

State of Colorado  
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303) 894-2100 Fax 894-2109



FOR OGCC USE ONLY

**SITE INVESTIGATION AND REMEDIATION WORKPLAN**

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

OGCC Employee: \_\_\_\_\_

Spill  Complaint  
 Inspection  NOAV

Tracking No: \_\_\_\_\_

**CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED**

Spill or Release  Plug & Abandon  Central Facility Closure  Site/Facility Closure  Other (describe): \_\_\_\_\_

**GENERAL INFORMATION**

OGCC Operator Number: <u>47120</u>		Contact Name and Telephone	
Name of Operator: <u>Kerr-McGee Oil and Gas Onshore LP</u>		Name: <u>Phillip Hamlin</u>	
Address: <u>P.O. Box 173779</u>		No: <u>(970) 336-3500</u>	
City: <u>Denver</u> State: <u>CO</u> Zip: <u>80217-3779</u>		Fax: <u>(970) 336-3656</u>	
API/Facility No: <u>326972</u>		County: <u>Weld</u>	
Facility Name: <u>HSR-63N66W/13SENW</u>		Facility Number: _____	
Well Name: _____		Well Number: _____	
Location (Qtr, Sec, Twp, Rng, Meridian): <u>SENW Sec 13-T3N-R66W</u>		Latitude: <u>40.225381</u> Longitude: <u>-104.727598</u>	

**TECHNICAL CONDITIONS**

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): Produced Water

Site Conditions: Is location within a sensitive area (according to Rule 901e)?  Y  N If yes, attach evaluation. Groundwater < 20 ft.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Cropland

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Silty, fine-grained sand

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Surface water approximately 100' northeast, water well approximately 875' northeast, livestock approximately 980' northeast, building approximately 510' east, and excavation groundwater approximately 7' below ground surface (bgs).

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):	Extent of Impact:	How Determined:
<input checked="" type="checkbox"/> Soils	<u>25' N-S x 35' E-W x 8' bgs (maximum extent)</u>	<u>Collected soil samples for laboratory analysis</u>
<input type="checkbox"/> Vegetation	_____	_____
<input checked="" type="checkbox"/> Groundwater	<u>See attached data</u>	<u>Collected groundwater samples for laboratory analysis</u>
<input type="checkbox"/> Surface water	_____	_____

**REMEDIATION WORKPLAN**

Describe initial action taken (if previously provided, refer to that form or document):

A negative trend on the produced water vessel was detected by the operator during a site visit at the HSR-63N66W/13SENW tank battery. Upon examination, a corrosion hole in the water dumphine was discovered. The volume of the release is unknown. The petroleum hydrocarbon impacted soil was excavated. Impacted groundwater was encountered in the excavation. A topographic Site Location Map depicting the geographic setting of the release is provided as Figure 1.

Describe how source is to be removed:

Impacted soil was excavated into the phreatic zone to address potential hydrocarbon impacts that may have been present below the current water table due to past seasonal fluctuations. On February 8, 2016, five sidewall soil samples (N01@5', E01@5', S01@5', W01@5', and W02@5') were collected from the excavation and submitted for laboratory analysis of total petroleum hydrocarbons (TPH) by United States Environmental Protection Agency (USEPA) Methods 8015C and 8260C, benzene, toluene, ethylbenzene, and total xylenes (BTEX) by USEPA Method 8260C, pH by USEPA Method 9045D, and specific conductivity (EC) by USEPA Method 9050D. Laboratory analytical results indicated that soil sample N01@5', which was collected from the northern sidewall of the excavation, exceeded the COGCC Table 910-1 allowable levels for TPH and benzene at 3,430 milligrams per kilogram (mg/kg) and 19.1 mg/kg, respectively. TPH, BTEX, pH, and EC concentrations/levels in the remaining soil samples were compliant with COGCC allowable levels. An excavation groundwater sample (GW01) was collected for BTEX analysis. Laboratory analytical results for the GW01 groundwater sample indicated the benzene, toluene, and total xylene concentrations exceeded the Colorado Groundwater Quality Standards (CGWQS) at a concentrations of 3,630 micrograms per liter (µg/L), 6,090 µg/L, and 3,200 µg/L, respectively.

On February 9, 2016, one excavation sidewall soil sample (N02@5') was collected following the removal of additional impacted soil from the northern sidewall. Laboratory analytical results indicated that TPH, BTEX, pH, and EC levels were in compliance with COGCC allowable levels. On February 10, 2016, following the removal of impacted groundwater, a second groundwater sample (GW02) was collected from the excavation for BTEX analysis. Laboratory analytical results for sample GW02 indicated benzene, toluene, and total xylene concentrations continued to exceed the CGWQS at concentrations of 603 µg/L, 1,930 µg/L, and 3,040 µg/L, respectively. Approximately 31 barrels of impacted groundwater were removed from the excavation and transported to a licensed injection facility for disposal.

On March 17, 2016, two additional excavation sidewall soil samples (N03@5' and E02@5') were collected after removing the produced water sump that was left in place during the initial excavation activities. Laboratory analytical results indicated that TPH, BTEX, pH, and EC levels were in compliance with COGCC allowable levels at the excavation extent.

Approximately 190 cubic yards of impacted soil were excavated and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado. Prior to backfilling, 800 pounds of COGAC®, an activated carbon-based bioremediation product, was applied to the groundwater and clean backfill in a series of lifts to ensure distribution through the phreatic and capillary zones. The general site layout, excavation dimensions, and soil and groundwater sample locations are depicted on the Excavation Site Map provided as Figure 2. The excavation soil and groundwater sample analytical results are summarized in Tables 1 and 2, respectively. The laboratory analytical reports are attached.

FORM  
27  
Rev 6/99

State of Colorado  
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado  
(303) 894-2100 Fax 894-2109



Page 2

REMEDIATION WORKPLAN (CONT.)

OGCC Employee: \_\_\_\_\_

Tracking Number: \_\_\_\_\_  
Name of Operator: \_\_\_\_\_  
OGCC Operator No: \_\_\_\_\_  
Received Date: \_\_\_\_\_  
Well Name & No: \_\_\_\_\_  
Facility Name & No.: \_\_\_\_\_

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

The impacted soil was transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado. The impacted groundwater was transported to a licensed injection facility for disposal.

