



March 8, 2019

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

**Re: Sump Closure Summary Letter Report
Heit 8-13A FP Production Facility
API: 05-123-21104
Facility ID: 331674
Legal: NWE Sec 13-T2N-R67W
Remediation Project #12507**

Dear Mr. Hamilton:

On behalf of Kerr-McGee Oil & Gas Onshore LP (Kerr-McGee), Tasman Geosciences, Inc. (Tasman) has prepared this Sump Closure Summary Letter Report (Report) to document site assessment activities and the results of environmental testing at the above-referenced site (Site). This Report is being submitted under Form 27 Site Investigation and Remediation Workplan Remediation Project # 12507. Tasman provided environmental services at the Site that included collection of confirmation samples from the excavation, documentation of field activities, and review of analytical data 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 closure of the produced water sump. Soil sampling activities, laboratory analytical results, and conclusions are presented below.

Excavation activities were initiated on September 21, 2017, following removal of the produced water sump. The final extent of the excavation measured approximately 16 feet by 10 feet with an approximate depth of 4 feet below ground surface (bgs). Excavated material was not removed from the Site during excavation and sump closure activities. A liner was not present at the location. Groundwater was encountered during excavation activities at approximately 4 feet bgs.

Four soil samples were collected from the sidewalls of the final lateral extent of the sump excavation area at approximately 3 feet bgs. The soil samples were field screened for volatile organic compound (VOC) concentrations using a photoionization detector (PID). Based on field screening results, the excavation sidewall soil sample (E01@3') 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), and pH. The remaining samples were placed on hold pending sample results. One groundwater sample (GW01) was collected from the excavation and submitted to Origins Laboratory for analysis of BTEX.

The general Site layout, sample locations and approximate final extent of the excavation are illustrated on Figure 1.

Results

Soil analytical results for sidewall sample E01@3' indicated that constituent concentrations were in full compliance with State standards. Groundwater analytical results for sample GW01 indicated that constituent concentrations were in full compliance with State standards. Based on these results, the remaining soil samples were not analyzed. Soil analytical data are provided in Table 1 and groundwater analytical data are provided in Table 2. The laboratory analytical report is provided as Attachment A.

Conclusions

Analytical results described herein confirm that BTEX and TPH impacts are not present at concentrations above applicable regulatory standards at the former produced water sump location. Therefore, no further Site assessment or remedial activity is recommended at this time. Following Site assessment activities, the produced water sump was removed and the excavation area was backfilled and contoured to match pre-existing conditions.

Please contact me at (303) 487-1228 if you have any questions regarding this report or require additional information.

Sincerely,

A handwritten signature in black ink, appearing to read 'MJahn', is positioned above the typed name.

Mike Jahn, PG
Project Manager

Attachments:

- Table 1 – Soil Sample Results Summary Table
- Table 2 – Groundwater Sample Results Summary Table
- Figure 1 – Sample Location Map
- Attachment A – Laboratory Analytical Report

Tables

TABLE 1
HEIT 8-13A FP PRODUCTION FACILITY
SOIL SAMPLE RESULTS SUMMARY TABLE
KERR-McGEE OIL AND GAS ONSHORE LP

Sample Location	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 mmhos/cm or 2x BG	6-9
E01@3'	09/21/17	3	<0.002	<0.002	<0.002	<0.002	<0.200	<25.0	<100	0.0669	8.47

Notes:

(1) Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective January 30, 2015.

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

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.

TABLE 2
HEIT 8-13A FP PRODUCTION FACILITY
GROUNDWATER SAMPLE RESULTS SUMMARY TABLE
KERR-McGEE OIL AND GAS ONSHORE LP

Sample Location	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth To Water (ft. bgs)
COGCC Standards for groundwater (µg/L) ⁽¹⁾		5	560	700	1,400	
GW01	09/21/17	<4.00	<4.00	<4.00	<4.00	4

Notes:

(1) Standards for groundwater are taken from 2 CCR 404-1, Table 910-1, effective January 30, 2015.

