



November 17, 2015

Mr. Sam LaRue
Senior HSE Representative
Kerr-McGee Oil & Gas Onshore LP
1099 18th Street, Suite 1800
Denver, Colorado 80202

**Re: Sump Replacement Summary Letter Report
WCLI USX S 33-15P
API: 05-123-31524
Facility ID: 416948
Legal: SWSE Sec 33-T4N-R68W
Remediation Project #8961**

Dear Mr. LaRue:

On behalf of Kerr-McGee Oil & Gas Onshore LP (Kerr-McGee), Tasman Geosciences, Inc. (Tasman) has prepared this Sump Replacement Summary Letter Report (Report) to document sampling activities and the results of environmental testing at the above-referenced site. This Report is being submitted under the Form 27 Management Plan for Closure/Replacement of Produced Water Vessels, which has been assigned Remediation #8961 by the COGCC. Tasman provided environmental services at the site that included collection of confirmation soil and groundwater samples from the excavation and documentation of field activities, as described below.

Site Assessment Activities

The field activities described herein were performed with the purpose of assessing potential hydrocarbon impacts at the site related to the replacement of the produced water sump on July 2, 2015. Soil sampling activities, laboratory analytical results, and conclusions are presented below. The general site layout and sample locations are provided in the attached site map (Attachment A) .

The final extent of the excavation measured approximately 15 feet by 15 feet with an approximate depth of 5 feet below ground surface (bgs). No impacted material was removed during the replacement of the produced water sump at this location. A liner was present at the location and groundwater was not encountered in the excavation.

Confirmation soil samples were collected from the east and south sidewalls of the excavation area at approximately 4 feet bgs. Soil samples were not collected from the base and west and north sidewalls of the excavation area due to the presence of a liner. Soil samples were field screened for volatile organic compound (VOC) concentrations using a photoionization detector (PID). The confirmation soil sample collected from the east sidewall of the excavation area was submitted to Origins Laboratory in Denver, Colorado, for analysis of benzene, toluene,

ethylbenzene, total xylenes (BTEX), total petroleum hydrocarbons (TPH) – gasoline range organics (GRO) by United States Environmental Protection Agency (USEPA) Method 8260C, TPH – diesel range and oil range organics (DRO and ORO) by USEPA Method 8015, electrical conductivity (EC), pH. Soil analytical data is summarized in Table 1 and the laboratory analytical report is provided in Attachment B.

Results

Soil analytical results from the sample collected from the east sidewall of the final extent of the excavation area indicated that BTEX and TPH concentrations were below the applicable COGCC Table 910-1 standards. The remaining soil sample collected from the south sidewall of the excavation area were not submitted for laboratory analysis as analytical data confirmed the absence of petroleum hydrocarbon impacts above regulatory standards.

Conclusions

Analytical results described herein confirm BTEX and TPH impacts are not present at concentrations above applicable regulatory standards in the former sump location. Consequently, no further site assessment or remedial activity is recommended at this time. Following site assessment activities, the produced water sump was replaced and the excavation area was backfilled and contoured to match pre-existing site conditions. The production facility remains operational.

Please contact me at (720) 409-8791 if you have any questions regarding this report or require additional information.

Sincerely,

A handwritten signature in blue ink that reads 'Christine Wasko'.

Christine Wasko
Project Scientist

Attachments:

Table 1 – Soil Sample Results Summary Table
Attachment A – Site Map
Attachment B – Laboratory Analytical Report

Table

TABLE 1
WCLI USX S 33-15P
SOIL SAMPLE RESULTS SUMMARY TABLE
KERR-McGEE OIL AND GAS ONSHORE LP

Sample ID	Date	Depth (ft. bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TVPH- GRO (mg/kg)	TEPH- DRO (mg/kg)	TEPH- ORO (mg/kg)	EC (mmhos/cm)	pH (units)
COGCC standards for soil (mg/kg) ⁽¹⁾			0.17	85	100	175	500			4 or 2x BG	6-9
E01 @4'	07/02/15	4.0	<0.002	<0.002	<0.002	<0.002	<0.200	<50	<200	0.0933	8.65

