

ANALYTICAL TABLES

TABLE 1
COUGHLIN RED V V 22-1, 22-2, WAGNER RED V V 22-7, 22-8
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	
NW01@8	10/26/2014	8	<0.0020	<0.0020	<0.0020	<0.0020	0.238	<200
NE01@8	10/26/2014	8	<0.0020	<0.0020	<0.0020	<0.0020	<0.200	<200
SW01@8	10/26/2014	8	0.381	<0.0020	0.0131	<0.0020	67.3	<200
SE01@8	10/26/2014	8	0.0229	<0.0020	0.013	<0.0020	0.546	<200
E01@8	10/26/2014	8	<0.0020	<0.0020	<0.0020	<0.0020	<0.200	<200
W01@8	10/26/2014	8	<0.0020	<0.0020	<0.0020	<0.0020	0.591	<200
SW02@8	10/27/2014	8	<0.0500	<0.0500	<0.0500	<0.0500	<5.00	<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= Analytical result is in exceedance of COGCC Table 910-1 soil standards.

TABLE 2
COUGHLIN RED V V 22-1, 22-2, WAGNER RED V V 22-7, 22-8
GROUNDWATER SAMPLE RESULTS SUMMARY TABLE
KERR-McGEE OIL AND GAS ONSHORE LP

Sample ID	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)
COGCC Table 910-1 Groundwater Standard (ug/L) ⁽¹⁾		5	560	700	1,400
GW01	10/24/2014	2620	1.5	170	704

Notes:

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective February 1, 2014.

COGCC = Colorado Oil and Gas Conservation Commission

ug/L = Micrograms per liter

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

BOLD= Analytical result is in exceedance of COGCC groundwater standards.

LABORATORY ANALYTICAL REPORTS

October 27, 2014

Tasman Geosciences

Christine Wasko

6899 Pecos Street, Unit C

Denver

CO 80211

Project Name - Coughlin Red VV 22-1

Project Number - [none]

Attached are your analytical results for Coughlin Red VV 22-1 received by Origins Laboratory, Inc. October 24, 2014. This project is associated with Origins project number X410280-01.

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: Coughlin Red VV 22-1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
NW01 @ 8	X410280-01	Soil	October 24, 2014 13:47	10/24/2014 15:00
NE01 @ 8	X410280-02	Soil	October 24, 2014 13:50	10/24/2014 15:00
SW01 @ 8	X410280-03	Soil	October 24, 2014 13:53	10/24/2014 15:00
SE01 @ 8	X410280-04	Soil	October 24, 2014 13:55	10/24/2014 15:00
E01 @ 8	X410280-05	Soil	October 24, 2014 13:57	10/24/2014 15:00
W01 @ 8	X410280-06	Soil	October 24, 2014 14:00	10/24/2014 15:00
GW01	X410280-07	Water	October 24, 2014 14:10	10/24/2014 15:00

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: Coughlin Red VV 22-1

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page 1 of 1

ORIGINS
LABORATORY, INC X410280

Client: Tasman Geo Project Manager/Send Report To: Christine Wasko
Address: 6899 Pecos Street, Unit C Email Address: c.wasko@tasman-geo.com
Telephone Number: 912 236 2807 Project Name/Number: Coughlin Red VV 22-1
Samples Collected By: Breck Nelson

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative					Matrix			Analysis/Method	Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa #	Other		
NW0108	10/24/14	1347	1	X					X			BTEX (6260) TPH D10000 (8215)	1
NE0108		1350	1	X					X				2
SW0108		1353	1	X					X				3
SE0108		1355	1	X					X				4
EW0108		1357	1	X					X				5
W0108		1400	1	X					X				6
GW01	✓	1410	3	X				X			BTEX (6260)		7
													8
													9
													10
Relinquished By: 	Date: 10/24	Time: 1500	Received By: 	Date: 10-24-14	Time: 1500	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"/> 8.9							

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

Origins Laboratory, Inc.

