

0 1,000 2,000 4,000
Feet

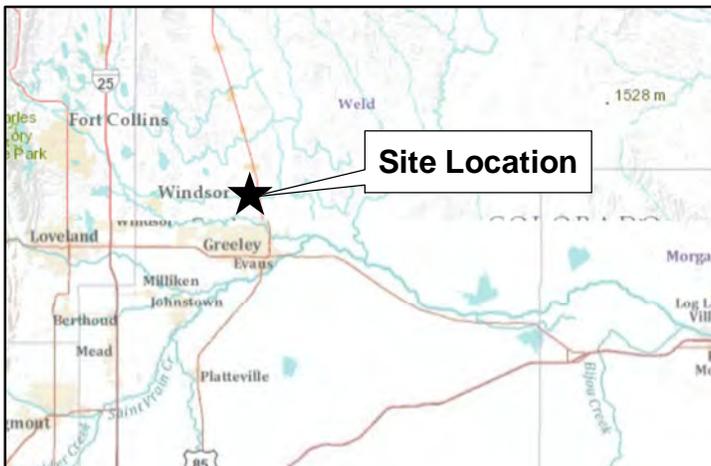


Figure 1

Site Location Map
Cottonwood #1
NESE S13 T6N R66W
Weld County, Colorado

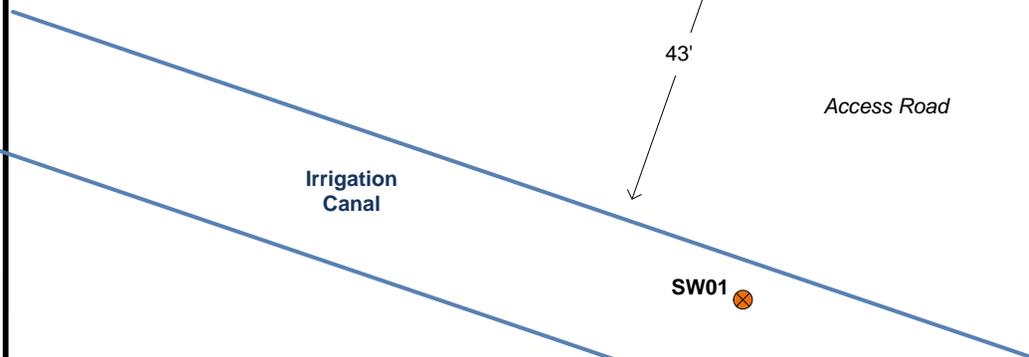
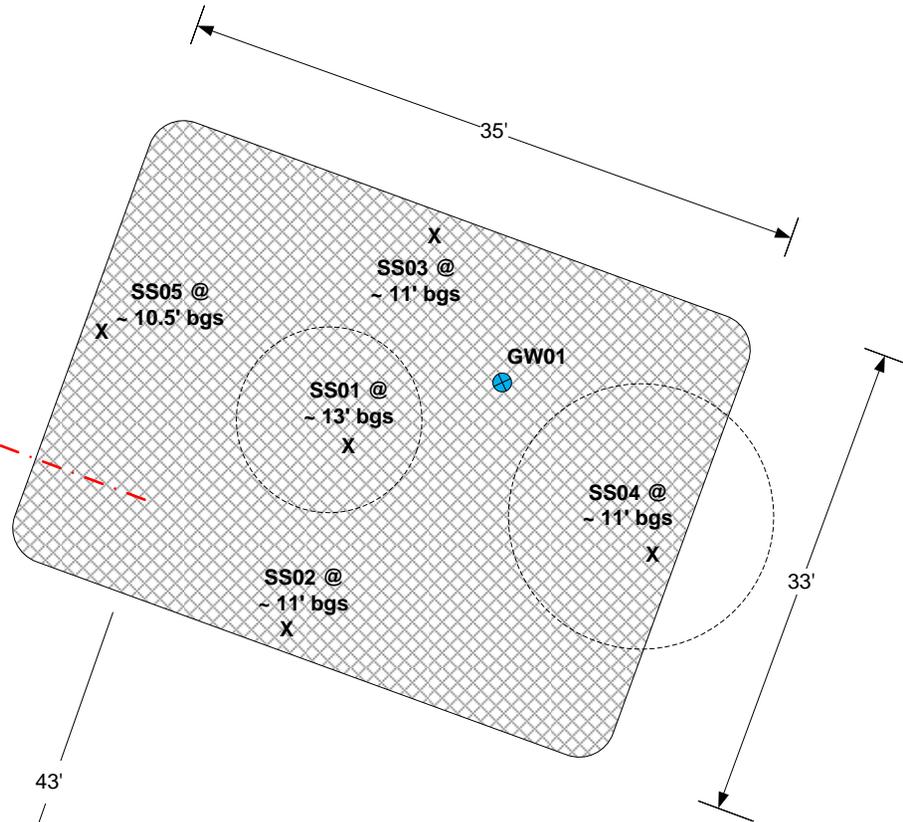
Drawn By: CAW
Date: 08/22/2012





