

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 Phone: (303)894-2100 Fax:(303)894-2109



FOR OGCC USE ONLY

RECEIVED
8/13/2013**SPILL/RELEASE REPORT**

This form is to be submitted by the party responsible for the oil and gas spill or release. Any spill or release which may impact waters of the State must be reported as soon as practicable; any spill over 20 bbls must be reported within 24 hours and all spills over five bbls must be reported within ten days. Submit a Site Investigation and

Spill report taken by:

FACILITY ID:

OPERATOR INFORMATION

Name of Operator: <u>PDC Energy, Inc.</u>	OGCC Operator No: <u>69175</u>	Phone Numbers
Address: <u>1775 Sherman Street, Suite 3000</u>		No: <u>(303) 831-3971</u>
City: <u>Denver</u>	State: <u>CO</u> Zip: <u>80203</u>	Fax: <u>(303) 860-5838</u>
Contact Person: <u>Brandon Bruns</u>		Email: <u>brandon.bruns@pdce.com</u>

DESCRIPTION OF SPILL OR RELEASE

Date of Incident: <u>6/18/2013</u>	Facility Name & No: <u>Leffler No. 2</u>	County: <u>Weld</u>
Type of Facility (well, tank battery, flow line, pit): <u>Tank Battery</u>		QtrQtr: <u>NWNE</u> Section: <u>2</u>
Well Name and Number: <u>Leffler No. 2</u>		Township: <u>6N</u> Range: <u>66W</u>
API Number: <u>05-13-15318</u>		Meridian: <u>6th</u>

Specify volume spilled and recovered (in bbls) for the following materials:

Oil spilled: 0 Oil recov'd: 0 Water spilled: 0 Water recov'd: 0 Other spilled: 0 Other recov'd: 0

Ground Water impacted? ☐ Yes ☒ No Surface Water impacted? ☐ Yes ☒ No

Contained within berm? ☐ Yes ☒ No Area and vertical extent of spill: ~500 ft² x ~15' bgs

Current land use: Livestock/ Agriculture Weather conditions: High 90s

Soil/geology description: Kim loam, 3 to 5 percent slopes

IF LESS THAN A MILE, report distance IN FEET to nearest ... Surface water: ~130' W Wetlands: NA Buildings: ~490' N

Livestock: ~30' N Water wells: ~925 N Depth to shallowest ground water: Unknown

Cause of spill (e.g. equipment failure, human error, etc.): Equipment failure Detailed description of the spill/release incident:

On June 18, 2013, a historical release was discovered below the produced water vault at the Leffler No. 2 (API # 05-123-15318) tank battery. A topographic map of the site is included as Figure 1.

CORRECTIVE ACTION

Describe immediate response (how stopped, contained and recovered):

Excavation of impacted soil occurred between June 18, 2013 and June 20, 2013. Approximately 210 cubic yards (yd3) of impacted material was removed and transported to the Waste Management Facility in Ault, Colorado under PDC waste manifests. The location and extent of the excavation is illustrated on Figure 2.

Describe any emergency pits constructed: NA

How was the extent of contamination determined?

Excavation activities commenced on June 19, 2013 following the discovery of a historical release below the buried produced water vault. During excavation activities, soil sample locations were selected based on volatile organic compound (VOC) concentrations measured with a photoionization detector (PID). On June 19, 2013, a soil sample (SS01) was collected from the base of the excavation at 15 feet below ground surface (bgs) which exhibited elevated PID readings. On June 20, 2013, four soil samples (SS02 - SS05) were collected from the walls of the excavation at approximately 12 feet bgs. Soil samples were submitted to Summit Scientific Laboratories in Golden, Colorado for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), total petroleum hydrocarbons (TPH)-gasoline range organics (GRO), and naphthalene by EPA Method 8260B. Samples were also analyzed for TPH-diesel range organics (DRO) by EPA Method 8015. Analytical results indicate that constituent concentrations are below laboratory detection limits at all four wall sample locations. However, the soil sample collected at the total depth of the excavation exhibited benzene and TPH concentrations in exceedance of COGCC Table 910-1 soil standards. A summary of soil analytical data is presented in Table 1. Groundwater was not encountered during excavation activities. The laboratory analytical reports are included as Attachment A. The extent of the excavation and soil sample locations are illustrated on Figure 2.

Further remediation activities proposed (attach separate sheet if needed):

PDC will submit a subsequent Form 27 outlining a proposed remedial strategy to address residual petroleum hydrocarbon concentrations in soil.