Jen Pellegrini

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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: Coughlin Red VV 22-1

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X410280 Client: Tasman
Client Project ID: Coughlin Red VV22-1
Checklist Completed by: Jen Pellegrini Shipped Via: Pickup
(UPS, FedEx, Hand Delivered, Pick-up, etc.)
Date/time completed: 10-24-14 Airbill #: N/A
Matrix(s) Received: (Check all that apply): ☒ Soil/Solid ☒ Water ☐ Other: _____
(Describe)
Cooler Number/Temperature: 1 / 8.9 °C _____ / _____ °C _____ / _____ °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>samp'd same day</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.		<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"/>			<u>HCL</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)

Date/Time Reviewed

Origins Laboratory, Inc.

Jen Pellegrini

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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: Coughlin Red VV 22-1

NW01 @ 8

10/24/2014 1:47:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410280-01 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	4J24013	10/24/2014	10/26/2014
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"

Surrogate: o-Terphenyl	92.5 %	59-131			"	"	"
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	0.238	0.200	mg/kg	1	4J24014	10/24/2014	10/24/2014
Benzene	ND	0.0020	"	"	"	"	"
Toluene	ND	0.0020	"	"	"	"	"
Ethylbenzene	ND	0.0020	"	"	"	"	"
Xylenes, total	ND	0.0020	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	93.7 %	70-130			"	"	"
Surrogate: Toluene-d8	99.7 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	102 %	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: Coughlin Red VV 22-1

NE01 @ 8

10/24/2014 1:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. X410280-02 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	4J24013	10/24/2014	10/26/2014
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"

Surrogate: o-Terphenyl	89.4 %	59-131			"	"	"
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	4J24014	10/24/2014	10/24/2014
Benzene	ND	0.0020	"	"	"	"	"
Toluene	ND	0.0020	"	"	"	"	"
Ethylbenzene	ND	0.0020	"	"	"	"	"
Xylenes, total	ND	0.0020	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	90.0 %	70-130			"	"	"
Surrogate: Toluene-d8	98.6 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	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: Coughlin Red VV 22-1

SW01 @ 8

10/24/2014 1:53:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410280-03 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	4J24013	10/24/2014	10/27/2014
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"

Surrogate: o-Terphenyl	89.6 %	59-131			"	"	"
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	67.3	5.00	mg/kg	25	4J24014	10/24/2014	10/27/2014
Benzene	0.381	0.0020	"	1	"	"	10/24/2014
Toluene	ND	0.0020	"	"	"	"	"
Ethylbenzene	0.0131	0.0020	"	"	"	"	"
Xylenes, total	ND	0.0020	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	79.8 %	70-130			"	"	"
Surrogate: Toluene-d8	119 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	107 %	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: Coughlin Red VV 22-1

SE01 @ 8

10/24/2014 1:55:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410280-04 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	4J24013	10/24/2014	10/27/2014
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"

Surrogate: o-Terphenyl	86.4 %	59-131			"	"	"
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	0.546	0.200	mg/kg	1	4J24014	10/24/2014	10/25/2014
Benzene	0.0229	0.0020	"	"	"	"	"
Toluene	ND	0.0020	"	"	"	"	"
Ethylbenzene	ND	0.0020	"	"	"	"	"
Xylenes, total	ND	0.0020	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	77.7 %	70-130			"	"	"
Surrogate: Toluene-d8	98.8 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	96.4 %	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: Coughlin Red VV 22-1

E01 @ 8

10/24/2014 1:57:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410280-05 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	4J24013	10/24/2014	10/27/2014
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"

Surrogate: o-Terphenyl 90.1 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	4J24014	10/24/2014	10/25/2014
Benzene	ND	0.0020	"	"	"	"	"
Toluene	ND	0.0020	"	"	"	"	"
Ethylbenzene	ND	0.0020	"	"	"	"	"
Xylenes, total	ND	0.0020	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4 86.6 % 70-130 " " "
Surrogate: Toluene-d8 100 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 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: Coughlin Red VV 22-1

W01 @ 8

10/24/2014 2:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410280-06 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	4J24013	10/24/2014	10/27/2014
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"

