	Surface	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	8.24	0.887
SS02	5/5/2016	Surface	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	8.18	0.606
SS03	5/5/2016	Surface	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	8.12	0.726
SS04	5/5/2016	Surface	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	8.14	0.718
SS05	5/5/2016	Surface	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	8.13	1.08
SS06	5/5/2016	Surface	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	7.97	1.05

Notes:

1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective January 30, 2015.

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

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

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

May 12, 2016

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Rieder 18QT

Enclosed are the results of analyses for samples received by Summit Scientific on 05/05/16 14:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury
President



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

Project: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01	1605053-01	Soil	05/05/16 11:05	05/05/16 14:00
SS02	1605053-02	Soil	05/05/16 11:10	05/05/16 14:00
SS03	1605053-03	Soil	05/05/16 11:15	05/05/16 14:00
SS04	1605053-04	Soil	05/05/16 11:20	05/05/16 14:00
SS05	1605053-05	Soil	05/05/16 11:25	05/05/16 14:00
SS06	1605053-06	Soil	05/05/16 11:30	05/05/16 14:00

Summit Scientific

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

Project: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

Summit Scientific

1605053

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

Page 1 of 1

Client: PDC/Tasman

Address:

City/State/Zip:

Phone:

Fax:

Sampler Name: Eric Siegel

Project Manager: Mark Longhurst

E-Mail:

Project Name: Rieder 18QT

Project Number:

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative			Matrix			Analyze For:					Special Instructions		
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	8015 DRD	8260 GBEN	pH		EC	SAR (Hold)
SS01	5/5/16	11:05	1														
SS02		11:10															
SS03		11:15															
SS04		11:20															
SS05		11:25															
SS06		11:30															
[Handwritten signature across the table]																	
Relinquished by: E. A. Boyd		Date/Time: 5/5/16 14:00		Received by: [Signature]		Date/Time: 5-5-16 14:00		Turn Around Time (Check)					Notes:				
								Same Day <input type="checkbox"/>					72 Hours <input checked="" type="checkbox"/>			Hold SAR pending results	
								24 Hours <input type="checkbox"/>					Standard <input type="checkbox"/>				
Relinquished by:		Date/Time:		Received by:		Date/Time:		48 Hours <input type="checkbox"/>									
Relinquished by:		Date/Time:		Received in Lab by:		Date/Time:		Sample Integrity:									
								Temperature Upon Receipt: <input type="checkbox"/>									
								Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>									

www.s2scientific.com

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

Project: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

Sample Receipt Checklist

S2 Work Order: 1605053

Client: PD

Client Project ID: Rieder 18QT

Shipped Via: HD

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: _____

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

Cooler ID					
Temp (°C)	<u>00°C</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C ⁽¹⁾ ?	✓			
NOTE: If samples are delivered the same day of sampling, this requirement is waived 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 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 ⁽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.				

Andy Mach
Custodian Printed Name

mm
Signature or Initials of Custodian

5/6/16 15:29
Date/Time



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

Project: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

SS01
1605053-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/05/16 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1605063	05/06/16	05/06/16	8015M	

Date Sampled: **05/05/16 11:05**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/05/16 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1605064	05/06/16	05/07/16	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: **05/05/16 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		128 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/05/16 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.887	0.0100	mmhos/cm	1	1605066	05/06/16	05/06/16	SM 2510B	

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

Project: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

SS01
1605053-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/05/16 11:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.24	0.100	pH Units	1	1605065	05/06/16	05/06/16	EPA 9045	

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

Project: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

SS02
1605053-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/05/16 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1605063	05/06/16	05/06/16	8015M	

Date Sampled: **05/05/16 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		95.7 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/05/16 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1605064	05/06/16	05/07/16	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: **05/05/16 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		132 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/05/16 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.606	0.0100	mmhos/cm	1	1605066	05/06/16	05/06/16	SM 2510B	

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

Project: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

SS02
1605053-02 (Soil)

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Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/05/16 11:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.18	0.100	pH Units	1	1605065	05/06/16	05/06/16	EPA 9045	

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

Project: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

SS03
1605053-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/05/16 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1605063	05/06/16	05/06/16	8015M	

Date Sampled: **05/05/16 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: **05/05/16 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1605064	05/06/16	05/07/16	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: **05/05/16 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		125 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/05/16 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.726	0.0100	mmhos/cm	1	1605066	05/06/16	05/06/16	SM 2510B	

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

Project: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

SS03
1605053-03 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/05/16 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.12	0.100	pH Units	1	1605065	05/06/16	05/06/16	EPA 9045	

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

Project: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

SS04
1605053-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/05/16 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1605063	05/06/16	05/06/16	8015M	

Date Sampled: **05/05/16 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		96.3 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/05/16 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1605064	05/06/16	05/07/16	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: **05/05/16 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		129 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/05/16 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.718	0.0100	mmhos/cm	1	1605066	05/06/16	05/06/16	SM 2510B	

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

Project: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

SS04
1605053-04 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/05/16 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.14	0.100	pH Units	1	1605065	05/06/16	05/06/16	EPA 9045	

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

Project: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

SS05
1605053-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/05/16 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1605063	05/06/16	05/06/16	8015M	

Date Sampled: **05/05/16 11:25**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/05/16 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1605064	05/06/16	05/07/16	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: **05/05/16 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		131 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/05/16 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.08	0.0100	mmhos/cm	1	1605066	05/06/16	05/06/16	SM 2510B	

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

Project: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

SS05
1605053-05 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/05/16 11:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.13	0.100	pH Units	1	1605065	05/06/16	05/06/16	EPA 9045	

Summit Scientific

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

Project: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

SS06
1605053-06 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/05/16 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1605063	05/06/16	05/06/16	8015M	

