

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
ALE PARTNERSHIP FED W 29-16JI
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

COGCC Allowable Concentration (Soil) -->				Organics (mg/kg)										
				500			0.17	85	100	175	23			
Sample ID:	Sample Date:	Sample Depth (feet bgs):	Photoionization Detector Reading (ppm):	TPH-GRO (C6-C10) Low Fraction	TPH-DRO (C10-C28) High Fraction	TPH-RRO (C28-C40) High Fraction	Benzene	Toluene	Ethylbenzene	Xylenes - total	Naphthalene	EC (<4 mmhos/cm or 2x background)	pH (unit)	SAR
B01@5'	06/10/2019	5'	100.1	<0.200	<25.0	<100	<0.002	<0.002	<0.002	<0.002	<0.008	0.0362	8.27	1.98
E01@4'	06/10/2019	4'	20.8	<5.00	<25.0	<100	<0.050	<0.050	<0.050	<0.050	<0.200	NA	NA	NA
N01@4'	06/10/2019	4'	5.2	<0.200	<25.0	<100	<0.002	<0.002	<0.002	<0.002	<0.008	NA	NA	NA
S01@4'	06/10/2019	4'	13.8	<0.200	<25.0	<100	<0.002	<0.002	<0.002	<0.002	<0.008	NA	NA	NA
W01@4'	06/10/2019	4'	18.4	<0.200	<25.0	<100	<0.002	<0.002	<0.002	<0.002	<0.008	NA	NA	NA

Notes: mg/kg - milligrams per kilogram
COGCC - Colorado Oil and Gas Conservation Commission
bgs - below ground surface
ppm - parts per million
TPH - total petroleum hydrocarbons
GRO - gasoline range organics
DRO - diesel range organics
RRO - residual range organics
EC - Specific Conductance
mmhos/cm - millimhos per centimeter
SAR - Sodium Adsorption Ratio
NA - not analyzed
Bold indicates result exceeds allowable level





June 17, 2019

LT Environmental, Inc.

Brian Sulzberger

4600 West 60th Avenue

Arvada

CO 80003

**Project Name - KMG - Ale Partnership Fed
W29-16JI**

Project Number - 014219072

Attached are your analytical results for KMG - Ale Partnership Fed W29-16JI received by Origins Laboratory, Inc. June 10, 2019. This project is associated with Origins project number Y906160-01.

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

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219072
Project: KMG - Ale Partnership Fed W29-16JI

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
N01@4'	Y906160-01	Soil	June 10, 2019 15:20	06/10/2019 16:37
E01@4'	Y906160-02	Soil	June 10, 2019 15:13	06/10/2019 16:37
S01@4'	Y906160-03	Soil	June 10, 2019 15:16	06/10/2019 16:37
W01@4'	Y906160-04	Soil	June 10, 2019 15:23	06/10/2019 16:37
B01@5'	Y906160-05	Soil	June 10, 2019 15:10	06/10/2019 16:37

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219072
Project: KMG - Ale Partnership Fed W29-16JI

www.originslaboratory.com

Y906160

ORIGINS
LABORATORY, INC

page 1 of 1

Client: LT Environmental
Address: 4600 W. 60th Ave.
Arvada, CO, 80003
Telephone Number: KMG Group
Email Address: KMG Group
Project Manager: B. Sulzberger
Project Name: Ale Partnership Fed W29-16JI
Project Number: 014219072
Samples Collected By: BH

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis			Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summary #	Other	GC/MS	ICP	
N01041	6-10-19	1520	1	X				X					X	1
E01041		1513	1	X				X					X	2
S01041		1516	1	X				X					X	3
W01041		1523	1	X				X					X	4
B01051		1510	2	X				X					X	5
B001		1525	2	X				X					X	6
													X	7
													X	8
													X	9
													X	10

Relinquished By: [Signature] Date: 5-10-19 Time: 1637
Relinquished By: [Signature] Date: 6-10-19 Time: 1637
Turnaround Time: Same Day ☒ 24 Hr ☐ 48 Hr ☐ 72 Hr ☐ Standard ☐

Temp Received: 26.5°C Date Results Needed

Origins Laboratory, Inc.

