



February 18, 2015

LT Environmental, Inc.

Justin Solomon

4600 West 60th Avenue

Arvada CO 80003

Project Name - KMG - NRC 4N-4Hz

Project Number - 014211290-353

Attached are your analytical results for KMG - NRC 4N-4Hz received by Origins Laboratory, Inc. February 11, 2015. This project is associated with Origins project number X502138-01.

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

Justin Solomon  
Project Number: 014211290-353  
Project: KMG - NRC 4N-4Hz

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Off S	X502138-01	Soil	February 10, 2015 13:45	02/11/2015 16:05
Off E	X502138-02	Soil	February 10, 2015 13:50	02/11/2015 16:05
Off N	X502138-03	Soil	February 10, 2015 13:55	02/11/2015 16:05
Off W	X502138-04	Soil	February 10, 2015 14:00	02/11/2015 16:05
Off Comp	X502138-05	Soil	February 10, 2015 14:05	02/11/2015 16:05
Pad Comp	X502138-06	Soil	February 10, 2015 14:10	02/11/2015 16:05

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Jen Pellegrini For Noelle Doyle Mathis, President

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Project: KMG - NRC 4N-4Hz

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X502138

page 1 of 1

**ORIGINS**  
LABORATORY, INC

Project Manager: Justin Solomon  
Project Name: KMG - NRC 4N-4Hz  
Project Number: 014211290-353  
Samples Collected by: RZ

Client: LT Environmental Inc.  
Address: 4600 W. 60th Ave Arvada CO 80002  
Telephone Number: 303.433.7988  
Email Address: jsolomon@ltenv.com

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis				Sample Instructions
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summation	Other	PH, EC, SAR	Total Barium	TCLP Arsenic	
Off S	2/10/15	13:45	1	X					X						1
Off E		13:50	1	X					X						2
Off N		13:55	1	X					X						3
Off W		14:00	1	X					X						4
Off Comp		14:05	2	X					X						5
Pad Comp		14:10	3	X					X						6
															7
															8
															9
															10

  

Relinquished by:	Date:	Time:	Received by:	Date:	Time:	Turnaround Time:
<i>[Signature]</i>	2/11/15	16:05	<i>[Signature]</i>	2/11/15	16:05	Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input checked="" type="checkbox"/>

Date Results Needed

5.4

Origins Laboratory, Inc.

*Jefe Pellegrini*

Jen Pellegrini For Noelle Doyle Mathis, President

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Justin Solomon  
Project Number: 014211290-353  
Project: KMG - NRC 4N-4Hz

Origins Laboratory

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

## Sample Receipt Checklist

Origins Work Order: X502138

Client: LTE

Client Project ID: NRC 4N-4Hz

Checklist Completed by: Jefe Smith

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

Date/time completed: 2/11/15

Airbill #: NA

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

Cooler Number/Temperature: 1 / 5.4 °C 1 / \_\_\_\_\_ °C 1 / \_\_\_\_\_ °C (Describe)

Thermometer ID: T603

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"/>			PH
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/pH <2 for samples preserved with HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> / (pH >10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

Reviewed by (Project Manager) [Signature]

Date/Time Reviewed 02-13-15

Origins Laboratory, Inc.

Jefe Pellegrini

Jen Pellegrini For Noelle Doyle Mathis, President

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

Justin Solomon  
Project Number: 014211290-353  
Project: KMG - NRC 4N-4Hz

Off S

2/10/2015 1:45:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**GEL Laboratories, LLC**  
**X502138-01 (Soil)**

**Total Metals by SW846 3050B/6010C**

Arsenic	7.04	0.517	3.10	mg/kg dry	1	1457749	02/13/2015	02/16/2015	
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Origins Laboratory, Inc.



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Justin Solomon  
Project Number: 014211290-353  
Project: KMG - NRC 4N-4Hz

Off E

2/10/2015 1:50:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**GEL Laboratories, LLC**  
**X502138-02 (Soil)**

**Total Metals by SW846 3050B/6010C**

Arsenic	7.96	0.583	3.50	mg/kg dry	1	1457749	02/13/2015	02/16/2015	
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Origins Laboratory, Inc.