COGCC = Colorado Oil and Gas Conservation Commission

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

µg/L = Micrograms per liter.

ft bgs = Feet below ground surface

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

Figure



Legend

- Final excavation extent (surveyed by Tasman Geosciences, Inc.)
- Earthen berm
- Soil sample location
- Groundwater sample location

Notes

All locations are approximate unless otherwise noted.

APC infrastructure shown on this map has been removed, and is illustrated for reference only.

B – Benzene
T – Toluene
E – Ethylbenzene
X – Total xylenes
TPH – Total petroleum hydrocarbons
mg/kg – Milligrams per kilogram
µg/L – Micrograms per liter

0 ft. 15 ft. 30 ft.

Image Source: Google Earth 2017

DATE: January 4, 2019

DESIGNED BY: M. Jahn

DRAWN BY: M. Jahn



Kerr-McGee Oil and Gas Onshore LP
Heit 8-13A FP Production Facility
NWNE Sec. 13 -T2N-R67W
Weld County, Colorado

Sample Location Map

FIGURE 1

Attachment A

September 22, 2017

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - KMG - Heit 8-13A

Project Number - 89107075

Attached are your analytical results for KMG - Heit 8-13A received by Origins Laboratory, Inc. September 21, 2017. This project is associated with Origins project number Y709284-03.

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

Bob Cornez
Project Number: 89107075
Project: KMG - Heit 8-13A

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
E01@3'	Y709284-03	Soil	September 21, 2017 15:30	09/21/2017 16:37
GW01	Y709284-06	Water	September 21, 2017 15:05	09/21/2017 16:37

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: 89107075
 Project: KMG - Heit 8-13A

www.originslaboratory.com

page 1 of 1

7709284



Client: APC
 Address: 6899 Pecos St. Denver, Unit C
 Telephone Number: 303.810.2414
 Email Address: bcornez@tasman-geo.com

Project Manager: Bob Cornez
 Project Name: Heit 8-13A FP
 Project Number:
 Samples Collected By: Matt P.

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis				Sample Instructions		
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summary	Other	Gr	Co	So		PT	SAF (lead)
No1e3	9/21/17	15:15	2	X				X								Hold	1
So1e3		15:20	2	X				X								Hold	2
Ed1e3		15:30	2	X				X					X	X		Run	3
wo1e3		15:35	2	X				X								Hold	4
Bo1		15:45	2	X				X								Hold	5
																	6
Gwo1	9/21/17	15:05	3	X				X						X		Run	7
																	8
																	9
																	10
Relinquished By:	Date: 9/21/17	Time: 16:31	Received By:	Date: 9-21-17	Time: 16:27	Turnaround Time: Same Day	Standard										

5.4 Date Results Needed

Origins Laboratory, Inc.

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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: 89107075
 Project: KMG - Heit 8-13A

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 4709284 Client: Tasman
 Client Project ID: KMG Heit 8-13A
 Checklist Completed by: Dan W Shipped Via: HD
 Date/time completed: 9-21-12 1644 (UPS, FedEx, Hand Delivered, Pick-up, etc.)
 Airbill #: NA
 Matrix(s) Received: (Check all that apply): Soil/Solid Water Other: _____
 Cooler Number/Temperature: 15.4 °C / _____ °C / _____ °C (Describe)
 Thermometer ID: 1003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input checked="" type="checkbox"/>			pH
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 [Signature] (Project Manager) Date/Time Reviewed 9-21-12 1644

Origins Laboratory, Inc.

