



February 8, 2018

Mr. Erik Mickelson  
Senior HSE Representative  
Kerr-McGee Oil & Gas Onshore LP  
1099 18th Street, Suite 1800  
Denver, Colorado 80202

**Re: Sump Closure Summary Report  
Berry P 26-24 Tank Battery  
Location ID: 302774  
SESW 26 3N67W  
COGCC eForm 27 Initial Remediation #10981**

Dear Mr. Mickelson:

Apex Companies, LLC (Apex) is providing Kerr-McGee Oil & Gas Onshore LP (Kerr-McGee) with this Sump Closure Summary Report (Report) to document sampling activities and the results of environmental testing at the tank battery associated with the Berry P 26-24 well. In accordance with the Initial eForm 27 - Remediation Number 10981 as approved by the COGCC, this form is being submitted to document two produced water vessel closure activities. Apex provided the environmental services at the site, that included the collection of confirmation samples from the excavation and documentation of field activities, as described below.

#### Site Assessment Activities

The field activities described herein were performed on November 21, 2017, with the purpose of assessing potential hydrocarbon impacts at the site related to the closure of two produced water vessels. Soil sampling activities, laboratory analytical results, and conclusions are presented below. The general site layout and sample locations are provided on Figure 1.

The final extent of the excavation measured approximately 34 feet by 20 feet, at an approximate depth of 6 feet below ground surface (bgs). Impacted soil was not encountered in the excavation. Groundwater was not encountered in the excavation.

Confirmation soil samples were collected from the sidewalls of the excavation area at approximately 3 feet bgs, and from the base of the excavation, beneath each location of the former produced water vessels, at approximately 6 feet bgs. Soil samples were field-screened for volatile organic compound concentrations using a photoionization detector. The soil samples collected beneath the two former produced water vessel locations (B01@6' and B02@6') were submitted to Origins Laboratory in Denver, Colorado and analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX), total petroleum hydrocarbons (TPH) – gasoline range organics (GRO) by United States Environmental Protection Agency (USEPA) Method 8260, TPH – diesel range and residual range organics (DRO and RRO, respectively) by USEPA Method 8015, electrical conductivity (EC), and pH. Soil analytical data are summarized in Table 1, and the laboratory analytical report is provided in Attachment A.

## Results

Analytical results from the two soil base samples (B01@6' and B02@6') indicate that BTEX and TPH concentrations are below the applicable COGCC Table 910-1 standards. For both EC and pH, analytical results indicate that concentrations are within COGCC Table 910-1 allowable concentrations. The remaining soil samples, collected from the sidewalls of the excavation area, were not submitted for laboratory analysis as analytical data from the samples collected beneath the two locations of the former produced water vessels confirmed the absence of petroleum hydrocarbon impacts above COGCC Table 910-1 standards.

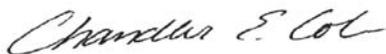
## Conclusions

Analytical results described herein confirm BTEX and TPH impacts are not present at concentrations above applicable regulatory standards at the former produced water vessel locations. Consequently, no further site assessment or remedial activity is necessary. Prior to site assessment activities, the sumps were permanently removed.

Please contact me at (720) 501-5052 if you have any questions regarding this report or require additional information.

Sincerely,

Apex Companies, LLC



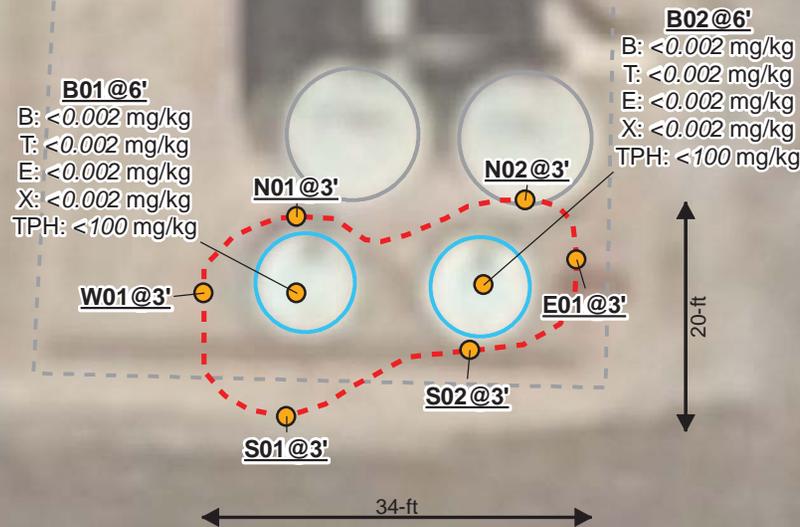
Chandler E Cole  
Project Manager

## Attachments:

Figure 1 – Berry P 26-24 Tank Battery - Facility Layout & Analytical Results  
Table 1 – Soil Sample Analytical Results  
Attachment A – Laboratory Analytical Report