Date Sampled: **05/05/16 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		93.7 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/05/16 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1605064	05/06/16	05/07/16	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: **05/05/16 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		122 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/05/16 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.05	0.0100	mmhos/cm	1	1605066	05/06/16	05/06/16	SM 2510B	

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

Project: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

SS06
1605053-06 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/05/16 11:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	7.97	0.100	pH Units	1	1605065	05/06/16	05/06/16	EPA 9045	

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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: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1605063 - EPA 3550A

Blank (1605063-BLK1)

Prepared & Analyzed: 05/06/16

C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	12.4		"	12.5		99.0	30-150			

LCS (1605063-BS1)

Prepared & Analyzed: 05/06/16

C10-C28 (DRO)	526	50	mg/kg	499		105	73-134			
Surrogate: o-Terphenyl	12.3		"	12.5		98.0	30-150			

Matrix Spike (1605063-MS1)

Source: 1605053-04

Prepared & Analyzed: 05/06/16

C10-C28 (DRO)	533	50	mg/kg	478	6.79	110	50-148			
Surrogate: o-Terphenyl	12.0		"	12.0		100	30-150			

Matrix Spike Dup (1605063-MSD1)

Source: 1605053-04

Prepared & Analyzed: 05/06/16

C10-C28 (DRO)	535	50	mg/kg	484	6.79	109	50-148	0.454	13	
Surrogate: o-Terphenyl	11.8		"	12.1		97.0	30-150			

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

Project: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

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 1605064 - EPA 5030 Soil MS

Blank (1605064-BLK1)

Prepared: 05/06/16 Analyzed: 05/07/16

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	"							
Surrogate: 1,2-Dichloroethane-d4	0.0452		"	0.0400		113	23-173			
Surrogate: Toluene-d8	0.0402		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0404		"	0.0400		101	21-167			

LCS (1605064-BS1)

Prepared: 05/06/16 Analyzed: 05/07/16

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.0901	0.0020	"	0.100		90.1	58-130			
Toluene	0.0918	0.0050	"	0.100		91.8	61-134			
Ethylbenzene	0.131	0.0050	"	0.0992		132	74-139			
m,p-Xylene	0.255	0.010	"	0.200		128	73-137			
o-Xylene	0.119	0.0050	"	0.0980		121	73-141			
Xylenes (total)	0.373	0.010	"				0-200			
Gasoline Range Hydrocarbons	2.96	0.50	"				30-150			
Surrogate: 1,2-Dichloroethane-d4	0.0442		"	0.0400		111	23-173			
Surrogate: Toluene-d8	0.0390		"	0.0400		97.6	20-170			
Surrogate: 4-Bromofluorobenzene	0.0401		"	0.0400		100	21-167			

Matrix Spike (1605064-MS1)

Source: 1605053-04

Prepared: 05/06/16 Analyzed: 05/07/16

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.0885	0.0020	"	0.0949	ND	93.3	30-131			
Toluene	0.0910	0.0050	"	0.0949	ND	95.9	30-134			
Ethylbenzene	0.120	0.0050	"	0.0941	ND	127	22-153			
m,p-Xylene	0.230	0.010	"	0.189	ND	122	10-159			
o-Xylene	0.111	0.0050	"	0.0930	ND	119	31-151			
Xylenes (total)	0.341	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	2.67	0.50	"		ND		30-160			
Surrogate: 1,2-Dichloroethane-d4	0.0470		"	0.0380		124	23-173			
Surrogate: Toluene-d8	0.0385		"	0.0380		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0392		"	0.0380		103	21-167			

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

Project: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

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 1605064 - EPA 5030 Soil MS

Matrix Spike Dup (1605064-MSD1)		Source: 1605053-04			Prepared: 05/06/16		Analyzed: 05/07/16			
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.0876	0.0020	"	0.0936	ND	93.5	30-131	1.13	34	
Toluene	0.0878	0.0050	"	0.0936	ND	93.8	30-134	3.56	30	
Ethylbenzene	0.119	0.0050	"	0.0929	ND	128	22-153	0.348	24	
m,p-Xylene	0.230	0.010	"	0.187	ND	123	10-159	0.127	68	
o-Xylene	0.112	0.0050	"	0.0918	ND	122	31-151	1.04	38	
Xylenes (total)	0.342	0.010	"		ND		30-160	0.254	30	
Gasoline Range Hydrocarbons	2.62	0.50	"		ND		30-160	2.11	30	
Surrogate: 1,2-Dichloroethane-d4	0.0482		"	0.0375		129	23-173			
Surrogate: Toluene-d8	0.0374		"	0.0375		99.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0384		"	0.0375		103	21-167			

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

Project: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

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

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

Batch 1605065 - General Preparation

LCS (1605065-BS1)

Prepared & Analyzed: 05/06/16

pH	8.01	0.100	pH Units	8.00	100	95-105
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Duplicate (1605065-DUP1)

Source: 1605053-01

Prepared & Analyzed: 05/06/16

pH	8.25	0.100	pH Units	8.24	0.121	20
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Batch 1605066 - General Preparation

Blank (1605066-BLK1)

Prepared & Analyzed: 05/06/16

Specific Conductance (EC)	ND	0.0100	mmhos/cm
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LCS (1605066-BS1)

Prepared & Analyzed: 05/06/16

Specific Conductance (EC)	0.496	0.0100	mmhos/cm	0.500	99.2	90-110
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Duplicate (1605066-DUP1)

Source: 1605053-01

Prepared & Analyzed: 05/06/16

Specific Conductance (EC)	0.806	0.0100	mmhos/cm	0.887	9.57	20
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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Rieder 18QT
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/12/16 09:09

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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A handwritten signature in black ink, appearing to be 'MSM'.