Separator secondary containment

Dump Line



PROJECT NO:	
DRAWN BY:	CAW
DATE:	8/22/2012

Facility Diagram
 PDC Energy – DJ Basin
 Cottonwood #1
 NESE S13 T6N R66W
 Weld County, CO



5690 Webster Avenue
 Arvada CO 80002

LEGEND	
	Former Storage Tank Location
	Approximate Area of Excavation
	Soil Sample Location
	Groundwater Sample Location
	Surface Water Sample Location

FIGURE 2
 Not to Scale

**TABLE 1
COTTONWOOD #1
SOIL ANALYTICAL RESULTS 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	8/20/2012	13	1,020	4.1	ND	7.3	30	1.5	1,480
SS02	8/20/2012	11	26	ND	ND	ND	ND	ND	ND
SS03	8/20/2012	11	80	ND	ND	ND	ND	ND	ND
SS04	8/21/2012	11	41	ND	ND	ND	ND	ND	ND
SS05	8/21/2012	10.5	53	ND	ND	ND	ND	ND	ND
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

ND- Not Detected

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

**TABLE 2
COTTONWOOD #1
GROUNDWATER ANALYTICAL RESULTS**

Sample ID	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Naphthalene (ug/L)
GW01	8/21/2012	3,000	1.7	320	1,900	200
COGCC standards for Groundwater (ug/L) ⁽¹⁾		5	560	700	1,400	

Notes:

1). The environmental cleanup standards for groundwater that are applicable to this site are the Colorado Oil and Gas Conservation Commission (COGCC) standards for contaminants in groundwater according to Table 910-1 of the COGCC 900 Series Rule for E&P Waste Management.

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

ug/L= Micrograms per liter. ND - Not Detected

**TABLE 3
COTTONWOOD #1
SURFACE WATER ANALYTICAL RESULTS**

Sample ID	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Naphthalene (ug/L)
SW01	8/20/2012	ND	ND	ND	ND	ND
COGCC standards for Groundwater (ug/L) ⁽¹⁾		5	560	700	1,400	

Notes:

1). The environmental cleanup standards for groundwater that are applicable to this site are the Colorado Oil and Gas Conservation Commission (COGCC) standards for contaminants in groundwater according to Table 910-1 of the COGCC 900 Series Rule for E&P Waste Management.

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

ug/L= Micrograms per liter. ND - Not Detected

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

August 21, 2012

Brandon Bruns
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Cottonwood #1

Enclosed are the results of analyses for samples received by Summit Scientific on 08/20/12 17:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury
President / Laboratory Director



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

Project: Cottonwood #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/21/12 06:51

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SW01	R208127-01	Water	08/20/12 09:00	08/20/12 17:00
SS01@13'	R208127-02	Soil	08/20/12 09:30	08/20/12 17:00
SS02@11'	R208127-03	Soil	08/20/12 12:10	08/20/12 17:00
SS03@11'	R208127-04	Soil	08/20/12 13:00	08/20/12 17:00

Summit Scientific

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

Project: Cottonwood #1
 Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 08/21/12 06:51

SW01
R208127-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/20/12 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	1.0	ug/l	1	2082007	08/20/12	08/20/12	EPA 8260B	
Benzene	ND	1.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	

Date Sampled: **08/20/12 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		147 %	49.7-150		"	"	"	"	
Surrogate: Toluene-d8		102 %	51-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		108 %	50.1-150		"	"	"	"	

Summit Scientific

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

Project: Cottonwood #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/21/12 06:51