Describe measures taken to prevent problem from reoccurring:

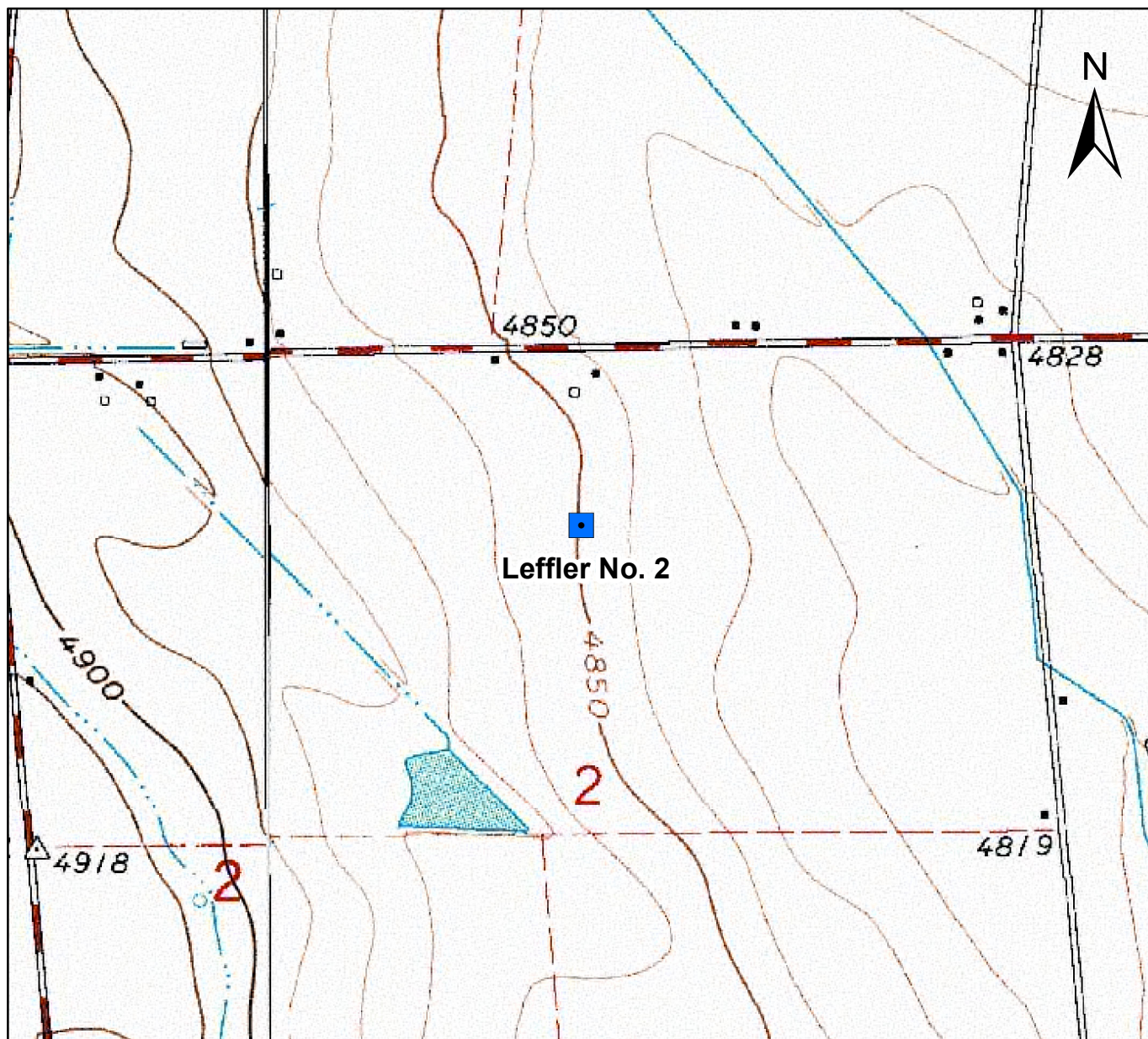
PDC will continue yearly production line testing once the location is back to being operational.

OTHER NOTIFICATIONS

List the parties and agencies notified (County, BLM, EPA, DOT, Local Emergency Planning Coordinator or other).

