



September 21, 2017

Apex Companies, LLC

Chandler Cole

4150 Darley Avenue, Suite 1

Boulder CO 80305

Project Name - KMG - Erickson Birckle P25-4JI Project Number - [none]

Attached are your analytical results for KMG - Erickson Birckle P25-4JI received by Origins Laboratory, Inc. September 19, 2017. This project is associated with Origins project number Y709256-01.

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 - Erickson Birckle P25-4JI

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW01	Y709256-01	Water	September 19, 2017 15:22	09/19/2017 18:23
N01@1.5'	Y709256-02	Soil	September 19, 2017 15:25	09/19/2017 18:23
E01@1.5'	Y709256-03	Soil	September 19, 2017 15:28	09/19/2017 18:23
S01@1.5'	Y709256-04	Soil	September 19, 2017 15:32	09/19/2017 18:23
W01@1.5'	Y709256-05	Soil	September 19, 2017 15:35	09/19/2017 18:23

Per the email from Chandler on 9/20/17, E01@1.5', S01@1.5', and W01@1.5' were taken off hold.

Origins Laboratory, Inc.



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Chandler Cole
Project Number: [none]
Project: KMG - Erickson Birckle P25-4JI

[illegible]

Origins Laboratory, Inc.

Jeff Pellipini

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

Chandler Cole
Project Number: [none]
Project: KMG - Erickson Birckle P25-4J1

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 4759256

Client: Apex Co.

Client Project ID: van der Erickson Birckle P25-4J1

Checklist Completed by: Dan L.

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

Date/time completed: 5-19-17 1348

Airbill #: N/A

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

Cooler Number/Temperature: 1 4.8 °C 1 °C 1 °C (Describe) _____ °C

Thermometer ID: TC03

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<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 ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pk</u>
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<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 ⁽¹⁾ ? (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 ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾ 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]

5-19-17 1348
Date/Time Reviewed

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 - Erickson Birckle P25-4JI

GW01

9/19/2017 3:22:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y709256-01 (Water)

BTEX by EPA 8260C

Benzene	5.92	4.00	ug/L	4	B711911	09/19/2017	09/19/2017
Toluene	28.1	4.00	"	"	"	"	"
Ethylbenzene	440	4.00	"	"	"	"	"
Xylenes, total	591	4.00	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	100 %	84-121			"	"	"
Surrogate: Toluene-d8	104 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	103 %	84-114			"	"	"

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 - Erickson Birckle P25-4JI

N01@1.5'
9/19/2017 3:25:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y709256-02 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	25.0	mg/kg	1	B711902	09/19/2017	09/19/2017	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 93.4 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B711901	09/19/2017	09/19/2017	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 98.0 % 70-130 " " "
Surrogate: Toluene-d8 99.5 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 102 % 70-130 " " "

pH in Soil by EPA 9045D

pH	8.43		pH Units	1	B711903	09/19/2017	09/20/2017	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0915		mmhos/cm	"	B711904	"	"	
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4150 Darley Avenue, Suite 1
Boulder CO 80305

Chandler Cole
Project Number: [none]
Project: KMG - Erickson Birckle P25-4JI

E01@1.5'
9/19/2017 3:28:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y709256-03 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	25.0	mg/kg	1	B7I2002	09/20/2017	09/20/2017	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl	126 %	59-131			"	"	"	
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7I2001	09/20/2017	09/20/2017	U
Benzene	0.004	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	98.3 %	70-130			"	"	"	
Surrogate: Toluene-d8	102 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	104 %	70-130			"	"	"	

pH in Soil by EPA 9045D

pH	7.06		pH Units	1	B7I2003	09/20/2017	09/20/2017	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.147		mmhos/cm	"	B7I2004	09/20/2017	09/20/2017	
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Apex Companies, LLC
4150 Darley Avenue, Suite 1
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Chandler Cole
Project Number: [none]
Project: KMG - Erickson Birckle P25-4JI