Jefe Pellegrini

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219072
Project: KMG - Ale Partnership Fed W29-16JI

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: Y906160

Client: LTE

Client Project ID: Ale Partnership Fed W29

Checklist Completed by: JG

Shipped Via: HD

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

Date/time completed: 6/10/2019

Airbill #: N/A

Matrix(s) Received: (Check all that apply): X Soil/Solid Water Other:

(Describe)

Cooler Number/Temperature: 1 265 °C °C °C °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 ⁽¹⁾ ?		<input checked="" type="checkbox"/>		<u>Same Day</u>
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 ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<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 ⁽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 checked="" 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) JG

Date/Time Reviewed 6/11/19

Origins Laboratory, Inc.

Jefe Pellegrini

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219072
Project: KMG - Ale Partnership Fed W29-16JI

N01@4'

6/10/2019 3:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y906160-01 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B9F1005	KDK	06/10/2019	06/10/2019	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl 76.7 % 50-150 " " "

GBTEX + Naphthalene by EPA 8260D

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B9F1004	KDK	"	06/10/2019	U
Benzene	ND	0.002	"	"	"	KDK	"	"	U
Toluene	ND	0.002	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.002	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.002	"	"	"	KDK	"	"	U
Naphthalene	ND	0.008	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4 108 % 70-130 " " "
Surrogate: Toluene-d8 91.4 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 97.8 % 70-130 " " "

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219072
Project: KMG - Ale Partnership Fed W29-16JI

E01@4'

6/10/2019 3:13:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y906160-02 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B9F1005	KDK	06/10/2019	06/10/2019	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl 73.6 % 50-150 " " "

GBTEX + Naphthalene by EPA 8260D

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B9F1004	KDK	"	06/10/2019	U
Benzene	ND	0.050	"	"	"	KDK	"	"	U
Toluene	ND	0.050	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.050	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.050	"	"	"	KDK	"	"	U
Naphthalene	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4 93.8 % 70-130 " " "
Surrogate: Toluene-d8 94.8 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 98.8 % 70-130 " " "

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219072
Project: KMG - Ale Partnership Fed W29-16JI

S01@4'

6/10/2019 3:16:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y906160-03 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B9F1005	KDK	06/10/2019	06/10/2019	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl 76.7 % 50-150 " " "

GBTEX + Naphthalene by EPA 8260D

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B9F1004	KDK	"	06/10/2019	U
Benzene	ND	0.002	"	"	"	KDK	"	"	U
Toluene	ND	0.002	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.002	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.002	"	"	"	KDK	"	"	U
Naphthalene	ND	0.008	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4 101 % 70-130 " " "
Surrogate: Toluene-d8 92.8 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 98.4 % 70-130 " " "

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219072
Project: KMG - Ale Partnership Fed W29-16JI

W01@4'

6/10/2019 3:23:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y906160-04 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B9F1005	KDK	06/10/2019	06/10/2019	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl 67.3 % 50-150 " " "

GBTEX + Naphthalene by EPA 8260D

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B9F1004	KDK	"	06/10/2019	U
Benzene	ND	0.002	"	"	"	KDK	"	"	U
Toluene	ND	0.002	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.002	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.002	"	"	"	KDK	"	"	U
Naphthalene	ND	0.008	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4 102 % 70-130 " " "
Surrogate: Toluene-d8 93.3 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 98.6 % 70-130 " " "

Origins Laboratory, Inc.