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

Groundwater monitoring wells will be installed at the site to fully define the extent and magnitude of the dissolved-phase groundwater impact. The monitoring wells will be surveyed to determine the groundwater flow direction. Quarterly groundwater monitoring activities will be conducted and samples will be submitted for laboratory analysis of BTEX.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

The tank battery will be deconstructed and the site will be restored to its pre-release grade.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required?  Y  N If yes, describe:

After installing the monitoring wells and establishing points of compliance, groundwater monitoring will be conducted.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

The impacted soil was transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado. The impacted groundwater was transported to a licensed injection facility for disposal.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 2/9/2016 - Date Site Investigation Completed: Active Remediation Plan Submitted: \_\_\_\_\_  
Remediation Start Date: 2/9/2016 Anticipated Completion Date: TBD Actual Completion Date: \_\_\_\_\_

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Phillip Hamlin

Signed: [Signature] Title: Senior HSE Representative Date: 4/29/2016

OGCC Approved: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

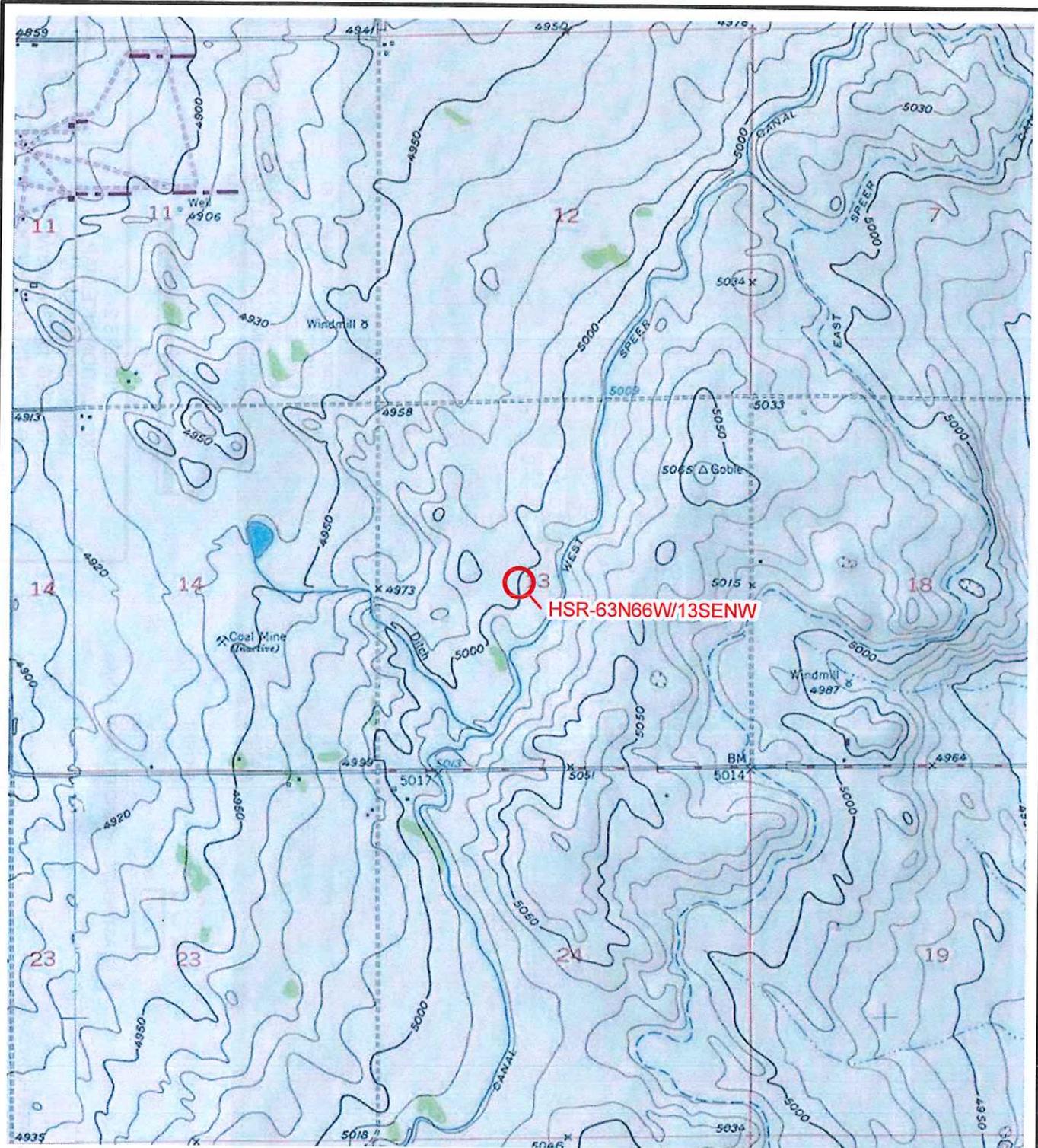
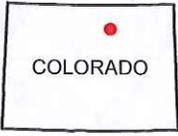
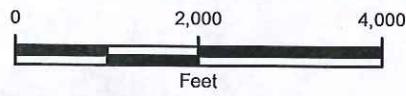


IMAGE COURTESY OF ESRI/USGS

**LEGEND**

 SITE LOCATION



**FIGURE 1**  
**SITE LOCATION MAP**  
 HSR-63N66W/13SENW  
 SENW SEC 13-T3N-R66W  
 WELD COUNTY, COLORADO  
 KERR-MCGEE OIL & GAS ONSHORE LP

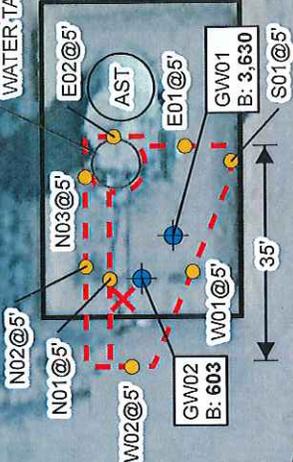


POND

AGRICULTURE

SEPARATOR

FORMER PRODUCED WATER TANK

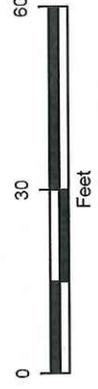


GROUNDWATER SAMPLE ID  
 SAMPLE DATE  
 B: BENZENE CONCENTRATION  
 RESULTS IN MICROGRAMS PER LITER (µg/L)  
**BOLD INDICATES RESULT EXCEEDS STANDARD**

IMAGE COURTESY OF GOOGLE EARTH 2015

**LEGEND**

- RELEASE LOCATION
- SOIL SAMPLE
- GROUNDWATER SAMPLE
- METER HOUSE
- ESTIMATED GROUNDWATER FLOW DIRECTION
- EXCAVATION EXTENT
- BERM
- AST: ABOVEGROUND STORAGE TANK



**FIGURE 2**  
 EXCAVATION SITE MAP  
 HSR-63N66W/13SENW  
 SENW SEC 13-T3N-R66W  
 WELD COUNTY, COLORADO  
 KERR-MCGEE OIL & GAS ONSHORE LP



**TABLE 1**  
**SOIL SAMPLE ANALYTICAL RESULTS**  
**HSR-63N66W/13SENW**  
**WELD COUNTY, COLORADO**  
**KERR-MCGEE OIL & GAS ONSHORE LP**

Soil Sample ID	Depth (bgs)	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	DRO (mg/kg)	GRO (mg/kg)	ORO (mg/kg)	pH (su)	Specific Conductance (mmhos/cm)
E01 @ 5'	5'	02/08/2016	<0.002	<0.002	<0.002	<0.002	<2.5	<0.200	<100	6.80	0.0689
N01 @ 5'	5'	02/08/2016	19.1	62.1	11.2	123	1200	2230	<100	7.85	0.0707
S01 @ 5'	5'	02/08/2016	0.017	0.009	<0.002	<0.002	<2.5	<0.200	<100	6.93	0.0719
W01 @ 5'	5'	02/08/2016	0.169	0.420	<0.100	0.331	<2.5	<5.00	<100	7.33	0.0291
W02 @ 5'	5'	02/08/2016	<0.100	<0.100	<0.100	<0.100	<2.5	<5.00	<100	7.32	0.0378
N02 @ 5'	5'	02/09/2016	<0.002	<0.002	<0.002	<0.002	<2.5	<0.200	<100	7.95	0.0501
E02 @ 5'	5'	03/17/2016	<0.002	<0.002	<0.002	<0.002	<2.5	<0.200	<100	7.91	0.0316
N03 @ 5'	5'	03/17/2016	<0.002	<0.002	<0.002	<0.002	<2.5	<0.200	<100	8.28	0.0888
<b>COGCC Allowable Levels</b>											
			0.17	85	100	175	500*	500*	500*	6-9	4

