



April 21, 2016

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

**Subject:** **Sump Closure Summary Report for Keller 61N66W/9NESE**  
**Facility Type:** Production Facility/Tank Battery  
**Location ID:** 311481  
**Legal Description of Facility:** NESE Section 9 1N 66W  
**Associated API Number:** 05-123-22984  
**Remediation Project Number:** 8961  
**Apex Project Number:** 066.1507.02 – COT0017

Dear Mr. Mickelson:

Apex Companies, LLC (Apex) is providing Kerr-McGee Oil & Gas Onshore LP (Kerr-McGee) this sump closure summary report for the Keller 61N66W/9NESE facility (Facility), which services American Petroleum Institute (API) well 05-123-22984 (Keller #43-9). On March 10, 2016, Kerr-McGee personnel reported that 2 barrels of produced water overflowed from the Facility's partially-buried produced water sump, into the secondary containment structure, and came into contact with soils at the perimeter of the sump. Between March 11 and March 22, field assessments were conducted to determine if impacts to groundwater and soil resulted from the release. This report summarizes field activities and provides laboratory analytical results, and is being submitted under the Form 27 Management Plan for Closure of Produced Water Vessels, which has been assigned Remediation #8961 by the Colorado Oil and Gas Conservation Commission (COGCC).

### **Summary of Field Activities**

To characterize impacts related to the release, on March 11, soil samples were collected from the surface at the perimeter of the produced water sump. On March 22, following excavation activities of soil beneath the removed sump, a groundwater sample and four soil samples were collected from the excavation. The groundwater sample was collected at a depth of 8 feet below ground surface (bgs), from within the excavation, while the four confirmation soil samples were collected at the sidewall extents of the excavation (Figure 1), at 6 feet bgs.

Each soil sample was field screened for volatile organic compounds with a calibrated photoionization detector (PID). All samples were submitted to Origins Laboratory, Inc. in Denver, Colorado. The groundwater sample was analyzed for benzene, toluene, ethylbenzene and total xylenes (BTEX) using Environmental Protection Agency (EPA) Method 8260C. The soil samples were analyzed for total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) and BTEX using Environmental Protection Agency (EPA) Method 8260C, TPH - diesel range organics (DRO) and TPH - residual range organics (RRO) using EPA Method 8015C, electrical conductivity (EC), and pH. Laboratory results are provided in the attached analytical results tables and laboratory reports, and are illustrated in the attached site layout (Figure 1).

The final excavation footprint was approximately 20 feet by 20 feet, by 8 feet. Approximately 60 cubic yards of material was excavated and removed from the Facility, and transported to the Buffalo Ridge Landfill, in Keenesburg, Colorado. Prior to site assessment activities, the produced water sump was permanently removed. Once the excavation was backfilled, an above-ground produced water tank was placed in the footprint of the former sump. The location is planned for continued use as a production facility.

### **Laboratory Analytical Results**

Laboratory analytical results from the confirmation soil samples collected at the sidewall extents beneath the sump indicated that TPH, BTEX, pH, and EC concentrations were within COGCC's Table 910-1 allowable

thresholds (Table 1). For the groundwater sample, laboratory analytical results were below COGCC Table 910-1 allowable thresholds for BTEX.

### **Conclusions and Recommendations**

Based on laboratory analytical results of TPH, BTEX, pH, and EC, concentrations of organic and inorganic constituents of concern are below COGCC Table 910-1 thresholds beneath the previous location of the sump, and no further remedial activity is necessary. If you have any questions regarding this submittal, please contact me at 303.242.8671.

Sincerely,  
**Apex Companies, LLC**

Reviewed by:



Jacob Hildebrand, PMP  
Project Manager



Brad Kieding  
Branch Manager

### **Attachments:**

Table 1 - Soil Sample Analytical Results  
Table 2 - Groundwater Sample Analytical Results  
Figure 1 – Site Layout  
Laboratory Analytical Reports