S01@1.5'
9/19/2017 3:32:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y709256-04 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	25.0	mg/kg	1	B7I2002	09/20/2017	09/20/2017	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 116 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7I2001	09/20/2017	09/20/2017	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 104 % 70-130 " " "
Surrogate: Toluene-d8 101 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 105 % 70-130 " " "

pH in Soil by EPA 9045D

pH	7.44	pH Units	1	B7I2003	09/20/2017	09/20/2017
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.124	mmhos/cm	"	B7I2004	09/20/2017	09/20/2017
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4150 Darley Avenue, Suite 1
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Chandler Cole
Project Number: [none]
Project: KMG - Erickson Birckle P25-4JI

W01@1.5'
9/19/2017 3:35:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y709256-05 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	25.0	mg/kg	1	B7I2002	09/20/2017	09/20/2017	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 115 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7I2001	09/20/2017	09/20/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	0.002	0.002	"	"	"	"	"	
Xylenes, total	0.004	0.002	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 104 % 70-130 " " "
Surrogate: Toluene-d8 102 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 103 % 70-130 " " "

pH in Soil by EPA 9045D

pH	7.52		pH Units	1	B7I2003	09/20/2017	09/20/2017	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.184		mmhos/cm	"	B7I2004	09/20/2017	09/20/2017	
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Apex Companies, LLC
4150 Darley Avenue, Suite 1
Boulder CO 80305

Chandler Cole
Project Number: [none]
Project: KMG - Erickson Birckle P25-4JI

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
Batch B7I1901 - EPA 5030 (soil)										
Blank (B7I1901-BLK1)					Prepared: 09/19/2017 Analyzed: 09/19/2017					
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	54		ug/kg	62.5		86.0	70-130			
Surrogate: Toluene-d8	64		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.7	70-130			

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Chandler Cole
Project Number: [none]
Project: KMG - Erickson Birckle P25-4JI

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
Batch B7I1901 - EPA 5030 (soil)										
LCS (B7I1901-BS1)					Prepared: 09/19/2017 Analyzed: 09/19/2017					
Benzene	0.099	0.002	mg/kg	0.100		99.0	77.1-124			
Toluene	0.097	0.002	"	0.100		96.9	74.5-128			
Ethylbenzene	0.091	0.002	"	0.100		91.0	66.4-127			
m,p-Xylene	0.173	0.004	"	0.200		86.3	76.6-124			
o-Xylene	0.087	0.002	"	0.100		87.0	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	51		ug/kg	62.5		82.1	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		94.7	70-130			

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Chandler Cole
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Project: KMG - Erickson Birckle P25-4JI

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 B711901 - EPA 5030 (soil)

Matrix Spike (B711901-MS1)		Source: Y709211-02			Prepared: 09/19/2017 Analyzed: 09/19/2017					
Benzene	0.104	0.002	mg/kg	0.100	ND	104	71.8-126			
Toluene	0.101	0.002	"	0.100	ND	101	65.1-130			
Ethylbenzene	0.094	0.002	"	0.100	ND	93.6	62.2-130			
m,p-Xylene	0.178	0.004	"	0.200	ND	88.9	46.5-137			
o-Xylene	0.089	0.002	"	0.100	ND	88.6	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	51		ug/kg	62.5		82.4	70-130			
Surrogate: Toluene-d8	64		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		95.0	70-130			

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Chandler Cole
Project Number: [none]
Project: KMG - Erickson Birckle P25-4JI

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 B711901 - EPA 5030 (soil)

Matrix Spike Dup (B711901-MSD1)		Source: Y709211-02			Prepared: 09/19/2017 Analyzed: 09/19/2017					
Benzene	0.100	0.002	mg/kg	0.100	ND	99.7	71.8-126	4.07	11.3	
Toluene	0.099	0.002	"	0.100	ND	98.7	65.1-130	2.68	15.4	
Ethylbenzene	0.093	0.002	"	0.100	ND	93.0	62.2-130	0.600	19.6	
m,p-Xylene	0.176	0.004	"	0.200	ND	87.9	46.5-137	1.13	19.2	
o-Xylene	0.090	0.002	"	0.100	ND	89.6	54.2-134	1.10	17.9	
Surrogate: 1,2-Dichloroethane-d4	53		ug/kg	62.5		85.3	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.2	70-130			