Notes: bgs - below ground surface  
COGCC - Colorado Oil and Gas Conservation Commission  
DRO - diesel range organics  
GRO - gasoline range organics  
mg/kg - milligrams per kilogram  
mmhos/cm - millimhos per centimeter

NA - not analyzed/not available  
ORO - oil range organics  
su - standard units  
\* - Standard applies to combined DRO-GRO-ORO  
< - less than laboratory reporting limit  
Bold indicates result exceeds allowable level



**TABLE 2**  
**GROUNDWATER ANALYTICAL AND FIELD RESULTS**  
**HSR-63N66W/13SEW**  
**WELD COUNTY, COLORADO**  
**KERR-MCGEE OIL & GAS ONSHORE LP**

<b>Well Name</b>	<b>Date</b>	<b>Benzene (µg/L)</b>	<b>Toluene (µg/L)</b>	<b>Ethylbenzene (µg/L)</b>	<b>Total Xylenes (µg/L)</b>	<b>Depth Water/ (Product Thickness) (ft bgs)</b>
GW01	02/08/2016	<b>3630</b>	<b>6090</b>	232	<b>3200</b>	7.00
GW02	02/10/2016	<b>603</b>	<b>1930</b>	214	<b>3040</b>	7.00
<b>CGWQS</b>		<b>5</b>	<b>1000</b>	<b>700</b>	<b>1400</b>	

Notes: CGWQS - Colorado Groundwater Quality Standards  
 ft bgs - feet below ground surface  
 NA - not analyzed/not available  
 NM - not measured

µg/L - micrograms per liter  
 < - less than laboratory reporting limit  
 Bold indicates result exceeds allowable level  
 Excavation groundwater depth is approximate



February 09, 2016

LT Environmental, Inc.

John Cocroft

4600 West 60th Avenue

Arvada CO 80003

Project Name - KMG - HSR 6-13X

Project Number - 014216034/WO# 890098

Attached are your analytical results for KMG - HSR 6-13X received by Origins Laboratory, Inc. February 08, 2016. This project is associated with Origins project number X602063-01.

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



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

John Cocroft  
Project Number: 014216034/WO# 89009847  
Project: KMG - HSR 6-13X

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
N01 @ 5'	X602063-01	Soil	February 8, 2016 10:35	02/08/2016 16:40
E01 @ 5'	X602063-02	Soil	February 8, 2016 10:40	02/08/2016 16:40
S01 @ 5'	X602063-03	Soil	February 8, 2016 10:45	02/08/2016 16:40
W01 @ 5'	X602063-04	Soil	February 8, 2016 10:50	02/08/2016 16:40
W02 @ 5'	X602063-05	Soil	February 8, 2016 10:55	02/08/2016 16:40
GW01	X602063-07	Water	February 8, 2016 11:10	02/08/2016 16:40

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.*



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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X602063

Client: LTE

Client Project ID: HSR 6-13x

Checklist Completed by: Jeff Smith

Shipped Via: W/D  
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 2/5/16

Airbill #: NA

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

Cooler Number/Temperature: 1 1.24 °C 1 °C 1 °C 1 °C (Describe)

Thermometer ID: T853

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			
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)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact <sup>(1)</sup> ?	X			
Was adequate sample volume provided <sup>(1)</sup> ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	X			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> ?	X			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	X			
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.		X		
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 HNO3, HCL, H2SO4) / (pH > 10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH).		X		
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.

Jeff Smith  
 Reviewed by (Project Manager)

2/5/16  
 Date/Time Reviewed

Origins Laboratory, Inc.

*Jeff Pellegrini*

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**N01 @ 5'**

**2/8/2016 10:35:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X602063-01 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	1200	25	mg/kg	1	B6B0805	02/08/2016	02/08/2016	
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	

Surrogate: *o*-Terphenyl 97.5 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	2230	50.0	mg/kg	250	B6B0806	02/08/2016	02/08/2016	
Benzene	19.1	0.498	"	"	"	"	"	
Toluene	62.1	0.995	"	500	"	"	02/09/2016	
Ethylbenzene	11.2	0.498	"	250	"	"	02/08/2016	
Xylenes, total	123	0.498	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 122 % 70-130 " " "  
 Surrogate: Toluene-d8 121 % 70-130 " " "  
 Surrogate: 4-Bromofluorobenzene 104 % 70-130 " " "

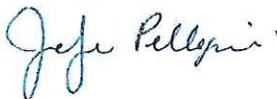
**pH in Soil by EPA 9045D**

pH	7.85		pH Units	1	B6B0807	02/08/2016	02/08/2016	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.0707		mmhos/cm	"	B6B0808	02/08/2016	02/08/2016	
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Origins Laboratory, Inc.



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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**E01 @ 5'**  
**2/8/2016 10:40:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X602063-02 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	25	mg/kg	1	B6B0805	02/08/2016	02/08/2016	
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	

Surrogate: o-Terphenyl 70.8 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B6B0806	02/08/2016	02/08/2016	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 104 % 70-130 " " "  
 Surrogate: Toluene-d8 106 % 70-130 " " "  
 Surrogate: 4-Bromofluorobenzene 99.5 % 70-130 " " "

**pH in Soil by EPA 9045D**

pH	6.80		pH Units	1	B6B0807	02/08/2016	02/08/2016	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.0689		mmhos/cm	"	B6B0808	02/08/2016	02/08/2016	
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Origins Laboratory, Inc.



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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**S01 @ 5'**  
**2/8/2016 10:45:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X602063-03 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	25	mg/kg	1	B6B0805	02/08/2016	02/08/2016	
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	

Surrogate: *o*-Terphenyl 86.5 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B6B0806	02/08/2016	02/08/2016	
Benzene	0.017	0.002	"	"	"	"	"	
Toluene	0.009	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 105 % 70-130 " " "  
 Surrogate: Toluene-d8 100 % 70-130 " " "  
 Surrogate: 4-Bromofluorobenzene 93.9 % 70-130 " " "

**pH in Soil by EPA 9045D**

pH	6.93		pH Units	1	B6B0807	02/08/2016	02/08/2016	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.0719		mmhos/cm	"	B6B0808	02/08/2016	02/08/2016	
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Origins Laboratory, Inc.



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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**W01 @ 5'**  
**2/8/2016 10:50:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X602063-04 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	25	mg/kg	1	B6B0805	02/08/2016	02/08/2016	
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	

Surrogate: *o*-Terphenyl 62.6 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B6B0806	02/08/2016	02/08/2016	
Benzene	0.169	0.100	"	50	"	"	"	
Toluene	0.420	0.100	"	"	"	"	"	
Ethylbenzene	ND	0.100	"	"	"	"	"	
Xylenes, total	0.331	0.100	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 101 % 70-130 " " "  
 Surrogate: Toluene-d8 102 % 70-130 " " "  
 Surrogate: 4-Bromofluorobenzene 97.1 % 70-130 " " "

**pH in Soil by EPA 9045D**

pH	7.33		pH Units	1	B6B0807	02/08/2016	02/08/2016	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.0291		mmhos/cm	"	B6B0808	02/08/2016	02/08/2016	
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Origins Laboratory, Inc.