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

EC = Electrical conductivity

BG = Background

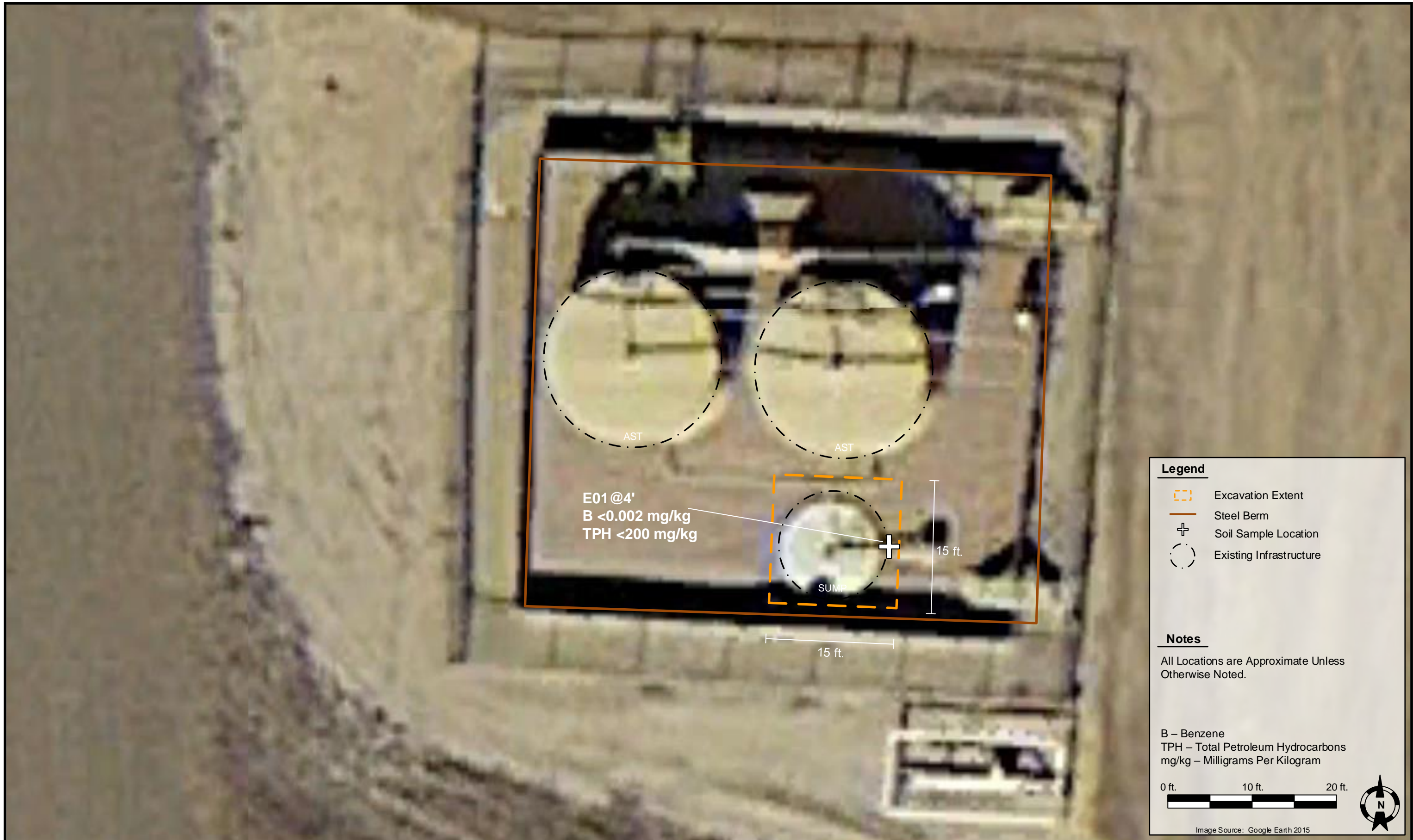
mmhos/cm = Millimhos per centimeter

mg/kg = Milligrams per kilogram.

ft. bgs = Feet below ground surface.

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

Attachment A



DATE:	November 17, 2015
DESIGNED BY:	B. Nelson
DRAWN BY:	B. Nelson



Kerr-McGee Oil and Gas Onshore, LP
WCLI USX S 33-15P
SWSE, Section 33, Township 4 North, Range 68 West
Weld County, Colorado

Sample Location
Map

FIGURE
1

Attachment B



July 06, 2015

Tasman Geosciences

Christine Wasko

6899 Pecos Street, Unit C

Denver

CO 80211

Project Name - KMG - WCLI USX S33-15P

Project Number - [none]

Attached are your analytical results for KMG - WCLI USX S33-15P received by Origins Laboratory, Inc. July 02, 2015. This project is associated with Origins project number X507055-02.

