

January 06, 2020

Tasman Geosciences

Bob Cornez

6855 West 119th Avenue

Broomfield CO 80020

Project Name - KMG - Kern L 4-14

Project Number - 89820501

Attached are your analytical results for KMG - Kern L 4-14 received by Origins Laboratory, Inc. December 30, 2019. This project is associated with Origins project number Y912459-01.

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



Tasman Geosciences
6855 West 119th Avenue
Broomfield CO 80020

Bob Cornez
Project Number: 89820501
Project: KMG - Kern L 4-14

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01-123019	Y912459-01	Water	December 30, 2019 13:01	12/30/2019 16:08
BH02-123019	Y912459-02	Water	December 30, 2019 13:00	12/30/2019 16:08
BH03-123019	Y912459-03	Water	December 30, 2019 12:52	12/30/2019 16:08
BH04-123019	Y912459-04	Water	December 30, 2019 13:08	12/30/2019 16:08
BH05-123019	Y912459-05	Water	December 30, 2019 13:09	12/30/2019 16:08

Origins Laboratory, Inc.



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Bob Cornez
 Project Number: 89820501
 Project: KMG - Kern L 4-14

ORIGINS
 LABORATORY, INC

790459

page | of |

Client: Oxy / Tasman
 Address: 6855 W. 119th Ave
Broomfield, CO. 80020
 Telephone Number: 303-487-1228
 Email Address: Cornez@tasman-geo.com

Project Manager: Bob Cornez
 Project Name: Kern L 4-14
 Project Number: 89820501
 Samples Collected By: Jesse M., Morgan S.

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis	Sample Instructions	
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	As Summ Container #			Other
BH01 - 123019	12-30-19	1301	3	X	X	X		X					
BH02 - 123019	12-30-19	1300	3	X	X	X		X					
BH03 - 123019	12-30-19	1252	3	X	X	X		X					
BH04 - 123019	12-30-19	1308	3	X	X	X		X					
BH05 - 123019	12-30-19	1309	3	X	X	X		X					
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:							
<u>msc</u>	12/30/19	1600	<u>BC</u>	12-30-19	1600	Same Day <input type="checkbox"/>							
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	48 Hr <input type="checkbox"/>							
						72 Hr <input type="checkbox"/>							
						Standard <input checked="" type="checkbox"/>							

Temp Received: 39 Date Results Needed

Origins Laboratory, Inc.

Jefe Pellegrini

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 Broomfield CO 80020

Bob Cornez
 Project Number: 89820501
 Project: KMG - Kern L 4-14

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 492159 Client: Tasman
 Client Project ID: KMG - Kern L 4-14
 Checklist Completed by: Don Lee Shipped Via: 140
 Date/time completed: 12-31-11 (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 / 3.8 °C _____ / _____ °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 ⁽¹⁾ ?	<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 ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.		<input checked="" type="checkbox"/>		
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

Reviewed by (Project Manager) [Signature] Date/Time Reviewed 1/2/12

Origins Laboratory, Inc.

Jefe Pellegrini

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 6855 West 119th Avenue
 Broomfield CO 80020

Bob Cornez
 Project Number: 89820501
 Project: KMG - Kern L 4-14

BH01-123019

12/30/2019 1:01:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y912459-01 (Water)

BTEX by EPA 8260D

Benzene	ND	1.00	ug/L	1	B9L3103	ZZZ	12/31/2019	12/31/2019	U
Toluene	ND	1.00	"	"	"	ZZZ	"	"	U
Ethylbenzene	ND	1.00	"	"	"	ZZZ	"	"	U
Xylenes, total	ND	1.00	"	"	"	ZZZ	"	"	U

Surrogate: 1,2-Dichloroethane-d4	106 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	100 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	70-130			"	"	"	"	

Origins Laboratory, Inc.



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 6855 West 119th Avenue
 Broomfield CO 80020

Bob Cornez
 Project Number: 89820501
 Project: KMG - Kern L 4-14

BH02-123019
12/30/2019 1:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y912459-02 (Water)

BTEX by EPA 8260D

Benzene	ND	1.00	ug/L	1	B9L3103	ZZZ	12/31/2019	12/31/2019	U
Toluene	ND	1.00	"	"	"	ZZZ	"	"	U
Ethylbenzene	ND	1.00	"	"	"	ZZZ	"	"	U
Xylenes, total	ND	1.00	"	"	"	ZZZ	"	"	U

Surrogate: 1,2-Dichloroethane-d4	109 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	96.4 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	100 %	70-130			"	"	"	"	

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Bob Cornez
 Project Number: 89820501
 Project: KMG - Kern L 4-14

