

December 5, 2013

Mr. Paul Schneider
Senior Staff EHS Representative
Kerr-McGee Oil & Gas Onshore LP
1099 18th Street, Suite 1800
Denver, Colorado 80202

Re: Sump Closure: Excavation Summary Letter
Report UPRR 42 Pan Am B1
API: 05-123-07248
Legal: SESW Sec 21-T1N-R67W

Dear Mr. Schneider:

Tasman Geosciences, LLC (Tasman) has prepared this Sump Closure: Excavation Summary Letter Report (Report) to document information regarding environmental testing at the above-referenced site on behalf of Kerr-McGee Oil & Gas Onshore LP (Kerr-McGee). Tasman provided environmental services at the site which included collection of confirmation soil samples from the excavation and documentation of field activities.

The objective of the soil sampling was to confirm the presence or absence of petroleum hydrocarbon impacts in the subsurface located below a removed sump on September 6, and November 13, 2013. Soil sampling activities, laboratory analytical results, and conclusions are presented below. The general site layout, excavation dimensions, and sample locations are provided in the attached field notes (Attachment A).

Upon arrival to the site, the extent of the excavation measured approximately 25 feet north to south by 25 feet east to west to an approximate depth of 15 feet below ground surface (bgs). Approximately 350 cubic yards of soil were removed and transported to Kerr-McGee's land treatment facility in Weld County, Colorado. Soil samples were field screened using a photoionization detector (PID) and standard headspace sampling techniques. Groundwater was not encountered in the excavation.

One confirmation soil sample was collected from the north, south, east and west excavation sidewalls at approximately 12 feet bgs, and one sample was collected from the base of the excavation at approximately 15 feet bgs on September 6, 2013. These samples were submitted to Summit Scientific located in Golden, Colorado for laboratory analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX) and total petroleum hydrocarbons (TPH) gasoline range organics (GRO) by Environmental Protection Agency (EPA) Method 8260B, as well as TPH diesel range and oil range organics (DRO and ORO) by EPA Method 8015. Groundwater was not encountered during excavation activities. The soil sample laboratory data is summarized in

Table 1, and the laboratory analytical report is provided in Attachment B.

No indications of petroleum hydrocarbon impacts above applicable standards were observed in the soil samples, with the exception of the sample collected from the west sidewall (W01@15'). Sample W01@15' exceeded the Colorado Oil and Gas Conservation Commission Table 910-1 standards for TPH, with a value of 542 mg/kg. Subsequent to additional excavation activities, an additional confirmation soil sample was collected from the west sidewall at approximately 13 feet bgs on November 20, 2013. This sample (W02@13') returned results below the COGCC Table 910-1 standards. Based on analytical results, no remedial action is required at this site.

Please contact me at (303) 487-1228 if you have any questions regarding this report or require additional information.

Sincerely,



Jenna R. Barker
Environmental Engineer

Attachments: Table 1
Attachment A – Field Notes
Attachment B – Laboratory Analytical Report

Table

TABLE 1
UPRR 42 PAN AM B1
SOIL SAMPLE RESULTS SUMMARY TABLE
KERR-McGEE OIL AND GAS ONSHORE LP

Sample ID	Date Sampled	Depth (Feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TVPH - GRO (mg/kg)	TEPH - DRO + ORO (mg/kg)
N01@12'	9/6/2013	12	<0.002	0.0077	0.028	2.1	55	120
S01@12'	9/6/2013	12	<0.002	<0.005	<0.005	<0.005	8.8	98
E01@12'	9/6/2013	12	<0.002	<0.005	<0.005	<0.005	<0.5	<50
W01@12'	9/6/2013	12	<0.002	<0.005	<0.005	<0.005	1	542
B01@15'	9/6/2013	15	0.038	0.0064	0.19	1.1	180	<50
W02@13'	11/13/2013	13	<0.002	<0.005	<0.005	<0.005	<0.5	61.1
COGCC standards for Soil (mg/kg)			0.17	85	100	175	500	

Notes:

TVPH - GRO: Total volatile petroleum hydrocarbons - Gasoline Range Organics

TEPH - DRO: Total extractable volatile petroleum hydrocarbons - Diesel Range Organics

TEPH - ORO: Total extractable volatile petroleum hydrocarbons - Oil Range Organics

mg/kg= Milligrams per kilogram. bgs - Below ground surface.