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

Christine Wasko

Project Number: [none]

Project: KMG - WCLI USX S33-15P

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
E01 @ 4	X507055-02	Soil	July 2, 2015 13:40	07/02/2015 16:05

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

Christine Wasko
Project Number: [none]
Project: KMG - WCLI USX S33-15P

www.originslaboratory.com

page 1 of 1

XS0755

ORIGINS
LABORATORY, INC

Client: Tasman Geosciences
Address: 6899 Pecos St
Telephone Number: 912.230.2807
Email Address: Christine@tasman-geo.com

Project Manager: Christine Wasko
Project Name: WCLI USX S33-15P
Project Number:
Samples Collected By: Zack Nelson

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis	Sample Instructions	
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summ #			Other
S0104	7/2/15	1337	2	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>				1	
E0104	7/2/15	1340	2	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>				2	GSTC / TPI - Pecos KMG
												3	
												4	
												5	
												6	
												7	
												8	
												9	
												10	

Relinquished By:

Relinquished By:

Date: 7/2/15
Time: 1605

Date: 7/2/15
Time: 1605

Received By:

Received By:

Turnaround Time: Same Day ☒ 24 Hr ☐ 48 Hr ☐ 72 Hr ☐ Standard ☐

Date Results Needed:

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - WCLI USX S33-15P

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X507085

Client: Tasman

Client Project ID: WCLI USX S33-15P

Checklist Completed by: Jeff Smith

Shipped Via: PKK 40

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

Date/time completed: 7/12/15

Airbill #: N/A

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

Cooler Number/Temperature: 1 12.8 °C 1 °C 1 °C (Describe)

Thermometer ID: 2003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<u>X</u>			
Is there ice present (document if blue ice is used)	<u>X</u>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<u>X</u>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<u>X</u>		
Were all samples received intact ⁽¹⁾ ?	<u>X</u>			
Was adequate sample volume provided ⁽¹⁾ ?	<u>X</u>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<u>X</u>			<u>PH</u>
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<u>X</u>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<u>X</u>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<u>X</u>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<u>X</u>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<u>X</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>X</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 7/12/15

Origins Laboratory, Inc.

Jeff 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 - WCLI USX S33-15P

E01 @ 4
7/2/2015 1:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X507055-02 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50	mg/kg	1	5G02001	07/02/2015	07/02/2015
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"

Surrogate: o-Terphenyl 78.3 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	5G02002	07/02/2015	07/02/2015
Benzene	ND	0.002	"	"	"	"	"
Toluene	ND	0.002	"	"	"	"	"
Ethylbenzene	ND	0.002	"	"	"	"	"
Xylenes, total	ND	0.002	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4 110 % 70-130 " " "
Surrogate: Toluene-d8 97.0 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 101 % 70-130 " " "

pH in Soil by EPA 9045D

pH	8.65		pH Units	1	5G02011	07/02/2015	07/02/2015
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0993		mmhos/cm	"	5G02012	07/02/2015	07/02/2015
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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - WCLI USX S33-15P

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 5G02002 - EPA 5030 (soil)

Blank (5G02002-BLK1)

Prepared: 07/02/2015 Analyzed: 07/02/2015

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	64.1		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	61.5		"	62.5		98.4	70-130			
Surrogate: 4-Bromofluorobenzene	62.9		"	62.5		101	70-130			

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Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - WCLI USX S33-15P

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 5G02002 - EPA 5030 (soil)										
LCS (5G02002-BS1)					Prepared: 07/02/2015 Analyzed: 07/02/2015					
Benzene	0.089	0.002	mg/kg	0.100		89.2	77.1-124			
Toluene	0.088	0.002	"	0.100		88.2	74.5-128			
Ethylbenzene	0.093	0.002	"	0.100		93.1	66.4-127			
m,p-Xylene	0.187	0.004	"	0.200		93.6	76.6-124			
o-Xylene	0.093	0.002	"	0.100		93.1	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	58.5		ug/kg	62.5		93.6	70-130			
Surrogate: Toluene-d8	63.0		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	63.2		"	62.5		101	70-130			

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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - WCLI USX S33-15P

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 5G02002 - EPA 5030 (soil)