# Table 1 - Soil Sample Analytical Results



Kerr-McGee Oil and Gas Onshore LP

Location Name: Keller 61N66W/9NESE

Location ID: 311481

API #: 05-123-22984

County: Weld

County: Weld

COGCC Allowable Concentration →			Organics in Soil							Inorganics in Soil	
			500			0.17	85	100	175	(<4 or 2x background)	(6-9)
Sample ID	Sample Date	Depth (feet bgs)	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)	pH
South 1 @ 6'	03/22/16	6'	<0.200	<50	<200	<0.002	<0.002	<0.002	<0.002	0.0416	7.99
East 1 @ 6'	03/22/16	6'	0.621	210	<200	<0.002	<0.002	<0.002	<0.002	0.0282	7.51
West 1 @ 6'	03/22/16	6'	<0.200	<50	<200	<0.002	<0.002	<0.002	<0.002	0.0343	7.31
North 1 @ 6'	03/22/16	6'	<0.200	<50	<200	<0.002	<0.002	<0.002	<0.002	0.0461	7.35
Base E @ 0'	03/11/16	0'	<5.00	<50	<200	<0.050	<0.050	<0.050	<0.050	0.225	8.24
Base SW @ 0'	03/11/16	0'	7.36	<50	<200	0.250	0.084	<0.050	0.178	0.521	7.10

Notes:

TPH Total petroleum hydrocarbons  
 GRO Gasoline range hydrocarbons (C6 - C10)  
 DRO Diesel range organics (C10 - C28)  
 RRO Reduced range organics (C28 - C36)

**Bold** cell indicates result exceeded COGCC Table 910-1 allowable concentration for the contaminant / inorganic of concern

bgs below ground surface  
 mg/kg milligrams per kilogram  
 mmhos/cm millimhos per centimeter  
 NA Not analyzed / not available  
 COGCC Colorado Oil and Gas Conservation Commission

## Table 2 - Groundwater Sample Analytical Results



**Kerr-McGee Oil and Gas Onshore LP**

**Location Name:** Keller 61N66W/9NESE

**Location ID:** 311481

**API #:** 05-123-22984

**County:** Weld

			Organics in Groundwater			
COGCC Allowable Concentration →			5	560	700	10,000
Sample ID	Sample Date	Depth (feet bgs)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes - total (µg/L)
Groundwater 1 @ 8'	03/22/16	8'	<4.0	<4.0	<4.0	38.9

Notes:

bgs below ground surface

µg/L micrograms per liter

NA Not analyzed / not available

COGCC Colorado Oil and Gas Conservation Commission

**Bold** cell indicates result exceeded COGCC Table 910-1

allowable concentration for the contaminant / inorganic of concern

**Figure 1**  
**Keller 61N66W/9NESE**  
**Site Layout**

**Legend**

- Groundwater Sample
- Soil Sample
- Existing Berm
- Excavation Extent (20' x 20')

**Sample Location**

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

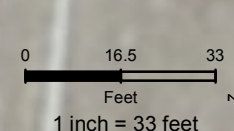
Bold values exceed COGCC Table  
910-1 allowable concentrations

**Site Characteristics**

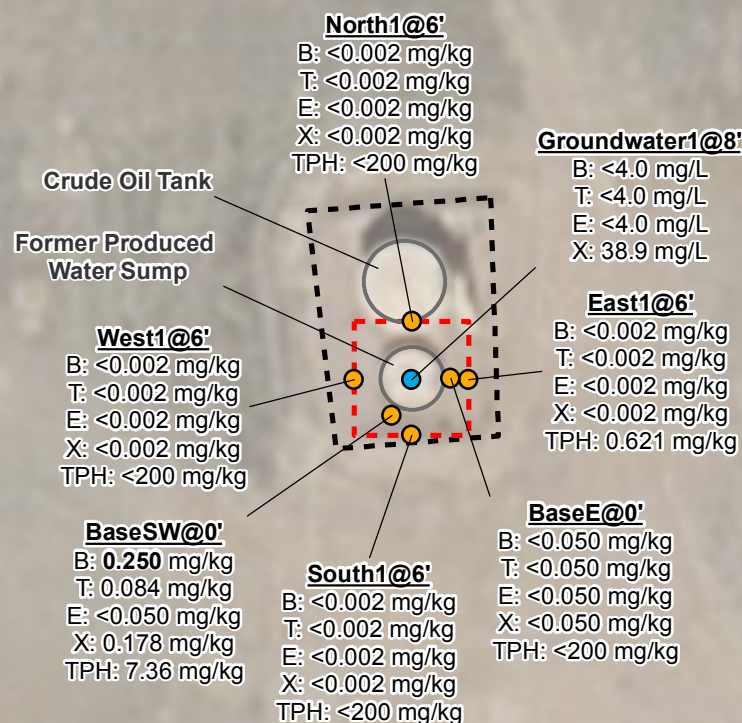
**Legal Location:** NESE, Sec 9, T1N R66W  
**County:** Weld  
**Land Use:** Non-cropland  
**Topography:** 0-3% Slopes  
**Run-Off Risk:** Very low  
**Soil Type:** Vona loamy sand

