

TABLE 1
RYAN 14, 23-25U, 25BU; SCOTT 24-25U; MVS 1 TANK BATTERY
SOIL ANALYTICAL RESULTS SUMMARY TABLE

REM#: 7239
Document #: 2225393
Date: 11/11/2016

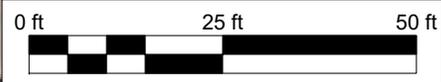
Sample ID	Date Sampled	Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH ⁽²⁾ (mg/kg)
COGCC standards for soil (mg/kg) ⁽¹⁾			0.17	85	100	175	23	500
SS01	3/26/2012	6-13 ⁽³⁾	14	77	15	92	0.88	12,340
SS02	3/26/2012	6-13 ⁽³⁾	2.5	6.2	0.15	3.0	1.3	9,600
SS05	3/26/2012	6-13 ⁽³⁾	0.57	1.2	0.039	0.52	0.031	3.4
SS06	3/26/2012	12	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<50
SS07	3/26/2012	12	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<50
SS08	3/27/2012	10	1.2	2.0	0.073	1.3	0.063	35
SS09	3/27/2012	13	1.1	11	1.3	18	0.22	840
SS10	3/27/2012	11	160	880	58	850	1.8	34,900
SS11	3/27/2012	9	0.20	0.36	0.013	0.38	<0.010	4.6
SS12	3/27/2012	11	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<50
BH01 @ 14-15'	4/13/2012	14-15	3.5	15	1.4	13.4	0.093	300
BH02 @ 9-10'	4/13/2012	9-10	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<50
BH03 @ 12'	4/13/2012	12	5.7	21	2.4	22.2	0.17	638
BH04 @ 13'	4/13/2012	13	0.53	1.1	0.076	0.87	0.023	17
BH05 @ 11'	4/13/2012	11	0.054	0.91	0.098	1	0.018	31

Notes:

- Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective January 30, 2015.
 - TPH - Total volatile and extractable petroleum hydrocarbons. Value calculated by adding GRO and DRO concentrations.
 - Depth of soil samples is not available. Based on the Form 19, samples were collected between 6 and 13 feet below ground surface. Soil sample locations were later excavated and not representative of the final excavation extent.
- 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
BOLD = Analytical result is in exceedance of COGCC soil standards.



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



DRAWN BY: CAW
DATE: 7/1/2016

Facility Diagram
PDC Energy – DJ Basin
Ryan 23-25U & 25BU, 14-25U/ Scott 24-25U/ MVS #1
Tank Battery
SESW S25 T5N R68W
Larimer County, CO

TASMAN GEOSCIENCES
6899 Pecos St., Unit C
Denver CO 80221

LEGEND

- Excavation Extent
- Excavation Soil Sample Location
- Test Pit Soil Sample Location
- Borehole/Monitoring Well Location
- Point of Release
- Groundwater Flow Direction

All locations are approximate unless otherwise noted

FIGURE 2
EXCAVATION AND INVESTIGATION SITE MAP (2012)

Excavation and Site Investigation 2012
Laboratory Analytical Reports

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

March 27, 2012

Brandon Bruns

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Enclosed are the results of analyses for samples received by Summit Scientific on 03/26/12 16:30. 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: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/27/12 16:30

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01	R203182-01	Soil	03/26/12 00:00	03/26/12 16:30
SS02	R203182-02	Soil	03/26/12 00:00	03/26/12 16:30
SS05	R203182-03	Soil	03/26/12 00:00	03/26/12 16:30
SS06	R203182-04	Soil	03/26/12 00:00	03/26/12 16:30
SS07	R203182-05	Soil	03/26/12 00:00	03/26/12 16:30

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 03/27/12 16:30

Summit Scientific *220317a*

741 Corporate Circle Suite 1 • Golden, Colorado 80401
 303-277-9310 • 303-277-9311 Fax

Client: PDC Energy
 Address: 1775 Sherman St Suite 3000
 City/State/Zip: Denver, CO 80203
 Phone: (303) 866-3800
 Project Name: *RYAN 14, 23-25U, 25BU/ Scott 24-25U/ MVS 1*
 Project Number:
 Project Manager: Brandon Bruns
 E-Mail: *bbruns@pdc.com*
 Fax:
 Sampler Name: *Sease, Scott*

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative			Matrix			Analyze For:	Special Instructions
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil		
S501	3/26/12		2	X	X	X					
S502											
S505											
S506											
S507											

Retrieved by: <i>[Signature]</i>	Date/Time: 3/26 15:00	Received by: <i>[Signature]</i>	Date/Time: 3/26 16:30	Turn Around Time (Check): <input type="checkbox"/> 72 Hours <input checked="" type="checkbox"/> 24 Hours <input type="checkbox"/> 48 Hours	Notes: <i>Please CC Bruns Humphrey @ bbruns@pdc.com</i>
Retrieved by: <i>[Signature]</i>	Date/Time:	Received by:	Date/Time:	Sample Integrity: Temperature Upon Receipt: <i>12</i> Inact: Yes No	
Retrieved by:	Date/Time:	Received in lab by:	Date/Time:		

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/27/12 16:30

SS01
R203182-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	340	50	mg/kg	1	2032601	03/26/12	03/27/12	8015 Full Carbon Chain	

Date Sampled: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		111 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	0.0050	mg/kg	1	2032602	03/26/12	03/27/12	EPA 8260B	
Benzene	14	0.50	"	100	"	"	"	"	
Toluene	77	0.50	"	"	"	"	"	"	
Ethylbenzene	15	0.50	"	"	"	"	"	"	
Xylenes (total)	92	1.0	"	"	"	"	"	"	
Naphthalene	0.88	0.10	"	10	"	"	"	"	
Gasoline Range Hydrocarbons	12000	50	"	100	"	"	"	"	

Date Sampled: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		80.9 %	67.4-143		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		144 %	77.3-114		"	"	"	"	S-02
<i>Surrogate: 4-Bromofluorobenzene</i>		102 %	78.4-125		"	"	"	"	

Summit Scientific

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
03/27/12 16:30

SS02
R203182-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	8500	50	mg/kg	1	2032601	03/26/12	03/27/12	8015 Full Carbon Chain	

