

ANALYTICAL TABLE

TABLE 1
RADEMACHER 9, 16-25A, 10, 15, 23, 37, 38, 39-25
SOIL SAMPLE RESULTS SUMMARY TABLE
KERR-McGEE OIL AND GAS ONSHORE LP

Sample ID	Date Sampled	Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TVPH - GRO (mg/kg)	TEPH - DRO + ORO (mg/kg)
COGCC standards for soil (mg/kg) ⁽¹⁾			0.17	85	100	175	500	
B01@8"	1/23/2015	0.66	<0.002	<0.002	<0.002	<0.002	<0.200	<200
B02@6"	1/23/2015	0.5	0.048	0.082	0.006	0.049	0.525	<200
B03@8"	1/23/2015	0.66	20.6	97.7	21.9	158	4,120	7,500
N01@5	1/27/2015	5	<0.002	<0.002	<0.002	<0.002	<0.200	<200
S01@5'	1/27/2015	5	0.022	0.007	<0.002	0.012	0.530	<200
E01@5'	1/27/2015	5	<0.002	<0.002	<0.002	<0.002	0.399	<200
W01@5'	1/27/2015	5	<0.002	<0.002	<0.002	<0.002	<0.200	<200
B04@6	1/27/2015	6	0.008	0.013	<0.002	0.014	0.839	<200

Notes:

1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective February 1, 2014.

COGCC = Colorado Oil and Gas Conservation Commission

(<) = Analytical result is less than the indicated laboratory reporting limit.

TVPH - GRO = Total volatile petroleum hydrocarbons - gasoline range organics

TEPH - DRO = Total extractable petroleum hydrocarbons - diesel range organics

TEPH - ORO = Total extractable petroleum hydrocarbons - oil range organics

mg/kg = Milligrams per kilogram.

bgs = Below ground surface.

BOLD=alytical result is in exceedance of COGCC Table 910-1 soil standards.

LABORATORY ANALYTICAL REPORTS

January 26, 2015

Tasman Geosciences

Christine Wasko

6899 Pecos Street, Unit C

Denver

CO 80211

Project Name - KMG - Rademacher 9,16-25A

Project Number - [none]

Attached are your analytical results for KMG - Rademacher 9,16-25A received by Origins Laboratory, Inc. January 23, 2015. This project is associated with Origins project number X501252-01.

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

6899 Pecos Street, Unit C

Denver CO 80211

Christine Wasko

Project Number: [none]

Project: KMG - Rademacher 9,16-25A

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B01 @ 8"	X501252-01	Soil	January 23, 2015 15:15	01/23/2015 16:30
B02 @ 6"	X501252-02	Soil	January 23, 2015 14:57	01/23/2015 16:30
B03 @ 8"	X501252-03	Soil	January 23, 2015 15:25	01/23/2015 16:30

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.

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

ORIGINS

LABORATORY, INC

www.originslaboratory.com

XSA12SZ

page 1 of 1

Client: Tasman Geosciences

Project Manager: Christine Wasko

Address:

Project Name: Endeavour 9 16-25A

Telephone Number:

Project Number:

Email Address:

Samples Collected By: Derek Nelson

912-230-2807
C:\Users\LEO\Desktop\origins-Lab.m

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative					Matrix			Analysis	Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa #	Other		
P01 @ 8"	1/23/15	1515	1						X			GSTEX 8260 TPA	702/1060 (2015)
P02 @ 6"	↓	1457	1						X				
P03 @ 8"	↓	1575	1						X				↓
													4
													5
													6
													7
													8
													9
													10
Relinquished By: [Signature]	Date: 1/23/15	Time: 1630	Received By: [Signature]	Date: 1.23.15	Time: 1630							Turnaround Time: Same Day <input checked="" type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input type="checkbox"/> S/S	
Relinquished By: [Signature]	Date:	Time:	Received By:	Date:	Time:								

Origins Laboratory, Inc.