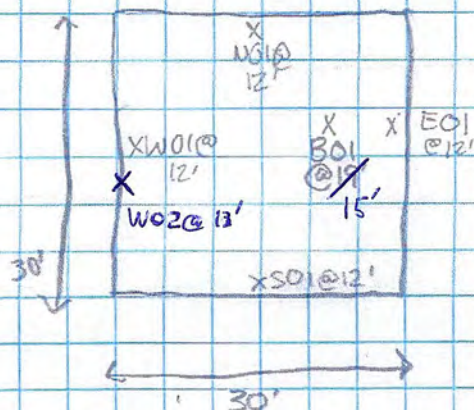
Bold values indicate an exceedance of the COGCC soil standards for the Site.

Attachment A

UPRR 42 Pan Am B1
 9/6/13 WO#88406957
 11/14/13

↑ N

ACCESS
ROAD



AGRICULTURE

PID (ppm)
 NO1 - 1598
 SO1 - 305
 EO1 - 25.9
 WO1 - 1396
 BO1 - 2280

SOIL ANALYTICAL mg/kg

	B	T	E	X	TPH
NO1	on hold				
EO1	ND	ND	ND	ND	ND
SO1	ND	ND	ND	ND	106.8
WO1	on hold				
BO1	0.90	ND	0.92	2.8	550

Attachment B

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

September 10, 2013

Mike Dinkel

Anadarko - Denver

1099 18th St, Suite 1800

Denver, CO 80202

RE: UPRR 42 Pan AM B1

Enclosed are the results of analyses for samples received by Summit Scientific on 09/06/13 15:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to be 'BS' or 'Shrewsbury', with a long, sweeping horizontal line extending to the right.

Ben Shrewsbury

President / Laboratory Manager



Anadarko - Denver
1099 18th St, Suite 1800
Denver CO, 80202

Project: UPRR 42 Pan AM B1

Project Number: WO #88406957
Project Manager: Mike Dinkel

Reported:
09/10/13 06:47

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
N01@12'	R309032-01	Soil	09/06/13 13:30	09/06/13 15:15
S01@12'	R309032-02	Soil	09/06/13 13:30	09/06/13 15:15
E01@12'	R309032-03	Soil	09/06/13 13:30	09/06/13 15:15
W01@12'	R309032-04	Soil	09/06/13 13:30	09/06/13 15:15
B01@12' 12' 15'	R309032-05	Soil	09/06/13 13:30	09/06/13 15:15

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Denver CO, 80202

Project: UPRR 42 Pan AM B1

Project Number: WO #88406957

Project Manager: Mike Dinkel

Reported:

09/10/13 06:47

Summit Scientific 2306032

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

Client: Anglarko / Tasmah
Address: _____
City/State/Zip: _____
Phone: _____ Fax: _____
Sample Name: Jean Parker

Project Manager: Mike Dinkel
E-Mail: _____
Project Name: 1000 42 Pan Am B1
Project Number: W1# 88401A57

Page 1 of 1

Page 1 of 1

[illegible]

www.s2scientific.com

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Anadarko - Denver
1099 18th St, Suite 1800
Denver CO, 80202

Project: UPRR 42 Pan AM B1
Project Number: WO #88406957
Project Manager: Mike Dinkel

Reported:
09/10/13 06:47

N01@12'
R309032-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	120	50	mg/kg	1	3090910	09/09/13	09/09/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		95.2 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3090909	09/09/13	09/09/13	EPA 8260B	
Toluene	0.0077	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.028	0.0050	"	"	"	"	"	"	
Xylenes (total)	2.1	0.050	"	10	"	"	09/09/13	"	
Gasoline Range Hydrocarbons	55	0.50	"	1	"	"	09/09/13	"	