Surrogate: o-Terphenyl	78.4 %	59-131			"	"	"
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	0.591	0.200	mg/kg	1	4J24014	10/24/2014	10/25/2014
Benzene	ND	0.0020	"	"	"	"	"
Toluene	ND	0.0020	"	"	"	"	"
Ethylbenzene	ND	0.0020	"	"	"	"	"
Xylenes, total	ND	0.0020	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	80.2 %	70-130			"	"	"
Surrogate: Toluene-d8	102 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	97.2 %	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: Coughlin Red VV 22-1

GW01

10/24/2014 2:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410280-07 (Water)

BTEX by EPA 8260C

Benzene	2620	50.0	ug/L	50	4J24012	10/24/2014	10/26/2014
Toluene	1.5	1.0	"	1	"	"	10/24/2014
Ethylbenzene	170	1.0	"	"	"	"	"
Xylenes, total	704	50.0	"	50	"	"	10/26/2014

Surrogate: 1,2-Dichloroethane-d4	92.3 %	87.3-113			"	"	10/24/2014
Surrogate: Toluene-d8	99.4 %	90.9-108			"	"	10/26/2014
Surrogate: 4-Bromofluorobenzene	101 %	88.6-111			"	"	10/24/2014

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: Coughlin Red VV 22-1

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 4J24012 - EPA 5030B (Water)

Blank (4J24012-BLK1)

Prepared: 10/24/2014 Analyzed: 10/24/2014

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	54		"	62.5	86.2		87.3-113			S-GC
Surrogate: Toluene-d8	66		"	62.5	105		90.9-108			
Surrogate: 4-Bromofluorobenzene	63		"	62.5	100		88.6-111			

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: Coughlin Red VV 22-1

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 4J24012 - EPA 5030B (Water)

LCS (4J24012-BS1)

Prepared: 10/24/2014 Analyzed: 10/24/2014

Benzene	55.2	1.0	ug/L	50.0	110	75-126
Toluene	55.2	1.0	"	50.0	110	78.7-126
Ethylbenzene	55.4	1.0	"	50.0	111	81-130
m,p-Xylene	111	2.0	"	100	111	77.2-133
o-Xylene	55.6	1.0	"	50.0	111	77.9-126
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5	97.0	87.3-113
Surrogate: Toluene-d8	62		"	62.5	99.8	90.9-108
Surrogate: 4-Bromofluorobenzene	61		"	62.5	97.7	88.6-111

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: Coughlin Red VV 22-1

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 4J24012 - EPA 5030B (Water)

Matrix Spike (4J24012-MS1)		Source: X410250-01			Prepared: 10/24/2014 Analyzed: 10/24/2014					
Benzene	57.5	1.0	ug/L	50.0	ND	115	74-130			
Toluene	59.0	1.0	"	50.0	ND	118	73-131			
Ethylbenzene	60.2	1.0	"	50.0	ND	120	76-132			
m,p-Xylene	119	2.0	"	100	ND	119	69-139			
o-Xylene	57.7	1.0	"	50.0	ND	115	74-131			
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		95.5	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		101	90.9-108			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	88.6-111			

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: Coughlin Red VV 22-1

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 4J24012 - EPA 5030B (Water)

Matrix Spike Dup (4J24012-MSD1)		Source: X410250-01			Prepared: 10/24/2014 Analyzed: 10/24/2014					
Benzene	53.9	1.0	ug/L	50.0	ND	108	74-130	6.51	20	
Toluene	54.7	1.0	"	50.0	ND	109	73-131	7.44	20	
Ethylbenzene	56.1	1.0	"	50.0	ND	112	76-132	7.19	20	
m,p-Xylene	112	2.0	"	100	ND	112	69-139	6.23	20	
o-Xylene	54.2	1.0	"	50.0	ND	108	74-131	6.27	20	
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		96.3	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		101	90.9-108			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	88.6-111			

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: Coughlin Red VV 22-1

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 4J24014 - EPA 5030 (soil)

Blank (4J24014-BLK1)

Prepared: 10/24/2014 Analyzed: 10/24/2014

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0020	"							
Ethylbenzene	ND	0.0020	"							
Xylenes, total	ND	0.0020	"							
Surrogate: 1,2-Dichloroethane-d4	56.3		ug/kg	62.5		90.1	70-130			
Surrogate: Toluene-d8	61.2		"	62.5		97.9	70-130			
Surrogate: 4-Bromofluorobenzene	60.9		"	62.5		97.4	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: Coughlin Red VV 22-1