Date Sampled: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		98.1 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	0.0050	mg/kg	1	2032602	03/26/12	03/27/12	EPA 8260B	
Benzene	2.5	0.050	"	10	"	"	"	"	
Toluene	6.2	0.050	"	"	"	"	"	"	
Ethylbenzene	0.15	0.050	"	"	"	"	"	"	
Xylenes (total)	3.0	0.10	"	"	"	"	"	"	
Naphthalene	1.3	0.10	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1100	5.0	"	"	"	"	"	"	E

Date Sampled: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		70.8 %	67.4-143		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		1110 %	77.3-114		"	"	"	"	S-02
<i>Surrogate: 4-Bromofluorobenzene</i>		141 %	78.4-125		"	"	"	"	S-02

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
03/27/12 16:30

SS05
R203182-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2032601	03/26/12	03/27/12	8015 Full Carbon Chain	

Date Sampled: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		115 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	0.0050	mg/kg	1	2032602	03/26/12	03/27/12	EPA 8260B	
Benzene	0.57	0.050	"	10	"	"	"	"	
Toluene	1.2	0.050	"	"	"	"	"	"	
Ethylbenzene	0.039	0.0050	"	1	"	"	"	"	
Xylenes (total)	0.52	0.10	"	10	"	"	"	"	
Naphthalene	0.031	0.010	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	3.4	0.50	"	"	"	"	"	"	

Date Sampled: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		82.4 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		124 %	77.3-114		"	"	"	"	S-02
Surrogate: 4-Bromofluorobenzene		107 %	78.4-125		"	"	"	"	

Summit Scientific

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
03/27/12 16:30

SS06
R203182-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2032601	03/26/12	03/27/12	8015 Full Carbon Chain	

Date Sampled: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		115 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	0.0050	mg/kg	1	2032602	03/26/12	03/27/12	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
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: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		90.7 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		99.3 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	78.4-125		"	"	"	"	

Summit Scientific

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
03/27/12 16:30

SS07
R203182-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2032601	03/26/12	03/27/12	8015 Full Carbon Chain	

Date Sampled: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		117 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	0.0050	mg/kg	1	2032602	03/26/12	03/27/12	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
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: **03/26/12 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		86.5 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		109 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	78.4-125		"	"	"	"	

Summit Scientific

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
03/27/12 16:30

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 2032601 - EPA 3550A

Blank (2032601-BLK1)											Prepared: 03/26/12 Analyzed: 03/27/12	
C10-C28 (DRO)	ND	50	mg/kg									
Surrogate: o-Terphenyl	12.1		"	12.5		96.9	80-124					
Blank (2032601-BLK2)											Prepared: 03/26/12 Analyzed: 03/27/12	
C10-C28 (DRO)	ND	50	mg/kg									
Surrogate: o-Terphenyl	12.1		"	12.5		96.6	80-124					
LCS (2032601-BS1)											Prepared: 03/26/12 Analyzed: 03/27/12	
C10-C28 (DRO)	556	50	mg/kg	501		111	81.4-129			9.26		
LCS (2032601-BS2)											Prepared: 03/26/12 Analyzed: 03/27/12	
C10-C28 (DRO)	549	50	mg/kg	501		109	81.4-129			9.26		
LCS Dup (2032601-BSD1)											Prepared: 03/26/12 Analyzed: 03/27/12	
C10-C28 (DRO)	517	50	mg/kg	501		103	81.4-129	7.41		9.26		
LCS Dup (2032601-BSD2)											Prepared: 03/26/12 Analyzed: 03/27/12	
C10-C28 (DRO)	496	50	mg/kg	501		99.0	81.4-129	10.1		9.26		
Matrix Spike (2032601-MS1)											Prepared: 03/26/12 Analyzed: 03/27/12	
C10-C28 (DRO)	509	50	mg/kg	501	29.4	95.7	77.8-133			8.48		
Matrix Spike (2032601-MS2)											Prepared: 03/26/12 Analyzed: 03/27/12	
C10-C28 (DRO)	848	50	mg/kg	501	274	115	77.8-133			8.48		
Matrix Spike Dup (2032601-MSD1)											Prepared: 03/26/12 Analyzed: 03/27/12	
C10-C28 (DRO)	512	50	mg/kg	501	29.4	96.3	77.8-133	0.663		8.48		

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 03/27/12 16:30

Extractable 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 2032601 - EPA 3550A

Matrix Spike Dup (2032601-MSD2)	Source: R203171-02			Prepared: 03/26/12		Analyzed: 03/27/12				
C10-C28 (DRO)	864	50	mg/kg	501	274	118	77.8-133	1.85	8.48	

Summit Scientific

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
03/27/12 16:30

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 2032602 - EPA 5030 Soil MS

Blank (2032602-BLK1)

Prepared: 03/26/12 Analyzed: 03/27/12

Methyl tert-butyl ether	ND	0.0050	mg/kg							
Benzene	ND	0.0050	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Naphthalene	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0373</i>		<i>"</i>	<i>0.0397</i>	<i>94.0</i>	<i>67.4-143</i>				
<i>Surrogate: Toluene-d8</i>	<i>0.0382</i>		<i>"</i>	<i>0.0400</i>	<i>95.4</i>	<i>77.3-114</i>				
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0394</i>		<i>"</i>	<i>0.0400</i>	<i>98.6</i>	<i>78.4-125</i>				

Blank (2032602-BLK2)

Prepared: 03/26/12 Analyzed: 03/27/12

Methyl tert-butyl ether	ND	0.0050	mg/kg							
Benzene	ND	0.0050	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Naphthalene	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0380</i>		<i>"</i>	<i>0.0397</i>	<i>95.8</i>	<i>67.4-143</i>				
<i>Surrogate: Toluene-d8</i>	<i>0.0406</i>		<i>"</i>	<i>0.0400</i>	<i>101</i>	<i>77.3-114</i>				
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0402</i>		<i>"</i>	<i>0.0400</i>	<i>100</i>	<i>78.4-125</i>				

LCS (2032602-BS1)

Prepared: 03/26/12 Analyzed: 03/27/12

Methyl tert-butyl ether	ND	0.0050	mg/kg			60-140		25	
Benzene	0.0868	0.0050	"	0.100	86.8	61-139		11.1	
Toluene	0.0863	0.0050	"	0.100	86.3	64-132		10.9	
Ethylbenzene	0.0896	0.0050	"	0.100	89.6	68.7-135		20	
m,p-Xylene	0.190	0.0050	"	0.200	95.1	70.4-129		20	
o-Xylene	0.0915	0.0050	"	0.100	91.5	66.9-126		20	
Naphthalene	ND	0.010	"			67.8-151		25	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0421</i>		<i>"</i>	<i>0.0397</i>	<i>106</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0397</i>		<i>"</i>	<i>0.0400</i>	<i>99.3</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0402</i>		<i>"</i>	<i>0.0400</i>	<i>100</i>	<i>78.4-125</i>			