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		117 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	21-167		"	"	"	"	

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Denver CO, 80202

Project: UPRR 42 Pan AM B1
Project Number: WO #88406957
Project Manager: Mike Dinkel

Reported:
09/10/13 06:47

S01@12'
R309032-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	98	50	mg/kg	1	3090607	09/06/13	09/06/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		98.2 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3090608	09/06/13	09/06/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	8.8	0.50	"	"	"	"	"	"	

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

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Denver CO, 80202

Project: UPRR 42 Pan AM B1
Project Number: WO #88406957
Project Manager: Mike Dinkel

Reported:
09/10/13 06:47

E01 @ 12'
R309032-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3090607	09/06/13	09/06/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		95.9 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3090608	09/06/13	09/06/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

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Project: UPRR 42 Pan AM B1
Project Number: WO #88406957
Project Manager: Mike Dinkel

Reported:
09/10/13 06:47

W01@12'
R309032-04 (Soil)

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Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	510	50	mg/kg	1	3090910	09/09/13	09/09/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		104 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3090909	09/09/13	09/09/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	1.0	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	32	0.50	"	"	"	"	"	"	

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		134 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		129 %	21-167		"	"	"	"	

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Project: UPRR 42 Pan AM B1
Project Number: WO #88406957
Project Manager: Mike Dinkel

Reported:
09/10/13 06:47

B01@~~12'~~ 15'
R309032-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 09/06/13 13:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3090607	09/06/13	09/06/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 09/06/13 13:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		97.3 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 09/06/13 13:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.038	0.0020	mg/kg	1	3090608	09/06/13	09/06/13	EPA 8260B	
Toluene	0.0064	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.19	0.0050	"	"	"	"	"	"	
Xylenes (total)	1.1	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	180	0.50	"	"	"	"	"	"	

Date Sampled: 09/06/13 13:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		100 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		79.2 %	21-167		"	"	"	"	

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Project: UPRR 42 Pan AM B1
Project Number: WO #88406957
Project Manager: Mike Dinkel

Reported:
09/10/13 06:47

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 3090607 - EPA 3550A

Blank (3090607-BLK1)				Prepared & Analyzed: 09/06/13							
C10-C28 (TEPH-DRO)	ND	50	mg/kg								
C28-C36 (TEPH-ORO)	ND	50	"								
LCS (3090607-BS1)				Prepared & Analyzed: 09/06/13							
C10-C28 (TEPH-DRO)	561	50	mg/kg	501		112	73-134				
LCS Dup (3090607-BSD1)				Prepared & Analyzed: 09/06/13							
C10-C28 (TEPH-DRO)	623	50	mg/kg	501		124	73-134	10.4	11		
Matrix Spike (3090607-MS1)				Source: R309031-01		Prepared & Analyzed: 09/06/13					
C10-C28 (TEPH-DRO)	536	50	mg/kg	501	ND	107	50-148				
Matrix Spike Dup (3090607-MSD1)				Source: R309031-01		Prepared & Analyzed: 09/06/13					
C10-C28 (TEPH-DRO)	548	50	mg/kg	501	ND	109	50-148	2.24	13		

Batch 3090910 - EPA 3550A

Blank (3090910-BLK1)				Prepared: 09/09/13 Analyzed: 09/10/13							
C10-C28 (TEPH-DRO)	ND	50	mg/kg								
C28-C36 (TEPH-ORO)	ND	50	"								
LCS (3090910-BS1)				Prepared: 09/09/13 Analyzed: 09/10/13							
C10-C28 (TEPH-DRO)	533	50	mg/kg	501		106	73-134				
LCS Dup (3090910-BSD1)				Prepared: 09/09/13 Analyzed: 09/10/13							
C10-C28 (TEPH-DRO)	546	50	mg/kg	501		109	73-134	2.38	11		