Jeff Pellipini

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

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: XS01252

Client: Tasman

Client Project ID: Rademacher 9,16-25A

Checklist Completed by: Jeff Smith

Shipped Via: Air Up

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

Date/time completed: 1/23/15

Airbill #: N/A

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

Cooler Number/Temperature: 1 / 5.8 °C 1 / _____ °C 1 / _____ °C (Describe)

Thermometer ID: TW3

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) JP

Date/Time Reviewed 01-26-15

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

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

B01 @ 8"
1/23/2015 3:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X501252-01 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	5A23006	01/23/2015	01/24/2015
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"

<i>Surrogate: o-Terphenyl</i>	89.3 %	59-131			"	"	"
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	5A23010	01/23/2015	01/24/2015
Benzene	ND	0.002	"	"	"	"	"
Toluene	ND	0.002	"	"	"	"	"
Ethylbenzene	ND	0.002	"	"	"	"	"
Xylenes, total	ND	0.002	"	"	"	"	"

<i>Surrogate: 1,2-Dichloroethane-d4</i>	112 %	70-130			"	"	"
<i>Surrogate: Toluene-d8</i>	103 %	70-130			"	"	"
<i>Surrogate: 4-Bromofluorobenzene</i>	104 %	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

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

B02 @ 6"
1/23/2015 2:57:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X501252-02 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	5A23006	01/23/2015	01/24/2015
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"

Surrogate: o-Terphenyl	93.3 %	59-131			"	"	"
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	0.525	0.200	mg/kg	1	5A23010	01/23/2015	01/24/2015
Benzene	0.048	0.002	"	"	"	"	"
Toluene	0.082	0.002	"	"	"	"	"
Ethylbenzene	0.006	0.002	"	"	"	"	"
Xylenes, total	0.049	0.002	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	108 %	70-130			"	"	"
Surrogate: Toluene-d8	104 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	102 %	70-130			"	"	"

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

B03 @ 8"
1/23/2015 3:25:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X501252-03 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	6400	50	mg/kg	1	5A23006	01/23/2015	01/24/2015
Residual Range Organics (C28-C36)	1100	200	"	"	"	"	"

Surrogate: o-Terphenyl	105 %	59-131			"	"	"
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	4120	50.0	mg/kg	250	5A23010	01/23/2015	01/24/2015
Benzene	20.6	0.498	"	"	"	"	"
Toluene	97.7	0.498	"	"	"	"	"
Ethylbenzene	21.9	0.498	"	"	"	"	"
Xylenes, total	158	0.498	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	104 %	70-130			"	"	"
Surrogate: Toluene-d8	112 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	105 %	70-130			"	"	"

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

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 5A23010 - EPA 5030 (soil)										
Blank (5A23010-BLK1)					Prepared: 01/23/2015 Analyzed: 01/23/2015					
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	62.1		ug/kg	62.5		99.3	70-130			
Surrogate: Toluene-d8	62.6		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	64.1		"	62.5		103	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

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 5A23010 - EPA 5030 (soil)										
LCS (5A23010-BS1)					Prepared: 01/23/2015 Analyzed: 01/23/2015					
Benzene	0.104	0.002	mg/kg	0.100		104	77.1-124			
Toluene	0.104	0.002	"	0.100		104	74.5-128			
Ethylbenzene	0.113	0.002	"	0.100		113	66.4-127			
m,p-Xylene	0.225	0.004	"	0.200		112	76.6-124			
o-Xylene	0.110	0.002	"	0.100		110	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	64.4		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	64.8		"	62.5		104	70-130			
Surrogate: 4-Bromofluorobenzene	63.7		"	62.5		102	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

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 5A23010 - EPA 5030 (soil)

Matrix Spike (5A23010-MS1)		Source: X501248-01			Prepared: 01/23/2015 Analyzed: 01/23/2015					
Benzene	0.088	0.002	mg/kg	0.100	ND	87.5	71.8-126			
Toluene	0.091	0.002	"	0.100	ND	91.4	65.1-130			
Ethylbenzene	0.099	0.002	"	0.100	ND	99.4	62.2-130			
m,p-Xylene	0.197	0.004	"	0.200	ND	98.3	46.5-137			
o-Xylene	0.094	0.002	"	0.100	ND	93.6	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	64.4		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	61.1		"	62.5		97.7	70-130			
Surrogate: 4-Bromofluorobenzene	63.2		"	62.5		101	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