**Figure 1**  
**Berry P 26-24**  
**Tank Battery -**  
**Facility Layout &**  
**Analytical Results**



**Legend**

- Soil Sample
- Former Crude Oil Tank
- Former Produced Water Tank
- Former Secondary Containment
- Excavation Extent

**Sample Location**

- B: benzene
- T: toluene
- E: ethylbenzene
- X: xylenes
- TPH: total petroleum hydrocarbons

Bold values exceed COGCC Table 910-1 allowable concentrations

**Site Characteristics**

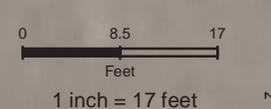
**Legal Location:** NESW Sec 26, T3N R67W  
**County:** Weld  
**Land Use:** Crop Land  
**Topography:** Not Available  
**Run-Off Risk:** Low  
**Soil Type:** Aquolls and Aquentis

REVISED	BY	COMMENT
12/5/2017	BJB	Figure 1



Apex Companies, LLC  
 beau.bergstrom@apexco.com  
 M:\Projects\Anadarko\DJ\_Basin\Remediation\Berry\_P\_26-24\Projects\Berry\_P\_26-24\_Fig1.dwg\_20171205.mxd

For illustration purposes, spatial data in this diagram (e.g. sample points, excavation perimeter) is representative of field observations, and for illustration purposes may have been adjusted to align with aerial imagery and other pictured spatial data. Apex also collects spatial data using GPS units with real-time differential correction and sub-meter accuracy. Spatial data (e.g. ESRI shapefiles, Google Earth KMZ) provided separately from this diagram, may not be consistent with what is presented in this site diagram, due to adjustments made for illustrative purposes.





# Table 1 - Soil Sample Analytical Results

Kerr-McGee Oil & Gas Onshore LP  
 Location Name: Berry P 26-24 Tank Battery  
 Location ID: 302774  
 County: Weld

Sample ID	Sample Date	Sample Depth (feet bgs)	Organics in Soil							Inorganics in Soil	
			TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-RRO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes - total (mg/kg)	Electrical Conductivity (mmhos/cm) <small>(<math>&lt;4</math> or <math>2\times</math> background)</small>	pH <small>(6-9)</small>
			500			0.17	85	100	175		
B01@6'	11/21/17	6	<0.200	<25.0	<100	<0.002	<0.002	<0.002	<0.002	0.120	8.56
B02@6'	11/21/17	6	<0.200	<25.0	<100	<0.002	<0.002	<0.002	<0.002	0.0324	8.78

**Notes:**

- |             |  |          |  |
|-------------|--|----------|--|
| TPH         | Total petroleum hydrocarbons   | bgs      | below ground surface                         |
| GRO         | Gasoline range organics (C6 - C10)   | mg/kg    | milligrams per kilogram                      |
| DRO         | Diesel range organics (C10 - C28)  | mmhos/cm | millimhos per centimeter                     |
| RRO         | Residual range organics (C28 - C40)  | NA       | Not analyzed / not available                 |
| <b>Bold</b> | value indicates result exceeded COGCC Table 910-1 allowable concentration for the contaminant / inorganic of concern | COGCC    | Colorado Oil and Gas Conservation Commission |

**Attachment A**

**Laboratory Analytical Report**



November 22, 2017

Apex Companies, LLC  
Chandler Cole  
4150 Darley Avenue, Suite 1  
Boulder CO 80305

Project Name - KMG - Berry P 26-24

Project Number - [none]

Attached are your analytical results for KMG - Berry P 26-24 received by Origins Laboratory, Inc. November 21, 2017. This project is associated with Origins project number Y711333-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Apex Companies, LLC  
4150 Darley Avenue, Suite 1  
Boulder CO 80305

Chandler Cole  
Project Number: [none]  
Project: KMG - Berry P 26-24

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B01@6'	Y711333-01	Soil	November 21, 2017 13:15	11/21/2017 15:00
B02@6'	Y711333-05	Soil	November 21, 2017 13:25	11/21/2017 15:00

Origins Laboratory, Inc.