REVISED	BY	COMMENT
3/30/2016	BJB	Figure 1

Apex Companies, LLC  
beau.bergstrom@apexcos.com  
M:\Projects\Anadarko\DJ\_Basin\Remediation\Keller\_61N66W\_9NESE\Projects\Keller\_61N66W\_9NESE\_Fig1\_Dlg\_20160330.mxd



Non-cropland





March 14, 2016

Apex Companies, LLC

Jake Hildebrand

3240 W. 71st Avenue, Suite 1

Westminster CO 80030

Project Name - KMG - Keller 61N66W 9NESE

Project Number - 89028447

Attached are your analytical results for KMG - Keller 61N66W 9NESE received by Origins Laboratory, Inc. March 11, 2016. This project is associated with Origins project number X603181-01.

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  
3240 W. 71st Avenue, Suite 1  
Westminster CO 80030

Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Base E @ 0'	X603181-01	Soil	March 11, 2016 15:48	03/11/2016 17:11
Base SW @ 0'	X603181-02	Soil	March 11, 2016 15:50	03/11/2016 17:11

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.*



Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

[illegible]

Origins Laboratory, Inc.

Jeff Pellipini

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Apex Companies, LLC  
3240 W. 71st Avenue, Suite 1  
Westminster CO 80030

Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

Origins Laboratory

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

## Sample Receipt Checklist

Origins Work Order: X603181

Client: Apex

Client Project ID: Keller 61N66W 9NESE

Checklist Completed by: J. Pellegrini

Shipped Via: HTD  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 3/11/12

Airbill #: N/A

Matrix(s) Received: (Check all that apply): ☒ Soil/Solid ☐ Water ☐ Other: \_\_\_\_\_

Cooler Number/Temperature: 1 124.3 °C 1 °C 1 °C 1 °C (Describe)

Thermometer ID: T003

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> ?		X		Sampled Some Dry
Is there ice present (document if blue ice is used)		X		
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		A		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		A		
Were all samples received intact <sup>(1)</sup> ?	X			
Was adequate sample volume provided <sup>(1)</sup> ?	A			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	A			pH
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	X			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	A			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	A			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			A	
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)			A	
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.

J. Pellegrini  
Reviewed by (Project Manager)

3/11/12  
Date/Time Reviewed

Origins Laboratory, Inc.

*Jen Pellegrini*

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Apex Companies, LLC  
3240 W. 71st Avenue, Suite 1  
Westminster CO 80030

Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

Base E @ 0'  
3/11/2016 3:48:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X603181-01 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	B6C1102	03/11/2016	03/11/2016	U
Residual Range Organics (C28-C40)	ND	200	"	"	"	"	"	U

Surrogate: o-Terphenyl 97.3 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B6C1101	03/11/2016	03/11/2016	U
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4 101 % 70-130 " " "  
Surrogate: Toluene-d8 101 % 70-130 " " "  
Surrogate: 4-Bromofluorobenzene 99.9 % 70-130 " " "

**pH in Soil by EPA 9045D**

pH	8.24		pH Units	1	B6C1108	03/11/2016	03/11/2016	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.225		mmhos/cm	"	B6C1109	"	"	
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Origins Laboratory, Inc.