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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**W02 @ 5'**  
**2/8/2016 10:55:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X602063-05 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	25	mg/kg	1	B6B0805	02/08/2016	02/08/2016	
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	

Surrogate: o-Terphenyl 65.1 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	B6B0806	02/08/2016	02/08/2016	
Benzene	ND	0.100	"	50	"	"	"	
Toluene	ND	0.100	"	"	"	"	"	
Ethylbenzene	ND	0.100	"	"	"	"	"	
Xylenes, total	ND	0.100	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 95.8 % 70-130 " " "  
 Surrogate: Toluene-d8 101 % 70-130 " " "  
 Surrogate: 4-Bromofluorobenzene 92.2 % 70-130 " " "

**pH in Soil by EPA 9045D**

pH	7.32		pH Units	1	B6B0807	02/08/2016	02/08/2016	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.0378		mmhos/cm	"	B6B0808	02/08/2016	02/08/2016	
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LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO 80003

John Cocroft  
Project Number: 014216034/WO# 89009847  
Project: KMG - HSR 6-13X

**GW01**  
**2/8/2016 11:10:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X602063-07 (Water)**

**BTEX by EPA 8260C**

Benzene	3630	100	ug/L	100	B6B0501	02/08/2016	02/08/2016	
Toluene	6090	100	"	"	"	"	"	
Ethylbenzene	232	4.0	"	4	"	"	02/08/2016	
Xylenes, total	3200	100	"	100	"	"	02/08/2016	
Surrogate: 1,2-Dichloroethane-d4	106 %	84-121			"	"	02/08/2016	
Surrogate: Toluene-d8	104 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.0 %	84-114			"	"	"	

Origins Laboratory, Inc.



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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**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 B6B0501 - EPA 5030B (Water)</b>										
<b>Blank (B6B0501-BLK1)</b>										
					Prepared: 02/05/2016 Analyzed: 02/08/2016					
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	68		"	62.5		109	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		95.7	84-114			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**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 B6B0501 - EPA 5030B (Water)

LCS (B6B0501-BS1)				Prepared: 02/05/2016 Analyzed: 02/08/2016						
Benzene	46.8	1.0	ug/L	50.0	93.7	73.3-129				
Toluene	46.8	1.0	"	50.0	93.5	76.2-123				
Ethylbenzene	47.4	1.0	"	50.0	94.7	73.6-130				
m,p-Xylene	93.8	2.0	"	100	93.8	76.1-126				
o-Xylene	46.8	1.0	"	50.0	93.7	76.6-124				
Surrogate: 1,2-Dichloroethane-d4	66		"	62.5	106	84-121				
Surrogate: Toluene-d8	64		"	62.5	103	85-115				
Surrogate: 4-Bromofluorobenzene	61		"	62.5	97.6	84-114				

Origins Laboratory, Inc.



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LT Environmental, Inc.  
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 Arvada CO 80003

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**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 B6B0501 - EPA 5030B (Water)</b>										
<b>Matrix Spike (B6B0501-MS1)</b>			<b>Source: X602051-03</b>			<b>Prepared: 02/05/2016 Analyzed: 02/08/2016</b>				
Benzene	46.4	1.0	ug/L	50.0	ND	92.9	74-130			
Toluene	45.3	1.0	"	50.0	ND	90.6	73-131			
Ethylbenzene	45.3	1.0	"	50.0	ND	90.5	76-132			
m,p-Xylene	91.1	2.0	"	100	ND	91.1	69-139			
o-Xylene	45.1	1.0	"	50.0	ND	90.1	74-131			
Surrogate: 1,2-Dichloroethane-d4	72		"	62.5		114	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.6	84-114			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**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 B6B0501 - EPA 5030B (Water)

Matrix Spike Dup (B6B0501-MSD1)	Source: X602051-03			Prepared: 02/05/2016 Analyzed: 02/08/2016						
Benzene	40.0	1.0	ug/L	50.0	ND	79.9	74-130	15.0	20	
Toluene	38.9	1.0	"	50.0	ND	77.9	73-131	15.1	20	
Ethylbenzene	39.8	1.0	"	50.0	ND	79.6	76-132	12.9	20	
m,p-Xylene	79.9	2.0	"	100	ND	79.9	69-139	13.1	20	
o-Xylene	41.6	1.0	"	50.0	ND	83.2	74-131	7.99	20	
Surrogate: 1,2-Dichloroethane-d4	67		"	62.5		107	84-121			
Surrogate: Toluene-d8	62		"	62.5		99.5	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	84-114			

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 4600 West 60th Avenue  
 Arvada CO 80003

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**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 B6B0806 - EPA 5030 (soil)

Blank (B6B0806-BLK1)

Prepared: 02/08/2016 Analyzed: 02/08/2016

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							
Benzene	ND	0.002	"							
Toluene	ND	0.002	"							
Ethylbenzene	ND	0.002	"							
Xylenes, total	ND	0.002	"							
Surrogate: 1,2-Dichloroethane-d4	63.3		ug/kg	62.5		101	70-130			
Surrogate: Toluene-d8	64.4		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	60.7		"	62.5		97.1	70-130			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**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 B6B0806 - EPA 5030 (soil)</b>										
<b>LCS (B6B0806-BS1)</b>										
					Prepared: 02/08/2016 Analyzed: 02/08/2016					
Benzene	0.107	0.002	mg/kg	0.100	107		77.1-124			
Toluene	0.106	0.002	"	0.100	106		74.5-128			
Ethylbenzene	0.104	0.002	"	0.100	104		66.4-127			
m,p-Xylene	0.206	0.004	"	0.200	103		76.6-124			
o-Xylene	0.108	0.002	"	0.100	108		76.6-124			
Surrogate: 1,2-Dichloroethane-d4	67.6		ug/kg	62.5	108		70-130			
Surrogate: Toluene-d8	66.0		"	62.5	106		70-130			
Surrogate: 4-Bromofluorobenzene	64.5		"	62.5	103		70-130			

Origins Laboratory, Inc.