Date	Agency	Contact	Phone	Response
6/25/2013	Landowner	Russ Leffler	970-381-2455	spoke to landowner on phone

Spill/Release Tracking No: **2145795**



0 375 750 1,500
Feet

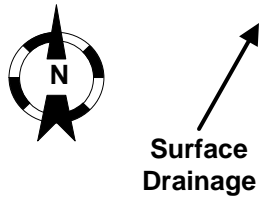


Figure 1

Site Location Map
Leffler No. 2
NWNE S2 T6N R66W
Weld County, Colorado

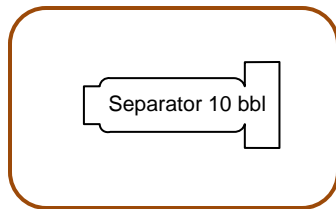
Drawn By: CAW
Date: 7/1/2013


Tasman Geosciences

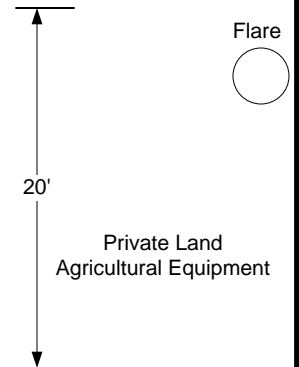
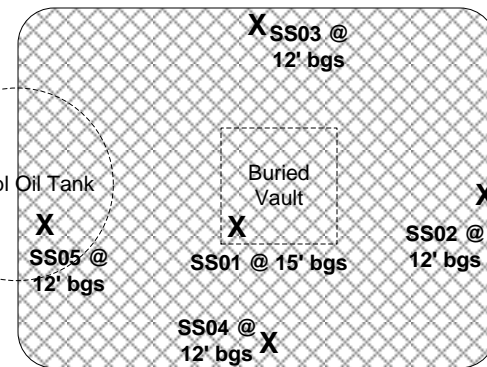
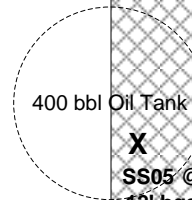


Private Land
Feed Lot

Access Road



M



Private Land
Agricultural Equipment

Irrigation Drainage
Approximately 130 feet



Private Land
Calf Shed and Feed Lot

Note: Surface drainage direction is estimated based on site topography and is not related to regional topography.

DRAWN BY: CAW

DATE: 7/1/2013

Facility Diagram
PDC Energy – DJ Basin
Leffler No. 2
NWNE S2 T6N R66W
Weld County, CO



6899 Pecos Street
Unit C
Denver, CO 80221

LEGEND
— Earthen Berm
--- Former Tank Location
Approximate Area of Excavation
X Soil Sample Location

M Meter House

FIGURE 2
Excavation Site Map
Not to Scale

TABLE 1
LEFFLER NO. 2
SOIL ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Depth (Feet bgs)	PID Readings (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH ⁽²⁾ (mg/kg)
SS01	6/19/2013	15	1,367	0.59	<0.005	4.6	7.8	0.67	3,270
SS02	6/20/2013	12	0	<0.005	<0.005	<0.005	<0.010	<0.005	<50
SS03	6/20/2013	12	0	<0.005	<0.005	<0.005	<0.010	<0.005	<50
SS04	6/20/2013	12	0	<0.005	<0.005	<0.005	<0.010	<0.005	<50
SS05	6/20/2013	12	0	<0.005	<0.005	<0.005	<0.010	<0.005	<50
COGCC standards for Soil (mg/kg) ⁽¹⁾				0.17	85	100	175	23	500

Notes:

1). Standards for Soil are taken from 2 CCR 404-1, Table 910-1, effective April 1, 2009.

2). TPH - Total volatile and extractable petroleum hydrocarbons. Value calculated by adding GRO and DRO concentrations.

GRO - Gasoline range organics.

DRO - Diesel range organics.

mg/kg= Milligrams per kilogram.

bgs - Below ground surface.

ppm - Parts per million

Bold red values indicate an exceedance of the COGCC soil standards for the Site.

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

June 20, 2013

Brandon Bruns
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Leffler No 2

Enclosed are the results of analyses for samples received by Summit Scientific on 06/19/13 16:30. 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', is written over a light gray circular watermark that contains the text 'Summit Scientific'.