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Apex Companies, LLC  
3240 W. 71st Avenue, Suite 1  
Westminster CO 80030

Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

**Base SW @ 0'**  
**3/11/2016 3:50:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X603181-02 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	B6C1102	03/11/2016	03/11/2016	U
Residual Range Organics (C28-C40)	ND	200	"	"	"	"	"	U

Surrogate: o-Terphenyl 60.8 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	7.36	5.00	mg/kg	25	B6C1101	03/11/2016	03/11/2016	
Benzene	0.250	0.050	"	"	"	"	"	
Toluene	0.084	0.050	"	"	"	"	"	
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	0.178	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 102 % 70-130 " " "  
Surrogate: Toluene-d8 99.7 % 70-130 " " "  
Surrogate: 4-Bromofluorobenzene 99.7 % 70-130 " " "

**pH in Soil by EPA 9045D**

pH	7.10		pH Units	1	B6C1108	03/11/2016	03/11/2016	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.521		mmhos/cm	"	B6C1109	"	"	
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3240 W. 71st Avenue, Suite 1  
Westminster CO 80030

Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

**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
<b>Batch B6C1101 - EPA 5030 (soil)</b>										
<b>Blank (B6C1101-BLK1)</b>					Prepared: 03/11/2016 Analyzed: 03/11/2016					
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	74.8		ug/kg	62.5		120	70-130			
Surrogate: Toluene-d8	60.2		"	62.5		96.4	70-130			
Surrogate: 4-Bromofluorobenzene	61.7		"	62.5		98.7	70-130			

Origins Laboratory, Inc.



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Westminster CO 80030

Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

**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
<b>Batch B6C1101 - EPA 5030 (soil)</b>										
<b>LCS (B6C1101-BS1)</b>					Prepared: 03/11/2016 Analyzed: 03/11/2016					
Benzene	0.097	0.002	mg/kg	0.100		97.1	77.1-124			
Toluene	0.107	0.002	"	0.100		107	74.5-128			
Ethylbenzene	0.091	0.002	"	0.100		91.0	66.4-127			
m,p-Xylene	0.195	0.004	"	0.200		97.6	76.6-124			
o-Xylene	0.088	0.002	"	0.100		88.3	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	65.8		ug/kg	62.5		105	70-130			
Surrogate: Toluene-d8	62.0		"	62.5		99.3	70-130			
Surrogate: 4-Bromofluorobenzene	62.3		"	62.5		99.7	70-130			

Origins Laboratory, Inc.



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Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

**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 B6C1101 - EPA 5030 (soil)**

Matrix Spike (B6C1101-MS1)		Source: X603167-01			Prepared: 03/11/2016 Analyzed: 03/11/2016					
Benzene	0.090	0.002	mg/kg	0.100	ND	90.4	71.8-126			
Toluene	0.101	0.002	"	0.100	ND	101	65.1-130			
Ethylbenzene	0.111	0.002	"	0.100	ND	111	62.2-130			
m,p-Xylene	0.240	0.004	"	0.200	ND	120	46.5-137			
o-Xylene	0.105	0.002	"	0.100	ND	105	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	63.0		ug/kg	62.5		101	70-130			
Surrogate: Toluene-d8	65.5		"	62.5		105	70-130			
Surrogate: 4-Bromofluorobenzene	79.1		"	62.5		126	70-130			

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Project: KMG - Keller 61N66W 9NESE

**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
<b>Batch B6C1101 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B6C1101-MSD1)</b>	<b>Source: X603167-01</b>				Prepared: 03/11/2016 Analyzed: 03/11/2016					
Benzene	0.091	0.002	mg/kg	0.100	ND	90.8	71.8-126	0.486	11.3	
Toluene	0.096	0.002	"	0.100	ND	96.1	65.1-130	5.19	15.4	
Ethylbenzene	0.091	0.002	"	0.100	ND	90.5	62.2-130	20.2	19.6	QR-02
m,p-Xylene	0.192	0.004	"	0.200	ND	96.2	46.5-137	22.1	19.2	QR-02
o-Xylene	0.087	0.002	"	0.100	ND	86.9	54.2-134	18.8	17.9	QR-02
Surrogate: 1,2-Dichloroethane-d4	66.2		ug/kg	62.5		106	70-130			
Surrogate: Toluene-d8	63.8		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	73.6		"	62.5		118	70-130			

Origins Laboratory, Inc.