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LT Environmental, Inc.  
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 Arvada CO 80003

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**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 B6B0806 - EPA 5030 (soil)</b>										
<b>Matrix Spike (B6B0806-MS1)</b>		<b>Source: X602063-02</b>			<b>Prepared: 02/08/2016 Analyzed: 02/08/2016</b>					
Benzene	0.093	0.002	mg/kg	0.100	0.0008	92.1	71.8-126			
Toluene	0.089	0.002	"	0.100	ND	89.4	65.1-130			
Ethylbenzene	0.099	0.002	"	0.100	ND	99.3	62.2-130			
m,p-Xylene	0.198	0.004	"	0.200	0.0009	99.2	46.5-137			
o-Xylene	0.099	0.002	"	0.100	ND	98.7	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	58.5		ug/kg	62.5		93.7	70-130			
Surrogate: Toluene-d8	58.1		"	62.5		92.9	70-130			
Surrogate: 4-Bromofluorobenzene	67.7		"	62.5		108	70-130			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**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 B6B0806 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B6B0806-MSD1)</b>			<b>Source: X602063-02</b>			<b>Prepared: 02/08/2016 Analyzed: 02/08/2016</b>				
Benzene	0.098	0.002	mg/kg	0.100	0.0008	97.1	71.8-126	5.24	11.3	
Toluene	0.092	0.002	"	0.100	ND	91.6	65.1-130	2.43	15.4	
Ethylbenzene	0.099	0.002	"	0.100	ND	98.5	62.2-130	0.748	19.6	
m,p-Xylene	0.192	0.004	"	0.200	0.0009	95.8	46.5-137	3.58	19.2	
o-Xylene	0.098	0.002	"	0.100	ND	97.6	54.2-134	1.14	17.9	
Surrogate: 1,2-Dichloroethane-d4	62.0		ug/kg	62.5		99.2	70-130			
Surrogate: Toluene-d8	59.9		"	62.5		95.8	70-130			
Surrogate: 4-Bromofluorobenzene	61.9		"	62.5		99.0	70-130			

Origins Laboratory, Inc.



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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**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 B6B0805 - EPA 3580**

**Blank (B6B0805-BLK1)**

Prepared: 02/08/2016 Analyzed: 02/08/2016

Diesel (C10-C28)	ND	50	mg/kg							
Residual Range Organics (C28-C40)	ND	200	"							
Surrogate: o-Terphenyl	63		"	50.0		126	59-131			

**LCS (B6B0805-BS1)**

Prepared: 02/08/2016 Analyzed: 02/08/2016

Diesel (C10-C28)	1000	50	mg/kg	1000		103	64-121			
Residual Range Organics (C28-C40)	1100	200	"	1000		105	58-124			
Surrogate: o-Terphenyl	55		"	50.0		110	59-131			

**LCS Dup (B6B0805-BSD1)**

Prepared: 02/08/2016 Analyzed: 02/08/2016

Diesel (C10-C28)	940	50	mg/kg	1000		94.0	64-121	9.19	20	
Residual Range Organics (C28-C40)	930	200	"	1000		92.9	58-124	12.6	20	
Surrogate: o-Terphenyl	50		"	50.0		99.1	59-131			

Origins Laboratory, Inc.



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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B6B0807 - NO PREP</b>										
<b>Duplicate (B6B0807-DUP1)</b>		<b>Source: X602063-01</b>			<b>Prepared: 02/08/2016 Analyzed: 02/08/2016</b>					
pH	7.84		pH Units		7.85			0.127	25	
<b>Batch B6B0808 - NO PREP</b>										
<b>Blank (B6B0808-BLK1)</b>		<b>Prepared: 02/08/2016 Analyzed: 02/08/2016</b>								
Specific Conductance (EC)	0.00340		mmhos/cm							
<b>Duplicate (B6B0808-DUP1)</b>		<b>Source: X602063-01</b>			<b>Prepared: 02/08/2016 Analyzed: 02/08/2016</b>					
Specific Conductance (EC)	0.0709		mmhos/cm		0.0707			0.282	25	

Origins Laboratory, Inc.



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

John Cocroft  
Project Number: 014216034/WO# 89009847  
Project: KMG - HSR 6-13X

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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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February 10, 2016

LT Environmental, Inc.

John Cocroft

4600 West 60th Avenue

Arvada CO 80003

Project Name - KMG - HSR 6-13X

Project Number - 014216034

Attached are your analytical results for KMG - HSR 6-13X received by Origins Laboratory, Inc. February 09, 2016. This project is associated with Origins project number X602076-01.

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

John Cocroft  
Project Number: 014216034  
Project: KMG - HSR 6-13X

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
N02 @ 5'	X602076-01	Soil	February 9, 2016 14:25	02/09/2016 16:16

Origins Laboratory, Inc.



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

John Cocroft  
 Project Number: 014216034  
 Project: KMG - HSR 6-13X

Origins Laboratory

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

**Sample Receipt Checklist**

Origins Work Order: X602076

Client: LTE

Client Project ID: HSR 6-13x

Checklist Completed by: Jeff Smith

Shipped Via: H/D  
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 2/9/16

Airbill #: NA

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

Cooler Number/Temperature: 1 / 18.6 °C 1 °C 1 °C 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"/>		<i>Sampled Same Day</i>
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			<i>PH</i>
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)(pH <2 for samples preserved with HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

John Cocroft  
 Reviewed by (Project Manager)

2/9/16  
 Date/Time Reviewed

Origins Laboratory, Inc.

*Jeff Pellegrini*

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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

John Cocroft  
 Project Number: 014216034  
 Project: KMG - HSR 6-13X

**N02 @ 5'**  
**2/9/2016 2:25:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X602076-01 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	25	mg/kg	1	B6B0904	02/09/2016	02/09/2016	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 98.9 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B6B0810	02/09/2016	02/09/2016	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 99.3 % 70-130 " " "  
 Surrogate: Toluene-d8 94.6 % 70-130 " " "  
 Surrogate: 4-Bromofluorobenzene 96.5 % 70-130 " " "

**pH in Soil by EPA 9045D**

pH	7.95		pH Units	1	B6B0906	02/09/2016	02/09/2016	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.0501		mmhos/cm	"	B6B0907	02/09/2016	"	
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Origins Laboratory, Inc.



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

John Cocroft  
 Project Number: 014216034  
 Project: KMG - HSR 6-13X

**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 B6B0810 - EPA 5030 (soil)</b>										
<b>Blank (B6B0810-BLK1)</b>										
Prepared: 02/09/2016 Analyzed: 02/09/2016										
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	62.9		ug/kg	62.5		101	70-130			
Surrogate: Toluene-d8	64.3		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	55.3		"	62.5		88.5	70-130			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

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

John Cocroft  
 Project Number: 014216034  
 Project: KMG - HSR 6-13X

**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 B6B0810 - EPA 5030 (soil)										
<b>LCS (B6B0810-BS1)</b>					Prepared: 02/09/2016 Analyzed: 02/09/2016					
Benzene	0.102	0.002	mg/kg	0.100		102	77.1-124			
Toluene	0.105	0.002	"	0.100		105	74.5-128			
Ethylbenzene	0.092	0.002	"	0.100		91.5	66.4-127			
m,p-Xylene	0.178	0.004	"	0.200		89.2	76.6-124			
o-Xylene	0.094	0.002	"	0.100		94.0	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	68.4		ug/kg	62.5		109	70-130			
Surrogate: Toluene-d8	68.7		"	62.5		110	70-130			
Surrogate: 4-Bromofluorobenzene	62.4		"	62.5		99.9	70-130			

Origins Laboratory, Inc.