Paul Shrewsbury For Ben Shrewsbury
President / Laboratory Manager

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

Project: Leffler No 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
06/20/13 07:32

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@15'	R306130-01	Soil	06/19/13 13:20	06/19/13 16:30

Summit Scientific
R306130

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

Client	POL Energy	
Address		
City/State/Zip		
Phone		Fax
Project Name:	Water No. 2	
Project Number	C 1008863	
Project Manager:	Brandon Brown	
E-Mail:		
Page		of

[illegible]

www.s2scientific.com

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

Project: Leffler No 2
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
06/20/13 07:32

SS01@15'
R306130-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 06/19/13 13:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	2300	50	mg/kg	1	3061914	06/19/13	06/19/13	8015M	

Date Sampled: 06/19/13 13:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		105 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 06/19/13 13:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.67	0.0050	mg/kg	1	3061913	06/19/13	06/19/13	EPA 8260B	
Benzene	0.59	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	4.6	0.050	"	10	"	"	"	"	
Xylenes (total)	7.8	0.10	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	970	5.0	"	"	"	"	"	"	E

Date Sampled: 06/19/13 13:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		82.9 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Leffler No 2
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
06/20/13 07:32

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 3061914 - EPA 3550A

Blank (3061914-BLK1)

Prepared & Analyzed: 06/19/13

C10-C28 (DRO) ND 50 mg/kg

LCS (3061914-BS1)

Prepared & Analyzed: 06/19/13

C10-C28 (DRO) 545 50 mg/kg 501 109 73-134

LCS Dup (3061914-BSD1)

Prepared & Analyzed: 06/19/13

C10-C28 (DRO) 518 50 mg/kg 501 103 73-134 5.18 11

Matrix Spike (3061914-MS1)

Source: R306132-01

Prepared & Analyzed: 06/19/13

C10-C28 (DRO) 556 50 mg/kg 501 44.0 102 50-148

Matrix Spike Dup (3061914-MSD1)

Source: R306132-01

Prepared & Analyzed: 06/19/13

C10-C28 (DRO) 535 50 mg/kg 501 44.0 98.0 50-148 3.88 13

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

Project: Leffler No 2
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
06/20/13 07:32

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 3061913 - EPA 5030 Soil MS

Blank (3061913-BLK1)

Prepared & Analyzed: 06/19/13

Naphthalene	ND	0.0050	mg/kg							
Benzene	ND	0.0050	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0408		"	0.0397	103	23-173				
Surrogate: Toluene-d8	0.0386		"	0.0400	96.4	20-170				
Surrogate: 4-Bromofluorobenzene	0.0378		"	0.0400	94.5	21-167				

LCS (3061913-BS1)

Prepared & Analyzed: 06/19/13

Naphthalene	ND	0.0050	mg/kg			66-138				
Benzene	0.104	0.0050	"	0.100	104	58-130				
Toluene	0.105	0.0050	"	0.100	105	61-134				
Ethylbenzene	0.108	0.0050	"	0.100	108	74-139				
m,p-Xylene	0.218	0.010	"	0.200	109	73-137				
o-Xylene	0.110	0.0050	"	0.100	110	73-141				
Surrogate: 1,2-Dichloroethane-d4	0.0430		"	0.0397	108	23-173				
Surrogate: Toluene-d8	0.0395		"	0.0400	98.8	20-170				
Surrogate: 4-Bromofluorobenzene	0.0390		"	0.0400	97.5	21-167				

LCS Dup (3061913-BSD1)

Prepared: 06/19/13 Analyzed: 06/20/13

Naphthalene	ND	0.0050	mg/kg			66-138		12		
Benzene	0.0928	0.0050	"	0.100	92.8	58-130	11.8	13		
Toluene	0.0944	0.0050	"	0.100	94.4	61-134	10.6	16		
Ethylbenzene	0.0983	0.0050	"	0.100	98.3	74-139	9.75	12		
m,p-Xylene	0.197	0.010	"	0.200	98.4	73-137	10.4	14		
o-Xylene	0.0988	0.0050	"	0.100	98.8	73-141	10.3	12		
Surrogate: 1,2-Dichloroethane-d4	0.0428		"	0.0397	108	23-173				
Surrogate: Toluene-d8	0.0394		"	0.0400	98.4	20-170				
Surrogate: 4-Bromofluorobenzene	0.0390		"	0.0400	97.4	21-167				

Summit Scientific

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

Project: Leffler No 2
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
06/20/13 07:32

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 3061913 - EPA 5030 Soil MS

Matrix Spike (3061913-MS1)