*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.*

Apex Companies, LLC  
 4150 Darley Avenue, Suite 1  
 Boulder CO 80305

Chandler Cole  
 Project Number: [none]  
 Project: KMG - Berry P 26-24

www.originslaboratory.com

page 1 of 1

711333



Client: Apex Companies  
 Address: 1746 Cole Blvd, Lakewood, CO 80401  
 Telephone Number: 970-903-1260  
 Email Address: Chandler.Cole@apexcoos.com

Project Manager: Chandler Cole  
 Project Name: Berry P 26-24  
 Project Number: WO#pending Erik Mickelson  
 Samples Collected by: Brian Gibson  
 Bill to Anatarko

1725 Elk Place | Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix				Analysis				Sample Instructions			
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summa #	Other	GRTEX	DRO/RRO	EC, PH	HOLD SAR				
BO1E6'	11/21/17	1315	1	X				X				X	X	X	X		1		
SO1E3'		1318	1														2	Hold	
NO1E3'		1320	1														3		
NO1E3'		1321	1														4	→	
BO2E6'		1325	1														5		
Background		1306	1														6	Hold	
NO2E3'		1326	1														7		
EO1E3'		1328	1														8		
SO2E3'		1334	1														9	↘	
Relinquished By:	Date:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Turnaround Time:	
<i>[Signature]</i>	11/21/2017	1501	1501	1501	1501	1501	1501	1501	1501	1501	1501	1501	1501	1501	1501	1501	1501	1501	24 Hr <input type="checkbox"/>
Relinquished By:	Date:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	48 Hr <input type="checkbox"/>
																			Standard <input type="checkbox"/>

Date Results Needed: 7am, 11/22/17

5.6c

Origins Laboratory, Inc.

*Jefe Pellegrini*

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.

Apex Companies, LLC  
 4150 Darley Avenue, Suite 1  
 Boulder CO 80305

Chandler Cole  
 Project Number: [none]  
 Project: KMG - Berry P 26-24

Origins Laboratory F-012207-01-R1  
Effective Date: 01/09/12

**Sample Receipt Checklist**

Origins Work Order: 4711533 Client: Apex Co.  
 Client Project ID: KMG - Berry P 26-24  
 Checklist Completed by: Don Lu Shipped Via: HD  
 Date/time completed: 11-21-13 1528 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Airbill #: N/A  
 Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_  
 Cooler Number/Temperature:  / 5.6 °C  / \_\_\_\_\_ °C  / \_\_\_\_\_ °C (Describe)  
 Thermometer ID: 1003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			pH
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH >10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)		<input checked="" type="checkbox"/>		
Additional Comments (if any):				

<sup>(1)</sup>If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) [Signature]

Date/Time Reviewed 11-21-13 1528

Origins Laboratory, Inc.

Jefe Pellegrini

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Apex Companies, LLC  
 4150 Darley Avenue, Suite 1  
 Boulder CO 80305

Chandler Cole  
 Project Number: [none]  
 Project: KMG - Berry P 26-24

**B01@6'**  
**11/21/2017 1:15:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y711333-01 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B7K2103	11/21/2017	11/22/2017	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

*Surrogate: o-Terphenyl* 113 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7K2104	11/21/2017	11/21/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

*Surrogate: 1,2-Dichloroethane-d4* 117 % 70-130 " " "  
*Surrogate: Toluene-d8* 87.9 % 70-130 " " "  
*Surrogate: 4-Bromofluorobenzene* 102 % 70-130 " " "

**pH in Soil by EPA 9045D**

pH	8.56		pH Units	1	B7K2101	11/21/2017	11/21/2017	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.120		mmhos/cm	"	B7K2106	11/21/2017	11/21/2017	
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Origins Laboratory, Inc.



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Apex Companies, LLC  
 4150 Darley Avenue, Suite 1  
 Boulder CO 80305

Chandler Cole  
 Project Number: [none]  
 Project: KMG - Berry P 26-24

**B02@6'**

**11/21/2017 1:25:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y711333-05 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	25.0	mg/kg	1	B7K2103	11/21/2017	11/21/2017	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U
<i>Surrogate: o-Terphenyl</i>	91.7 %	59-131			"	"	"	

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7K2104	11/21/2017	11/21/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	121 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	100 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	93.6 %	70-130			"	"	"	

**pH in Soil by EPA 9045D**

pH	8.78		pH Units	1	B7K2101	11/21/2017	11/21/2017	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.0324		mmhos/cm	"	B7K2106	11/21/2017	11/21/2017	
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Origins Laboratory, Inc.