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 5A23010 - EPA 5030 (soil)										
Matrix Spike Dup (5A23010-MSD1)		Source: X501248-01			Prepared: 01/23/2015 Analyzed: 01/23/2015					
Benzene	0.097	0.002	mg/kg	0.100	ND	96.9	71.8-126	10.2	11.3	
Toluene	0.098	0.002	"	0.100	ND	98.5	65.1-130	7.48	15.4	
Ethylbenzene	0.105	0.002	"	0.100	ND	105	62.2-130	5.15	19.6	
m,p-Xylene	0.212	0.004	"	0.200	ND	106	46.5-137	7.39	19.2	
o-Xylene	0.102	0.002	"	0.100	ND	102	54.2-134	8.45	17.9	
Surrogate: 1,2-Dichloroethane-d4	70.1		ug/kg	62.5		112	70-130			
Surrogate: Toluene-d8	64.5		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	62.1		"	62.5		99.3	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

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 5A23006 - EPA 3580

Blank (5A23006-BLK1)

Prepared: 01/23/2015 Analyzed: 01/23/2015

Diesel (C10-C28)	ND	50	mg/kg							
Residual Range Organics (C28-C36)	ND	200	"							
Surrogate: o-Terphenyl	51		"	50.0		102	59-131			

LCS (5A23006-BS1)

Prepared: 01/23/2015 Analyzed: 01/23/2015

Diesel (C10-C28)	900	50	mg/kg				64-121			
Residual Range Organics (C28-C36)	1000	200	"	1000		103	58-124			
Surrogate: o-Terphenyl	49		"	50.0		98.4	59-131			

Matrix Spike (5A23006-MS1)

Source: X501227-01

Prepared: 01/23/2015 Analyzed: 01/23/2015

Diesel (C10-C28)	850	50	mg/kg		20		53-125			
Residual Range Organics (C28-C36)	1000	200	"	1000	24	98.0	47-133			
Surrogate: o-Terphenyl	45		"	50.0		90.2	59-131			

Matrix Spike Dup (5A23006-MSD1)

Source: X501227-01

Prepared: 01/23/2015 Analyzed: 01/23/2015

Diesel (C10-C28)	900	50	mg/kg		20		53-125	5.34	20	
Residual Range Organics (C28-C36)	1000	200	"	1000	24	99.0	47-133	1.02	20	
Surrogate: o-Terphenyl	47		"	50.0		94.0	59-131			

Origins Laboratory, Inc.



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Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Christine Wasko

Project Number: [none]

Project: KMG - Rademacher 9,16-25A

Notes and Definitions

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.

January 28, 2015

Tasman Geosciences

Christine Wasko

6899 Pecos Street, Unit C

Denver

CO 80211

Project Name - KMG - Rademacher 9,16-25A

Project Number - [none]

Attached are your analytical results for KMG - Rademacher 9,16-25A received by Origins Laboratory, Inc. January 27, 2015. This project is associated with Origins project number X501288-01.

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
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
N01 @ 5	X501288-01	Soil	January 27, 2015 12:15	01/27/2015 16:30
S01 @ 5	X501288-02	Soil	January 27, 2015 12:20	01/27/2015 16:30
E01 @ 5	X501288-03	Soil	January 27, 2015 12:35	01/27/2015 16:30
W01 @ 5	X501288-04	Soil	January 27, 2015 12:40	01/27/2015 16:30
B04 @ 6	X501288-05	Soil	January 27, 2015 12:45	01/27/2015 16:30

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.

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

ORIGINS

LABORATORY, INC

www.originslaboratory.com

X501288

page 1 of 1

Client: Tasman Geosciences
Address:
Telephone Number: 912-230-2807
Email Address: lwiske@tsgm-n-glo.com

Project Manager: Christine Wasko
Project Name: Calderman 9 16-254
Project Number:
Samples Collected By: Brak Nelson

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis	Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summ #		
N0105	1/27/15	1215	1	X						X		GDEX (840) TPH - D80 OK (845)
S0105		1220	1	X						X		
E0105		1235	1	X						X		
W0105		1240	1	X						X		
B0406		1245	1	X						X		
												6
												7
												8
												9
												10

Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:	
						Same Day:	Standard
<i>[Signature]</i>	1/27/15	1630	<i>[Signature]</i>	1.2.7.15	1630	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>[Signature]</i>						<input type="checkbox"/>	<input type="checkbox"/>

Origins Laboratory, Inc.