Summit Scientific

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
03/27/12 16:30

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 2032602 - EPA 5030 Soil MS

LCS (2032602-BS2)

Prepared: 03/26/12 Analyzed: 03/27/12

Methyl tert-butyl ether	ND	0.0050	mg/kg				60-140		25	
Benzene	0.0915	0.0050	"	0.100		91.5	61-139		11.1	
Toluene	0.0892	0.0050	"	0.100		89.2	64-132		10.9	
Ethylbenzene	0.0860	0.0050	"	0.100		86.0	68.7-135		20	
m,p-Xylene	0.192	0.0050	"	0.200		96.2	70.4-129		20	
o-Xylene	0.0936	0.0050	"	0.100		93.6	66.9-126		20	
Naphthalene	ND	0.010	"				67.8-151		25	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0392</i>		<i>"</i>	<i>0.0397</i>		<i>98.7</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0402</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0395</i>		<i>"</i>	<i>0.0400</i>		<i>98.8</i>	<i>78.4-125</i>			

LCS Dup (2032602-BSD1)

Prepared: 03/26/12 Analyzed: 03/27/12

Methyl tert-butyl ether	ND	0.0050	mg/kg				60-140		25	
Benzene	0.0778	0.0050	"	0.100		77.8	61-139	10.9	11.1	
Toluene	0.0819	0.0050	"	0.100		81.9	64-132	5.24	10.9	
Ethylbenzene	0.0734	0.0050	"	0.100		73.4	68.7-135	19.8	20	
m,p-Xylene	0.164	0.0050	"	0.200		82.0	70.4-129	14.8	20	
o-Xylene	0.0797	0.0050	"	0.100		79.7	66.9-126	13.7	20	
Naphthalene	ND	0.010	"				67.8-151		25	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0414</i>		<i>"</i>	<i>0.0397</i>		<i>104</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0407</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0396</i>		<i>"</i>	<i>0.0400</i>		<i>98.9</i>	<i>78.4-125</i>			

LCS Dup (2032602-BSD2)

Prepared: 03/26/12 Analyzed: 03/27/12

Methyl tert-butyl ether	ND	0.0050	mg/kg				60-140		25	
Benzene	0.0912	0.0050	"	0.100		91.2	61-139	0.329	11.1	
Toluene	0.0896	0.0050	"	0.100		89.6	64-132	0.436	10.9	
Ethylbenzene	0.0865	0.0050	"	0.100		86.5	68.7-135	0.557	20	
m,p-Xylene	0.197	0.0050	"	0.200		98.3	70.4-129	2.17	20	
o-Xylene	0.0945	0.0050	"	0.100		94.5	66.9-126	1.02	20	
Naphthalene	ND	0.010	"				67.8-151		25	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0408</i>		<i>"</i>	<i>0.0397</i>		<i>103</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0406</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0409</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>78.4-125</i>			

Summit Scientific

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
03/27/12 16:30

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 2032602 - EPA 5030 Soil MS

Matrix Spike (2032602-MS1)		Source: R203177-05			Prepared: 03/26/12		Analyzed: 03/27/12	
Methyl tert-butyl ether	ND	0.0050	mg/kg	ND	50-150			30
Benzene	0.0897	0.0050	"	0.100	ND	89.7	42.9-137	17.9
Toluene	0.0886	0.0050	"	0.100	ND	88.6	42.6-130	11.9
Ethylbenzene	0.0916	0.0050	"	0.100	ND	91.6	39-133	20
m,p-Xylene	0.190	0.0050	"	0.200	ND	94.8	34.7-134	20
o-Xylene	0.112	0.0050	"	0.100	ND	112	41.3-126	20
Naphthalene	ND	0.010	"	ND	26.4-144			30
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0453</i>		<i>"</i>	<i>0.0397</i>		<i>114</i>	<i>67.4-143</i>	
<i>Surrogate: Toluene-d8</i>	<i>0.0478</i>		<i>"</i>	<i>0.0400</i>		<i>120</i>	<i>77.3-114</i>	<i>S-02</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0421</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>78.4-125</i>	

Matrix Spike (2032602-MS2)		Source: R203171-02			Prepared: 03/26/12		Analyzed: 03/27/12	
Methyl tert-butyl ether	ND	0.0050	mg/kg	ND	50-150			30
Benzene	0.0929	0.0050	"	0.100	ND	92.9	42.9-137	17.9
Toluene	0.0893	0.0050	"	0.100	ND	89.3	42.6-130	11.9
Ethylbenzene	0.0798	0.0050	"	0.100	ND	79.8	39-133	20
m,p-Xylene	0.190	0.0050	"	0.200	ND	95.1	34.7-134	20
o-Xylene	0.0950	0.0050	"	0.100	ND	95.0	41.3-126	20
Naphthalene	ND	0.010	"	ND	26.4-144			30
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0448</i>		<i>"</i>	<i>0.0397</i>		<i>113</i>	<i>67.4-143</i>	
<i>Surrogate: Toluene-d8</i>	<i>0.0406</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>77.3-114</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0426</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>78.4-125</i>	

Matrix Spike Dup (2032602-MSD1)		Source: R203177-05			Prepared: 03/26/12		Analyzed: 03/27/12	
Methyl tert-butyl ether	ND	0.0050	mg/kg	ND	50-150			30
Benzene	0.0902	0.0050	"	0.100	ND	90.2	42.9-137	0.467 17.9
Toluene	0.0896	0.0050	"	0.100	ND	89.6	42.6-130	1.04 11.9
Ethylbenzene	0.0928	0.0050	"	0.100	ND	92.8	39-133	1.20 20
m,p-Xylene	0.187	0.0050	"	0.200	ND	93.6	34.7-134	1.27 20
o-Xylene	0.116	0.0050	"	0.100	ND	116	41.3-126	3.51 20
Naphthalene	ND	0.010	"	ND	26.4-144			30
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0437</i>		<i>"</i>	<i>0.0397</i>		<i>110</i>	<i>67.4-143</i>	
<i>Surrogate: Toluene-d8</i>	<i>0.0488</i>		<i>"</i>	<i>0.0400</i>		<i>122</i>	<i>77.3-114</i>	<i>S-02</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0410</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>78.4-125</i>	