SS01@13'
R208127-02 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **08/20/12 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	180	50	mg/kg	1	2082005	08/20/12	08/21/12	8015 DRO	

Date Sampled: **08/20/12 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		84.5 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/20/12 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	1.5	0.050	mg/kg	10	2082006	08/20/12	08/21/12	EPA 8260B	
Benzene	4.1	0.050	"	"	"	"	"	"	
Toluene	ND	0.050	"	"	"	"	"	"	
Ethylbenzene	7.3	0.050	"	"	"	"	"	"	
Xylenes (total)	30	0.10	"	"	"	"	"	"	E
Gasoline Range Hydrocarbons	1300	5.0	"	"	"	"	"	"	E

Date Sampled: **08/20/12 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		60.8 %	30-150		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		207 %	30-150		"	"	"	"	S-02
<i>Surrogate: 4-Bromofluorobenzene</i>		169 %	30-150		"	"	"	"	S-02

Summit Scientific

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

Project: Cottonwood #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/21/12 06:51

SS02@11'
R208127-03 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **08/20/12 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	45	mg/kg	1	2082005	08/20/12	08/21/12	8015 DRO	

Date Sampled: **08/20/12 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		82.1 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/20/12 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	2082006	08/20/12	08/20/12	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: **08/20/12 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		68.2 %	30-150		"	"	"	"	
Surrogate: Toluene-d8		93.0 %	30-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.4 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Cottonwood #1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
08/21/12 06:51

SS03@11'
R208127-04 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **08/20/12 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2082005	08/20/12	08/21/12	8015 DRO	

Date Sampled: **08/20/12 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		80.6 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/20/12 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	2082006	08/20/12	08/20/12	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: **08/20/12 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		81.0 %	30-150		"	"	"	"	
Surrogate: Toluene-d8		83.1 %	30-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		88.1 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Cottonwood #1
 Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 08/21/12 06:51

Total Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 2082005 - EPA 3550A

Blank (2082005-BLK1)				Prepared: 08/20/12 Analyzed: 08/21/12						
C10-C28 (DRO)	ND	50	mg/kg							
LCS (2082005-BS1)				Prepared: 08/20/12 Analyzed: 08/21/12						
C10-C28 (DRO)	449	50	mg/kg	501	89.7	77-133				
LCS Dup (2082005-BSD1)				Prepared: 08/20/12 Analyzed: 08/21/12						
C10-C28 (DRO)	443	50	mg/kg	501	88.4	77-133	1.44		11	
Matrix Spike (2082005-MS1)				Source: R208126-01 Prepared: 08/20/12 Analyzed: 08/21/12						
C10-C28 (DRO)	462	50	mg/kg	488	ND	94.5	68-141			
Matrix Spike Dup (2082005-MSD1)				Source: R208126-01 Prepared: 08/20/12 Analyzed: 08/21/12						
C10-C28 (DRO)	445	50	mg/kg	474	ND	93.8	68-141	3.62	25	

Summit Scientific

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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
08/21/12 06:51

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 2082006 - EPA 5030 Soil MS

Blank (2082006-BLK1)

Prepared: 08/20/12 Analyzed: 08/21/12

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	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0248</i>		<i>"</i>	<i>0.0397</i>		<i>62.5</i>	<i>30-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0372</i>		<i>"</i>	<i>0.0400</i>		<i>93.1</i>	<i>30-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0338</i>		<i>"</i>	<i>0.0400</i>		<i>84.4</i>	<i>30-150</i>			

LCS (2082006-BS1)

Prepared: 08/20/12 Analyzed: 08/21/12

Naphthalene	ND	0.0050	mg/kg				85.7-124			
Benzene	0.0737	0.0050	"	0.100		73.7	58.1-115			
Toluene	0.0878	0.0050	"	0.100		87.8	56.7-123			
Ethylbenzene	0.106	0.0050	"	0.100		106	61.4-138			
m,p-Xylene	0.219	0.010	"	0.200		109	63.6-128			
o-Xylene	0.113	0.0050	"	0.100		113	62.6-134			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0235</i>		<i>"</i>	<i>0.0397</i>		<i>59.2</i>	<i>30-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0368</i>		<i>"</i>	<i>0.0400</i>		<i>92.0</i>	<i>30-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0333</i>		<i>"</i>	<i>0.0400</i>		<i>83.2</i>	<i>30-150</i>			