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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219072
Project: KMG - Ale Partnership Fed W29-16JI

B01@5'

6/10/2019 3:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y906160-05 (Soil)

DRO/ORO by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B9F1005	KDK	06/10/2019	06/10/2019	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl 76.6 % 50-150 " " "

GBTEX + Naphthalene by EPA 8260D

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B9F1004	KDK	"	06/10/2019	U
Benzene	ND	0.002	"	"	"	KDK	"	"	U
Toluene	ND	0.002	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.002	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.002	"	"	"	KDK	"	"	U
Naphthalene	ND	0.008	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4 101 % 70-130 " " "
Surrogate: Toluene-d8 94.1 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 99.5 % 70-130 " " "

Metals (Saturated Paste Prep)

Calcium	2.68	me/L	1	'[none]'	06/12/2019	05/01/2017
Magnesium	0.97	"	"	"	"	06/14/2019
Sodium	2.68	"	"	"	"	"

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Arvada CO 80003

Brian Sulzberger
Project Number: 014219072
Project: KMG - Ale Partnership Fed W29-16JI

B01@5'

6/10/2019 3:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y906160-05 (Soil)

pH in Soil by EPA 9045D

pH	8.27		pH Units	1	B9F1012	OLAB	06/10/2019	06/10/2019
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SAR by 20B Saturated Paste

SAR	1.98			1	'[none]'		06/12/2019	06/14/2019
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0362	0.00500	mmhos/cm	1	B9F1013	OLAB	06/10/2019	06/10/2019
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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219072
Project: KMG - Ale Partnership Fed W29-16JI

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B9F1004 - EPA 5030 (soil)										
Blank (B9F1004-BLK1)					Prepared: 06/10/2019 Analyzed: 06/10/2019					
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
Naphthalene	ND	0.008	"							U
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		101	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		95.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		99.0	70-130			

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219072
Project: KMG - Ale Partnership Fed W29-16JI

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B9F1004 - EPA 5030 (soil)										
Blank (B9F1004-BLK2)					Prepared: 06/10/2019 Analyzed: 06/10/2019					
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
Naphthalene	ND	0.008	"							U
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		97.6	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		94.3	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		97.8	70-130			

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Arvada CO 80003

Brian Sulzberger
Project Number: 014219072
Project: KMG - Ale Partnership Fed W29-16JI

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B9F1004 - EPA 5030 (soil)										
LCS (B9F1004-BS1)					Prepared: 06/10/2019 Analyzed: 06/10/2019					
Benzene	0.112	0.002	mg/kg	0.100		112	70-130			
Toluene	0.101	0.002	"	0.100		101	70-130			
Ethylbenzene	0.102	0.002	"	0.100		102	70-130			
m,p-Xylene	0.208	0.004	"	0.200		104	70-130			
o-Xylene	0.108	0.002	"	0.100		108	70-130			
Naphthalene	0.096	0.008	"	0.100		96.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		104	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		94.1	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.9	70-130			

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219072
Project: KMG - Ale Partnership Fed W29-16JI

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B9F1004 - EPA 5030 (soil)										
LCS (B9F1004-BS2)					Prepared: 06/10/2019 Analyzed: 06/10/2019					
Benzene	0.103	0.002	mg/kg	0.100		103	70-130			
Toluene	0.095	0.002	"	0.100		94.9	70-130			
Ethylbenzene	0.097	0.002	"	0.100		97.2	70-130			
m,p-Xylene	0.199	0.004	"	0.200		99.6	70-130			
o-Xylene	0.103	0.002	"	0.100		103	70-130			
Naphthalene	0.091	0.008	"	0.100		90.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		97.7	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		95.5	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		101	70-130			

Origins Laboratory, Inc.