Jeff Pellgrini

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

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: XS0258

Client: Tasman

Client Project ID: Rademacher

Checklist Completed by: David Mathis

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

Date/time completed: 01-27-15 13:41

Airbill #: NA

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

Cooler Number/Temperature: 18-0°C / _____ °C / _____ °C (Describe) _____ °C

Thermometer ID: T003

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

Date/Time Reviewed 1/27/15

Origins Laboratory, Inc.

Jefe Pellegrini

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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

N01 @ 5

1/27/2015 12:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X501288-01 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	5A27006	01/27/2015	01/27/2015
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"

Surrogate: o-Terphenyl 78.1 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	5A27010	01/27/2015	01/28/2015
Benzene	ND	0.002	"	"	"	"	"
Toluene	ND	0.002	"	"	"	"	"
Ethylbenzene	ND	0.002	"	"	"	"	"
Xylenes, total	ND	0.002	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4 105 % 70-130 " " "
Surrogate: Toluene-d8 106 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 112 % 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

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

S01 @ 5

1/27/2015 12:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X501288-02 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	5A27006	01/27/2015	01/28/2015
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"

Surrogate: o-Terphenyl 80.2 % 59-131 " " " S-04

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	0.530	0.200	mg/kg	1	5A27010	01/27/2015	01/28/2015
Benzene	0.022	0.002	"	"	"	"	"
Toluene	0.007	0.002	"	"	"	"	"
Ethylbenzene	ND	0.002	"	"	"	"	"
Xylenes, total	0.012	0.002	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4 110 % 70-130 " " "

Surrogate: Toluene-d8 103 % 70-130 " " "

Surrogate: 4-Bromofluorobenzene 108 % 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

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

E01 @ 5

1/27/2015 12:35:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X501288-03 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	5A27006	01/27/2015	01/27/2015
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"

Surrogate: o-Terphenyl	91.1 %	59-131			"	"	"
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	0.399	0.200	mg/kg	1	5A27010	01/27/2015	01/28/2015
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	105 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	111 %	70-130			"	"	"

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

W01 @ 5

1/27/2015 12:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X501288-04 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	5A27006	01/27/2015	01/27/2015
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"

Surrogate: o-Terphenyl	62.5 %	59-131			"	"	"
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	5A27010	01/27/2015	01/28/2015
Benzene	ND	0.002	"	"	"	"	"
Toluene	ND	0.002	"	"	"	"	"
Ethylbenzene	ND	0.002	"	"	"	"	"
Xylenes, total	ND	0.002	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	108 %	70-130			"	"	"
Surrogate: Toluene-d8	100 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	112 %	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

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

B04 @ 6

1/27/2015 12:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X501288-05 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	5A27006	01/27/2015	01/28/2015	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

Surrogate: o-Terphenyl 67.5 % 59-131 " " " S-04

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	0.839	0.200	mg/kg	1	5A27010	01/27/2015	01/28/2015	
Benzene	0.008	0.002	"	"	"	"	"	
Toluene	0.013	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	0.014	0.002	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 102 % 70-130 " " "

Surrogate: Toluene-d8 108 % 70-130 " " "

Surrogate: 4-Bromofluorobenzene 111 % 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

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

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 5A27010 - EPA 5030 (soil)

Blank (5A27010-BLK1)

Prepared: 01/27/2015 Analyzed: 01/27/2015

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	65.7		ug/kg	62.5		105	70-130			
Surrogate: Toluene-d8	66.2		"	62.5		106	70-130			
Surrogate: 4-Bromofluorobenzene	67.5		"	62.5		108	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