Source: R306132-01

Prepared: 06/19/13 Analyzed: 06/20/13

Naphthalene	ND	0.0050	mg/kg	ND	ND		10-158			
Benzene	0.0910	0.0050	"	0.100	0.00	91.0	30-131			
Toluene	0.0925	0.0050	"	0.100	0.00	92.5	30-134			
Ethylbenzene	0.0947	0.0050	"	0.100	0.00	94.7	22-153			
m,p-Xylene	0.193	0.010	"	0.200	0.00	96.6	10-159			
o-Xylene	0.0955	0.0050	"	0.100	0.00	95.5	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0437		"	0.0397		110	23-173			
Surrogate: Toluene-d8	0.0396		"	0.0400		99.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0386		"	0.0400		96.5	21-167			

Matrix Spike Dup (3061913-MSD1)

Source: R306132-01

Prepared: 06/19/13 Analyzed: 06/20/13

Naphthalene	ND	0.0050	mg/kg	ND	ND		10-158		42	
Benzene	0.0890	0.0050	"	0.100	0.00	89.0	30-131	2.23	34	
Toluene	0.0892	0.0050	"	0.100	0.00	89.2	30-134	3.57	30	
Ethylbenzene	0.0922	0.0050	"	0.100	0.00	92.2	22-153	2.70	24	
m,p-Xylene	0.187	0.010	"	0.200	0.00	93.7	10-159	3.06	68	
o-Xylene	0.0940	0.0050	"	0.100	0.00	94.0	31-151	1.55	38	
Surrogate: 1,2-Dichloroethane-d4	0.0424		"	0.0397		107	23-173			
Surrogate: Toluene-d8	0.0392		"	0.0400		97.9	20-170			
Surrogate: 4-Bromofluorobenzene	0.0371		"	0.0400		92.8	21-167			

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

Project: Leffler No 2
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
06/20/13 07:32

Notes and Definitions

E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.

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

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Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

June 21, 2013

Brandon Bruns
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Leffler No 2

Enclosed are the results of analyses for samples received by Summit Scientific on 06/20/13 15:30. 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', is written over a light gray circular background.

Paul Shrewsbury For Ben Shrewsbury
President / Laboratory Manager



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

Project: Leffler No 2
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
06/21/13 06:31

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS02@12'	R306149-01	Soil	06/20/13 08:45	06/20/13 15:30
SS03@12'	R306149-02	Soil	06/20/13 09:15	06/20/13 15:30
SS04@12'	R306149-03	Soil	06/20/13 10:00	06/20/13 15:30
SS05@12'	R306149-04	Soil	06/20/13 12:15	06/20/13 15:30

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

Project: Leffler No 2

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
06/21/13 06:31

Summit Scientific

5

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

Client:	PPC Energy	Page	of
Address:			
City/State/Zip:			
Phone:			
Fax:			
Project Name:	Officer No. 2		
Project Number:			
Sample Name:	01-WA-SM-03		
Project Manager:	Brandon Banks		
E-Mail:			

Page of

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

Project: Leffler No 2
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
06/21/13 06:31

SS02@12'
R306149-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/20/13 08:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	3062006	06/20/13	06/20/13	8015M	

Date Sampled: **06/20/13 08:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		95.1 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/20/13 08:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	3062005	06/20/13	06/20/13	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/20/13 08:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		115 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Leffler No 2
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
06/21/13 06:31

SS03@12'
R306149-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/20/13 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	3062006	06/20/13	06/20/13	8015M	

Date Sampled: **06/20/13 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		94.4 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/20/13 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	3062005	06/20/13	06/20/13	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/20/13 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.0 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Leffler No 2
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
06/21/13 06:31

SS04@12'
R306149-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/20/13 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	3062006	06/20/13	06/20/13	8015M	

Date Sampled: **06/20/13 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		91.3 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/20/13 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	3062005	06/20/13	06/20/13	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/20/13 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.9 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Leffler No 2
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
06/21/13 06:31

SS05@12'
R306149-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/20/13 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	3062006	06/20/13	06/20/13	8015M	

Date Sampled: **06/20/13 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		101 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/20/13 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	3062005	06/20/13	06/20/13	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/20/13 12:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.3 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Leffler No 2
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
06/21/13 06:31

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 3062006 - EPA 3550A

Blank (3062006-BLK1)

Prepared & Analyzed: 06/20/13

C10-C28 (DRO) ND 50 mg/kg

LCS (3062006-BS1)

Prepared & Analyzed: 06/20/13

C10-C28 (DRO) 569 50 mg/kg 501 114 73-134

LCS Dup (3062006-BSD1)

Prepared & Analyzed: 06/20/13

C10-C28 (DRO) 603 50 mg/kg 501 120 73-134 5.83 11

Matrix Spike (3062006-MS1)