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Project Number: 014219072
Project: KMG - Ale Partnership Fed W29-16JI

Volatile Organic Compounds by GC/MS SW846 8260D - 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 B9F1004 - EPA 5030 (soil)

Matrix Spike (B9F1004-MS1)		Source: Y906141-04			Prepared: 06/10/2019 Analyzed: 06/10/2019					
Benzene	0.098	0.002	mg/kg	0.100	ND	98.2	70-130			
Toluene	0.089	0.002	"	0.100	ND	89.1	70-130			
Ethylbenzene	0.091	0.002	"	0.100	ND	90.6	70-130			
m,p-Xylene	0.186	0.004	"	0.200	ND	93.0	70-130			
o-Xylene	0.097	0.002	"	0.100	ND	97.0	70-130			
Naphthalene	0.084	0.008	"	0.100	0.002	81.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		97.7	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		95.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		101	70-130			

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Sulzberger
Project Number: 014219072
Project: KMG - Ale Partnership Fed W29-16JI

Volatile Organic Compounds by GC/MS SW846 8260D - 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 B9F1004 - EPA 5030 (soil)

Matrix Spike (B9F1004-MS2)		Source: Y906162-04			Prepared: 06/10/2019 Analyzed: 06/10/2019					
Benzene	0.086	0.002	mg/kg	0.100	ND	85.6	70-130			
Toluene	0.077	0.002	"	0.100	ND	77.3	70-130			
Ethylbenzene	0.079	0.002	"	0.100	ND	79.0	70-130			
m,p-Xylene	0.162	0.004	"	0.200	ND	81.2	70-130			
o-Xylene	0.083	0.002	"	0.100	ND	83.1	70-130			
Naphthalene	0.078	0.008	"	0.100	0.002	75.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		95.4	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		95.1	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		100	70-130			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B9F1004 - EPA 5030 (soil)										
Matrix Spike Dup (B9F1004-MSD1)					Source: Y906141-04					Prepared: 06/10/2019 Analyzed: 06/10/2019
Benzene	0.094	0.002	mg/kg	0.100	ND	94.2	70-130	4.18	20	
Toluene	0.085	0.002	"	0.100	ND	84.7	70-130	5.11	20	
Ethylbenzene	0.085	0.002	"	0.100	ND	85.4	70-130	5.89	20	
m,p-Xylene	0.175	0.004	"	0.200	ND	87.7	70-130	5.90	20	
o-Xylene	0.092	0.002	"	0.100	ND	91.6	70-130	5.71	20	
Naphthalene	0.077	0.008	"	0.100	0.002	75.1	70-130	8.20	20	
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		94.1	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		94.5	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		101	70-130			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B9F1004 - EPA 5030 (soil)										
Matrix Spike Dup (B9F1004-MSD2)		Source: Y906162-04			Prepared: 06/10/2019 Analyzed: 06/10/2019					
Benzene	0.075	0.002	mg/kg	0.100	ND	75.2	70-130	12.9	20	
Toluene	0.067	0.002	"	0.100	ND	66.9	70-130	14.3	20	QM-07
Ethylbenzene	0.067	0.002	"	0.100	ND	67.3	70-130	15.9	20	QM-07
m,p-Xylene	0.139	0.004	"	0.200	ND	69.4	70-130	15.7	20	QM-07
o-Xylene	0.071	0.002	"	0.100	ND	71.2	70-130	15.4	20	
Naphthalene	0.071	0.008	"	0.100	0.002	69.3	70-130	8.70	20	QM-07
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		95.1	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		94.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		101	70-130			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B9F1005 - EPA 3580										
Blank (B9F1005-BLK1)					Prepared: 06/10/2019 Analyzed: 06/10/2019					
Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	40		"	50.0		80.5	50-150			

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Project: KMG - Ale Partnership Fed W29-16JI

Extractable Petroleum Hydrocarbons by 8015D - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B9F1005 - EPA 3580										
Blank (B9F1005-BLK2)					Prepared: 06/10/2019 Analyzed: 06/10/2019					
Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	40		"	50.0		79.3	50-150			

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Extractable Petroleum Hydrocarbons by 8015D - 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 B9F1005 - EPA 3580

LCS (B9F1005-BS1)

