



January 25, 2018

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver

CO 80211

**Project Name - KMG - Clifford L3-3**

**Project Number - 2130768.PAB**

Attached are your analytical results for KMG - Clifford L3-3 received by Origins Laboratory, Inc. January 24, 2018. This project is associated with Origins project number Y801335-01.

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

Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Bob Cornez

Project Number: 2130768.PAB

Project: KMG - Clifford L3-3

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@3"	Y801335-01	Soil	January 24, 2018 11:50	01/24/2018 16:45

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.*

Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: 2130768.PAB  
Project: KMG - Clifford L3-3

**ORIGINS**  
LABORATORY, INC

1725 Elk Place  
Denver, CO 80211  
Phone: 303.433.1322  
Fax: 303.265.9645

www.originslaboratory.com

160135

page of

Client: ARC

Project Manager: Robert Cornez

Address: \_\_\_\_\_

Project Name: Clifford L3-3

Project Number: ARC2130768.PAB

Telephone Number: \_\_\_\_\_

Samples Collected By: BL

Email Address: RCORNEZ@TASMAN-GEOSCI.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 Sampling	Other	Other	Other	Other	
550103"	1-24-18	1150	2	X				X					X		
800103"	↓	1200	1	↓				↓					X		On hold
Relinquished By: <u>BL</u>	Date: <u>1-24-2018</u>	Time: <u>1615</u>	Received By: <u>RC</u>	Date: <u>1/24/18</u>	Time: <u>1615</u>	Turnaround Time: <input checked="" type="checkbox"/> Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard									
Relinquished By: _____	Date: _____	Time: _____	Received By: _____	Date: _____	Time: _____										

Temp Received: 5.6

Date Results Needed: \_\_\_\_\_

Origins Laboratory, Inc.

*Jefe 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.

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: 2130768.PAB  
Project: KMG - Clifford L3-3

Origins Laboratory

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

## Sample Receipt Checklist

Origins Work Order: Y801335

Client: Tasman

Client Project ID: KMG - Clifford L3-3

Checklist Completed by: Don Lee

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

Date/time completed: 1-24-12

Airbill #: NR

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

Cooler Number/Temperature: 1 / 5.6 °C      /      °C      /      °C (Describe)

Thermometer ID: 1003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PH
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Additional Comments (if any):				

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

Reviewed by (Project Manager) Don Lee

Date/Time Reviewed 1-24-12

Origins Laboratory, Inc.

*Jefe 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.

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: 2130768.PAB  
Project: KMG - Clifford L3-3

SS01@3"

1/24/2018 11:50:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

**Origins Laboratory, Inc.**  
**Y801335-01 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	71.6	25.0	mg/kg	1	B8A2405	01/24/2018	01/25/2018
Residual Range Organics (C28-C40)	109	100	"	"	"	"	"

Surrogate: o-Terphenyl	67.4 %	59-131			"	"	"
------------------------	--------	--------	--	--	---	---	---

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	3.40	0.200	mg/kg	1	B8A2404	01/24/2018	01/25/2018
Benzene	0.048	0.002	"	"	"	"	"
Toluene	0.182	0.002	"	"	"	"	"
Ethylbenzene	0.036	0.002	"	"	"	"	"
Xylenes, total	0.376	0.002	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	111 %	70-130			"	"	"
Surrogate: Toluene-d8	94.1 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	121 %	70-130			"	"	"

**pH in Soil by EPA 9045D**

pH	8.23		pH Units	1	B8A2406	01/24/2018	01/24/2018
----	------	--	----------	---	---------	------------	------------

**Specific Conductance by Modified 9050A**

Specific Conductance (EC)	0.316		mmhos/cm	"	B8A2407	01/24/2018	"
---------------------------	-------	--	----------	---	---------	------------	---

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.

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: 2130768.PAB  
Project: KMG - Clifford L3-3

**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 B8A2404 - EPA 5030 (soil)</b>										
<b>Blank (B8A2404-BLK1)</b>					Prepared: 01/24/2018 Analyzed: 01/24/2018					
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	68		ug/kg	62.5		110	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.4	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		103	70-130			

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.