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Project: UPRR 42 Pan AM B1

Project Number: WO #88406957
Project Manager: Mike Dinkel

Reported:
09/10/13 06:47

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 3090910 - EPA 3550A

Matrix Spike (3090910-MS1)		Source: R309040-01			Prepared: 09/09/13		Analyzed: 09/10/13			
C10-C28 (TEPH-DRO)	521	50	mg/kg	501	ND	104	50-148			
Matrix Spike Dup (3090910-MSD1)		Source: R309040-01			Prepared: 09/09/13		Analyzed: 09/10/13			
C10-C28 (TEPH-DRO)	520	50	mg/kg	501	ND	104	50-148	0.139	13	

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Project: UPRR 42 Pan AM B1
Project Number: WO #88406957
Project Manager: Mike Dinkel

Reported:
09/10/13 06:47

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

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

Batch 3090608 - EPA 5030 Soil MS

Blank (3090608-BLK1)

Prepared & Analyzed: 09/06/13

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0416		"	0.0397	105	23-173				
Surrogate: Toluene-d8	0.0405		"	0.0400	101	20-170				
Surrogate: 4-Bromofluorobenzene	0.0394		"	0.0400	98.4	21-167				

LCS (3090608-BS1)

Prepared & Analyzed: 09/06/13

Benzene	0.0935	0.0020	mg/kg	0.100	93.5	58-130				
Toluene	0.107	0.0050	"	0.100	107	61-134				
Ethylbenzene	0.114	0.0050	"	0.100	114	74-139				
m,p-Xylene	0.224	0.010	"	0.200	112	73-137				
o-Xylene	0.115	0.0050	"	0.100	115	73-141				
Surrogate: 1,2-Dichloroethane-d4	0.0428		"	0.0397	108	23-173				
Surrogate: Toluene-d8	0.0407		"	0.0400	102	20-170				
Surrogate: 4-Bromofluorobenzene	0.0393		"	0.0400	98.2	21-167				

LCS Dup (3090608-BSD1)

Prepared & Analyzed: 09/06/13

Benzene	0.0891	0.0020	mg/kg	0.100	89.1	58-130	4.83	13		
Toluene	0.103	0.0050	"	0.100	103	61-134	3.57	16		
Ethylbenzene	0.108	0.0050	"	0.100	108	74-139	5.53	12		
m,p-Xylene	0.213	0.010	"	0.200	107	73-137	5.00	14		
o-Xylene	0.110	0.0050	"	0.100	110	73-141	4.31	12		
Surrogate: 1,2-Dichloroethane-d4	0.0419		"	0.0397	106	23-173				
Surrogate: Toluene-d8	0.0405		"	0.0400	101	20-170				
Surrogate: 4-Bromofluorobenzene	0.0391		"	0.0400	97.6	21-167				

Summit Scientific

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1099 18th St, Suite 1800
Denver CO, 80202

Project: UPRR 42 Pan AM B1
Project Number: WO #88406957
Project Manager: Mike Dinkel

Reported:
09/10/13 06:47

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

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

Batch 3090608 - EPA 5030 Soil MS

Matrix Spike (3090608-MS1)		Source: R309031-01			Prepared & Analyzed: 09/06/13					
Benzene	0.0853	0.0020	mg/kg	0.100	ND	85.3	30-131			
Toluene	0.0979	0.0050	"	0.100	ND	97.9	30-134			
Ethylbenzene	0.103	0.0050	"	0.100	ND	103	22-153			
m,p-Xylene	0.204	0.010	"	0.200	ND	102	10-159			
o-Xylene	0.104	0.0050	"	0.100	ND	104	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0430		"	0.0397		108	23-173			
Surrogate: Toluene-d8	0.0402		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0392		"	0.0400		98.1	21-167			

Matrix Spike Dup (3090608-MSD1)		Source: R309031-01			Prepared & Analyzed: 09/06/13					
Benzene	0.0807	0.0020	mg/kg	0.100	ND	80.7	30-131	5.57	34	
Toluene	0.0955	0.0050	"	0.100	ND	95.5	30-134	2.51	30	
Ethylbenzene	0.102	0.0050	"	0.100	ND	102	22-153	0.556	24	
m,p-Xylene	0.202	0.010	"	0.200	ND	101	10-159	1.24	68	
o-Xylene	0.102	0.0050	"	0.100	ND	102	31-151	2.15	38	
Surrogate: 1,2-Dichloroethane-d4	0.0397		"	0.0397		100	23-173			
Surrogate: Toluene-d8	0.0406		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0385		"	0.0400		96.2	21-167			