Prepared: 06/10/2019 Analyzed: 06/10/2019

Diesel (C10-C28)	955	50.0	mg/kg	1000		95.5	70-130			
Residual Range Organics (C28-C40)	931	200	"	1000		93.1	70-130			
Surrogate: o-Terphenyl	39		"	50.0		77.2	50-150			

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Extractable Petroleum Hydrocarbons by 8015D - 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 B9F1005 - EPA 3580

LCS (B9F1005-BS2)

Prepared: 06/10/2019 Analyzed: 06/10/2019

Diesel (C10-C28)	977	50.0	mg/kg	1000		97.7	70-130			
Residual Range Organics (C28-C40)	970	200	"	1000		97.0	70-130			
Surrogate: o-Terphenyl	47		"	50.0		93.6	50-150			

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Extractable Petroleum Hydrocarbons by 8015D - 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 B9F1005 - EPA 3580

Matrix Spike (B9F1005-MS1)		Source: Y906141-04			Prepared: 06/10/2019 Analyzed: 06/10/2019					
Diesel (C10-C28)	1050	50.0	mg/kg	1000	78.4	97.4	70-130			
Residual Range Organics (C28-C40)	816	200	"	1000	ND	81.6	70-130			
Surrogate: o-Terphenyl	41		"	50.0		82.4	50-150			

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Jen Pellegrini For Noelle Doyle Mathis, President

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Extractable Petroleum Hydrocarbons by 8015D - 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 B9F1005 - EPA 3580

Matrix Spike (B9F1005-MS2)		Source: Y906162-04			Prepared: 06/10/2019 Analyzed: 06/10/2019					
Diesel (C10-C28)	1030	50.0	mg/kg	1000	ND	103	70-130			
Residual Range Organics (C28-C40)	999	200	"	1000	ND	99.9	70-130			
Surrogate: o-Terphenyl	44		"	50.0		88.9	50-150			

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Extractable Petroleum Hydrocarbons by 8015D - 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 B9F1005 - EPA 3580

Matrix Spike Dup (B9F1005-MSD1)		Source: Y906141-04			Prepared: 06/10/2019 Analyzed: 06/10/2019					
Diesel (C10-C28)	989	50.0	mg/kg	1000	78.4	91.0	70-130	6.81	35	
Residual Range Organics (C28-C40)	848	200	"	1000	ND	84.8	70-130	3.78	35	
Surrogate: o-Terphenyl	43		"	50.0		85.7	50-150			

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Extractable Petroleum Hydrocarbons by 8015D - 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 B9F1005 - EPA 3580

Matrix Spike Dup (B9F1005-MSD2)		Source: Y906162-04			Prepared: 06/10/2019 Analyzed: 06/10/2019					
Diesel (C10-C28)	894	50.0	mg/kg	1000	ND	89.4	70-130	14.1	35	
Residual Range Organics (C28-C40)	850	200	"	1000	ND	85.0	70-130	16.1	35	
Surrogate: o-Terphenyl	40		"	50.0		80.1	50-150			

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Extractable Petroleum Hydrocarbons by 8015D - 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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Classical Chemistry Parameters - 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 B9F1012 - NO PREP

Duplicate (B9F1012-DUP1)		Source: Y906160-05			Prepared: 06/10/2019 Analyzed: 06/10/2019					
pH	8.27		pH Units		8.27			0.00	25	

Batch B9F1013 - NO PREP

Blank (B9F1013-BLK1)		Prepared: 06/10/2019 Analyzed: 06/10/2019								
Specific Conductance (EC)	0.00330	0.00500	mmhos/cm							
Duplicate (B9F1013-DUP1)		Source: Y906160-05			Prepared: 06/10/2019 Analyzed: 06/10/2019					
Specific Conductance (EC)	0.0361	0.00500	mmhos/cm		0.0362			0.277	25	

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Notes and Definitions

U Sample is Non-Detect.

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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