Jefe Pellegrini

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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: 89107075
 Project: KMG - Heit 8-13A

E01@3'
9/21/2017 3:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y709284-03 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	25.0	mg/kg	1	B712105	09/21/2017	09/21/2017	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 74.3 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B712104	09/21/2017	09/21/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4 100 % 70-130 " " "
Surrogate: Toluene-d8 96.6 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 101 % 70-130 " " "

pH in Soil by EPA 9045D

pH	8.47		pH Units	1	B712106	09/21/2017	09/21/2017	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0669		mmhos/cm	"	B712107	09/21/2017	09/21/2017	
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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: 89107075
 Project: KMG - Heit 8-13A

GW01
9/21/2017 3:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y709284-06 (Water)

BTEX by EPA 8260C

Benzene	ND	4.00	ug/L	4	B712101	09/21/2017	09/22/2017	U
Toluene	ND	4.00	"	"	"	"	"	U
Ethylbenzene	ND	4.00	"	"	"	"	"	U
Xylenes, total	ND	4.00	"	"	"	"	"	U
Surrogate: 1,2-Dichloroethane-d4	100 %	84-121			"	"	"	
Surrogate: Toluene-d8	93.7 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	105 %	84-114			"	"	"	

Origins Laboratory, Inc.



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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: 89107075
 Project: KMG - Heit 8-13A

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 B712101 - EPA 5030B (Water)

Blank (B712101-BLK1)

Prepared: 09/21/2017 Analyzed: 09/21/2017

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5	93.7		84-121			
Surrogate: Toluene-d8	62		"	62.5	100		85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5	100		84-114			

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 Denver CO 80211

Bob Cornez
 Project Number: 89107075
 Project: KMG - Heit 8-13A

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 B712101 - EPA 5030B (Water)

LCS (B712101-BS1)

Prepared: 09/21/2017 Analyzed: 09/21/2017

Benzene	50.8	1.00	ug/L	50.0		102	73.3-129			
Toluene	48.7	1.00	"	50.0		97.3	76.2-123			
Ethylbenzene	46.1	1.00	"	50.0		92.3	73.6-130			
m,p-Xylene	88.7	2.00	"	100		88.7	76.1-126			
o-Xylene	44.0	1.00	"	50.0		87.9	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	55		"	62.5		87.8	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.8	84-114			

Origins Laboratory, Inc.



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 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: 89107075
 Project: KMG - Heit 8-13A

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 B712101 - EPA 5030B (Water)

Matrix Spike (B712101-MS1)	Source: Y709238-01			Prepared: 09/21/2017 Analyzed: 09/21/2017						
Benzene	52.7	1.00	ug/L	50.0	ND	105	74-130			
Toluene	51.0	1.00	"	50.0	ND	102	73-131			
Ethylbenzene	49.9	1.00	"	50.0	0.080	99.7	76-132			
m,p-Xylene	97.0	2.00	"	100	ND	97.0	69-139			
o-Xylene	47.6	1.00	"	50.0	ND	95.1	74-131			
Surrogate: 1,2-Dichloroethane-d4	56		"	62.5		89.3	84-121			
Surrogate: Toluene-d8	62		"	62.5		99.5	85-115			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.6	84-114			

Origins Laboratory, Inc.



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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: 89107075
 Project: KMG - Heit 8-13A

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 B712101 - EPA 5030B (Water)

Matrix Spike Dup (B712101-MSD1)	Source: Y709238-01			Prepared: 09/21/2017 Analyzed: 09/21/2017						
Benzene	50.3	1.00	ug/L	50.0	ND	101	74-130	4.54	20	
Toluene	46.5	1.00	"	50.0	ND	93.1	73-131	9.18	20	
Ethylbenzene	47.3	1.00	"	50.0	0.080	94.5	76-132	5.39	20	
m,p-Xylene	90.5	2.00	"	100	ND	90.5	69-139	6.95	20	
o-Xylene	45.5	1.00	"	50.0	ND	91.0	74-131	4.38	20	
Surrogate: 1,2-Dichloroethane-d4	58		"	62.5		92.5	84-121			
Surrogate: Toluene-d8	60		"	62.5		95.7	85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.4	84-114			

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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: 89107075
 Project: KMG - Heit 8-13A

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 B712104 - EPA 5030 (soil)										
Blank (B712104-BLK1)										
					Prepared: 09/21/2017 Analyzed: 09/21/2017					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	66		ug/kg	62.5		105	70-130			
Surrogate: Toluene-d8	59		"	62.5		93.9	70-130			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: 89107075
 Project: KMG - Heit 8-13A

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 B712104 - EPA 5030 (soil)