Matrix Spike (2082006-MS1)

Source: R208126-01

Prepared: 08/20/12 Analyzed: 08/21/12

Naphthalene	ND	0.0050	mg/kg		ND		34-148			
Benzene	0.0700	0.0050	"	0.0928	0.00	75.4	47.2-120			
Toluene	0.0762	0.0050	"	0.0928	0.00	82.2	47.7-125			
Ethylbenzene	0.0961	0.0050	"	0.0928	0.00	104	34.5-150			
m,p-Xylene	0.196	0.010	"	0.186	0.00	105	30-150			
o-Xylene	0.0988	0.0050	"	0.0928	0.00	107	30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0287</i>		<i>"</i>	<i>0.0368</i>		<i>77.9</i>	<i>30-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0320</i>		<i>"</i>	<i>0.0371</i>		<i>86.2</i>	<i>30-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0297</i>		<i>"</i>	<i>0.0371</i>		<i>80.1</i>	<i>30-150</i>			

Summit Scientific

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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
08/21/12 06:51

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 2082006 - EPA 5030 Soil MS

Matrix Spike Dup (2082006-MSD1)	Source: R208126-01			Prepared: 08/20/12		Analyzed: 08/21/12				
Naphthalene	ND	0.0050	mg/kg	ND	ND		34-148			23.9
Benzene	0.0692	0.0050	"	0.0965	0.00	71.7	47.2-120	1.13		15.1
Toluene	0.0868	0.0050	"	0.0965	0.00	89.9	47.7-125	13.0		16.8
Ethylbenzene	0.105	0.0050	"	0.0965	0.00	108	34.5-150	8.53		10.1
m,p-Xylene	0.213	0.010	"	0.193	0.00	110	30-150	8.46		17.2
o-Xylene	0.109	0.0050	"	0.0965	0.00	113	30-150	9.90		15.2
Surrogate: 1,2-Dichloroethane-d4	0.0247		"	0.0383		64.5	30-150			
Surrogate: Toluene-d8	0.0362		"	0.0386		93.8	30-150			
Surrogate: 4-Bromofluorobenzene	0.0339		"	0.0386		87.9	30-150			

Batch 2082007 - EPA 5030 Water MS

Blank (2082007-BLK1)				Prepared: 08/20/12		Analyzed: 08/21/12				
Naphthalene	ND	1.0	ug/l							
Benzene	ND	1.0	"							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Gasoline Range Hydrocarbons	ND	500	"							
Surrogate: 1,2-Dichloroethane-d4	19.8		"	13.2		150	49.7-150			
Surrogate: Toluene-d8	13.6		"	13.3		102	51-150			
Surrogate: 4-Bromofluorobenzene	14.2		"	13.3		107	50.1-150			

LCS (2082007-BS1)				Prepared: 08/20/12		Analyzed: 08/21/12				
Naphthalene	ND	1.0	ug/l				77.7-124			
Benzene	28.0	1.0	"	33.3		84.1	56.7-114			
Toluene	29.1	1.0	"	33.3		87.2	50.7-130			
Ethylbenzene	27.9	1.0	"	33.3		83.8	54.2-143			
m,p-Xylene	56.4	2.0	"	66.7		84.6	58.3-134			
o-Xylene	28.0	1.0	"	33.3		84.0	57.4-134			
Surrogate: 1,2-Dichloroethane-d4	19.9		"	13.2		151	49.7-150			
Surrogate: Toluene-d8	13.4		"	13.3		101	51-150			
Surrogate: 4-Bromofluorobenzene	14.5		"	13.3		109	50.1-150			

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.