Summit Scientific

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
03/27/12 16:30

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 2032602 - EPA 5030 Soil MS

Matrix Spike Dup (2032602-MSD2)

Source: R203171-02

Prepared: 03/26/12 Analyzed: 03/27/12

Methyl tert-butyl ether	ND	0.0050	mg/kg		ND		50-150		30	
Benzene	0.0900	0.0050	"	0.100	ND	90.0	42.9-137	3.21	17.9	
Toluene	0.0877	0.0050	"	0.100	ND	87.7	42.6-130	1.83	11.9	
Ethylbenzene	0.0831	0.0050	"	0.100	ND	83.1	39-133	4.05	20	
m,p-Xylene	0.185	0.0050	"	0.200	ND	92.4	34.7-134	2.90	20	
o-Xylene	0.0921	0.0050	"	0.100	ND	92.1	41.3-126	3.11	20	
Naphthalene	ND	0.010	"		ND		26.4-144		30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0462</i>		<i>"</i>	<i>0.0397</i>		<i>116</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0413</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0410</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>78.4-125</i>			

Summit Scientific

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/27/12 16:30

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

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Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

March 28, 2012

Brandon Bruns

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Enclosed are the results of analyses for samples received by Summit Scientific on 03/27/12 16:45. 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: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/28/12 16:00

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS08	R203206-01	Soil	03/27/12 11:10	03/27/12 16:45
SS09	R203206-02	Soil	03/27/12 11:20	03/27/12 16:45
SS10	R203206-03	Soil	03/27/12 11:30	03/27/12 16:45
SS11	R203206-04	Soil	03/27/12 11:40	03/27/12 16:45
SS12	R203206-05	Soil	03/27/12 11:50	03/27/12 16:45

Summit Scientific

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/28/12 16:00

SS08
R203206-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/27/12 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2032714	03/27/12	03/28/12	8015 Full Carbon Chain	

Date Sampled: **03/27/12 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		98.4 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/27/12 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	0.0050	mg/kg	1	2032713	"	03/28/12	EPA 8260B	
Benzene	1.2	0.050	"	10	"	"	"	"	
Toluene	2.0	0.050	"	"	"	"	"	"	
Ethylbenzene	0.073	0.050	"	"	"	"	"	"	
Xylenes (total)	1.3	0.10	"	"	"	"	"	"	
Naphthalene	0.063	0.010	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	35	5.0	"	10	"	"	"	"	

Date Sampled: **03/27/12 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		107 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		113 %	78.4-125		"	"	"	"	

Summit Scientific

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
03/28/12 16:00

SS09
R203206-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/27/12 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	360	50	mg/kg	1	2032714	03/27/12	03/28/12	8015 Full Carbon Chain	

Date Sampled: **03/27/12 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		100 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/27/12 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	0.0050	mg/kg	1	2032713	"	03/28/12	EPA 8260B	
Benzene	1.1	0.050	"	10	"	"	"	"	
Toluene	11	0.50	"	100	"	"	"	"	
Ethylbenzene	1.3	0.050	"	10	"	"	"	"	
Xylenes (total)	18	1.0	"	100	"	"	"	"	
Naphthalene	0.22	0.010	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	480	50	"	100	"	"	"	"	

Date Sampled: **03/27/12 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		110 %	67.4-143		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		113 %	77.3-114		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		115 %	78.4-125		"	"	"	"	

Summit Scientific

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
03/28/12 16:00

SS10
R203206-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/27/12 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	1900	50	mg/kg	1	2032714	03/27/12	03/28/12	8015 Full Carbon Chain	

Date Sampled: **03/27/12 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		102 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/27/12 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	0.0050	mg/kg	1	2032713	"	03/28/12	EPA 8260B	
Benzene	160	5.0	"	1000	"	"	"	"	
Toluene	880	5.0	"	"	"	"	"	"	
Ethylbenzene	58	5.0	"	"	"	"	"	"	
Xylenes (total)	850	10	"	"	"	"	"	"	
Naphthalene	1.8	0.10	"	10	"	"	"	"	
Gasoline Range Hydrocarbons	33000	500	"	1000	"	"	"	"	

Date Sampled: **03/27/12 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		108 %	67.4-143		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		165 %	77.3-114		"	"	"	"	S-02
<i>Surrogate: 4-Bromofluorobenzene</i>		122 %	78.4-125		"	"	"	"	

Summit Scientific

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
03/28/12 16:00

SS11
R203206-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/27/12 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2032714	03/27/12	03/28/12	8015 Full Carbon Chain	

Date Sampled: **03/27/12 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		93.6 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/27/12 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	0.0050	mg/kg	1	2032713	"	03/28/12	EPA 8260B	
Benzene	0.20	0.0050	"	"	"	"	"	"	
Toluene	0.36	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.013	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.38	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	4.6	0.50	"	"	"	"	"	"	

Date Sampled: **03/27/12 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		107 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		113 %	78.4-125		"	"	"	"	

Summit Scientific

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
03/28/12 16:00

SS12
R203206-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/27/12 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2032714	03/27/12	03/28/12	8015 Full Carbon Chain	

Date Sampled: **03/27/12 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		95.4 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/27/12 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methyl tert-butyl ether	ND	0.0050	mg/kg	1	2032713	"	03/28/12	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
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: **03/27/12 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		102 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	78.4-125		"	"	"	"	

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: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 03/28/12 16:00

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 2032714 - EPA 3550A

Blank (2032714-BLK1)				Prepared & Analyzed: 03/27/12							
C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	12.2		"	12.5		97.3	80-124				
LCS (2032714-BS1)				Prepared & Analyzed: 03/27/12							
C10-C28 (DRO)	574	50	mg/kg	501		115	81.4-129			9.26	
LCS Dup (2032714-BSD1)				Prepared & Analyzed: 03/27/12							
C10-C28 (DRO)	572	50	mg/kg	501		114	81.4-129	0.409		9.26	
Matrix Spike (2032714-MS1)				Source: R203185-01		Prepared: 03/27/12 Analyzed: 03/28/12					
C10-C28 (DRO)	595	50	mg/kg	501	ND	119	77.8-133			8.48	
Matrix Spike Dup (2032714-MSD1)				Source: R203185-01		Prepared: 03/27/12 Analyzed: 03/28/12					
C10-C28 (DRO)	577	50	mg/kg	501	ND	115	77.8-133	3.02		8.48	