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Chandler Cole
Project Number: [none]
Project: KMG - Erickson Birckle P25-4JI

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 B7I1911 - EPA 5030B (Water)

Blank (B7I1911-BLK1)

Prepared: 09/19/2017 Analyzed: 09/19/2017

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5	97.7	84-121				
Surrogate: Toluene-d8	64		"	62.5	102	85-115				
Surrogate: 4-Bromofluorobenzene	62		"	62.5	99.4	84-114				

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Chandler Cole
Project Number: [none]
Project: KMG - Erickson Birckle P25-4JI

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
Batch B7I1911 - EPA 5030B (Water)										
LCS (B7I1911-BS1)					Prepared: 09/19/2017 Analyzed: 09/19/2017					
Benzene	49.4	1.00	ug/L	50.0		98.7	73.3-129			
Toluene	49.9	1.00	"	50.0		99.7	76.2-123			
Ethylbenzene	48.8	1.00	"	50.0		97.6	73.6-130			
m,p-Xylene	95.0	2.00	"	100		95.0	76.1-126			
o-Xylene	46.9	1.00	"	50.0		93.8	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5		102	84-121			
Surrogate: Toluene-d8	64		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.7	84-114			

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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 B7I1911 - EPA 5030B (Water)

Matrix Spike (B7I1911-MS1)		Source: Y709220-02			Prepared: 09/19/2017 Analyzed: 09/19/2017					
Benzene	50.8	1.00	ug/L	50.0	ND	102	74-130			
Toluene	50.6	1.00	"	50.0	ND	101	73-131			
Ethylbenzene	50.0	1.00	"	50.0	ND	100	76-132			
m,p-Xylene	96.9	2.00	"	100	ND	96.9	69-139			
o-Xylene	48.7	1.00	"	50.0	ND	97.3	74-131			
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5		104	84-121			
Surrogate: Toluene-d8	64		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	84-114			

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Apex Companies, LLC
4150 Darley Avenue, Suite 1
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Chandler Cole
Project Number: [none]
Project: KMG - Erickson Birckle P25-4JI

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 B711911 - EPA 5030B (Water)

Matrix Spike Dup (B711911-MSD1)		Source: Y709220-02			Prepared: 09/19/2017 Analyzed: 09/19/2017					
Benzene	51.7	1.00	ug/L	50.0	ND	103	74-130	1.74	20	
Toluene	51.4	1.00	"	50.0	ND	103	73-131	1.55	20	
Ethylbenzene	50.9	1.00	"	50.0	ND	102	76-132	1.74	20	
m,p-Xylene	98.0	2.00	"	100	ND	98.0	69-139	1.15	20	
o-Xylene	49.1	1.00	"	50.0	ND	98.2	74-131	0.859	20	
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5		105	84-121			
Surrogate: Toluene-d8	64		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	84-114			

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Chandler Cole
Project Number: [none]
Project: KMG - Erickson Birckle P25-4JI

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
Batch B7I2001 - EPA 5030 (soil)										
Blank (B7I2001-BLK1)					Prepared: 09/20/2017 Analyzed: 09/20/2017					
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		94.3	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.4	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.3	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
Batch B7I2001 - EPA 5030 (soil)										
Blank (B7I2001-BLK2)					Prepared: 09/20/2017 Analyzed: 09/20/2017					
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	61		ug/kg	62.5		97.3	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.1	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	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
Batch B7I2001 - EPA 5030 (soil)										
LCS (B7I2001-BS1)					Prepared: 09/20/2017 Analyzed: 09/20/2017					
Benzene	0.105	0.002	mg/kg	0.100		105	77.1-124			
Toluene	0.099	0.002	"	0.100		99.1	74.5-128			
Ethylbenzene	0.092	0.002	"	0.100		92.3	66.4-127			
m,p-Xylene	0.178	0.004	"	0.200		88.9	76.6-124			
o-Xylene	0.089	0.002	"	0.100		88.8	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	56		ug/kg	62.5		89.3	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.2	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
Batch B7I2001 - EPA 5030 (soil)										
LCS (B7I2001-BS2)					Prepared: 09/20/2017 Analyzed: 09/20/2017					
Benzene	0.107	0.002	mg/kg	0.100		107	77.1-124			
Toluene	0.100	0.002	"	0.100		100	74.5-128			
Ethylbenzene	0.096	0.002	"	0.100		96.5	66.4-127			
m,p-Xylene	0.186	0.004	"	0.200		93.1	76.6-124			
o-Xylene	0.092	0.002	"	0.100		92.0	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	58		ug/kg	62.5		93.1	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.6	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.2	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 B7I2001 - EPA 5030 (soil)