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Project Number: 014211290-353  
Project: KMG - NRC 4N-4Hz

Off N

2/10/2015 1:55:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**GEL Laboratories, LLC**  
**X502138-03 (Soil)**

**Total Metals by SW846 3050B/6010C**

Arsenic	7.74	0.560	3.36	mg/kg dry	1	1457749	02/13/2015	02/16/2015	
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Justin Solomon  
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Project: KMG - NRC 4N-4Hz

Off W

2/10/2015 2:00:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**GEL Laboratories, LLC**  
**X502138-04 (Soil)**

**Total Metals by SW846 3050B/6010C**

Arsenic	12.4	0.531	3.19	mg/kg dry	1	1457749	02/13/2015	02/16/2015	
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Project: KMG - NRC 4N-4Hz

**Off Comp****2/10/2015 2:05:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X502138-05 (Soil)****pH in Soil by EPA 9045D**

pH	8.57			pH Units	1	5B12007	02/12/2015	02/13/2015	
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**SAR Metals by SW846 3050B/6010C**

Calcium	18100	9.29	29.0	mg/kg dry	1	1457748	02/13/2015	02/16/2015	
Magnesium	6070	9.87	34.8	"	"	"	"	"	
Sodium	442	8.13	29.0	"	"	"	"	"	

**Sodium Adsorption Ratio**

Sodium Adsorption Ratio	0.727			none	1	1458674		02/18/2015	
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**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.123			mmhos/cm	1	5B12008	02/12/2015	02/13/2015	
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**Total Metals by SW846 3050B/6010C**

Arsenic	7.67	0.581	3.48	mg/kg dry	1	1457749	02/13/2015	02/16/2015	
Barium	167	0.116	0.581	"	"	"	"	"	

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Project Number: 014211290-353  
Project: KMG - NRC 4N-4Hz

## Pad Comp

2/10/2015 2:10:00PM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory, Inc. X502138-06 (Soil)

### BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	5B12010	02/12/2015	02/14/2015
Toluene	ND	0.002	"	"	"	"	"
Ethylbenzene	ND	0.002	"	"	"	"	"
Xylenes, total	ND	0.002	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	115 %	70-130	"	"	"
Surrogate: Toluene-d8	97.6 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	99.3 %	70-130	"	"	"

### pH in Soil by EPA 9045D

pH	8.50	pH Units	1	5B12007	02/12/2015	02/13/2015
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### SAR Metals by SW846 3050B/6010C

Calcium	25100	8.07	25.2	mg/kg dry	1	1457748	02/13/2015	02/16/2015
Magnesium	5610	8.58	30.3	"	"	"	"	"
Sodium	1150	7.06	25.2	"	"	"	"	"

### Sodium Adsorption Ratio

Sodium Adsorption Ratio	1.71	none	1	1458674	02/18/2015
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**Pad Comp****2/10/2015 2:10:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X502138-06 (Soil)****Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.353			mmhos/cm	1	5B12008	02/12/2015	02/13/2015	
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**TCLP Metals by 1311/3010A/6010C**

Arsenic	ND	0.050	0.300	mg/L	1	1458310	02/17/2015	02/17/2015	U
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**Total Metals by SW846 3050B/6010C**

Arsenic	5.94	0.505	3.03	mg/kg dry	1	1457749	02/13/2015	02/16/2015	
Barium	1880	0.505	2.52	"	5	"	"	02/17/2015	

**TPH-Carbon Chain by EPA Method 8015C**

Gasoline (C6-C10)	ND	17	50	mg/kg	1	5B12009	02/12/2015	02/12/2015	
Diesel (C10-C28)	500	13	50	"	"	"	"	"	
Residual Range Organics (C28-C36)	ND	4.6	200	"	"	"	"	"	

Surrogate: o-Terphenyl	79.2 %		65-146			"	"	"	
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**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 5B12010 - EPA 5030 (soil)**

**Blank (5B12010-BLK1)**

Prepared: 02/12/2015 Analyzed: 02/12/2015

Benzene	ND	0.002	mg/kg							
Toluene	ND	0.002	"							
Ethylbenzene	ND	0.002	"							
Xylenes, total	ND	0.002	"							
Surrogate: 1,2-Dichloroethane-d4	81		ug/kg	62.5	130		70-130			
Surrogate: Toluene-d8	64		"	62.5	103		70-130			
Surrogate: 4-Bromofluorobenzene	69		"	62.5	111		70-130			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 5B12010 - EPA 5030 (soil)</b>										
<b>LCS (5B12010-BS1)</b>					Prepared: 02/12/2015 Analyzed: 02/12/2015					
Benzene	0.108	0.002	mg/kg	0.100		108	77.1-124			
Toluene	0.106	0.002	"	0.100		106	74.5-128			
Ethylbenzene	0.112	0.002	"	0.100		112	66.4-127			
m,p-Xylene	0.231	0.004	"	0.200		116	76.6-124			
o-Xylene	0.111	0.002	"	0.100		111	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	77		ug/kg	62.5		123	70-130			
Surrogate: Toluene-d8	65		"	62.5		104	70-130			
Surrogate: 4-Bromofluorobenzene	69		"	62.5		110	70-130			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 5B12010 - EPA 5030 (soil)**