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

John Cocroft  
Project Number: 014216034  
Project: KMG - HSR 6-13X

**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 B6B0810 - EPA 5030 (soil)</b>										
<b>Matrix Spike (B6B0810-MS1)</b>		<b>Source: X602060-01</b>			<b>Prepared: 02/09/2016 Analyzed: 02/09/2016</b>					
Benzene	0.098	0.002	mg/kg	0.100	ND	98.3	71.8-126			
Toluene	0.106	0.002	"	0.100	0.001	105	65.1-130			
Ethylbenzene	0.090	0.002	"	0.100	ND	90.5	62.2-130			
m,p-Xylene	0.188	0.004	"	0.200	ND	93.8	46.5-137			
o-Xylene	0.092	0.002	"	0.100	ND	92.2	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	60.6		ug/kg	62.5		97.0	70-130			
Surrogate: Toluene-d8	62.1		"	62.5		99.3	70-130			
Surrogate: 4-Bromofluorobenzene	57.9		"	62.5		92.6	70-130			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

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

John Cocroft  
 Project Number: 014216034  
 Project: KMG - HSR 6-13X

**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 B6B0810 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B6B0810-MSD1)</b>			<b>Source: X602060-01</b>			<b>Prepared: 02/09/2016 Analyzed: 02/09/2016</b>				
Benzene	0.103	0.002	mg/kg	0.100	ND	103	71.8-126	4.51	11.3	
Toluene	0.098	0.002	"	0.100	0.001	96.3	65.1-130	8.20	15.4	
Ethylbenzene	0.099	0.002	"	0.100	ND	98.6	62.2-130	8.63	19.6	
m,p-Xylene	0.199	0.004	"	0.200	ND	99.5	46.5-137	5.91	19.2	
o-Xylene	0.100	0.002	"	0.100	ND	100	54.2-134	8.12	17.9	
Surrogate: 1,2-Dichloroethane-d4	57.9		ug/kg	62.5		92.6	70-130			
Surrogate: Toluene-d8	60.9		"	62.5		97.5	70-130			
Surrogate: 4-Bromofluorobenzene	62.8		"	62.5		100	70-130			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

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

John Cocroft  
 Project Number: 014216034  
 Project: KMG - HSR 6-13X

**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 B6B0904 - EPA 3580**

<b>Blank (B6B0904-BLK1)</b>										
					Prepared: 02/09/2016 Analyzed: 02/09/2016					
Diesel (C10-C28)	ND	50	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	42		"	50.0		84.4	59-131			
<b>LCS (B6B0904-BS1)</b>										
					Prepared: 02/09/2016 Analyzed: 02/09/2016					
Diesel (C10-C28)	760	50	mg/kg	1000		76.3	64-121			
Residual Range Organics (C28-C40)	700	200	"	1000		70.4	58-124			
Surrogate: o-Terphenyl	39		"	50.0		79.0	59-131			
<b>LCS Dup (B6B0904-BSD1)</b>										
					Prepared: 02/09/2016 Analyzed: 02/09/2016					
Diesel (C10-C28)	770	50	mg/kg	1000		77.4	64-121	1.50	20	
Residual Range Organics (C28-C40)	720	200	"	1000		72.1	58-124	2.35	20	
Surrogate: o-Terphenyl	41		"	50.0		81.3	59-131			

Origins Laboratory, Inc.



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

John Cocroft  
 Project Number: 014216034  
 Project: KMG - HSR 6-13X

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B6B0906 - NO PREP</b>										
<b>Duplicate (B6B0906-DUP1)</b>		<b>Source: X602076-01</b>			Prepared: 02/09/2016 Analyzed: 02/09/2016					
pH	7.95		pH Units		7.95			0.00	25	
<b>Batch B6B0907 - NO PREP</b>										
<b>Blank (B6B0907-BLK1)</b>					Prepared: 02/09/2016 Analyzed: 02/09/2016					
Specific Conductance (EC)	0.00300		mmhos/cm							
<b>Duplicate (B6B0907-DUP1)</b>		<b>Source: X602076-01</b>			Prepared: 02/09/2016 Analyzed: 02/09/2016					
Specific Conductance (EC)	0.0430		mmhos/cm		0.0501			15.3	25	

Origins Laboratory, Inc.



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

John Cocroft  
Project Number: 014216034  
Project: KMG - HSR 6-13X

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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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---

Jen Pellegrini For Noelle Doyle Mathis, President



February 11, 2016

LT Environmental, Inc.

John Cocroft

4600 West 60th Avenue

Arvada

CO 80003

Project Name - KMG - HSR 6-13X

Project Number - 014216034/WO# 890098

Attached are your analytical results for KMG - HSR 6-13X received by Origins Laboratory, Inc. February 10, 2016. This project is associated with Origins project number X602089-01.

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

John Cocroft  
Project Number: 014216034/WO# 89009847  
Project: KMG - HSR 6-13X

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW02	X602089-01	Water	February 10, 2016 9:50	02/10/2016 17:07

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President



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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X602089

Client: LTE

Client Project ID: HSR 6-13X

Checklist Completed by: Jeff Smith

Shipped Via: H/D  
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 2/10/14

Airbill #: NA

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

Cooler Number/Temperature: 1 12.4 °C 1 °C 1 °C 1 °C

Thermometer ID: JCS

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

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

Jeff Smith  
 Reviewed by (Project Manager)

2/10/14  
 Date/Time Reviewed

Origins Laboratory, Inc.

*Jeff Pellegrini*

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Jen Pellegrini For Noelle Doyle Mathis, President

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

John Cocroft  
Project Number: 014216034/WO# 89009847  
Project: KMG - HSR 6-13X

**GW02**  
**2/10/2016 9:50:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X602089-01 (Water)**

**BTEX by EPA 8260C**

Benzene	603	4.0	ug/L	4	B6B0903	02/10/2016	02/10/2016	
Toluene	1930	20.0	"	20	"	"	02/10/2016	
Ethylbenzene	214	4.0	"	4	"	"	02/10/2016	
Xylenes, total	3040	20.0	"	20	"	"	02/10/2016	
Surrogate: 1,2-Dichloroethane-d4	106 %	84-121			"	"	02/10/2016	
Surrogate: Toluene-d8	99.9 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	95.4 %	84-114			"	"	"	

Origins Laboratory, Inc.



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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**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 B6B0903 - EPA 5030B (Water)</b>										
<b>Blank (B6B0903-BLK1)</b>										
Prepared: 02/09/2016 Analyzed: 02/10/2016										
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	66		"	62.5		105	84-121			
Surrogate: Toluene-d8	62		"	62.5		99.6	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	84-114			

Origins Laboratory, Inc.



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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**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 B6B0903 - EPA 5030B (Water)</b>										
<b>Blank (B6B0903-BLK2)</b>										
					Prepared: 02/09/2016 Analyzed: 02/10/2016					
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	64		"	62.5	102		84-121			
Surrogate: Toluene-d8	59		"	62.5	94.0		85-115			
Surrogate: 4-Bromofluorobenzene	58		"	62.5	93.5		84-114			

Origins Laboratory, Inc.



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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**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 B6B0903 - EPA 5030B (Water)										
LCS (B6B0903-BS1)					Prepared: 02/09/2016 Analyzed: 02/10/2016					
Benzene	51.2	1.0	ug/L	50.0		102	73.3-129			
Toluene	51.0	1.0	"	50.0		102	76.2-123			
Ethylbenzene	51.0	1.0	"	50.0		102	73.6-130			
m,p-Xylene	103	2.0	"	100		103	76.1-126			
o-Xylene	51.8	1.0	"	50.0		104	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5		101	84-121			
Surrogate: Toluene-d8	62		"	62.5		99.2	85-115			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	84-114			

Origins Laboratory, Inc.