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Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

## 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 B6C1102 - EPA 3580

##### Blank (B6C1102-BLK1)

Prepared: 03/11/2016 Analyzed: 03/11/2016

Diesel (C10-C28)	ND	50	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	42		"	50.0		83.1	59-131			

##### LCS (B6C1102-BS1)

Prepared: 03/11/2016 Analyzed: 03/11/2016

Diesel (C10-C28)	800	50	mg/kg	1000		79.9	64-121			
Residual Range Organics (C28-C40)	820	200	"	1000		82.0	58-124			
Surrogate: o-Terphenyl	34		"	50.0		67.9	59-131			

##### Matrix Spike (B6C1102-MS1)

Source: X603167-01

Prepared: 03/11/2016 Analyzed: 03/11/2016

Diesel (C10-C28)	750	50	mg/kg	1000	43	70.9	53-125			
Residual Range Organics (C28-C40)	900	200	"	1000	290	61.0	47-133			
Surrogate: o-Terphenyl	37		"	50.0		74.9	59-131			

##### Matrix Spike Dup (B6C1102-MSD1)

Source: X603167-01

Prepared: 03/11/2016 Analyzed: 03/11/2016

Diesel (C10-C28)	910	50	mg/kg	1000	43	87.0	53-125	20.3	20	QR-02
Residual Range Organics (C28-C40)	1200	200	"	1000	290	90.5	47-133	38.9	20	QR-02
Surrogate: o-Terphenyl	50		"	50.0		100	59-131			

Origins Laboratory, Inc.



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Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6C1108 - NO PREP										
Duplicate (B6C1108-DUP1)		Source: X603170-01			Prepared: 03/11/2016 Analyzed: 03/11/2016					
pH	7.27		pH Units		7.50			3.11	25	
Batch B6C1109 - NO PREP										
Blank (B6C1109-BLK1)		Prepared: 03/11/2016 Analyzed: 03/11/2016								
Specific Conductance (EC)	0.00230		mmhos/cm							
Duplicate (B6C1109-DUP1)		Source: X603170-01			Prepared: 03/11/2016 Analyzed: 03/11/2016					
Specific Conductance (EC)	0.475		mmhos/cm		0.507			6.52	25	

Origins Laboratory, Inc.



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3240 W. 71st Avenue, Suite 1  
Westminster CO 80030

Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

### 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



March 23, 2016

Apex Companies, LLC

Jake Hildebrand

3240 W. 71st Avenue, Suite 1

Westminster CO 80030

Project Name - KMG - Keller 61N66W 9NESE

Project Number - 89028447

Attached are your analytical results for KMG - Keller 61N66W 9NESE received by Origins Laboratory, Inc. March 22, 2016. This project is associated with Origins project number X603283-01.

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  
3240 W. 71st Avenue, Suite 1  
Westminster CO 80030

Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
South 1 @ 6'	X603283-01	Soil	March 22, 2016 12:17	03/22/2016 17:41
East 1 @ 6'	X603283-02	Soil	March 22, 2016 12:19	03/22/2016 17:41
West 1 @ 6'	X603283-03	Soil	March 22, 2016 12:21	03/22/2016 17:41
North 1 @ 6'	X603283-04	Soil	March 22, 2016 12:23	03/22/2016 17:41
Groundwater 1 @ 8'	X603283-05	Water	March 22, 2016 12:59	03/22/2016 17:41

Origins Laboratory, Inc.



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Page 3 of 20

Apex Companies, LLC  
3240 W. 71st Avenue, Suite 1  
Westminster CO 80030

Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

Origins Laboratory

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

## Sample Receipt Checklist

Origins Work Order: X603783

Client: Apex

Client Project ID: Keller 61N66W 9NESE

Checklist Completed by: J. Henderson

Shipped Via: H/D

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 3/22/16 1751

Airbill #: 244

Matrix(s) Received: (Check all that apply): ☒ Soil/Solid ☒ Water ☐ Other: \_\_\_\_\_

Cooler Number/Temperature: 1 / 5.5 °C 1 °C 1 °C (Describe) 1 °C

Thermometer ID: T003

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"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pH</u>
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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.

J. Henderson  
Reviewed by (Project Manager)

3/22/16 1900  
Date/Time Reviewed

Origins Laboratory, Inc.