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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
08/21/12 06:51

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 2082007 - EPA 5030 Water MS

LCS Dup (2082007-BSD1)

Prepared: 08/20/12 Analyzed: 08/21/12

Naphthalene	ND	1.0	ug/l				77.7-124		9.87	
Benzene	27.7	1.0	"	33.3		83.1	56.7-114	1.22	14.6	
Toluene	28.7	1.0	"	33.3		86.0	50.7-130	1.39	18.9	
Ethylbenzene	27.4	1.0	"	33.3		82.2	54.2-143	1.95	11.9	
m,p-Xylene	54.9	2.0	"	66.7		82.3	58.3-134	2.73	13.7	
o-Xylene	27.4	1.0	"	33.3		82.2	57.4-134	2.09	15	
Surrogate: 1,2-Dichloroethane-d4	20.3		"	13.2		153	49.7-150			
Surrogate: Toluene-d8	13.8		"	13.3		103	51-150			
Surrogate: 4-Bromofluorobenzene	14.3		"	13.3		107	50.1-150			

Matrix Spike (2082007-MS1)

Source: R208127-01

Prepared: 08/20/12 Analyzed: 08/21/12

Naphthalene	ND	1.0	ug/l		ND		87.8-124			
Benzene	27.8	1.0	"	33.3	ND	83.4	33.5-135			
Toluene	28.7	1.0	"	33.3	ND	86.1	30-150			
Ethylbenzene	27.6	1.0	"	33.3	ND	83.0	30-150			
m,p-Xylene	55.5	2.0	"	66.7	ND	83.2	30-150			
o-Xylene	27.9	1.0	"	33.3	ND	83.8	44.8-147			
Surrogate: 1,2-Dichloroethane-d4	19.9		"	13.2		151	49.7-150			
Surrogate: Toluene-d8	13.6		"	13.3		102	51-150			
Surrogate: 4-Bromofluorobenzene	14.4		"	13.3		108	50.1-150			

Matrix Spike Dup (2082007-MSD1)

Source: R208127-01

Prepared: 08/20/12 Analyzed: 08/21/12

Naphthalene	ND	1.0	ug/l		ND		87.8-124		7.87	
Benzene	22.2	1.0	"	33.3	ND	66.7	33.5-135	22.3	21.3	
Toluene	23.0	1.0	"	33.3	ND	69.0	30-150	22.0	15.5	
Ethylbenzene	22.1	1.0	"	33.3	ND	66.3	30-150	22.4	17.4	
m,p-Xylene	44.3	2.0	"	66.7	ND	66.4	30-150	22.5	18.1	
o-Xylene	22.1	1.0	"	33.3	ND	66.4	44.8-147	23.2	15	
Surrogate: 1,2-Dichloroethane-d4	19.9		"	13.2		150	49.7-150			
Surrogate: Toluene-d8	13.6		"	13.3		102	51-150			
Surrogate: 4-Bromofluorobenzene	14.2		"	13.3		107	50.1-150			

Summit Scientific

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

Project: Cottonwood #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/21/12 06:51

Notes and Definitions

- S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
- 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

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

August 23, 2012

Brandon Bruns
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Cottonwood #1

Enclosed are the results of analyses for samples received by Summit Scientific on 08/21/12 15:20. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Joe Egry".

Joe Egry For Ben Shrewsbury
President / Laboratory Director



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

Project: Cottonwood #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/23/12 16:40

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS04@11'	R208132-01	Soil	08/21/12 10:00	08/21/12 15:20
SS05@10.5'	R208132-02	Soil	08/21/12 12:30	08/21/12 15:20
GW01	R208132-03	Water	08/21/12 11:50	08/21/12 15:20

Summit Scientific

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

Project: Cottonwood #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/23/12 16:40

SS04@11'
R208132-01 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **08/21/12 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2082114	08/21/12	08/22/12	8015 DRO	

Date Sampled: **08/21/12 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		69.4 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/21/12 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	2082109	08/21/12	08/21/12	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: **08/21/12 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	30-150		"	"	"	"	
Surrogate: Toluene-d8		97.6 %	30-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Cottonwood #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/23/12 16:40

SS05@10.5'
R208132-02 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **08/21/12 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2082114	08/21/12	08/22/12	8015 DRO	

Date Sampled: **08/21/12 12:30**

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: **08/21/12 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	2082109	08/21/12	08/22/12	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: **08/21/12 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		114 %	30-150		"	"	"	"	
Surrogate: Toluene-d8		98.3 %	30-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Cottonwood #1
 Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 08/23/12 16:40

GW01
R208132-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/21/12 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	200	1.0	ug/l	1	2082110	08/21/12	08/22/12	EPA 8260B	
Benzene	3000	100	"	100	"	"	"	"	
Toluene	1.7	1.0	"	1	"	"	"	"	
Ethylbenzene	320	100	"	100	"	"	"	"	
Xylenes (total)	1900	100	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	32000	5000	"	10	"	"	"	"	

