

TABLE 1
FORMER PLATTE VALLEY 1 & 2 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'	8/26/2019	5.5	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	7.90	0.510

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
bgs = Below ground surface
EC = Electrical conductivity
mmhos/cm = millimhos per centimeter

TABLE 2
FORMER PLATTE VALLEY 1 & 2 TANK BATTERY
VOC CONCENTRATIONS SUMMARY TABLE

Sample ID	Date Sampled	Depth (feet bgs)	Sample Location ⁽¹⁾	Field Measured VOC Concentration ⁽²⁾ (ppm)
SS01 @ 5.5'	8/26/2019	5.5	Base	0.8
SS02 @ 3'	8/26/2019	3	North Sidewall	2.9
SS03 @ 3'	8/26/2019	3	West Sidewall	1.3
SS04 @ 3'	8/26/2019	3	South Sidewall	2.2
SS05 @ 3'	8/26/2019	3	East Sidewall	2.1

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).

bgs = Below ground surface

ppm = Parts per million

= Sample submitted for laboratory analysis.

ATTACHMENT A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

September 03, 2019

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Platte Valley 1 & 2

Work Order # 1908313

Enclosed are the results of analyses for samples received by Summit Scientific on 08/26/19 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 For Ben Shrewsbury

Laboratory Manager



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

Project: Platte Valley 1 & 2

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/03/19 12:24

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@5.5'	1908313-01	Soil	08/26/19 10:38	08/26/19 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

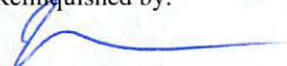
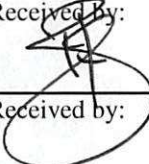
1908313

741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 1

Client: PDC
Address: _____
City/State/Zip: _____
Phone: _____ Fax: _____
Sampler Name: Jake McCarver

Project Manager: Mark Longhurst
E-Mail: Mark.Longhurst@pdce.com
Project Name: Platte Valley 1 & 2
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)	GBTEXN (8260)	TPH - DRO	EC/pH	HOLD						
SS01 @ 5.5'	8/26/2019	10:38	1			X		X				X	X	X							
SS02 @ 3'	8/26/2019	10:41	1			X		X								X					
SS03 @ 3'	8/26/2019	10:44	1			X		X								X					
SS04 @ 3'	8/26/2019	10:47	1			X		X								X					
SS05 @ 3'	8/26/2019	10:50	1			X		X								X					
Relinquished by:  8/26/19 11:54 AM	Date/Time: 8/26/19 17:30	Received by: 	Date/Time: 8/26/19 17:30	Turn Around Time (Check)										Hold SS02-SS05 please							
Relinquished by:	Date/Time:	Received by:	Date/Time:	Same Day	<input type="checkbox"/>	72 Hours	<input type="checkbox"/>	24 Hours	<input type="checkbox"/>	Standard	<input checked="" type="checkbox"/>	48 Hours	<input type="checkbox"/>								
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:	Sample Integrity:																	
				Temperature Upon Receipt: 3.6																	
				Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																	

Sample Receipt Checklist

S2 Work Order 1908313

Client: PDC Client Project ID: PLATTE VALLEY 1 & 2

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

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

Temp (°C)	<u>3.6</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 ⁽¹⁾ ?	<u>X</u>			
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⁾ ?	<u>X</u>			
Was adequate sample volume provided ⁽¹⁾ ?	<u>X</u>			
If custody seals are present, are they intact ⁽¹⁾ ?			<u>X</u>	
Are samples with holding times due within 48 hours sample due within 48 hours present?		<u>X</u>		
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<u>X</u>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<u>X</u>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<u>X</u>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<u>X</u>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<u>X</u>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?				
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<u>X</u>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<u>X</u>	
Record the pH in Comments.			<u>X</u>	
If dissolved metals are requested, were samples field filtered?			<u>X</u>	

Additional Comments (if any):

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

PDC
Custodian Printed Name or Initials

PDC
Signature of Custodian

8/26/17 1745
Date/Time



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

Project: Platte Valley 1 & 2

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/03/19 12:24

SS01@5.5'
1908313-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/26/19 10:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1908349	08/27/19	08/28/19	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: **08/26/19 10:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/26/19 10:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1908350	08/27/19	08/28/19	EPA 8015M	

Date Sampled: **08/26/19 10:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		96.9 %	30-150		"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/26/19 10:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.90		pH Units	1	1908359	08/28/19	08/28/19	EPA 9045D	

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

Project: Platte Valley 1 & 2

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/03/19 12:24

SS01@5.5'
1908313-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Specific Conductance by EPA Method 120.1

Date Sampled: **08/26/19 10:38**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.510	0.0100		mmhos/cm	1	1908360	08/28/19	08/28/19	EPA 120.1	