Jefe Pellegrini

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Apex Companies, LLC  
3240 W. 71st Avenue, Suite 1  
Westminster CO 80030

Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

## South 1 @ 6'

3/22/2016 12:17:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. X603283-01 (Soil)

### DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	B6C2202	03/22/2016	03/22/2016	U
Residual Range Organics (C28-C40)	ND	200	"	"	"	"	"	U

Surrogate: o-Terphenyl 88.9 % 59-131 " " "

### GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B6C2201	03/22/2016	03/22/2016	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 99.6 % 70-130 " " "  
Surrogate: Toluene-d8 100 % 70-130 " " "  
Surrogate: 4-Bromofluorobenzene 103 % 70-130 " " "

### pH in Soil by EPA 9045D

pH	7.99		pH Units	1	B6C2205	03/22/2016	03/22/2016	
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### Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0416		mmhos/cm	"	B6C2206	03/22/2016	03/22/2016	
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Origins Laboratory, Inc.



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Westminster CO 80030

Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

East 1 @ 6'

3/22/2016 12:19:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X603283-02 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	210	50	mg/kg	1	B6C2202	03/22/2016	03/22/2016	
Residual Range Organics (C28-C40)	ND	200	"	"	"	"	"	U

Surrogate: o-Terphenyl	77.1 %	59-131			"	"	"	
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**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	0.621	0.200	mg/kg	1	B6C2201	03/22/2016	03/22/2016	
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	103 %	70-130			"	"	"	
Surrogate: Toluene-d8	102 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	118 %	70-130			"	"	"	

**pH in Soil by EPA 9045D**

pH	7.51		pH Units	1	B6C2205	03/22/2016	03/22/2016	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.0282		mmhos/cm	"	B6C2206	03/22/2016	03/22/2016	
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3240 W. 71st Avenue, Suite 1  
Westminster CO 80030

Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

## West 1 @ 6'

3/22/2016 12:21:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. X603283-03 (Soil)

### DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	B6C2202	03/22/2016	03/22/2016	U
Residual Range Organics (C28-C40)	ND	200	"	"	"	"	"	U

Surrogate: o-Terphenyl 80.8 % 59-131 " " "

### GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B6C2201	03/22/2016	03/22/2016	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 99.0 % 70-130 " " "  
Surrogate: Toluene-d8 102 % 70-130 " " "  
Surrogate: 4-Bromofluorobenzene 104 % 70-130 " " "

### pH in Soil by EPA 9045D

pH	7.31		pH Units	1	B6C2205	03/22/2016	03/22/2016	
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### Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0343		mmhos/cm	"	B6C2206	03/22/2016	03/22/2016	
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Westminster CO 80030

Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

North 1 @ 6'  
3/22/2016 12:23:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X603283-04 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	B6C2202	03/22/2016	03/22/2016	U
Residual Range Organics (C28-C40)	ND	200	"	"	"	"	"	U

Surrogate: o-Terphenyl 85.8 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B6C2201	03/22/2016	03/22/2016	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 98.2 % 70-130 " " "  
Surrogate: Toluene-d8 101 % 70-130 " " "  
Surrogate: 4-Bromofluorobenzene 104 % 70-130 " " "

**pH in Soil by EPA 9045D**

pH	7.35		pH Units	1	B6C2205	03/22/2016	03/22/2016	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.0461		mmhos/cm	"	B6C2206	03/22/2016	03/22/2016	
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Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

Groundwater 1 @ 8'  
3/22/2016 12:59:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
X603283-05 (Water)

BTEX by EPA 8260C

Benzene	ND	4.0	ug/L	4	B6C2103	03/22/2016	03/22/2016	U
Toluene	ND	4.0	"	"	"	"	"	U
Ethylbenzene	ND	4.0	"	"	"	"	"	U
Xylenes, total	38.9	4.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	102 %	84-121	"	"	"
Surrogate: Toluene-d8	104 %	85-115	"	"	"
Surrogate: 4-Bromofluorobenzene	98.3 %	84-114	"	"	"

Origins Laboratory, Inc.