Matrix Spike (5B12010-MS1)		Source: X502131-06			Prepared: 02/12/2015 Analyzed: 02/12/2015					
Benzene	0.103	0.002	mg/kg	0.100	ND	103	71.8-126			
Toluene	0.102	0.002	"	0.100	ND	102	65.1-130			
Ethylbenzene	0.109	0.002	"	0.100	ND	109	62.2-130			
m,p-Xylene	0.221	0.004	"	0.200	ND	110	46.5-137			
o-Xylene	0.109	0.002	"	0.100	ND	109	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	78		ug/kg	62.5		125	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	68		"	62.5		109	70-130			

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Project: KMG - NRC 4N-4Hz

**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 5B12010 - EPA 5030 (soil)**

Matrix Spike Dup (5B12010-MSD1)		Source: X502131-06			Prepared: 02/12/2015 Analyzed: 02/12/2015					
Benzene	0.099	0.002	mg/kg	0.100	ND	98.9	71.8-126	3.71	11.3	
Toluene	0.097	0.002	"	0.100	ND	97.5	65.1-130	4.83	15.4	
Ethylbenzene	0.102	0.002	"	0.100	ND	102	62.2-130	6.64	19.6	
m,p-Xylene	0.215	0.004	"	0.200	ND	108	46.5-137	2.50	19.2	
o-Xylene	0.103	0.002	"	0.100	ND	103	54.2-134	6.47	17.9	
Surrogate: 1,2-Dichloroethane-d4	78		ug/kg	62.5		124	70-130			
Surrogate: Toluene-d8	66		"	62.5		105	70-130			
Surrogate: 4-Bromofluorobenzene	68		"	62.5		109	70-130			

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Project Number: 014211290-353  
Project: KMG - NRC 4N-4Hz

## 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 8015M - 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 5B12009 - EPA 3580

#### Blank (5B12009-BLK1)

Prepared: 02/12/2015 Analyzed: 02/12/2015

Gasoline (C6-C10)	36	50	mg/kg
Diesel (C10-C28)	19	50	"
Residual Range Organics (C28-C36)	ND	200	"

Surrogate: o-Terphenyl

60.1

"

50.0

120

65-146

#### LCS (5B12009-BS1)

Prepared: 02/12/2015 Analyzed: 02/12/2015

Gasoline (C6-C10)	970	50	mg/kg	1000		96.5	66.7-119
Diesel (C10-C28)	960	50	"	1000		96.2	70.1-127
Residual Range Organics (C28-C36)	1100	200	"	1000		111	54.5-139

Surrogate: o-Terphenyl

51.6

"

50.0

103

65-146

#### Matrix Spike (5B12009-MS1)

Source: X502131-06

Prepared: 02/12/2015 Analyzed: 02/12/2015

Gasoline (C6-C10)	990	50	mg/kg	1000	ND	99.4	56.4-132
Diesel (C10-C28)	1000	50	"	1000	26	97.2	57.4-138
Residual Range Organics (C28-C36)	1100	200	"	1000	ND	113	47.7-129

Surrogate: o-Terphenyl

44.0

"

50.0

88.1

65-146

#### Matrix Spike Dup (5B12009-MSD1)

Source: X502131-06

Prepared: 02/12/2015 Analyzed: 02/12/2015

Gasoline (C6-C10)	1000	50	mg/kg	1000	ND	101	56.4-132	1.56	22
Diesel (C10-C28)	1000	50	"	1000	26	102	57.4-138	4.86	18.3
Residual Range Organics (C28-C36)	1100	200	"	1000	ND	115	47.7-129	1.56	30.1

Surrogate: o-Terphenyl

43.7

"

50.0

87.4

65-146

Origins Laboratory, Inc.