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Apex Companies, LLC  
 4150 Darley Avenue, Suite 1  
 Boulder CO 80305

Chandler Cole  
 Project Number: [none]  
 Project: KMG - Berry P 26-24

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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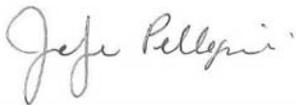
**Batch B7K2104 - EPA 5030 (soil)**

**Blank (B7K2104-BLK1)**

Prepared: 11/21/2017 Analyzed: 11/21/2017

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	59		ug/kg	62.5		94.4	70-130			
Surrogate: Toluene-d8	67		"	62.5		107	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

Origins Laboratory, Inc.



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Apex Companies, LLC  
 4150 Darley Avenue, Suite 1  
 Boulder CO 80305

Chandler Cole  
 Project Number: [none]  
 Project: KMG - Berry P 26-24

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B7K2104 - EPA 5030 (soil)**

**Blank (B7K2104-BLK2)**

Prepared: 11/21/2017 Analyzed: 11/21/2017

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	68		ug/kg	62.5		109	70-130			
Surrogate: Toluene-d8	61		"	62.5		98.3	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

Origins Laboratory, Inc.



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Apex Companies, LLC  
 4150 Darley Avenue, Suite 1  
 Boulder CO 80305

Chandler Cole  
 Project Number: [none]  
 Project: KMG - Berry P 26-24

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B7K2104 - EPA 5030 (soil)**

**LCS (B7K2104-BS1)**

Prepared: 11/21/2017 Analyzed: 11/21/2017

Benzene	0.099	0.002	mg/kg	0.100		98.9	77.1-124			
Toluene	0.106	0.002	"	0.100		106	74.5-128			
Ethylbenzene	0.096	0.002	"	0.100		95.7	66.4-127			
m,p-Xylene	0.188	0.004	"	0.200		94.0	76.6-124			
o-Xylene	0.094	0.002	"	0.100		94.4	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	58		ug/kg	62.5		93.5	70-130			
Surrogate: Toluene-d8	66		"	62.5		106	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.1	70-130			

Origins Laboratory, Inc.



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Apex Companies, LLC  
 4150 Darley Avenue, Suite 1  
 Boulder CO 80305

Chandler Cole  
 Project Number: [none]  
 Project: KMG - Berry P 26-24

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7K2104 - EPA 5030 (soil)

**LCS (B7K2104-BS2)**

Prepared: 11/21/2017 Analyzed: 11/21/2017

Benzene	0.103	0.002	mg/kg	0.100		103	77.1-124			
Toluene	0.102	0.002	"	0.100		102	74.5-128			
Ethylbenzene	0.106	0.002	"	0.100		106	66.4-127			
m,p-Xylene	0.214	0.004	"	0.200		107	76.6-124			
o-Xylene	0.105	0.002	"	0.100		105	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	62		ug/kg	62.5		98.6	70-130			
Surrogate: Toluene-d8	59		"	62.5		94.7	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.3	70-130			

Origins Laboratory, Inc.



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Apex Companies, LLC  
 4150 Darley Avenue, Suite 1  
 Boulder CO 80305

Chandler Cole  
 Project Number: [none]  
 Project: KMG - Berry P 26-24

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7K2104 - EPA 5030 (soil)

Matrix Spike (B7K2104-MS1)	Source: Y711285-01			Prepared: 11/21/2017 Analyzed: 11/21/2017						
Benzene	0.115	0.002	mg/kg	0.100	ND	115	71.8-126			
Toluene	0.117	0.002	"	0.100	ND	117	65.1-130			
Ethylbenzene	0.125	0.002	"	0.100	ND	125	62.2-130			
m,p-Xylene	0.250	0.004	"	0.200	ND	125	46.5-137			
o-Xylene	0.122	0.002	"	0.100	ND	122	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	59		ug/kg	62.5		94.0	70-130			
Surrogate: Toluene-d8	58		"	62.5		93.3	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

Origins Laboratory, Inc.



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Apex Companies, LLC  
 4150 Darley Avenue, Suite 1  
 Boulder CO 80305

Chandler Cole  
 Project Number: [none]  
 Project: KMG - Berry P 26-24

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7K2104 - EPA 5030 (soil)

Matrix Spike (B7K2104-MS2)	Source: Y711285-02			Prepared: 11/21/2017 Analyzed: 11/21/2017						
Benzene	0.113	0.002	mg/kg	0.100	ND	113	71.8-126			
Toluene	0.128	0.002	"	0.100	ND	128	65.1-130			
Ethylbenzene	0.123	0.002	"	0.100	ND	123	62.2-130			
m,p-Xylene	0.244	0.004	"	0.200	ND	122	46.5-137			
o-Xylene	0.120	0.002	"	0.100	ND	120	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	59		ug/kg	62.5		94.3	70-130			
Surrogate: Toluene-d8	65		"	62.5		104	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	70-130			