Matrix Spike (B7I2001-MS1)		Source: Y709248-05			Prepared: 09/20/2017 Analyzed: 09/20/2017					
Benzene	0.100	0.002	mg/kg	0.100	ND	100	71.8-126			
Toluene	0.094	0.002	"	0.100	ND	94.5	65.1-130			
Ethylbenzene	0.092	0.002	"	0.100	ND	91.7	62.2-130			
m,p-Xylene	0.176	0.004	"	0.200	ND	87.8	46.5-137			
o-Xylene	0.088	0.002	"	0.100	ND	88.0	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	58		ug/kg	62.5		92.1	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.5	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.1	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 B7I2001 - EPA 5030 (soil)

Matrix Spike (B7I2001-MS2)		Source: Y709263-01			Prepared: 09/20/2017 Analyzed: 09/20/2017					
Benzene	0.100	0.002	mg/kg	0.100	ND	100	71.8-126			
Toluene	0.093	0.002	"	0.100	ND	93.5	65.1-130			
Ethylbenzene	0.092	0.002	"	0.100	ND	91.6	62.2-130			
m,p-Xylene	0.178	0.004	"	0.200	ND	88.9	46.5-137			
o-Xylene	0.089	0.002	"	0.100	ND	88.9	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	59		ug/kg	62.5		95.1	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.3	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.3	70-130			

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7I2001 - EPA 5030 (soil)

Matrix Spike Dup (B7I2001-MSD1)		Source: Y709248-05			Prepared: 09/20/2017 Analyzed: 09/20/2017					
Benzene	0.102	0.002	mg/kg	0.100	ND	102	71.8-126	1.64	11.3	
Toluene	0.096	0.002	"	0.100	ND	95.9	65.1-130	1.49	15.4	
Ethylbenzene	0.095	0.002	"	0.100	ND	94.6	62.2-130	3.14	19.6	
m,p-Xylene	0.182	0.004	"	0.200	ND	90.9	46.5-137	3.56	19.2	
o-Xylene	0.090	0.002	"	0.100	ND	90.3	54.2-134	2.56	17.9	
Surrogate: 1,2-Dichloroethane-d4	56		ug/kg	62.5		89.7	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.8	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.8	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 B7I2001 - EPA 5030 (soil)

Matrix Spike Dup (B7I2001-MSD2)		Source: Y709263-01			Prepared: 09/20/2017 Analyzed: 09/20/2017					
Benzene	0.093	0.002	mg/kg	0.100	ND	92.8	71.8-126	7.85	11.3	
Toluene	0.088	0.002	"	0.100	ND	88.0	65.1-130	5.99	15.4	
Ethylbenzene	0.086	0.002	"	0.100	ND	85.9	62.2-130	6.40	19.6	
m,p-Xylene	0.166	0.004	"	0.200	ND	82.8	46.5-137	7.18	19.2	
o-Xylene	0.083	0.002	"	0.100	ND	83.3	54.2-134	6.50	17.9	
Surrogate: 1,2-Dichloroethane-d4	56		ug/kg	62.5		90.0	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.1	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 B7I1902 - EPA 3550B

Blank (B7I1902-BLK1)

Prepared: 09/19/2017 Analyzed: 09/19/2017

Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	49		"	50.0		97.4	59-131			

LCS (B7I1902-BS1)

Prepared: 09/19/2017 Analyzed: 09/19/2017

Diesel (C10-C28)	1130	50.0	mg/kg	1000		113	64-121			
Residual Range Organics (C28-C40)	966	200	"	1000		96.6	58-124			
Surrogate: o-Terphenyl	60		"	50.0		120	59-131			