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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**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 B6B0903 - EPA 5030B (Water)

LCS (B6B0903-BS2)				Prepared: 02/09/2016 Analyzed: 02/10/2016						
Benzene	43.0	1.0	ug/L	50.0		86.1	73.3-129			
Toluene	43.5	1.0	"	50.0		86.9	76.2-123			
Ethylbenzene	45.4	1.0	"	50.0		90.8	73.6-130			
m,p-Xylene	90.9	2.0	"	100		90.9	76.1-126			
o-Xylene	45.9	1.0	"	50.0		91.8	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5		101	84-121			
Surrogate: Toluene-d8	60		"	62.5		96.6	85-115			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		95.9	84-114			

Origins Laboratory, Inc.



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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**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 B6B0903 - EPA 5030B (Water)

Matrix Spike (B6B0903-MS1)	Source: X602056-03			Prepared: 02/09/2016 Analyzed: 02/10/2016						
Benzene	51.9	1.0	ug/L	50.0	1.7	100	74-130			
Toluene	51.2	1.0	"	50.0	ND	102	73-131			
Ethylbenzene	76.8	1.0	"	50.0	37.7	78.2	76-132			
m,p-Xylene	103	2.0	"	100	ND	103	69-139			
o-Xylene	50.2	1.0	"	50.0	ND	100	74-131			
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5		103	84-121			
Surrogate: Toluene-d8	62		"	62.5		99.6	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	84-114			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**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 B6B0903 - EPA 5030B (Water)

Matrix Spike (B6B0903-MS2)	Source: X602056-04			Prepared: 02/09/2016 Analyzed: 02/10/2016						
Benzene	39.8	1.0	ug/L	50.0	3.2	73.3	74-130			QM-07
Toluene	38.9	1.0	"	50.0	ND	77.8	73-131			
Ethylbenzene	40.6	1.0	"	50.0	130	NR	76-132			QM-07
m,p-Xylene	80.5	2.0	"	100	0.4	80.0	69-139			
o-Xylene	39.2	1.0	"	50.0	ND	78.4	74-131			
Surrogate: 1,2-Dichloroethane-d4	77		"	62.5		123	84-121			
Surrogate: Toluene-d8	61		"	62.5		97.3	85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.1	84-114			

Origins Laboratory, Inc.



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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

**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 B6B0903 - EPA 5030B (Water)</b>										
<b>Matrix Spike Dup (B6B0903-MSD1)</b>		<b>Source: X602056-03</b>			<b>Prepared: 02/09/2016 Analyzed: 02/10/2016</b>					
Benzene	60.9	1.0	ug/L	50.0	1.7	118	74-130	16.0	20	
Toluene	60.6	1.0	"	50.0	ND	121	73-131	16.9	20	
Ethylbenzene	93.2	1.0	"	50.0	37.7	111	76-132	19.4	20	
m,p-Xylene	125	2.0	"	100	ND	125	69-139	19.6	20	
o-Xylene	61.0	1.0	"	50.0	ND	122	74-131	19.4	20	
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5		100	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	84-114			

Origins Laboratory, Inc.



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

John Cocroft  
 Project Number: 014216034/WO# 89009847  
 Project: KMG - HSR 6-13X

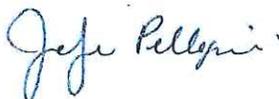
**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B6B0903 - EPA 5030B (Water)

Matrix Spike Dup (B6B0903-MSD2)	Source: X602056-04			Prepared: 02/09/2016 Analyzed: 02/10/2016						
Benzene	51.0	1.0	ug/L	50.0	3.2	95.8	74-130	24.8	20	QM-07
Toluene	49.0	1.0	"	50.0	ND	98.0	73-131	23.0	20	QM-07
Ethylbenzene	88.7	1.0	"	50.0	130	NR	76-132	74.5	20	QM-07
m,p-Xylene	99.8	2.0	"	100	0.4	99.3	69-139	21.4	20	QM-07
o-Xylene	49.9	1.0	"	50.0	ND	99.8	74-131	24.0	20	QM-07
Surrogate: 1,2-Dichloroethane-d4	68		"	62.5		108	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.0	84-114			

Origins Laboratory, Inc.



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

John Cocroft  
Project Number: 014216034/WO# 89009847  
Project: KMG - HSR 6-13X

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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.

Origins Laboratory, Inc.



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---

Jen Pellegrini For Noelle Doyle Mathis, President



March 18, 2016

LT Environmental, Inc.

Mike Furtaw

4600 West 60th Avenue

Arvada CO 80003

Project Name - KMG - HSR 63N66W13SEnw

Project Number - 014216034/0005/WO#89

Attached are your analytical results for KMG - HSR 63N66W13SEnw received by Origins Laboratory, Inc. March 17, 2016. This project is associated with Origins project number X603230-01.

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

Mike Furtaw  
Project Number:  
Project: KMG - HSR 63N66W13SEW

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
N03 @ 5'	X603230-01	Soil	March 17, 2016 11:55	03/17/2016 16:18
E02 @ 5'	X603230-02	Soil	March 17, 2016 12:00	03/17/2016 16:18

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President



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

Mike Furtaw  
 Project Number:  
 Project: KMG - HSR 63N66W13SENW

Origins Laboratory

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

**Sample Receipt Checklist**

Origins Work Order: X605230 Client: LFE  
 Checklist Completed by: Jeff Smith Client Project ID: HSR 63N66W13SENW  
 Date/time completed: 3/18/16 Shipped Via: H/D  
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Airbill #: N/A  
 Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_  
 Cooler Number/Temperature: 1 / 7.4 °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			
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)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact <sup>(1)</sup> ?	X			
Was adequate sample volume provided <sup>(1)</sup> ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	X			D11
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> ?	X			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	X			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	X			
For volatiles in water – is there headspace (> 1/4 inch bubble) present? If yes, contact client and note in narrative.			X	
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 HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)			X	
Additional Comments (if any):	Mice F. requested by phone conversation with client to change TAT from Standard to Same Day.			

<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.

Jeff Smith  
 Reviewed by (Project Manager)

3/18/16  
 Date/Time Reviewed

Origins Laboratory, Inc.



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

Mike Furtaw  
 Project Number:  
 Project: KMG - HSR 63N66W13SENW

N03 @ 5'  
 3/17/2016 11:55:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
 X603230-01 (Soil)

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	25	mg/kg	1	B6C1802	03/18/2016	03/18/2016	
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	

Surrogate: *o*-Terphenyl 95.6 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B6C1801	03/18/2016	03/18/2016	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 113 % 70-130 " " "  
 Surrogate: Toluene-d8 93.5 % 70-130 " " "  
 Surrogate: 4-Bromofluorobenzene 96.5 % 70-130 " " "

**pH in Soil by EPA 9045D**

pH	8.28		pH Units	1	B6C1803	03/18/2016	03/18/2016	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.0888		mmhos/cm	"	B6C1804	03/18/2016	"	
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LT Environmental, Inc.  
 4600 West 60th Avenue  
 Arvada CO 80003

Mike Furtaw  
 Project Number:  
 Project: KMG - HSR 63N66W13SENW

E02 @ 5'  
 3/17/2016 12:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X603230-02 (Soil)

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	25	mg/kg	1	B6C1802	03/18/2016	03/18/2016	
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	

*Surrogate: o-Terphenyl*      92.0 %      59-131      "      "      "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B6C1801	03/18/2016	03/18/2016	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4*      112 %      70-130      "      "      "

*Surrogate: Toluene-d8*      94.8 %      70-130      "      "      "

*Surrogate: 4-Bromofluorobenzene*      97.0 %      70-130      "      "      "

**pH in Soil by EPA 9045D**

pH	7.91		pH Units	1	B6C1803	03/18/2016	03/18/2016	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.0316		mmhos/cm	"	B6C1804	03/18/2016	"	
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Origins Laboratory, Inc.