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: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
03/28/12 16:00

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 2032713 - EPA 5030 Soil MS

Blank (2032713-BLK1)

Prepared: 03/27/12 Analyzed: 03/28/12

Methyl tert-butyl ether	ND	0.0050	mg/kg							
Benzene	ND	0.0050	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Naphthalene	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0418</i>		<i>"</i>	<i>0.0397</i>		<i>105</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0402</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0404</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>78.4-125</i>			

LCS (2032713-BS1)

Prepared: 03/27/12 Analyzed: 03/28/12

Methyl tert-butyl ether	ND	0.0050	mg/kg				60-140			25
Benzene	0.0911	0.0050	"	0.100		91.1	61-139			11.1
Toluene	0.0915	0.0050	"	0.100		91.5	64-132			10.9
Ethylbenzene	0.0871	0.0050	"	0.100		87.1	68.7-135			20
m,p-Xylene	0.186	0.0050	"	0.200		93.1	70.4-129			20
o-Xylene	0.0911	0.0050	"	0.100		91.1	66.9-126			20
Naphthalene	ND	0.010	"				67.8-151			25
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0198</i>		<i>"</i>	<i>0.0397</i>		<i>49.8</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0412</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0406</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>78.4-125</i>			

LCS Dup (2032713-BSD1)

Prepared: 03/27/12 Analyzed: 03/28/12

Methyl tert-butyl ether	ND	0.0050	mg/kg				60-140			25
Benzene	0.0952	0.0050	"	0.100		95.2	61-139	4.35		11.1
Toluene	0.0928	0.0050	"	0.100		92.8	64-132	1.37		10.9
Ethylbenzene	0.0890	0.0050	"	0.100		89.0	68.7-135	2.18		20
m,p-Xylene	0.198	0.0050	"	0.200		99.0	70.4-129	6.15		20
o-Xylene	0.0962	0.0050	"	0.100		96.2	66.9-126	5.45		20
Naphthalene	ND	0.010	"				67.8-151			25
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0416</i>		<i>"</i>	<i>0.0397</i>		<i>105</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0406</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0390</i>		<i>"</i>	<i>0.0400</i>		<i>97.4</i>	<i>78.4-125</i>			

Summit Scientific

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/28/12 16:00

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 2032713 - EPA 5030 Soil MS

Matrix Spike (2032713-MS1)

Source: R203185-01 Prepared: 03/27/12 Analyzed: 03/28/12

Methyl tert-butyl ether	ND	0.0050	mg/kg		ND		50-150		30	
Benzene	0.0936	0.0050	"	0.100	ND	93.6	42.9-137		17.9	
Toluene	0.0908	0.0050	"	0.100	ND	90.8	42.6-130		11.9	
Ethylbenzene	0.0912	0.0050	"	0.100	ND	91.2	39-133		20	
m,p-Xylene	0.206	0.0050	"	0.200	ND	103	34.7-134		20	
o-Xylene	0.101	0.0050	"	0.100	ND	101	41.3-126		20	
Naphthalene	ND	0.010	"		ND		26.4-144		30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0467</i>		<i>"</i>	<i>0.0397</i>		<i>118</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0401</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0406</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>78.4-125</i>			

Matrix Spike Dup (2032713-MSD1)

Source: R203185-01 Prepared: 03/27/12 Analyzed: 03/28/12

Methyl tert-butyl ether	ND	0.0050	mg/kg		ND		50-150		30	
Benzene	0.0911	0.0050	"	0.100	ND	91.1	42.9-137	2.73	17.9	
Toluene	0.0886	0.0050	"	0.100	ND	88.6	42.6-130	2.44	11.9	
Ethylbenzene	0.0831	0.0050	"	0.100	ND	83.1	39-133	9.33	20	
m,p-Xylene	0.186	0.0050	"	0.200	ND	93.1	34.7-134	10.3	20	
o-Xylene	0.0914	0.0050	"	0.100	ND	91.4	41.3-126	10.5	20	
Naphthalene	ND	0.010	"		ND		26.4-144		30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0465</i>		<i>"</i>	<i>0.0397</i>		<i>117</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0405</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0385</i>		<i>"</i>	<i>0.0400</i>		<i>96.3</i>	<i>78.4-125</i>			

Summit Scientific

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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/28/12 16:00

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.
- 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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Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

April 16, 2012

Jim Dawe
Tasman Geosciences
5690 Webster Street
Arvada, CO 80002
RE: PDC Characterization

Enclosed are the results of analyses for samples received by Summit Scientific on 04/13/12 18:35. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury
President / Laboratory Director



Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: PDC Characterization

Project Number: Ryan/Scott/MVS
Project Manager: Jim Dawe

Reported:
04/16/12 08:58

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01@14-15'	R204096-01	Soil	04/13/12 09:05	04/13/12 18:35
BH02@9-10'	R204096-02	Soil	04/13/12 09:50	04/13/12 18:35
BH03@12'	R204096-03	Soil	04/13/12 11:00	04/13/12 18:35
BH04@13'	R204096-04	Soil	04/13/12 11:15	04/13/12 18:35
BH05@11'	R204096-05	Soil	04/13/12 11:15	04/13/12 18:35
GW01-BH01	R204096-06	Water	04/13/12 16:30	04/13/12 18:35
GW02-BH02	R204096-07	Water	04/13/12 16:35	04/13/12 18:35
GW03-BH03	R204096-08	Water	04/13/12 16:45	04/13/12 18:35
GW04-BH04	R204096-09	Water	04/13/12 17:00	04/13/12 18:35
GW05-BH05	R204096-10	Water	04/13/12 17:05	04/13/12 18:35

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.



Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: PDC Characterization

Project Number: Ryan/Scott/MVS
Project Manager: Jim Dawe

Reported:
04/16/12 08:58

Summit Scientific

2204094

5

741 Corporate Circle Suite 1 • Golden, Colorado 80401
303-277-9310 • 303-277-9311 Fax

Client: ~~Summit Scientific~~ Tasman Geosciences
Address: ~~5690 Webster Street~~
City/State/Zip: ~~Arvada CO 80002~~
Phone: ~~303-277-9310~~ 719-988-9224
Sampler Name: ~~Chris Stimpel~~ Ryan/Scott/MVS
Project Manager: ~~Jim Dawe~~
E-Mail: ~~Jim.Dawe@TasmanGeosciences.com~~ AND ~~Chris.Stimpel@TasmanGeosciences.com~~
Project Name: PDC Environmental Section
Project Number: Ryan/Scott/MVS

Page 1 of 1

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix				Analyze For:	Special Instructions	
				HCl	HNO ₃	None	Other (Specify)	Air - Container Serial #	Groundwater	Soil	Other (Specify)			
B101 @ 14.15'	4/13/12	0905	2			X								
B102 @ 4.10'	4/13/12	0905	2			X								
B103 @ 12'	4/13/12	1100	1			X								
B104 @ 13'	4/13/12	1115	1			X								
B105 @ 11'	4/13/12	1150	1			X								
CAN1-B01	4/13/12	1030	3	X										
CAN2-B102	4/13/12	1055	2	X										
CAN3-B103	4/13/12	1055	3	X										
CAN4-B104	4/13/12	1000	3	X										
CAN5-B105	4/13/12	1005	3	X										
Requisitioned by:	Date/Time:	4/13/12		Accepted by:	Date/Time:	4/13/12 16:35		Turn Around Time (Check):	Same Day	24 Hours	72 Hours	Standard		Notes:
Requisitioned by:	Date/Time:			Received by:	Date/Time:			Sample Integrity:	Temperature	Upon Receipt:	Initials	Y/N	No	
Requisitioned by:	Date/Time:			Received in Lab by:	Date/Time:									

www.summitscientific.com



Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: PDC Characterization

Project Number: Ryan/Scott/MVS
Project Manager: Jim Dawe

Reported:
04/16/12 08:58

BH01@14-15'
R204096-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 04/13/12 09:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2041404	04/14/12	04/14/12	8015 Full Carbon Chain	

Date Sampled: 04/13/12 09:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		96.0 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 04/13/12 09:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.093	0.0050	mg/kg	1	2041405	04/14/12	04/15/12	EPA 8260B	
Benzene	3.5	0.050	"	10	"	"	"	"	
Toluene	15	0.050	"	"	"	"	"	"	E
Ethylbenzene	1.4	0.050	"	"	"	"	"	"	
m,p-Xylene	10	0.10	"	"	"	"	"	"	
o-Xylene	3.4	0.050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	300	5.0	"	"	"	"	"	"	

Date Sampled: 04/13/12 09:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		97.9 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		115 %	77.3-114		"	"	"	"	S-02
Surrogate: 4-Bromofluorobenzene		108 %	78.4-125		"	"	"	"	

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.



Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: PDC Characterization

Project Number: Ryan/Scott/MVS
Project Manager: Jim Dawe

Reported:
04/16/12 08:58

BH02@9-10'
R204096-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/13/12 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2041404	04/14/12	04/14/12	8015 Full Carbon Chain	

Date Sampled: **04/13/12 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		95.5 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/13/12 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	2041405	04/14/12	04/14/12	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
m,p-Xylene	ND	0.010	"	"	"	"	"	"	
o-Xylene	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/13/12 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		109 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	78.4-125		"	"	"	"	

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.



Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: PDC Characterization

Project Number: Ryan/Scott/MVS
Project Manager: Jim Dawe

Reported:
04/16/12 08:58

BH03@12'
R204096-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/13/12 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	68	50	mg/kg	1	2041404	04/14/12	04/14/12	8015 Full Carbon Chain	

Date Sampled: **04/13/12 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		95.7 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/13/12 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.17	0.0050	mg/kg	1	2041405	04/14/12	04/15/12	EPA 8260B	
Benzene	5.7	0.050	"	10	"	"	"	"	
Toluene	21	0.050	"	"	"	"	"	"	E
Ethylbenzene	2.4	0.050	"	"	"	"	"	"	
m,p-Xylene	16	0.10	"	"	"	"	"	"	
o-Xylene	6.2	0.050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	570	5.0	"	"	"	"	"	"	

Date Sampled: **04/13/12 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		94.8 %	67.4-143		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		153 %	77.3-114		"	"	"	"	S-02
<i>Surrogate: 4-Bromofluorobenzene</i>		122 %	78.4-125		"	"	"	"	

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.



Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: PDC Characterization

Project Number: Ryan/Scott/MVS
Project Manager: Jim Dawe

Reported:
04/16/12 08:58

BH04@13'
R204096-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/13/12 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2041404	04/14/12	04/14/12	8015 Full Carbon Chain	

Date Sampled: **04/13/12 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		96.4 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/13/12 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.023	0.0050	mg/kg	1	2041405	04/14/12	04/15/12	EPA 8260B	
Benzene	0.53	0.0050	"	"	"	"	"	"	
Toluene	1.1	0.050	"	10	"	"	"	"	
Ethylbenzene	0.076	0.0050	"	1	"	"	"	"	
m,p-Xylene	0.64	0.010	"	"	"	"	"	"	
o-Xylene	0.23	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	17	0.50	"	"	"	"	"	"	

Date Sampled: **04/13/12 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	67.4-143		"	"	"	"	
Surrogate: Toluene-d8		120 %	77.3-114		"	"	"	"	S-02
Surrogate: 4-Bromofluorobenzene		106 %	78.4-125		"	"	"	"	

Summit Scientific

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Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: PDC Characterization

Project Number: Ryan/Scott/MVS
Project Manager: Jim Dawe

Reported:
04/16/12 08:58

BH05@11'
R204096-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/13/12 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2041404	04/14/12	04/14/12	8015 Full Carbon Chain	

Date Sampled: **04/13/12 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		95.6 %	80-124		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/13/12 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.018	0.0050	mg/kg	1	2041405	04/14/12	04/15/12	EPA 8260B	
Benzene	0.054	0.0050	"	"	"	"	"	"	
Toluene	0.91	0.050	"	10	"	"	"	"	
Ethylbenzene	0.098	0.0050	"	1	"	"	"	"	
<i>m,p</i> -Xylene	0.75	0.010	"	"	"	"	"	"	
<i>o</i> -Xylene	0.25	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	31	0.50	"	"	"	"	"	"	

Date Sampled: **04/13/12 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane- <i>d</i> 4		93.4 %	67.4-143		"	"	"	"	
Surrogate: Toluene- <i>d</i> 8		110 %	77.3-114		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		114 %	78.4-125		"	"	"	"	

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Tasman Geosciences
 5690 Webster Street
 Arvada CO, 80002