Source: R306149-01

Prepared: 06/20/13 Analyzed: 06/21/13

C10-C28 (DRO) 588 50 mg/kg 501 45.9 108 50-148

Matrix Spike Dup (3062006-MSD1)

Source: R306149-01

Prepared: 06/20/13 Analyzed: 06/21/13

C10-C28 (DRO) 581 50 mg/kg 501 45.9 107 50-148 1.18 13

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

Project: Leffler No 2
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
06/21/13 06:31

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 3062005 - EPA 5030 Soil MS

Blank (3062005-BLK1)

Prepared & Analyzed: 06/20/13

Naphthalene	ND	0.0050	mg/kg							
Benzene	ND	0.0050	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0349		"	0.0397		88.0	23-173			
Surrogate: Toluene-d8	0.0393		"	0.0400		98.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0354		"	0.0400		88.6	21-167			

LCS (3062005-BS1)

Prepared & Analyzed: 06/20/13

Naphthalene	ND	0.0050	mg/kg				66-138			
Benzene	0.0948	0.0050	"	0.100		94.8	58-130			
Toluene	0.0984	0.0050	"	0.100		98.4	61-134			
Ethylbenzene	0.101	0.0050	"	0.100		101	74-139			
m,p-Xylene	0.210	0.010	"	0.200		105	73-137			
o-Xylene	0.105	0.0050	"	0.100		105	73-141			
Surrogate: 1,2-Dichloroethane-d4	0.0403		"	0.0397		102	23-173			
Surrogate: Toluene-d8	0.0399		"	0.0400		99.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0379		"	0.0400		94.7	21-167			

LCS Dup (3062005-BSD1)

Prepared & Analyzed: 06/20/13

Naphthalene	ND	0.0050	mg/kg				66-138		12	
Benzene	0.103	0.0050	"	0.100		103	58-130	8.17	13	
Toluene	0.0989	0.0050	"	0.100		98.9	61-134	0.517	16	
Ethylbenzene	0.109	0.0050	"	0.100		109	74-139	6.83	12	
m,p-Xylene	0.223	0.010	"	0.200		111	73-137	5.92	14	
o-Xylene	0.111	0.0050	"	0.100		111	73-141	5.40	12	
Surrogate: 1,2-Dichloroethane-d4	0.0437		"	0.0397		110	23-173			
Surrogate: Toluene-d8	0.0366		"	0.0400		91.4	20-170			
Surrogate: 4-Bromofluorobenzene	0.0382		"	0.0400		95.6	21-167			

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

Project: Leffler No 2
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
06/21/13 06:31

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 3062005 - EPA 5030 Soil MS

Matrix Spike (3062005-MS1)

Source: R306149-01

Prepared & Analyzed: 06/20/13

Naphthalene	ND	0.0050	mg/kg	ND	ND		10-158			
Benzene	0.0839	0.0050	"	0.100	0.00	83.9	30-131			
Toluene	0.0894	0.0050	"	0.100	0.00	89.4	30-134			
Ethylbenzene	0.0902	0.0050	"	0.100	0.00	90.2	22-153			
m,p-Xylene	0.184	0.010	"	0.200	0.00	91.8	10-159			
o-Xylene	0.0899	0.0050	"	0.100	0.00	89.9	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0413		"	0.0397		104	23-173			
Surrogate: Toluene-d8	0.0400		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0379		"	0.0400		94.6	21-167			

Matrix Spike Dup (3062005-MSD1)

Source: R306149-01

Prepared: 06/20/13 Analyzed: 06/21/13

Naphthalene	ND	0.0050	mg/kg	ND	ND		10-158		42	
Benzene	0.0889	0.0050	"	0.100	0.00	88.9	30-131	5.76	34	
Toluene	0.0917	0.0050	"	0.100	0.00	91.7	30-134	2.55	30	
Ethylbenzene	0.0923	0.0050	"	0.100	0.00	92.3	22-153	2.40	24	
m,p-Xylene	0.187	0.010	"	0.200	0.00	93.7	10-159	2.04	68	
o-Xylene	0.0922	0.0050	"	0.100	0.00	92.2	31-151	2.54	38	
Surrogate: 1,2-Dichloroethane-d4	0.0441		"	0.0397		111	23-173			
Surrogate: Toluene-d8	0.0412		"	0.0400		103	20-170			
Surrogate: 4-Bromofluorobenzene	0.0388		"	0.0400		96.9	21-167			

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

Project: Leffler No 2
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
06/21/13 06:31

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'.