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 4J24014 - EPA 5030 (soil)										
LCS (4J24014-BS1)					Prepared: 10/24/2014 Analyzed: 10/24/2014					
Benzene	0.103	0.0020	mg/kg	0.100		103	77.1-124			
Toluene	0.0997	0.0020	"	0.100		99.7	74.5-128			
Ethylbenzene	0.105	0.0020	"	0.100		105	66.4-127			
m,p-Xylene	0.210	0.0040	"	0.200		105	76.6-124			
o-Xylene	0.105	0.0020	"	0.100		105	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	56.7		ug/kg	62.5		90.7	70-130			
Surrogate: Toluene-d8	62.5		"	62.5		99.9	70-130			
Surrogate: 4-Bromofluorobenzene	63.4		"	62.5		101	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: Coughlin Red VV 22-1

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 4J24014 - EPA 5030 (soil)

Matrix Spike (4J24014-MS1)		Source: X410270-01			Prepared: 10/24/2014 Analyzed: 10/24/2014					
Benzene	0.105	0.0020	mg/kg	0.100	ND	105	71.8-126			
Toluene	0.101	0.0020	"	0.100	ND	101	65.1-130			
Ethylbenzene	0.105	0.0020	"	0.100	ND	105	62.2-130			
m,p-Xylene	0.208	0.0040	"	0.200	ND	104	46.5-137			
o-Xylene	0.102	0.0020	"	0.100	ND	102	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	54.2		ug/kg	62.5		86.7	70-130			
Surrogate: Toluene-d8	61.3		"	62.5		98.0	70-130			
Surrogate: 4-Bromofluorobenzene	61.4		"	62.5		98.3	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: Coughlin Red VV 22-1

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 4J24014 - EPA 5030 (soil)

Matrix Spike Dup (4J24014-MSD1)		Source: X410270-01			Prepared: 10/24/2014 Analyzed: 10/24/2014					
Benzene	0.105	0.0020	mg/kg	0.100	ND	105	71.8-126	0.590	11.3	
Toluene	0.100	0.0020	"	0.100	ND	100	65.1-130	0.458	15.4	
Ethylbenzene	0.110	0.0020	"	0.100	ND	110	62.2-130	4.20	19.6	
m,p-Xylene	0.217	0.0040	"	0.200	ND	108	46.5-137	4.23	19.2	
o-Xylene	0.106	0.0020	"	0.100	ND	106	54.2-134	3.88	17.9	
Surrogate: 1,2-Dichloroethane-d4	53.4		ug/kg	62.5		85.5	70-130			
Surrogate: Toluene-d8	60.5		"	62.5		96.7	70-130			
Surrogate: 4-Bromofluorobenzene	65.0		"	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: Coughlin Red VV 22-1

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 4J24013 - EPA 3580

Blank (4J24013-BLK1)

Prepared: 10/24/2014 Analyzed: 10/26/2014

Diesel (C10-C28) ND 50 mg/kg

Residual Range Organics (C28-C36) ND 200 "

Surrogate: o-Terphenyl 46 g 50.0 92.3 59-131

LCS (4J24013-BS1)

Prepared: 10/24/2014 Analyzed: 10/27/2014

Diesel (C10-C28) 860 50 mg/kg 1000 85.6 64-121

Residual Range Organics (C28-C36) 880 200 " 1000 87.8 58-124

Surrogate: o-Terphenyl 47 g 50.0 94.5 59-131

Matrix Spike (4J24013-MS1)

Source: X410270-01

Prepared: 10/24/2014 Analyzed: 10/26/2014

QM-07

Diesel (C10-C28) 180 50 mg/kg 1000 14 16.3 53-125

Residual Range Organics (C28-C36) 28 200 " 1000 26 0.213 47-133

Surrogate: o-Terphenyl 49 g 50.0 97.5 59-131

Matrix Spike Dup (4J24013-MSD1)

Source: X410270-01

Prepared: 10/24/2014 Analyzed: 10/26/2014

QM-07

Diesel (C10-C28) 170 50 mg/kg 1000 14 16.1 53-125 1.50 20

Residual Range Organics (C28-C36) 27 200 " 1000 26 0.130 47-133 2.98 20

Surrogate: o-Terphenyl 47 g 50.0 94.2 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

Christine Wasko

Project Number: [none]

Project: Coughlin Red VV 22-1

Notes and Definitions

S-GC Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

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.