Project: PDC Characterization

Project Number: Ryan/Scott/MVS
 Project Manager: Jim Dawe

Reported:
 04/16/12 08:58

GW01-BH01
R204096-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/13/12 16:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	320	10	ug/l	10	2041407	04/14/12	04/14/12	EPA 8260B	
Toluene	810	10	"	"	"	"	"	"	
Ethylbenzene	44	1.0	"	1	"	"	"	"	
Xylenes (total)	490	1.0	"	"	"	"	"	"	

Date Sampled: **04/13/12 16:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		89.8 %	57.9-139		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		98.2 %	83.1-115		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		98.3 %	80.8-120		"	"	"	"	

Summit Scientific

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Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: PDC Characterization

Project Number: Ryan/Scott/MVS
Project Manager: Jim Dawe

Reported:
04/16/12 08:58

GW02-BH02
R204096-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/13/12 16:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	7100	100	ug/l	100	2041407	04/14/12	04/14/12	EPA 8260B	
Toluene	14000	100	"	"	"	"	"	"	
Ethylbenzene	420	100	"	"	"	"	"	"	
Xylenes (total)	4400	100	"	"	"	"	"	"	

Date Sampled: **04/13/12 16:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		114 %	57.9-139		"	"	04/14/12	"	
<i>Surrogate: Toluene-d8</i>		118 %	83.1-115		"	"	"	"	S-02
<i>Surrogate: 4-Bromofluorobenzene</i>		95.6 %	80.8-120		"	"	"	"	

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5690 Webster Street
Arvada CO, 80002

Project: PDC Characterization

Project Number: Ryan/Scott/MVS
Project Manager: Jim Dawe

Reported:
04/16/12 08:58

GW03-BH03
R204096-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/13/12 16:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	11000	100	ug/l	100	2041407	04/14/12	04/14/12	EPA 8260B	
Toluene	13000	100	"	"	"	"	"	"	
Ethylbenzene	300	100	"	"	"	"	04/14/12	"	
Xylenes (total)	3500	100	"	"	"	"	04/14/12	"	

Date Sampled: **04/13/12 16:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		97.9 %	57.9-139		"	"	04/14/12	"	
<i>Surrogate: Toluene-d8</i>		102 %	83.1-115		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		106 %	80.8-120		"	"	"	"	

Summit Scientific

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5690 Webster Street
Arvada CO, 80002

Project: PDC Characterization

Project Number: Ryan/Scott/MVS
Project Manager: Jim Dawe

Reported:
04/16/12 08:58

GW04-BH04
R204096-09 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/13/12 17:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	3100	100	ug/l	100	2041407	04/14/12	04/14/12	EPA 8260B	
Toluene	3900	100	"	"	"	"	"	"	
Ethylbenzene	150	1.0	"	1	"	"	04/14/12	"	
Xylenes (total)	1700	100	"	100	"	"	04/14/12	"	

Date Sampled: **04/13/12 17:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		119 %	57.9-139		"	"	04/14/12	"	
<i>Surrogate: Toluene-d8</i>		115 %	83.1-115		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		103 %	80.8-120		"	"	"	"	

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Arvada CO, 80002

Project: PDC Characterization

Project Number: Ryan/Scott/MVS
Project Manager: Jim Dawe

Reported:
04/16/12 08:58

GW05-BH05
R204096-10 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/13/12 17:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	510	100	ug/l	100	2041407	04/14/12	04/14/12	EPA 8260B	
Toluene	3400	100	"	"	"	"	"	"	
Ethylbenzene	190	100	"	"	"	"	04/14/12	"	
Xylenes (total)	2200	100	"	"	"	"	04/14/12	"	

Date Sampled: **04/13/12 17:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		115 %	57.9-139		"	"	04/14/12	"	
<i>Surrogate: Toluene-d8</i>		115 %	83.1-115		"	"	"	"	S-02
<i>Surrogate: 4-Bromofluorobenzene</i>		95.1 %	80.8-120		"	"	"	"	

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Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: PDC Characterization

Project Number: Ryan/Scott/MVS
Project Manager: Jim Dawe

Reported:
04/16/12 08:58

Extractable 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 2041404 - EPA 3550A

Blank (2041404-BLK1)					Prepared & Analyzed: 04/14/12						
C10-C28 (DRO)	ND	50	mg/kg								
LCS (2041404-BS1)					Prepared & Analyzed: 04/14/12						
C10-C28 (DRO)	555	50	mg/kg	501	111	81.4-129					
LCS Dup (2041404-BSD1)					Prepared & Analyzed: 04/14/12						
C10-C28 (DRO)	536	50	mg/kg	501	107	81.4-129	3.50	9.26			
Matrix Spike (2041404-MS1)					Source: R204096-02 Prepared: 04/14/12 Analyzed: 04/15/12						
C10-C28 (DRO)	544	50	mg/kg	501	32.6	102	77.8-133				
Matrix Spike Dup (2041404-MSD1)					Source: R204096-02 Prepared: 04/14/12 Analyzed: 04/15/12						
C10-C28 (DRO)	540	50	mg/kg	501	32.6	101	77.8-133	0.776	8.48		

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Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: PDC Characterization

Project Number: Ryan/Scott/MVS
Project Manager: Jim Dawe

Reported:
04/16/12 08:58

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 2041405 - EPA 5030 Soil MS

Blank (2041405-BLK1)

Prepared: 04/14/12 Analyzed: 04/15/12

Naphthalene	ND	0.0050	mg/kg							
Benzene	ND	0.0050	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
m,p-Xylene	ND	0.010	"							
o-Xylene	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0386</i>		<i>"</i>	<i>0.0397</i>		<i>97.3</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0454</i>		<i>"</i>	<i>0.0400</i>		<i>114</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0400</i>		<i>"</i>	<i>0.0400</i>		<i>99.9</i>	<i>78.4-125</i>			

LCS (2041405-BS1)

Prepared: 04/14/12 Analyzed: 04/15/12

Naphthalene	ND	0.0050	mg/kg				67.8-151			
Benzene	0.0913	0.0050	"	0.100		91.3	61-139			
Toluene	0.0974	0.0050	"	0.100		97.4	64-132			
Ethylbenzene	0.102	0.0050	"	0.100		102	68.7-135			
m,p-Xylene	0.183	0.010	"	0.200		91.6	70.4-129			
o-Xylene	0.0997	0.0050	"	0.100		99.7	66.9-126			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0385</i>		<i>"</i>	<i>0.0397</i>		<i>96.9</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0456</i>		<i>"</i>	<i>0.0400</i>		<i>114</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0388</i>		<i>"</i>	<i>0.0400</i>		<i>97.1</i>	<i>78.4-125</i>			