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Westminster CO 80030

Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

**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
<b>Batch B6C2103 - EPA 5030B (Water)</b>										
<b>Blank (B6C2103-BLK1)</b>					Prepared: 03/21/2016 Analyzed: 03/22/2016					
Benzene	ND	1.0	ug/L							U
Toluene	ND	1.0	"							U
Ethylbenzene	ND	1.0	"							U
Xylenes, total	ND	1.0	"							U
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5		100	84-121			
Surrogate: Toluene-d8	64		"	62.5		103	85-115			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		94.9	84-114			

Origins Laboratory, Inc.



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3240 W. 71st Avenue, Suite 1  
Westminster CO 80030

Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

**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 B6C2103 - EPA 5030B (Water)**

**LCS (B6C2103-BS1)**

Prepared: 03/21/2016 Analyzed: 03/22/2016

Benzene	51.1	1.0	ug/L	50.0	102	73.3-129
Toluene	52.7	1.0	"	50.0	105	76.2-123
Ethylbenzene	54.9	1.0	"	50.0	110	73.6-130
m,p-Xylene	111	2.0	"	100	111	76.1-126
o-Xylene	52.9	1.0	"	50.0	106	76.6-124
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5	101	84-121
Surrogate: Toluene-d8	64		"	62.5	103	85-115
Surrogate: 4-Bromofluorobenzene	65		"	62.5	103	84-114

Origins Laboratory, Inc.



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Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

**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 B6C2103 - EPA 5030B (Water)**

Matrix Spike (B6C2103-MS1)		Source: X603236-03			Prepared: 03/21/2016 Analyzed: 03/22/2016					
Benzene	56.5	1.0	ug/L	50.0	ND	113	74-130			
Toluene	60.3	1.0	"	50.0	ND	121	73-131			
Ethylbenzene	62.4	1.0	"	50.0	ND	125	76-132			
m,p-Xylene	124	2.0	"	100	ND	124	69-139			
o-Xylene	57.3	1.0	"	50.0	ND	115	74-131			
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		95.6	84-121			
Surrogate: Toluene-d8	65		"	62.5		104	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		96.9	84-114			

Origins Laboratory, Inc.



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Apex Companies, LLC  
3240 W. 71st Avenue, Suite 1  
Westminster CO 80030

Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

**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 B6C2103 - EPA 5030B (Water)**

Matrix Spike Dup (B6C2103-MSD1)		Source: X603236-03			Prepared: 03/21/2016 Analyzed: 03/22/2016					
Benzene	54.8	1.0	ug/L	50.0	ND	110	74-130	3.05	20	
Toluene	58.2	1.0	"	50.0	ND	116	73-131	3.58	20	
Ethylbenzene	59.3	1.0	"	50.0	ND	119	76-132	5.13	20	
m,p-Xylene	118	2.0	"	100	ND	118	69-139	4.40	20	
o-Xylene	55.0	1.0	"	50.0	ND	110	74-131	4.01	20	
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		94.1	84-121			
Surrogate: Toluene-d8	64		"	62.5		103	85-115			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	84-114			

Origins Laboratory, Inc.



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Apex Companies, LLC  
3240 W. 71st Avenue, Suite 1  
Westminster CO 80030

Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

**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
<b>Batch B6C2201 - EPA 5030 (soil)</b>										
<b>Blank (B6C2201-BLK1)</b>					Prepared: 03/22/2016 Analyzed: 03/22/2016					
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	64.6		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	63.1		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	65.2		"	62.5		104	70-130			

Origins Laboratory, Inc.



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Apex Companies, LLC  
3240 W. 71st Avenue, Suite 1  
Westminster CO 80030

Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

**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 B6C2201 - EPA 5030 (soil)**

**LCS (B6C2201-BS1)**

Prepared: 03/22/2016 Analyzed: 03/22/2016

Benzene	0.111	0.002	mg/kg	0.100		111	77.1-124			
Toluene	0.114	0.002	"	0.100		114	74.5-128			
Ethylbenzene	0.120	0.002	"	0.100		120	66.4-127			
m,p-Xylene	0.240	0.004	"	0.200		120	76.6-124			
o-Xylene	0.118	0.002	"	0.100		118	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	56.5		ug/kg	62.5		90.4	70-130			
Surrogate: Toluene-d8	64.4		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	65.2		"	62.5		104	70-130			

Origins Laboratory, Inc.