Jen Pellegrini For Noelle Doyle Mathis, President

October 28, 2014

Tasman Geosciences

Christine Wasko

6899 Pecos Street, Unit C

Denver

CO 80211

Project Name - Coughlin Red VV 22-1

Project Number - [none]

Attached are your analytical results for Coughlin Red VV 22-1 received by Origins Laboratory, Inc. October 27, 2014. This project is associated with Origins project number X410295-01.

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: Coughlin Red VV 22-1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SW02 @ 8	X410295-01	Soil	October 27, 2014 12:32	10/27/2014 15:19

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: Coughlin Red VV 22-1

www.originslaboratory.com

X10295

ORIGINS
LABORATORY, INC

page 1 of 1

Client: Tasman Geo Project Manager/Send Report To: Christine Wasko
Address: _____ Email Address: CWasko@Tasman-Geo.com
Project Name/Number: Coughlin Red VV 22-1
Telephone Number: 912 730 2807 Samples Collected By: Jack Nelson

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

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis/Method	Sample Instructions	
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa Canister #			Other
SU0208	10/27/14	1230	1	X					X			PTX 680 (5204)	1
												TPH 260/600 (815)	2
													3
													4
													5
													6
													7
													8
													9
													10
Relinquished By: _____	Date: <u>10/27</u>	Time: <u>1519</u>	Received By: _____	Date: _____	Time: _____	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 <input type="checkbox"/> 81							
Relinquished By: _____	Date: _____	Time: _____	Received By: _____	Date: <u>10/27/14</u>	Time: <u>1519</u>								

Comments:

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

Christine Wasko
Project Number: [none]
Project: Coughlin Red VV 22-1

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X410295

Client: Tasman

Client Project ID: Coughlin Red VV 22-1

Checklist Completed by: Jeff Smith

Shipped Via: H/D

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

Date/time completed: 10/27/14

Airbill #: NA

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

Cooler Number/Temperature: 1 / 8.1 °C 15 °C 10 °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 Same Day</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.			<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]

10-27-14
Date/Time Reviewed

Origins Laboratory, Inc.

[Signature]

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: Coughlin Red VV 22-1

SW02 @ 8**10/27/2014 12:32:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X410295-01 (Soil)**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	4J27009	10/27/2014	10/27/2014
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"

Surrogate: o-Terphenyl	88.3 %	59-131			"	"	"
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	5.00	mg/kg	25	4J24016	10/27/2014	10/27/2014
Benzene	ND	0.0500	"	"	"	"	"
Toluene	ND	0.0500	"	"	"	"	"
Ethylbenzene	ND	0.0500	"	"	"	"	"
Xylenes, total	ND	0.0500	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	94.2 %	70-130			"	"	"
Surrogate: Toluene-d8	101 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	92.3 %	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: Coughlin Red VV 22-1

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 4J24016 - EPA 5030 (soil)

Blank (4J24016-BLK1)

Prepared: 10/27/2014 Analyzed: 10/27/2014

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0020	"							
Ethylbenzene	ND	0.0020	"							
Xylenes, total	ND	0.0020	"							
Surrogate: 1,2-Dichloroethane-d4	62.2		ug/kg	62.5		99.5	70-130			
Surrogate: Toluene-d8	62.4		"	62.5		99.9	70-130			
Surrogate: 4-Bromofluorobenzene	59.0		"	62.5		94.4	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: Coughlin Red VV 22-1

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 4J24016 - EPA 5030 (soil)

LCS (4J24016-BS1)