Date Sampled: **08/21/12 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		69.9 %	49.7-150		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		92.2 %	51-150		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		90.4 %	50.1-150		"	"	"	"	

Summit Scientific

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

Project: Cottonwood #1
 Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 08/23/12 16:40

Total Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 2082114 - EPA 3550A

Blank (2082114-BLK1)				Prepared: 08/21/12 Analyzed: 08/22/12						
C10-C28 (DRO)	ND	50	mg/kg							
LCS (2082114-BS1)				Prepared: 08/21/12 Analyzed: 08/22/12						
C10-C28 (DRO)	495	50	mg/kg	501		98.8	77-133			
LCS Dup (2082114-BSD1)				Prepared: 08/21/12 Analyzed: 08/22/12						
C10-C28 (DRO)	508	50	mg/kg	501		101	77-133	2.68	11	
Matrix Spike (2082114-MS1)				Source: R208130-01 Prepared: 08/21/12 Analyzed: 08/22/12						
C10-C28 (DRO)	382	45	mg/kg	447	ND	85.5	68-141			
Matrix Spike Dup (2082114-MSD1)				Source: R208130-01 Prepared: 08/21/12 Analyzed: 08/22/12						
C10-C28 (DRO)	432	45	mg/kg	451	ND	95.8	68-141	12.4	25	

Summit Scientific

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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/23/12 16:40

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 2082109 - EPA 5030 Soil MS

Blank (2082109-BLK1)

Prepared: 08/21/12 Analyzed: 08/22/12

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	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0409</i>		<i>"</i>	<i>0.0397</i>		<i>103</i>	<i>30-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0393</i>		<i>"</i>	<i>0.0400</i>		<i>98.2</i>	<i>30-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0394</i>		<i>"</i>	<i>0.0400</i>		<i>98.6</i>	<i>30-150</i>			

LCS (2082109-BS1)

Prepared: 08/21/12 Analyzed: 08/22/12

Naphthalene	ND	0.0050	mg/kg				85.7-124			
Benzene	0.0624	0.0050	"	0.100		62.4	58.1-115			
Toluene	0.0664	0.0050	"	0.100		66.4	56.7-123			
Ethylbenzene	0.0708	0.0050	"	0.100		70.8	61.4-138			
m,p-Xylene	0.141	0.010	"	0.200		70.7	63.6-128			
o-Xylene	0.0680	0.0050	"	0.100		68.0	62.6-134			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0400</i>		<i>"</i>	<i>0.0397</i>		<i>101</i>	<i>30-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0397</i>		<i>"</i>	<i>0.0400</i>		<i>99.3</i>	<i>30-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0391</i>		<i>"</i>	<i>0.0400</i>		<i>97.6</i>	<i>30-150</i>			

LCS Dup (2082109-BSD1)

Prepared: 08/21/12 Analyzed: 08/22/12

Naphthalene	ND	0.0050	mg/kg				85.7-124		12.6	
Benzene	0.0581	0.0050	"	0.100		58.1	58.1-115	7.22	20	
Toluene	0.0613	0.0050	"	0.100		61.3	56.7-123	8.13	20	
Ethylbenzene	0.0662	0.0050	"	0.100		66.2	61.4-138	6.70	12.2	
m,p-Xylene	0.130	0.010	"	0.200		65.0	63.6-128	8.33	13.2	
o-Xylene	0.0627	0.0050	"	0.100		62.7	62.6-134	8.08	12.2	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0392</i>		<i>"</i>	<i>0.0397</i>		<i>98.7</i>	<i>30-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0389</i>		<i>"</i>	<i>0.0400</i>		<i>97.3</i>	<i>30-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0384</i>		<i>"</i>	<i>0.0400</i>		<i>95.9</i>	<i>30-150</i>			

Summit Scientific

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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
08/23/12 16:40

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 2082109 - EPA 5030 Soil MS

Matrix Spike (2082109-MS1)