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Apex Companies, LLC  
3240 W. 71st Avenue, Suite 1  
Westminster CO 80030

Jake Hildebrand  
Project Number: 89028447  
Project: KMG - Keller 61N66W 9NESE

**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 B6C2201 - EPA 5030 (soil)**

Matrix Spike (B6C2201-MS1)		Source: X603249-01			Prepared: 03/22/2016 Analyzed: 03/22/2016					
Benzene	0.114	0.002	mg/kg	0.100	ND	114	71.8-126			
Toluene	0.116	0.002	"	0.100	ND	116	65.1-130			
Ethylbenzene	0.123	0.002	"	0.100	ND	123	62.2-130			
m,p-Xylene	0.248	0.004	"	0.200	ND	124	46.5-137			
o-Xylene	0.122	0.002	"	0.100	ND	122	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	56.4		ug/kg	62.5		90.3	70-130			
Surrogate: Toluene-d8	64.1		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	64.8		"	62.5		104	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 B6C2201 - EPA 5030 (soil)**

Matrix Spike Dup (B6C2201-MSD1)		Source: X603249-01			Prepared: 03/22/2016 Analyzed: 03/22/2016					
Benzene	0.112	0.002	mg/kg	0.100	ND	112	71.8-126	1.79	11.3	
Toluene	0.113	0.002	"	0.100	ND	113	65.1-130	2.99	15.4	
Ethylbenzene	0.119	0.002	"	0.100	ND	119	62.2-130	3.56	19.6	
m,p-Xylene	0.240	0.004	"	0.200	ND	120	46.5-137	3.29	19.2	
o-Xylene	0.118	0.002	"	0.100	ND	118	54.2-134	3.39	17.9	
Surrogate: 1,2-Dichloroethane-d4	59.3		ug/kg	62.5		94.9	70-130			
Surrogate: Toluene-d8	63.6		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	65.4		"	62.5		105	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 B6C2202 - EPA 3580

#### Blank (B6C2202-BLK1)

Prepared: 03/22/2016 Analyzed: 03/22/2016

Diesel (C10-C28)	ND	50	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	42		"	50.0		83.8	59-131			

#### LCS (B6C2202-BS1)

Prepared: 03/22/2016 Analyzed: 03/22/2016

Diesel (C10-C28)	920	50	mg/kg	1000		92.3	64-121			
Residual Range Organics (C28-C40)	980	200	"	1000		97.9	58-124			
Surrogate: o-Terphenyl	54		"	50.0		109	59-131			

#### Matrix Spike (B6C2202-MS1)

Source: X603249-01

Prepared: 03/22/2016 Analyzed: 03/22/2016

Diesel (C10-C28)	980	50	mg/kg	1000	ND	98.2	53-125			
Residual Range Organics (C28-C40)	1000	200	"	1000	ND	105	47-133			
Surrogate: o-Terphenyl	53		"	50.0		106	59-131			

#### Matrix Spike Dup (B6C2202-MSD1)

Source: X603249-01

Prepared: 03/22/2016 Analyzed: 03/22/2016

Diesel (C10-C28)	950	50	mg/kg	1000	ND	94.8	53-125	3.56	20	
Residual Range Organics (C28-C40)	970	200	"	1000	ND	96.9	47-133	7.92	20	
Surrogate: o-Terphenyl	55		"	50.0		109	59-131			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B6C2205 - NO PREP										
Duplicate (B6C2205-DUP1)		Source: X603269-01			Prepared: 03/22/2016 Analyzed: 03/22/2016					
pH	8.05		pH Units		8.06			0.124	25	
Batch B6C2206 - NO PREP										
Blank (B6C2206-BLK1)		Prepared: 03/22/2016 Analyzed: 03/22/2016								
Specific Conductance (EC)	0.00320		mmhos/cm							
Duplicate (B6C2206-DUP1)		Source: X603269-01			Prepared: 03/22/2016 Analyzed: 03/22/2016					
Specific Conductance (EC)	0.282		mmhos/cm		0.289			2.45	25	

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### Notes and Definitions

U Sample is Non-Detect.

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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