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

Mike Furtaw  
 Project Number:  
 Project: KMG - HSR 63N66W13SENW

**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 B6C1801 - EPA 5030 (soil)										
Blank (B6C1801-BLK1) <span style="float: right;">Prepared: 03/18/2016 Analyzed: 03/18/2016</span>										
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							
Benzene	ND	0.002	"							
Toluene	ND	0.002	"							
Ethylbenzene	ND	0.002	"							
Xylenes, total	ND	0.002	"							
Surrogate: 1,2-Dichloroethane-d4	76.9		ug/kg	62.5	126	70-130				
Surrogate: Toluene-d8	58.8		"	62.5	94.1	70-130				
Surrogate: 4-Bromofluorobenzene	60.0		"	62.5	96.0	70-130				

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 Arvada CO 80003

Mike Furtaw  
 Project Number:  
 Project: KMG - HSR 63N66W13SENW

**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 B6C1801 - EPA 5030 (soil)										
LCS (B6C1801-BS1)					Prepared: 03/18/2016 Analyzed: 03/18/2016					
Benzene	0.097	0.002	mg/kg	0.100		96.9	77.1-124			
Toluene	0.103	0.002	"	0.100		103	74.5-128			
Ethylbenzene	0.083	0.002	"	0.100		83.3	66.4-127			
m,p-Xylene	0.178	0.004	"	0.200		89.1	76.6-124			
o-Xylene	0.082	0.002	"	0.100		82.0	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	63.4		ug/kg	62.5		101	70-130			
Surrogate: Toluene-d8	60.6		"	62.5		97.0	70-130			
Surrogate: 4-Bromofluorobenzene	59.2		"	62.5		94.8	70-130			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Mike Furtaw  
 Project Number:  
 614610004/0005/INC#00000017  
 Project: KMG - HSR 63N66W13SENW

**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 B6C1801 - EPA 5030 (soil)										
Matrix Spike (B6C1801-MS1)		Source: X603230-02			Prepared: 03/18/2016 Analyzed: 03/18/2016					
Benzene	0.108	0.002	mg/kg	0.100	ND	108	71.8-126			
Toluene	0.181	0.002	"	0.100	ND	181	65.1-130			QM-07
Ethylbenzene	0.098	0.002	"	0.100	ND	97.8	62.2-130			
m,p-Xylene	0.227	0.004	"	0.200	ND	114	46.5-137			
o-Xylene	0.100	0.002	"	0.100	ND	100	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	65.1		ug/kg	62.5		104	70-130			
Surrogate: Toluene-d8	60.3		"	62.5		96.5	70-130			
Surrogate: 4-Bromofluorobenzene	60.1		"	62.5		96.2	70-130			

Origins Laboratory, Inc.



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Mike Furtaw  
 Project Number:  
 Project: KMG - HSR 63N66W13SENW

**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 B6C1801 - EPA 5030 (soil)

Matrix Spike Dup (B6C1801-MSD1)	Source: X603230-02			Prepared: 03/18/2016 Analyzed: 03/18/2016						
Benzene	0.104	0.002	mg/kg	0.100	ND	104	71.8-126	3.53	11.3	
Toluene	0.175	0.002	"	0.100	ND	175	65.1-130	3.42	15.4	QM-07
Ethylbenzene	0.092	0.002	"	0.100	ND	92.2	62.2-130	5.87	19.6	
m,p-Xylene	0.215	0.004	"	0.200	ND	108	46.5-137	5.40	19.2	
o-Xylene	0.095	0.002	"	0.100	ND	95.2	54.2-134	5.27	17.9	
Surrogate: 1,2-Dichloroethane-d4	65.8		ug/kg	62.5		105	70-130			
Surrogate: Toluene-d8	59.7		"	62.5		95.5	70-130			
Surrogate: 4-Bromofluorobenzene	59.8		"	62.5		95.6	70-130			

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 Arvada CO 80003

Mike Furtaw  
 Project Number:  
 Project: KMG - HSR 63N66W13SENW

**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 B6C1802 - EPA 3580**

**Blank (B6C1802-BLK1)** Prepared: 03/18/2016 Analyzed: 03/18/2016

Diesel (C10-C28)	ND	50	mg/kg							
Residual Range Organics (C28-C40)	ND	200	"							
Surrogate: o-Terphenyl	56		"	50.0		112	59-131			

**LCS (B6C1802-BS1)** Prepared: 03/18/2016 Analyzed: 03/18/2016

Diesel (C10-C28)	990	50	mg/kg	1000		98.9	64-121			
Residual Range Organics (C28-C40)	1100	200	"	1000		110	58-124			
Surrogate: o-Terphenyl	52		"	50.0		104	59-131			

**Matrix Spike (B6C1802-MS1)** Source: X603230-02 Prepared: 03/18/2016 Analyzed: 03/18/2016

Diesel (C10-C28)	910	50	mg/kg	1000	ND	91.5	53-125			
Residual Range Organics (C28-C40)	950	200	"	1000	ND	95.4	47-133			
Surrogate: o-Terphenyl	50		"	50.0		99.9	59-131			

**Matrix Spike Dup (B6C1802-MSD1)** Source: X603230-02 Prepared: 03/18/2016 Analyzed: 03/18/2016

Diesel (C10-C28)	960	50	mg/kg	1000	ND	95.9	53-125	4.75	20	
Residual Range Organics (C28-C40)	1000	200	"	1000	ND	100	47-133	4.83	20	
Surrogate: o-Terphenyl	49		"	50.0		96.2	59-131			

Origins Laboratory, Inc.



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

Mike Furtaw  
 Project Number:  
 Project: KMG - HSR 63N66W13SENW

**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 B6C1803 - NO PREP										
Duplicate (B6C1803-DUP1)			Source: X603230-02			Prepared: 03/18/2016 Analyzed: 03/18/2016				
pH	8.20		pH Units		7.91			3.60	25	
Batch B6C1804 - NO PREP										
Blank (B6C1804-BLK1)			Prepared: 03/18/2016 Analyzed: 03/18/2016							
Specific Conductance (EC)	0.00300		mmhos/cm							
Duplicate (B6C1804-DUP1)			Source: X603230-02			Prepared: 03/18/2016 Analyzed: 03/18/2016				
Specific Conductance (EC)	0.0344		mmhos/cm		0.0316			8.48	25	

Origins Laboratory, Inc.



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

Mike Furtaw  
Project Number:  
Project: KMG - HSR 63N66W13SEW

### Notes and Definitions

- 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.

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.*

Noelle Doyle Mathis, President