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: 2130768.PAB  
Project: KMG - Clifford L3-3

**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 B8A2404 - EPA 5030 (soil)</b>										
<b>LCS (B8A2404-BS1)</b>					Prepared: 01/24/2018 Analyzed: 01/24/2018					
Benzene	0.108	0.002	mg/kg	0.100		108	77.1-124			
Toluene	0.101	0.002	"	0.100		101	74.5-128			
Ethylbenzene	0.101	0.002	"	0.100		101	66.4-127			
m,p-Xylene	0.204	0.004	"	0.200		102	76.6-124			
o-Xylene	0.105	0.002	"	0.100		105	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		98.4	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.1	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.8	70-130			

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.*

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: 2130768.PAB  
Project: KMG - Clifford L3-3

**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 B8A2404 - EPA 5030 (soil)**

Matrix Spike (B8A2404-MS1)		Source: Y801319-01			Prepared: 01/24/2018 Analyzed: 01/24/2018					
Benzene	0.106	0.002	mg/kg	0.100	ND	106	71.8-126			
Toluene	0.113	0.002	"	0.100	ND	113	65.1-130			
Ethylbenzene	0.125	0.002	"	0.100	ND	125	62.2-130			
m,p-Xylene	0.266	0.004	"	0.200	ND	133	46.5-137			
o-Xylene	0.135	0.002	"	0.100	ND	135	54.2-134			QM-07
Surrogate: 1,2-Dichloroethane-d4	66		ug/kg	62.5		105	70-130			
Surrogate: Toluene-d8	64		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	77		"	62.5		122	70-130			

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.



Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: 2130768.PAB  
Project: KMG - Clifford L3-3

**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 B8A2404 - EPA 5030 (soil)**

Matrix Spike Dup (B8A2404-MSD1)		Source: Y801319-01			Prepared: 01/24/2018 Analyzed: 01/24/2018					
Benzene	0.095	0.002	mg/kg	0.100	ND	94.5	71.8-126	11.4	11.3	QR-02
Toluene	0.100	0.002	"	0.100	ND	99.5	65.1-130	12.5	15.4	
Ethylbenzene	0.106	0.002	"	0.100	ND	106	62.2-130	16.0	19.6	
m,p-Xylene	0.235	0.004	"	0.200	ND	117	46.5-137	12.6	19.2	
o-Xylene	0.118	0.002	"	0.100	ND	118	54.2-134	13.8	17.9	
Surrogate: 1,2-Dichloroethane-d4	67		ug/kg	62.5		107	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	79		"	62.5		126	70-130			

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.

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: 2130768.PAB  
Project: KMG - Clifford L3-3

**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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

**Batch B8A2405 - EPA 3550B**

**Blank (B8A2405-BLK1)**

Prepared: 01/24/2018 Analyzed: 01/24/2018

Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	45		"	50.0		89.3	59-131			

**LCS (B8A2405-BS1)**

Prepared: 01/24/2018 Analyzed: 01/24/2018

Diesel (C10-C28)	974	50.0	mg/kg	1000		97.4	64-121			
Residual Range Organics (C28-C40)	902	200	"	1000		90.2	58-124			
Surrogate: o-Terphenyl	48		"	50.0		96.4	59-131			

**Matrix Spike (B8A2405-MS1)**

**Source: Y801319-01**

Prepared: 01/24/2018 Analyzed: 01/24/2018

Diesel (C10-C28)	970	50.0	mg/kg	1000	ND	97.0	53-125			
Residual Range Organics (C28-C40)	924	200	"	1000	20.9	90.3	47-133			
Surrogate: o-Terphenyl	50		"	50.0		99.9	59-131			

**Matrix Spike Dup (B8A2405-MSD1)**

**Source: Y801319-01**

Prepared: 01/24/2018 Analyzed: 01/24/2018

Diesel (C10-C28)	943	50.0	mg/kg	1000	ND	94.3	53-125	2.79	20	
Residual Range Organics (C28-C40)	907	200	"	1000	20.9	88.7	47-133	1.90	20	
Surrogate: o-Terphenyl	48		"	50.0		96.2	59-131			

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.

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: 2130768.PAB  
Project: KMG - Clifford L3-3

## 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 B8A2406 - NO PREP</b>										
<b>Duplicate (B8A2406-DUP1)</b>		<b>Source: Y801332-01</b>			Prepared: 01/24/2018 Analyzed: 01/24/2018					
pH	8.45		pH Units		8.80			4.06	25	
<b>Batch B8A2407 - NO PREP</b>										
<b>Blank (B8A2407-BLK1)</b>		Prepared: 01/24/2018 Analyzed: 01/24/2018								
Specific Conductance (EC)	0.00210		mmhos/cm							
<b>Duplicate (B8A2407-DUP1)</b>		<b>Source: Y801332-01</b>			Prepared: 01/24/2018 Analyzed: 01/24/2018					
Specific Conductance (EC)	0.276		mmhos/cm		0.300			8.57	25	

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.

Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Bob Cornez

Project Number: 2130768.PAB

Project: KMG - Clifford L3-3

## Notes and Definitions

U Sample is Non-Detect.

QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

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

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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.*