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**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7K2104 - EPA 5030 (soil)

Matrix Spike Dup (B7K2104-MSD1)	Source: Y711285-01			Prepared: 11/21/2017 Analyzed: 11/21/2017						
Benzene	0.110	0.002	mg/kg	0.100	ND	110	71.8-126	4.90	11.3	
Toluene	0.122	0.002	"	0.100	ND	122	65.1-130	4.08	15.4	
Ethylbenzene	0.102	0.002	"	0.100	ND	102	62.2-130	20.0	19.6	QR-02
m,p-Xylene	0.206	0.004	"	0.200	ND	103	46.5-137	19.7	19.2	QR-02
o-Xylene	0.110	0.002	"	0.100	ND	110	54.2-134	10.2	17.9	
Surrogate: 1,2-Dichloroethane-d4	60		ug/kg	62.5		95.2	70-130			
Surrogate: Toluene-d8	64		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.5	70-130			

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Chandler Cole  
 Project Number: [none]  
 Project: KMG - Berry P 26-24

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7K2104 - EPA 5030 (soil)

Matrix Spike Dup (B7K2104-MSD2)	Source: Y711285-02			Prepared: 11/21/2017 Analyzed: 11/21/2017						
Benzene	0.108	0.002	mg/kg	0.100	ND	108	71.8-126	5.21	11.3	
Toluene	0.121	0.002	"	0.100	ND	121	65.1-130	4.98	15.4	
Ethylbenzene	0.109	0.002	"	0.100	ND	109	62.2-130	11.9	19.6	
m,p-Xylene	0.221	0.004	"	0.200	ND	111	46.5-137	9.89	19.2	
o-Xylene	0.110	0.002	"	0.100	ND	110	54.2-134	9.06	17.9	
Surrogate: 1,2-Dichloroethane-d4	60		ug/kg	62.5		95.3	70-130			
Surrogate: Toluene-d8	66		"	62.5		105	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.0	70-130			

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**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Extractable Petroleum Hydrocarbons by 8015C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B7K2103 - EPA 3580**

**Blank (B7K2103-BLK1)**

Prepared: 11/21/2017 Analyzed: 11/21/2017

Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	54		"	50.0		107	59-131			

**LCS (B7K2103-BS1)**

Prepared: 11/21/2017 Analyzed: 11/21/2017

Diesel (C10-C28)	1020	50.0	mg/kg	1000		102	64-121			
Residual Range Organics (C28-C40)	846	200	"	1000		84.6	58-124			
Surrogate: o-Terphenyl	63		"	50.0		126	59-131			

**Matrix Spike (B7K2103-MS1)**

Source: Y711285-01

Prepared: 11/21/2017 Analyzed: 11/21/2017

Diesel (C10-C28)	978	50.0	mg/kg	1000	37.3	94.1	53-125			
Residual Range Organics (C28-C40)	800	200	"	1000	ND	80.0	47-133			
Surrogate: o-Terphenyl	59		"	50.0		117	59-131			

**Matrix Spike Dup (B7K2103-MSD1)**

Source: Y711285-01

Prepared: 11/21/2017 Analyzed: 11/21/2017

Diesel (C10-C28)	1020	50.0	mg/kg	1000	37.3	97.8	53-125	3.91	20	
Residual Range Organics (C28-C40)	857	200	"	1000	ND	85.7	47-133	6.84	20	
Surrogate: o-Terphenyl	61		"	50.0		122	59-131			

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Chandler Cole  
 Project Number: [none]  
 Project: KMG - Berry P 26-24

**Classical Chemistry Parameters - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B7K2101 - NO PREP</b>										
<b>Duplicate (B7K2101-DUP1)</b>		<b>Source: Y711312-06</b>			Prepared: 11/21/2017 Analyzed: 11/21/2017					
pH	9.12		pH Units		9.08			0.440	25	
<b>Batch B7K2106 - NO PREP</b>										
<b>Blank (B7K2106-BLK1)</b>		Prepared: 11/21/2017 Analyzed: 11/21/2017								
Specific Conductance (EC)	0.00510		mmhos/cm							
<b>Duplicate (B7K2106-DUP1)</b>		<b>Source: Y711333-05</b>			Prepared: 11/21/2017 Analyzed: 11/21/2017					
Specific Conductance (EC)	0.0351		mmhos/cm		0.0324			8.00	25	

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Chandler Cole  
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### Notes and Definitions

U Sample is Non-Detect.

QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President