Batch 3090909 - EPA 5030 Soil MS

Blank (3090909-BLK1)		Prepared: 09/09/13 Analyzed: 09/10/13								
Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0425		"	0.0397		107	23-173			
Surrogate: Toluene-d8	0.0400		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0417		"	0.0400		104	21-167			

Summit Scientific

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Anadarko - Denver
1099 18th St, Suite 1800
Denver CO, 80202

Project: UPRR 42 Pan AM B1
Project Number: WO #88406957
Project Manager: Mike Dinkel

Reported:
09/10/13 06:47

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

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

Batch 3090909 - EPA 5030 Soil MS

LCS (3090909-BS1)

Prepared: 09/09/13 Analyzed: 09/10/13

Benzene	0.0932	0.0020	mg/kg	0.100		93.2	58-130			
Toluene	0.0945	0.0050	"	0.100		94.5	61-134			
Ethylbenzene	0.0963	0.0050	"	0.100		96.3	74-139			
m,p-Xylene	0.195	0.010	"	0.200		97.4	73-137			
o-Xylene	0.0972	0.0050	"	0.100		97.2	73-141			
Surrogate: 1,2-Dichloroethane-d4	0.0423		"	0.0397		107	23-173			
Surrogate: Toluene-d8	0.0399		"	0.0400		99.7	20-170			
Surrogate: 4-Bromofluorobenzene	0.0411		"	0.0400		103	21-167			

LCS Dup (3090909-BSD1)

Prepared: 09/09/13 Analyzed: 09/10/13

Benzene	0.0939	0.0020	mg/kg	0.100		93.9	58-130	0.738	13	
Toluene	0.0955	0.0050	"	0.100		95.5	61-134	1.01	16	
Ethylbenzene	0.0974	0.0050	"	0.100		97.4	74-139	1.11	12	
m,p-Xylene	0.197	0.010	"	0.200		98.7	73-137	1.33	14	
o-Xylene	0.0980	0.0050	"	0.100		98.0	73-141	0.769	12	
Surrogate: 1,2-Dichloroethane-d4	0.0419		"	0.0397		105	23-173			
Surrogate: Toluene-d8	0.0399		"	0.0400		99.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0406		"	0.0400		102	21-167			

Matrix Spike (3090909-MS1)

Source: R309040-03

Prepared: 09/09/13 Analyzed: 09/10/13

Benzene	0.0919	0.0020	mg/kg	0.100	ND	91.9	30-131			
Toluene	0.0947	0.0050	"	0.100	ND	94.7	30-134			
Ethylbenzene	0.0968	0.0050	"	0.100	ND	96.8	22-153			
m,p-Xylene	0.196	0.010	"	0.200	ND	98.2	10-159			
o-Xylene	0.0979	0.0050	"	0.100	ND	97.9	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0422		"	0.0397		106	23-173			
Surrogate: Toluene-d8	0.0397		"	0.0400		99.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0406		"	0.0400		102	21-167			

Summit Scientific

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Anadarko - Denver
1099 18th St, Suite 1800
Denver CO, 80202

Project: UPRR 42 Pan AM B1
Project Number: WO #88406957
Project Manager: Mike Dinkel

Reported:
09/10/13 06:47

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

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

Batch 3090909 - EPA 5030 Soil MS

Matrix Spike Dup (3090909-MSD1)	Source: R309040-03			Prepared: 09/09/13		Analyzed: 09/10/13				
Benzene	0.0956	0.0020	mg/kg	0.100	ND	95.6	30-131	3.94	34	
Toluene	0.0987	0.0050	"	0.100	ND	98.7	30-134	4.16	30	
Ethylbenzene	0.0997	0.0050	"	0.100	ND	99.7	22-153	2.96	24	
m,p-Xylene	0.202	0.010	"	0.200	ND	101	10-159	2.91	68	
o-Xylene	0.0993	0.0050	"	0.100	ND	99.3	31-151	1.43	38	
Surrogate: 1,2-Dichloroethane-d4	0.0436		"	0.0397		110	23-173			
Surrogate: Toluene-d8	0.0398		"	0.0400		99.6	20-170			
Surrogate: 4-Bromofluorobenzene	0.0412		"	0.0400		103	21-167			