LCS Dup (2041405-BSD1)

Prepared: 04/14/12 Analyzed: 04/15/12

Naphthalene	ND	0.0050	mg/kg				67.8-151		20	
Benzene	0.0938	0.0050	"	0.100		93.8	61-139	2.72	11.1	
Toluene	0.0988	0.0050	"	0.100		98.8	64-132	1.44	10.9	
Ethylbenzene	0.103	0.0050	"	0.100		103	68.7-135	1.52	20	
m,p-Xylene	0.186	0.010	"	0.200		92.9	70.4-129	1.32	20	
o-Xylene	0.101	0.0050	"	0.100		101	66.9-126	1.40	20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0388</i>		<i>"</i>	<i>0.0397</i>		<i>97.6</i>	<i>67.4-143</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0451</i>		<i>"</i>	<i>0.0400</i>		<i>113</i>	<i>77.3-114</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0387</i>		<i>"</i>	<i>0.0400</i>		<i>96.8</i>	<i>78.4-125</i>			

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Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: PDC Characterization

Project Number: Ryan/Scott/MVS
Project Manager: Jim Dawe

Reported:
04/16/12 08:58

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 2041405 - EPA 5030 Soil MS

Matrix Spike (2041405-MS1)		Source: R204096-01			Prepared: 04/14/12		Analyzed: 04/15/12				
Naphthalene	0.00726	0.0050	mg/kg		0.0925		26.4-144				QM-07
Benzene	1.16	0.0050	"	0.100	3.52	NR	42.9-137				QM-07
Toluene	2.22	0.0050	"	0.100	15.0	NR	42.6-130				QM-07
Ethylbenzene	0.214	0.0050	"	0.100	1.36	NR	39-133				QM-07
m,p-Xylene	1.08	0.010	"	0.200	10.4	NR	34.7-134				QM-07
o-Xylene	0.404	0.0050	"	0.100	3.43	NR	41.3-126				QM-07
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0365</i>		"	<i>0.0397</i>		<i>92.0</i>	<i>67.4-143</i>				
<i>Surrogate: Toluene-d8</i>	<i>0.0582</i>		"	<i>0.0400</i>		<i>145</i>	<i>77.3-114</i>				<i>S-02</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0393</i>		"	<i>0.0400</i>		<i>98.3</i>	<i>78.4-125</i>				

Matrix Spike Dup (2041405-MSD1)		Source: R204096-01			Prepared: 04/14/12		Analyzed: 04/15/12				
Naphthalene	0.00756	0.0050	mg/kg		0.0925		26.4-144	4.05	20		QM-07
Benzene	1.14	0.0050	"	0.100	3.52	NR	42.9-137	1.77	17.9		QM-07
Toluene	2.18	0.0050	"	0.100	15.0	NR	42.6-130	1.81	11.9		QM-07
Ethylbenzene	0.212	0.0050	"	0.100	1.36	NR	39-133	0.690	20		QM-07
m,p-Xylene	1.06	0.010	"	0.200	10.4	NR	34.7-134	1.87	20		QM-07
o-Xylene	0.398	0.0050	"	0.100	3.43	NR	41.3-126	1.48	20		QM-07
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0367</i>		"	<i>0.0397</i>		<i>92.5</i>	<i>67.4-143</i>				
<i>Surrogate: Toluene-d8</i>	<i>0.0575</i>		"	<i>0.0400</i>		<i>144</i>	<i>77.3-114</i>				<i>S-02</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0393</i>		"	<i>0.0400</i>		<i>98.2</i>	<i>78.4-125</i>				

Batch 2041407 - EPA 5030 Water MS

Blank (2041407-BLK1)					Prepared: 04/14/12		Analyzed: 04/15/12				
Benzene	ND	1.0	ug/l								
Toluene	ND	1.0	"								
Ethylbenzene	ND	1.0	"								
Xylenes (total)	ND	1.0	"								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>13.0</i>		"	<i>13.2</i>		<i>98.5</i>	<i>57.9-139</i>				
<i>Surrogate: Toluene-d8</i>	<i>15.2</i>		"	<i>13.3</i>		<i>114</i>	<i>83.1-115</i>				
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.6</i>		"	<i>13.3</i>		<i>102</i>	<i>80.8-120</i>				

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Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: PDC Characterization

Project Number: Ryan/Scott/MVS
Project Manager: Jim Dawe

Reported:
04/16/12 08:58

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 2041407 - EPA 5030 Water MS

LCS (2041407-BS1)

Prepared: 04/14/12 Analyzed: 04/15/12

Benzene	28.9	1.0	ug/l	33.3		86.7	60.1-131			
Toluene	30.6	1.0	"	33.3		91.7	65.9-127			
Ethylbenzene	31.7	1.0	"	33.3		95.2	65.1-129			
m,p-Xylene	56.2	2.0	"	66.7		84.3	66.8-127			
o-Xylene	31.4	1.0	"	33.3		94.1	61.2-120			
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.2		95.4	57.9-139			
Surrogate: Toluene-d8	15.2		"	13.3		114	83.1-115			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.7	80.8-120			

LCS Dup (2041407-BSD1)

Prepared: 04/14/12 Analyzed: 04/15/12

Benzene	30.0	1.0	ug/l	33.3		89.9	60.1-131	3.57	10.9	
Toluene	31.8	1.0	"	33.3		95.3	65.9-127	3.79	11.3	
Ethylbenzene	33.1	1.0	"	33.3		99.3	65.1-129	4.26	20	
m,p-Xylene	58.0	2.0	"	66.7		87.0	66.8-127	3.17	20	
o-Xylene	32.3	1.0	"	33.3		97.0	61.2-120	3.05	20	
Surrogate: 1,2-Dichloroethane-d4	12.7		"	13.2		95.9	57.9-139			
Surrogate: Toluene-d8	15.2		"	13.3		114	83.1-115			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.1	80.8-120			

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Tasman Geosciences
5690 Webster Street
Arvada CO, 80002

Project: PDC Characterization

Project Number: Ryan/Scott/MVS
Project Manager: Jim Dawe

Reported:
04/16/12 08:58

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.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- 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