Prepared: 10/27/2014 Analyzed: 10/27/2014

Benzene	0.0974	0.0020	mg/kg	0.100		97.4	77.1-124			
Toluene	0.0900	0.0020	"	0.100		90.0	74.5-128			
Ethylbenzene	0.0846	0.0020	"	0.100		84.6	66.4-127			
m,p-Xylene	0.171	0.0040	"	0.200		85.4	76.6-124			
o-Xylene	0.0864	0.0020	"	0.100		86.4	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	63.0		ug/kg	62.5		101	70-130			
Surrogate: Toluene-d8	62.6		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	60.7		"	62.5		97.1	70-130			

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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: Coughlin Red VV 22-1

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 4J24016 - EPA 5030 (soil)

Matrix Spike (4J24016-MS1)		Source: X410186-01			Prepared: 10/27/2014 Analyzed: 10/27/2014			QM-07		
Benzene	0.0845	0.0020	mg/kg	0.100	ND	84.5	71.8-126			
Toluene	0.0551	0.0020	"	0.100	ND	55.1	65.1-130			
Ethylbenzene	0.0419	0.0020	"	0.100	ND	41.9	62.2-130			
m,p-Xylene	0.0763	0.0040	"	0.200	ND	38.1	46.5-137			
o-Xylene	0.0402	0.0020	"	0.100	0.0023	38.0	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	58.1		ug/kg	62.5		93.0	70-130			
Surrogate: Toluene-d8	56.8		"	62.5		90.8	70-130			
Surrogate: 4-Bromofluorobenzene	55.1		"	62.5		88.2	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: Coughlin Red VV 22-1

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 4J24016 - EPA 5030 (soil)

Matrix Spike Dup (4J24016-MSD1)		Source: X410186-01			Prepared: 10/27/2014 Analyzed: 10/27/2014				QM-07	
Benzene	0.0816	0.0020	mg/kg	0.100	ND	81.6	71.8-126	3.56	11.3	
Toluene	0.0521	0.0020	"	0.100	ND	52.1	65.1-130	5.60	15.4	
Ethylbenzene	0.0373	0.0020	"	0.100	ND	37.3	62.2-130	11.6	19.6	
m,p-Xylene	0.0688	0.0040	"	0.200	ND	34.4	46.5-137	10.3	19.2	
o-Xylene	0.0338	0.0020	"	0.100	0.0023	31.5	54.2-134	17.5	17.9	
Surrogate: 1,2-Dichloroethane-d4	57.8		ug/kg	62.5		92.5	70-130			
Surrogate: Toluene-d8	56.6		"	62.5		90.6	70-130			
Surrogate: 4-Bromofluorobenzene	54.8		"	62.5		87.7	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: Coughlin Red VV 22-1

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 4J27009 - EPA 3580

Blank (4J27009-BLK1)

Prepared: 10/27/2014 Analyzed: 10/27/2014

Diesel (C10-C28) ND 50 mg/kg

Residual Range Organics (C28-C36) ND 200 "

Surrogate: o-Terphenyl 50 g 50.0 99.9 59-131

LCS (4J27009-BS1)

Prepared: 10/27/2014 Analyzed: 10/27/2014

Diesel (C10-C28) 910 50 mg/kg 1000 90.7 64-121

Residual Range Organics (C28-C36) 840 200 " 1000 83.8 58-124

Surrogate: o-Terphenyl 47 g 50.0 94.0 59-131

Matrix Spike (4J27009-MS1)

Source: X410294-01

Prepared: 10/27/2014 Analyzed: 10/27/2014

Diesel (C10-C28) 850 50 mg/kg 1000 16 83.7 53-125

Residual Range Organics (C28-C36) 770 200 " 1000 33 73.3 47-133

Surrogate: o-Terphenyl 43 g 50.0 85.1 59-131

Matrix Spike Dup (4J27009-MSD1)

Source: X410294-01

Prepared: 10/27/2014 Analyzed: 10/27/2014

Diesel (C10-C28) 940 50 mg/kg 1000 16 92.3 53-125 9.64 20

Residual Range Organics (C28-C36) 890 200 " 1000 33 85.4 47-133 14.5 20

Surrogate: o-Terphenyl 48 g 50.0 96.1 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

Christine Wasko

Project Number: [none]

Project: Coughlin Red VV 22-1

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.



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Jen Pellegrini For Noelle Doyle Mathis, President