Source: R208130-01 Prepared: 08/21/12 Analyzed: 08/22/12

Naphthalene	ND	0.0050	mg/kg	ND	ND		34-148			
Benzene	0.0610	0.0050	"	0.0965	0.00	63.2	47.2-120			
Toluene	0.0655	0.0050	"	0.0965	0.00	67.8	47.7-125			
Ethylbenzene	0.0679	0.0050	"	0.0965	0.00	70.3	34.5-150			
m,p-Xylene	0.135	0.010	"	0.193	0.00	69.8	30-150			
o-Xylene	0.0656	0.0050	"	0.0965	0.00	68.0	30-150			
Surrogate: 1,2-Dichloroethane-d4	0.0426		"	0.0383		111	30-150			
Surrogate: Toluene-d8	0.0390		"	0.0386		101	30-150			
Surrogate: 4-Bromofluorobenzene	0.0381		"	0.0386		98.8	30-150			

Matrix Spike Dup (2082109-MSD1)

Source: R208130-01 Prepared: 08/21/12 Analyzed: 08/22/12

Naphthalene	ND	0.0050	mg/kg	ND	ND		34-148		23.9	
Benzene	0.0703	0.0050	"	0.0888	0.00	79.1	47.2-120	14.1	15.1	
Toluene	0.0738	0.0050	"	0.0888	0.00	83.1	47.7-125	12.0	16.8	
Ethylbenzene	0.0764	0.0050	"	0.0888	0.00	86.0	34.5-150	11.8	10.1	
m,p-Xylene	0.151	0.010	"	0.178	0.00	85.2	30-150	11.5	17.2	
o-Xylene	0.0747	0.0050	"	0.0888	0.00	84.1	30-150	12.9	15.2	
Surrogate: 1,2-Dichloroethane-d4	0.0391		"	0.0353		111	30-150			
Surrogate: Toluene-d8	0.0355		"	0.0355		100	30-150			
Surrogate: 4-Bromofluorobenzene	0.0348		"	0.0355		98.0	30-150			

Batch 2082110 - EPA 5030 Water MS

Blank (2082110-BLK1)

Prepared: 08/21/12 Analyzed: 08/22/12

Naphthalene	ND	1.0	ug/l							
Benzene	ND	1.0	"							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Gasoline Range Hydrocarbons	ND	500	"							
Surrogate: 1,2-Dichloroethane-d4	8.45		"	13.2		63.9	49.7-150			
Surrogate: Toluene-d8	12.5		"	13.3		94.0	51-150			
Surrogate: 4-Bromofluorobenzene	11.9		"	13.3		89.4	50.1-150			

Summit Scientific

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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/23/12 16:40

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 2082110 - EPA 5030 Water MS

LCS (2082110-BS1)

Prepared: 08/21/12 Analyzed: 08/22/12

Naphthalene	ND	1.0	ug/l				77.7-124			
Benzene	26.4	1.0	"	33.3		79.1	56.7-114			
Toluene	26.0	1.0	"	33.3		78.1	50.7-130			
Ethylbenzene	29.1	1.0	"	33.3		87.3	54.2-143			
m,p-Xylene	54.2	2.0	"	66.7		81.3	58.3-134			
o-Xylene	25.3	1.0	"	33.3		75.8	57.4-134			
Surrogate: 1,2-Dichloroethane-d4	13.0		"	13.2		98.5	49.7-150			
Surrogate: Toluene-d8	13.5		"	13.3		101	51-150			
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		95.7	50.1-150			

LCS Dup (2082110-BSD1)

Prepared: 08/21/12 Analyzed: 08/22/12

Naphthalene	ND	1.0	ug/l				77.7-124			9.87
Benzene	29.2	1.0	"	33.3		87.6	56.7-114	10.2		14.6
Toluene	29.1	1.0	"	33.3		87.2	50.7-130	11.0		18.9
Ethylbenzene	31.8	1.0	"	33.3		95.6	54.2-143	9.06		11.9
m,p-Xylene	58.4	2.0	"	66.7		87.7	58.3-134	7.53		13.7
o-Xylene	28.0	1.0	"	33.3		84.0	57.4-134	10.3		15
Surrogate: 1,2-Dichloroethane-d4	13.9		"	13.2		105	49.7-150			
Surrogate: Toluene-d8	13.5		"	13.3		101	51-150			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		98.8	50.1-150			

Summit Scientific

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

Project: Cottonwood #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/23/12 16:40

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