BH03-123019
12/30/2019 12:52:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y912459-03 (Water)

BTEX by EPA 8260D

Benzene	ND	1.00	ug/L	1	B9L3103	ZZZ	12/31/2019	12/31/2019	U
Toluene	ND	1.00	"	"	"	ZZZ	"	"	U
Ethylbenzene	ND	1.00	"	"	"	ZZZ	"	"	U
Xylenes, total	ND	1.00	"	"	"	ZZZ	"	"	U

Surrogate: 1,2-Dichloroethane-d4	110 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	96.5 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	100 %	70-130			"	"	"	"	

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Bob Cornez
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 Project: KMG - Kern L 4-14

BH04-123019

12/30/2019 1:08:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y912459-04 (Water)

BTEX by EPA 8260D

Benzene	ND	1.00	ug/L	1	B9L3103	ZZZ	12/31/2019	12/31/2019	U
Toluene	ND	1.00	"	"	"	ZZZ	"	"	U
Ethylbenzene	ND	1.00	"	"	"	ZZZ	"	"	U
Xylenes, total	ND	1.00	"	"	"	ZZZ	"	"	U

Surrogate: 1,2-Dichloroethane-d4	108 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	96.4 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	100 %	70-130			"	"	"	"	

Origins Laboratory, Inc.



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Bob Cornez
 Project Number: 89820501
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BH05-123019

12/30/2019 1:09:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y912459-05 (Water)

BTEX by EPA 8260D

Benzene	ND	1.00	ug/L	1	B9L3103	ZZZ	12/31/2019	12/31/2019	U
Toluene	ND	1.00	"	"	"	ZZZ	"	"	U
Ethylbenzene	ND	1.00	"	"	"	ZZZ	"	"	U
Xylenes, total	ND	1.00	"	"	"	ZZZ	"	"	U

Surrogate: 1,2-Dichloroethane-d4	113 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	99.7 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	98.8 %	70-130			"	"	"	"	

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9L3103 - EPA 5030B (Water)

Blank (B9L3103-BLK1)

Prepared: 12/31/2019 Analyzed: 12/31/2019

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5	95.2		70-130			
Surrogate: Toluene-d8	62		"	62.5	98.8		70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5	99.8		70-130			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9L3103 - EPA 5030B (Water)

LCS (B9L3103-BS1)

Prepared: 12/31/2019 Analyzed: 12/31/2019

Benzene	48.4	1.00	ug/L	50.0		96.9	70-130			
Toluene	47.4	1.00	"	50.0		94.8	70-130			
Ethylbenzene	47.4	1.00	"	50.0		94.9	70-130			
m,p-Xylene	104	2.00	"	100		104	70-130			
o-Xylene	47.5	1.00	"	50.0		95.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		99.7	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.5	70-130			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9L3103 - EPA 5030B (Water)

Matrix Spike (B9L3103-MS1)	Source: Y912460-01			Prepared: 12/31/2019 Analyzed: 12/31/2019						
Benzene	77.7	1.00	ug/L	50.0	ND	155	70-130			QM-07
Toluene	72.7	1.00	"	50.0	ND	145	70-130			QM-07
Ethylbenzene	76.1	1.00	"	50.0	ND	152	70-130			QM-07
m,p-Xylene	165	2.00	"	100	ND	165	70-130			QM-07
o-Xylene	73.7	1.00	"	50.0	ND	147	70-130			QM-07
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		94.8	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.0	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		102	70-130			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9L3103 - EPA 5030B (Water)

Matrix Spike Dup (B9L3103-MSD1)	Source: Y912460-01			Prepared: 12/31/2019 Analyzed: 12/31/2019						
Benzene	40.5	1.00	ug/L	50.0	ND	81.1	70-130	62.9	20	QR-03
Toluene	38.2	1.00	"	50.0	ND	76.3	70-130	62.3	20	QR-03
Ethylbenzene	39.0	1.00	"	50.0	ND	77.9	70-130	64.5	20	QR-03
m,p-Xylene	86.7	2.00	"	100	ND	86.7	70-130	62.0	20	QR-03
o-Xylene	39.1	1.00	"	50.0	ND	78.3	70-130	61.3	20	QR-03
Surrogate: 1,2-Dichloroethane-d4	66		"	62.5		106	70-130			
Surrogate: Toluene-d8	61		"	62.5		96.9	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	70-130			

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Project: KMG - Kern L 4-14

Notes and Definitions

U Sample is Non-Detect.

QR-03 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.

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

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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Jen Pellegrini For Noelle Doyle Mathis, President