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Arvada CO 80003

Justin Solomon  
Project Number: 014211290-353  
Project: KMG - NRC 4N-4Hz

## 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 5B12007 - NO PREP</b>										
<b>Duplicate (5B12007-DUP1)</b>		<b>Source: X502131-05</b>			Prepared: 02/12/2015 Analyzed: 02/12/2015					
pH	7.80		pH Units		7.83			0.384	25	
<b>Duplicate (5B12007-DUP2)</b>		<b>Source: X502131-06</b>			Prepared: 02/12/2015 Analyzed: 02/12/2015					
pH	8.77		pH Units		8.81			0.455	25	
<b>Batch 5B12008 - NO PREP</b>										
<b>Blank (5B12008-BLK1)</b>					Prepared: 02/12/2015 Analyzed: 02/12/2015					
Specific Conductance (EC)	0.00250		mmhos/cm							
<b>Blank (5B12008-BLK2)</b>					Prepared: 02/12/2015 Analyzed: 02/12/2015					
Specific Conductance (EC)	0.00310		mmhos/cm							
<b>Duplicate (5B12008-DUP1)</b>		<b>Source: X502131-05</b>			Prepared: 02/12/2015 Analyzed: 02/12/2015					
Specific Conductance (EC)	0.0293		mmhos/cm		0.0333			12.8	25	
<b>Duplicate (5B12008-DUP2)</b>		<b>Source: X502131-06</b>			Prepared: 02/12/2015 Analyzed: 02/12/2015					
Specific Conductance (EC)	0.111		mmhos/cm		0.107			3.21	25	

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**TCLP Metals by 1311/3010A/6010C - Quality Control**  
**GEL Laboratories, LLC**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 1458310 - SW846 3010A</b>										
<b>MS (1203264605 S)</b>	<b>Source: 367132006</b>				Prepared: 02/17/2015 Analyzed: 02/17/2015					
Arsenic	4.21	0.300	mg/L	5.00	<0.050	84.2	75-125			
<b>TB (1203264606-BLK)</b>	Prepared: 02/17/2015 Analyzed: 02/17/2015									
Arsenic	ND	0.300	mg/L				-			U
<b>TB (1203265547-BLK)</b>	Prepared: 02/17/2015 Analyzed: 02/17/2015									
Arsenic	ND	0.300	mg/L				-			U
<b>BLANK (1203266167-BLK)</b>	Prepared: 02/17/2015 Analyzed: 02/17/2015									
Arsenic	ND	0.300	mg/L				-			U
<b>LCS (1203266168-BKS)</b>	Prepared: 02/17/2015 Analyzed: 02/17/2015									
Arsenic	4.92	0.300	mg/L	5.00		98.4	80-120			
<b>DUP (1203266169 D)</b>	<b>Source: 367132006</b>				Prepared: 02/17/2015 Analyzed: 02/17/2015					
Arsenic	ND	0.300	mg/L		<0.050		0-20	12.3	20	U

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**Total Metals by SW846 3050B/6010C - Quality Control**  
**GEL Laboratories, LLC**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 1457749 - SW846 3050B</b>										
<b>BLANK (1203264747-BLK)</b>					Prepared: 02/13/2015 Analyzed: 02/16/2015					
Barium	ND	0.495	mg/kg				-			U
Arsenic	ND	2.97	"				-			U
<b>LCS (1203264748-BKS)</b>					Prepared: 02/13/2015 Analyzed: 02/16/2015					
Barium	49.3	0.486	mg/kg	48.6		101	80-120			
Arsenic	49.6	2.92	"	48.6		102	80-120			
<b>DUP (1203264749 D)</b>					<b>Source: X502138-01</b>		Prepared: 02/13/2015 Analyzed: 02/16/2015			
Arsenic	6.52	3.08	mg/kg dry		7.04		0-20	7.65	20	
Barium	293	0.513	"		435		0-20	38.9	20	
<b>MS (1203264750 S)</b>					<b>Source: X502138-01</b>		Prepared: 02/13/2015 Analyzed: 02/16/2015			
Arsenic	0.0575	0.00304	mg/kg dry	0.0506	7.04	0	75-125			N
Barium	0.320	0.000506	"	0.0506	435	0	75-125			

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### Notes and Definitions

- U Result not detected above the detection limit
- N Spiked sample recovery not within control limits
- J Greater than the detection limit but less than the reporting limit
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- All soil results are reported on a wet weight basis.

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