Matrix Spike (B7I1902-MS1)

Source: Y709211-02

Prepared: 09/19/2017 Analyzed: 09/19/2017

Diesel (C10-C28)	1010	50.0	mg/kg	1000	ND	101	53-125			
Residual Range Organics (C28-C40)	895	200	"	1000	15.4	88.0	47-133			
Surrogate: o-Terphenyl	55		"	50.0		110	59-131			

Matrix Spike Dup (B7I1902-MSD1)

Source: Y709211-02

Prepared: 09/19/2017 Analyzed: 09/19/2017

Diesel (C10-C28)	884	50.0	mg/kg	1000	ND	88.4	53-125	13.5	20	
Residual Range Organics (C28-C40)	731	200	"	1000	15.4	71.6	47-133	20.5	20	QR-02
Surrogate: o-Terphenyl	46		"	50.0		91.4	59-131			

Batch B7I2002 - EPA 3580

Blank (B7I2002-BLK1)

Prepared: 09/20/2017 Analyzed: 09/20/2017

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Project: KMG - Erickson Birckle P25-4JI

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
Batch B7I2002 - EPA 3580										
Blank (B7I2002-BLK1)					Prepared: 09/20/2017 Analyzed: 09/20/2017					
Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	57		"	50.0		114	59-131			
LCS (B7I2002-BS1)					Prepared: 09/20/2017 Analyzed: 09/21/2017					
Diesel (C10-C28)	1090	50.0	mg/kg	1000		109	64-121			
Residual Range Organics (C28-C40)	922	200	"	1000		92.2	58-124			
Surrogate: o-Terphenyl	55		"	50.0		110	59-131			
Matrix Spike (B7I2002-MS1)					Source: Y709248-05		Prepared: 09/20/2017 Analyzed: 09/20/2017			
Diesel (C10-C28)	1410	50.0	mg/kg	1000	ND	141	53-125			QM-07
Residual Range Organics (C28-C40)	1030	200	"	1000	12.9	102	47-133			
Surrogate: o-Terphenyl	62		"	50.0		123	59-131			
Matrix Spike Dup (B7I2002-MSD1)					Source: Y709248-05		Prepared: 09/20/2017 Analyzed: 09/20/2017			
Diesel (C10-C28)	1360	50.0	mg/kg	1000	ND	136	53-125	4.11	20	QM-07
Residual Range Organics (C28-C40)	1170	200	"	1000	12.9	115	47-133	12.7	20	
Surrogate: o-Terphenyl	62		"	50.0		123	59-131			

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Chandler Cole
Project Number: [none]
Project: KMG - Erickson Birckle P25-4JI

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 B7I1903 - NO PREP										
Duplicate (B7I1903-DUP1)	Source: Y709211-01				Prepared: 09/19/2017 Analyzed: 09/19/2017					
pH	6.72		pH Units		6.95			3.37	25	
Batch B7I1904 - NO PREP										
Blank (B7I1904-BLK1)	Prepared: 09/19/2017 Analyzed: 09/19/2017									
Specific Conductance (EC)	0.00550		mmhos/cm							
Duplicate (B7I1904-DUP1)	Source: Y709211-01				Prepared: 09/19/2017 Analyzed: 09/19/2017					
Specific Conductance (EC)	0.0299		mmhos/cm		0.0324			8.03	25	
Batch B7I2003 - NO PREP										
Duplicate (B7I2003-DUP1)	Source: Y709248-05				Prepared: 09/20/2017 Analyzed: 09/20/2017					
pH	7.23		pH Units		7.21			0.277	25	
Batch B7I2004 - NO PREP										
Blank (B7I2004-BLK1)	Prepared: 09/20/2017 Analyzed: 09/20/2017									
Specific Conductance (EC)	0.00530		mmhos/cm							
Duplicate (B7I2004-DUP1)	Source: Y709248-05				Prepared: 09/20/2017 Analyzed: 09/20/2017					
Specific Conductance (EC)	0.0176		mmhos/cm		0.0194			9.73	25	

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Chandler Cole
Project Number: [none]
Project: KMG - Erickson Birckle P25-4JI

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.

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

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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