

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,



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 - Cuveter Serial #	Other (Specify)	8015 DICO	8260 GB75XN		pH
SS01	5/5/16	11:05	1		X					X	X	X	X	X	Hold SAR
SS02		11:10													
SS03		11:15													
SS04		11:20													
SS05		11:25													
SS06		11:30													
Relinquished by: <u>E. A. Boyd</u> Date/Time: <u>5/5/16 14:00</u>				Received by: <u>[Signature]</u> Date/Time: <u>5-5-16 14:00</u>				Turn Around Time (Check)				Notes:			
Relinquished by: _____ Date/Time: _____				Received by: _____ Date/Time: _____				Same Day <input type="checkbox"/>				72 Hours Standard <input checked="" type="checkbox"/>		Hold SAR pending results	
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____				48 Hours <input type="checkbox"/>				Sample Integrity:			
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____				Temperature Upon Receipt: <input type="checkbox"/>				Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			

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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⁾ ?	<input checked="" type="checkbox"/>			
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⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<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) ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
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 ⁽¹⁾ ? 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):				

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

Alindy March
 Custodian Printed Name

[Signature]
 Signature or Initials of Custodian

5/16/16 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: <i>o</i> -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	

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

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: <i>o</i> -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)

Summit Scientific

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		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.12	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

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: <i>o</i> -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		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
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: <i>o</i> -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	

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

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: <i>o</i> -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	

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

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1605063 - EPA 3550A

Blank (1605063-BLK1)

Prepared & Analyzed: 05/06/16

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

LCS (1605063-BS1)

Prepared & Analyzed: 05/06/16

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

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				
<i>Surrogate: o-Terphenyl</i>	<i>12.0</i>		"	<i>12.0</i>		<i>100</i>	<i>30-150</i>				

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		
<i>Surrogate: o-Terphenyl</i>	<i>11.8</i>		"	<i>12.1</i>		<i>97.0</i>	<i>30-150</i>				

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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		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

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

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			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0442</i>		<i>"</i>	<i>0.0400</i>		<i>111</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0390</i>		<i>"</i>	<i>0.0400</i>		<i>97.6</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0401</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>21-167</i>			

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			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0470</i>		<i>"</i>	<i>0.0380</i>		<i>124</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0385</i>		<i>"</i>	<i>0.0380</i>		<i>101</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0392</i>		<i>"</i>	<i>0.0380</i>		<i>103</i>	<i>21-167</i>			

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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	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

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
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0482</i>		<i>"</i>	<i>0.0375</i>		<i>129</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0374</i>		<i>"</i>	<i>0.0375</i>		<i>99.8</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0384</i>		<i>"</i>	<i>0.0375</i>		<i>103</i>	<i>21-167</i>			

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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		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 1605065 - General Preparation

LCS (1605065-BS1)					Prepared & Analyzed: 05/06/16					
pH	8.01	0.100	pH Units	8.00	100	95-105				
Duplicate (1605065-DUP1)					Source: 1605053-01 Prepared & Analyzed: 05/06/16					
pH	8.25	0.100	pH Units	8.24				0.121	20	

Batch 1605066 - General Preparation

Blank (1605066-BLK1)					Prepared & Analyzed: 05/06/16					
Specific Conductance (EC)	ND	0.0100	mmhos/cm							
LCS (1605066-BS1)					Prepared & Analyzed: 05/06/16					
Specific Conductance (EC)	0.496	0.0100	mmhos/cm	0.500	99.2	90-110				
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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Project: Rieder 18QT

Project Number: [none]
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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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