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 5A27010 - EPA 5030 (soil)										
LCS (5A27010-BS1)					Prepared: 01/27/2015 Analyzed: 01/27/2015					
Benzene	0.113	0.002	mg/kg	0.100		113	77.1-124			
Toluene	0.113	0.002	"	0.100		113	74.5-128			
Ethylbenzene	0.116	0.002	"	0.100		116	66.4-127			
m,p-Xylene	0.221	0.004	"	0.200		111	76.6-124			
o-Xylene	0.119	0.002	"	0.100		119	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	62.2		ug/kg	62.5		99.6	70-130			
Surrogate: Toluene-d8	65.9		"	62.5		105	70-130			
Surrogate: 4-Bromofluorobenzene	61.8		"	62.5		98.9	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

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 5A27010 - EPA 5030 (soil)

Matrix Spike (5A27010-MS1)		Source: X501284-03			Prepared: 01/27/2015 Analyzed: 01/27/2015					
Benzene	0.098	0.002	mg/kg	0.100	ND	98.1	71.8-126			
Toluene	0.097	0.002	"	0.100	ND	97.4	65.1-130			
Ethylbenzene	0.098	0.002	"	0.100	ND	97.8	62.2-130			
m,p-Xylene	0.189	0.004	"	0.200	ND	94.3	46.5-137			
o-Xylene	0.098	0.002	"	0.100	ND	97.8	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	65.5		ug/kg	62.5		105	70-130			
Surrogate: Toluene-d8	64.4		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	65.3		"	62.5		104	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

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 5A27010 - EPA 5030 (soil)

Matrix Spike Dup (5A27010-MSD1)		Source: X501284-03			Prepared: 01/27/2015 Analyzed: 01/27/2015					
Benzene	0.096	0.002	mg/kg	0.100	ND	95.8	71.8-126	2.31	11.3	
Toluene	0.096	0.002	"	0.100	ND	95.5	65.1-130	1.91	15.4	
Ethylbenzene	0.098	0.002	"	0.100	ND	97.7	62.2-130	0.0409	19.6	
m,p-Xylene	0.186	0.004	"	0.200	ND	93.1	46.5-137	1.25	19.2	
o-Xylene	0.096	0.002	"	0.100	ND	96.0	54.2-134	1.84	17.9	
Surrogate: 1,2-Dichloroethane-d4	65.0		ug/kg	62.5		104	70-130			
Surrogate: Toluene-d8	66.0		"	62.5		106	70-130			
Surrogate: 4-Bromofluorobenzene	65.9		"	62.5		106	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

Christine Wasko
Project Number: [none]
Project: KMG - Rademacher 9,16-25A

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 5A27006 - EPA 3580

Blank (5A27006-BLK1)

Prepared: 01/27/2015 Analyzed: 01/27/2015

Diesel (C10-C28)	ND	50	mg/kg							
Residual Range Organics (C28-C36)	ND	200	"							
Surrogate: o-Terphenyl	52		"	50.0		103	59-131			

LCS (5A27006-BS1)

Prepared: 01/27/2015 Analyzed: 01/27/2015

Diesel (C10-C28)	910	50	mg/kg	1000		91.1	64-121			
Residual Range Organics (C28-C36)	1000	200	"	1000		102	58-124			
Surrogate: o-Terphenyl	49		"	50.0		97.7	59-131			

Matrix Spike (5A27006-MS1)

Source: X501262-01

Prepared: 01/27/2015 Analyzed: 01/27/2015

Diesel (C10-C28)	930	50	mg/kg	1000	19	90.6	53-125			
Residual Range Organics (C28-C36)	1000	200	"	1000	27	102	47-133			
Surrogate: o-Terphenyl	46		"	50.0		92.5	59-131			

Matrix Spike Dup (5A27006-MSD1)

Source: X501262-01

Prepared: 01/27/2015 Analyzed: 01/27/2015

Diesel (C10-C28)	910	50	mg/kg	1000	19	88.9	53-125	1.83	20	
Residual Range Organics (C28-C36)	1000	200	"	1000	27	102	47-133	0.0302	20	
Surrogate: o-Terphenyl	42		"	50.0		83.7	59-131			

Origins Laboratory, Inc.



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Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Christine Wasko

Project Number: [none]

Project: KMG - Rademacher 9,16-25A

Notes and Definitions

S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.

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.

Jen Pellegrini For Noelle Doyle Mathis, President