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

Project: Platte Valley 1 & 2

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/03/19 12:24

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 1908349 - EPA 5030 Soil MS

Blank (1908349-BLK1)

Prepared: 08/27/19 Analyzed: 08/28/19

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	0.0406		"	0.0400		102	23-173			
Surrogate: Toluene-d8	0.0385		"	0.0400		96.3	20-170			
Surrogate: 4-Bromofluorobenzene	0.0404		"	0.0400		101	21-167			

LCS (1908349-BS1)

Prepared & Analyzed: 08/27/19

Benzene	0.151	0.0020	mg/kg	0.150		100	70-130			
Toluene	0.151	0.0050	"	0.150		101	70-130			
Ethylbenzene	0.156	0.0050	"	0.150		104	70-130			
m,p-Xylene	0.309	0.010	"	0.300		103	70-130			
o-Xylene	0.154	0.0050	"	0.150		103	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0410		"	0.0400		103	23-173			
Surrogate: Toluene-d8	0.0399		"	0.0400		99.7	20-170			
Surrogate: 4-Bromofluorobenzene	0.0404		"	0.0400		101	21-167			

Matrix Spike (1908349-MS1)

Source: 1908309-01

Prepared & Analyzed: 08/27/19

Benzene	0.157	0.0020	mg/kg	0.150	ND	105	70-130			
Toluene	0.157	0.0050	"	0.150	ND	105	70-130			
Ethylbenzene	0.164	0.0050	"	0.150	ND	110	70-130			
m,p-Xylene	0.328	0.010	"	0.300	ND	109	70-130			
o-Xylene	0.162	0.0050	"	0.150	ND	108	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0371		"	0.0400		92.8	23-173			
Surrogate: Toluene-d8	0.0397		"	0.0400		99.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0402		"	0.0400		100	21-167			

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

Project: Platte Valley 1 & 2

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/03/19 12:24

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 1908349 - EPA 5030 Soil MS

Matrix Spike Dup (1908349-MSD1)		Source: 1908309-01			Prepared & Analyzed: 08/27/19					
Benzene	0.161	0.0020	mg/kg	0.150	ND	107	70-130	2.41	30	
Toluene	0.163	0.0050	"	0.150	ND	108	70-130	3.45	30	
Ethylbenzene	0.165	0.0050	"	0.150	ND	110	70-130	0.291	30	
m,p-Xylene	0.326	0.010	"	0.300	ND	109	70-130	0.560	30	
o-Xylene	0.162	0.0050	"	0.150	ND	108	70-130	0.389	30	
Surrogate: 1,2-Dichloroethane-d4	0.0373		"	0.0400		93.3	23-173			
Surrogate: Toluene-d8	0.0407		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0396		"	0.0400		99.1	21-167			

Summit Scientific

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

Project: Platte Valley 1 & 2

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/03/19 12:24

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 1908350 - EPA 3550A

Blank (1908350-BLK1)

Prepared & Analyzed: 08/27/19

C10-C28 (DRO) ND 50 mg/kg

LCS (1908350-BS1)

Prepared & Analyzed: 08/27/19

C10-C28 (DRO) 471 50 mg/kg 500 94.3 70-130

Matrix Spike (1908350-MS1)

Source: 1908312-01

Prepared & Analyzed: 08/27/19

C10-C28 (DRO) 464 50 mg/kg 500 23.9 88.1 70-130

Matrix Spike Dup (1908350-MSD1)

Source: 1908312-01

Prepared & Analyzed: 08/27/19

C10-C28 (DRO) 447 50 mg/kg 500 23.9 84.6 70-130 3.88 20

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

Project: Platte Valley 1 & 2

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/03/19 12:24

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 1908359 - General Preparation

LCS (1908359-BS1)

Prepared & Analyzed: 08/28/19

pH	9.45	pH Units	9.23	102	95-105
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Duplicate (1908359-DUP1)

Source: 1908286-01

Prepared & Analyzed: 08/28/19

pH	8.10	pH Units	8.07	0.371	20
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Summit Scientific

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

Project: Platte Valley 1 & 2

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/03/19 12:24

Specific Conductance by EPA Method 120.1 - Quality Control
Summit Scientific

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

Batch 1908360 - General Preparation

Blank (1908360-BLK1)

Prepared & Analyzed: 08/28/19

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (1908360-BS1)

Prepared & Analyzed: 08/28/19

Specific Conductance (EC) 0.762 0.0100 mmhos/cm 0.750 102 90-110

Duplicate (1908360-DUP1)

Source: 1908286-01

Prepared & Analyzed: 08/28/19

Specific Conductance (EC) 0.994 0.0100 mmhos/cm 0.989 0.454 20

Summit Scientific

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PDC Energy

1775 Sherman St. STE. 3000

Denver CO, 80203

Project: Platte Valley 1 & 2

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

09/03/19 12:24

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