Matrix Spike (5G02002-MS1)		Source: X507037-01			Prepared: 07/02/2015 Analyzed: 07/02/2015					
Benzene	0.092	0.002	mg/kg	0.100	ND	91.6	71.8-126			
Toluene	0.088	0.002	"	0.100	ND	88.0	65.1-130			
Ethylbenzene	0.092	0.002	"	0.100	ND	91.8	62.2-130			
m,p-Xylene	0.184	0.004	"	0.200	ND	91.8	46.5-137			
o-Xylene	0.091	0.002	"	0.100	ND	91.3	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	62.7		ug/kg	62.5		100	70-130			
Surrogate: Toluene-d8	61.1		"	62.5		97.7	70-130			
Surrogate: 4-Bromofluorobenzene	63.8		"	62.5		102	70-130			

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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - WCLI USX S33-15P

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 5G02002 - EPA 5030 (soil)

Matrix Spike Dup (5G02002-MSD1)		Source: X507037-01			Prepared: 07/02/2015 Analyzed: 07/02/2015					
Benzene	0.090	0.002	mg/kg	0.100	ND	89.8	71.8-126	2.03	11.3	
Toluene	0.089	0.002	"	0.100	ND	88.5	65.1-130	0.634	15.4	
Ethylbenzene	0.091	0.002	"	0.100	ND	91.4	62.2-130	0.437	19.6	
m,p-Xylene	0.184	0.004	"	0.200	ND	92.1	46.5-137	0.272	19.2	
o-Xylene	0.093	0.002	"	0.100	ND	92.6	54.2-134	1.39	17.9	
Surrogate: 1,2-Dichloroethane-d4	62.3		ug/kg	62.5		99.7	70-130			
Surrogate: Toluene-d8	62.4		"	62.5		99.8	70-130			
Surrogate: 4-Bromofluorobenzene	63.4		"	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 - WCLI USX S33-15P

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 8015C - 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 5G02001 - EPA 3580

Blank (5G02001-BLK1)

Prepared: 07/02/2015 Analyzed: 07/02/2015

Diesel (C10-C28)	ND	50	mg/kg							
Residual Range Organics (C28-C36)	ND	200	"							
Surrogate: o-Terphenyl	36		"	50.0		72.4	59-131			

LCS (5G02001-BS1)

Prepared: 07/02/2015 Analyzed: 07/02/2015

Diesel (C10-C28)	860	50	mg/kg	1000		86.5	64-121			
Residual Range Organics (C28-C36)	650	200	"	1000		65.0	58-124			
Surrogate: o-Terphenyl	47		"	50.0		93.3	59-131			

Matrix Spike (5G02001-MS1)

Source: X507037-01

Prepared: 07/02/2015 Analyzed: 07/02/2015

Diesel (C10-C28)	960	50	mg/kg	1000	16	93.9	53-125			
Residual Range Organics (C28-C36)	700	200	"	1000	ND	69.8	47-133			
Surrogate: o-Terphenyl	45		"	50.0		90.6	59-131			

Matrix Spike Dup (5G02001-MSD1)

Source: X507037-01

Prepared: 07/02/2015 Analyzed: 07/02/2015

Diesel (C10-C28)	930	50	mg/kg	1000	16	91.5	53-125	2.52	20	
Residual Range Organics (C28-C36)	690	200	"	1000	ND	68.6	47-133	1.85	20	
Surrogate: o-Terphenyl	47		"	50.0		93.3	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 - WCLI USX S33-15P

Classical Chemistry Parameters - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5G02011 - NO PREP										
Duplicate (5G02011-DUP1)		Source: X507051-01			Prepared: 07/02/2015 Analyzed: 07/02/2015					
pH	8.38		pH Units		8.73			4.09	25	
Batch 5G02012 - NO PREP										
Blank (5G02012-BLK1)		Prepared: 07/02/2015 Analyzed: 07/02/2015								
Specific Conductance (EC)	0.00200		mmhos/cm							
Duplicate (5G02012-DUP1)		Source: X507051-01			Prepared: 07/02/2015 Analyzed: 07/02/2015					
Specific Conductance (EC)	0.0725		mmhos/cm		0.0741			2.18	25	

Origins Laboratory, Inc.



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Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Christine Wasko

Project Number: [none]

Project: KMG - WCLI USX S33-15P

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.



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