Summit Scientific

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Anadarko - Denver
1099 18th St, Suite 1800
Denver CO, 80202

Project: UPRR 42 Pan AM B1

Project Number: WO #88406957
Project Manager: Mike Dinkel

Reported:
09/10/13 06:47

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

A handwritten signature in black ink, appearing to be 'JMM'.

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

November 14, 2013

Jim Dawe
Anadarko - Denver
1099 18th St, Suite 1800
Denver, CO 80202
RE: UPRR Pan Am B1

Enclosed are the results of analyses for samples received by Summit Scientific on 11/14/13 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

DRAFT REPORT
DATA SUBJECT TO CHANGE

Anadarko - Denver
1099 18th St, Suite 1800
Denver CO, 80202

Project: UPRR Pan Am B1

Project Number: WO #88406957
Project Manager: Jim Dawe

Reported:
11/14/13 22:38

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DRAFT: W02@13'	R311096-01	Soil	11/14/13 14:40	11/14/13 16:30

Summit Scientific
R311096

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

Client: Tasman Australia Project Manager: Jim Davis

Address: _____ E-Mail: _____

City/State/Cp: _____ Project Name: APR 26 to 27m B1

Phone: _____ Project Number: 8840 6857

Fax: _____

Sample Name: Gr 12 Sigal

Page _____ of _____

[illegible]

www.s2scientific.com

DRAFT REPORT

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.



Anadarko - Denver
1099 18th St, Suite 1800
Denver CO, 80202

Project: UPRR Pan Am B1
Project Number: WO #88406957
Project Manager: Jim Dawe

Reported:
11/14/13 22:38

DRAFT: W02@13'
R311096-01 (Soil)

Summit Scientific

DRAFT: Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 11/14/13 14:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	56	50	mg/kg	1	3111407	11/14/13	11/14/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 11/14/13 14:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		111 %	30-150		"	"	"	"	

DRAFT: Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 11/14/13 14:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3111408	11/14/13	11/14/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	5.1	0.50	"	"	"	"	"	"	

Date Sampled: 11/14/13 14:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		81.2 %	21-167		"	"	"	"	

DRAFT REPORT

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.



Anadarko - Denver
1099 18th St, Suite 1800
Denver CO, 80202

Project: UPRR Pan Am B1
Project Number: WO #88406957
Project Manager: Jim Dawe

Reported:
11/14/13 22:38

DRAFT: Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 3111407 - EPA 3550A

Blank (3111407-BLK1)

Prepared & Analyzed: 11/14/13

C10-C28 (TEPH-DRO)	ND	50	mg/kg
C28-C36 (TEPH-ORO)	ND	50	"

LCS (3111407-BS1)

Prepared & Analyzed: 11/14/13

C10-C28 (TEPH-DRO)	542	50	mg/kg	501	108	73-134
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Matrix Spike (3111407-MS1)

Source: R311087-02

Prepared & Analyzed: 11/14/13

C10-C28 (TEPH-DRO)	522	50	mg/kg	481	ND	109	50-148
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Matrix Spike Dup (3111407-MSD1)

Source: R311087-02

Prepared & Analyzed: 11/14/13

C10-C28 (TEPH-DRO)	526	50	mg/kg	476	ND	110	50-148	0.640	13
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DRAFT REPORT

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Anadarko - Denver
1099 18th St, Suite 1800
Denver CO, 80202

Project: UPRR Pan Am B1
Project Number: WO #88406957
Project Manager: Jim Dawe

Reported:
11/14/13 22:38

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

DRAFT REPORT

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