LCS (B712104-BS1)

Prepared: 09/21/2017 Analyzed: 09/21/2017

Benzene	0.098	0.002	mg/kg	0.100		98.1	77.1-124			
Toluene	0.091	0.002	"	0.100		91.4	74.5-128			
Ethylbenzene	0.091	0.002	"	0.100		90.8	66.4-127			
m,p-Xylene	0.176	0.004	"	0.200		88.0	76.6-124			
o-Xylene	0.088	0.002	"	0.100		88.0	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		97.9	70-130			
Surrogate: Toluene-d8	60		"	62.5		96.5	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.2	70-130			

Origins Laboratory, Inc.



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 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: 89107075
 Project: KMG - Heit 8-13A

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 B712104 - EPA 5030 (soil)

Matrix Spike (B712104-MS1)	Source: Y709225-01			Prepared: 09/21/2017 Analyzed: 09/21/2017						
Benzene	0.100	0.002	mg/kg	0.100	ND	99.6	71.8-126			
Toluene	0.087	0.002	"	0.100	0.0008	86.3	65.1-130			
Ethylbenzene	0.135	0.002	"	0.100	0.013	122	62.2-130			
m,p-Xylene	0.260	0.004	"	0.200	0.032	114	46.5-137			
o-Xylene	0.131	0.002	"	0.100	0.027	105	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	63		ug/kg	62.5		101	70-130			
Surrogate: Toluene-d8	58		"	62.5		92.7	70-130			
Surrogate: 4-Bromofluorobenzene	67		"	62.5		107	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: 89107075
 Project: KMG - Heit 8-13A

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 B712104 - EPA 5030 (soil)										
Matrix Spike Dup (B712104-MSD1)			Source: Y709225-01			Prepared: 09/21/2017 Analyzed: 09/21/2017				
Benzene	0.102	0.002	mg/kg	0.100	ND	102	71.8-126	2.60	11.3	
Toluene	0.086	0.002	"	0.100	0.0008	84.9	65.1-130	1.60	15.4	
Ethylbenzene	0.178	0.002	"	0.100	0.013	165	62.2-130	27.6	19.6	QM-07, QR-03
m,p-Xylene	0.339	0.004	"	0.200	0.032	154	46.5-137	26.3	19.2	QM-07, QR-03
o-Xylene	0.180	0.002	"	0.100	0.027	153	54.2-134	31.1	17.9	QM-07, QR-03
Surrogate: 1,2-Dichloroethane-d4	62		ug/kg	62.5		98.6	70-130			
Surrogate: Toluene-d8	58		"	62.5		92.1	70-130			
Surrogate: 4-Bromofluorobenzene	68		"	62.5		109	70-130			

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Tasman Geosciences
 6899 Pecos Street, Unit C
 Denver CO 80211

Bob Cornez
 Project Number: 89107075
 Project: KMG - Heit 8-13A

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 B7I2105 - EPA 3580

Blank (B7I2105-BLK1)

Prepared: 09/21/2017 Analyzed: 09/21/2017

Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	50		"	50.0		99.1	59-131			

LCS (B7I2105-BS1)

Prepared: 09/21/2017 Analyzed: 09/21/2017

Diesel (C10-C28)	1110	50.0	mg/kg	1000		111	64-121			
Residual Range Organics (C28-C40)	1020	200	"	1000		102	58-124			
Surrogate: o-Terphenyl	52		"	50.0		104	59-131			

Matrix Spike (B7I2105-MS1)

Source: Y709225-01

Prepared: 09/21/2017 Analyzed: 09/21/2017

Diesel (C10-C28)	1040	50.0	mg/kg	1000	318	72.1	53-125			
Residual Range Organics (C28-C40)	987	200	"	1000	423	56.3	47-133			
Surrogate: o-Terphenyl	38		"	50.0		76.1	59-131			

Matrix Spike Dup (B7I2105-MSD1)

Source: Y709225-01

Prepared: 09/21/2017 Analyzed: 09/21/2017

Diesel (C10-C28)	1010	50.0	mg/kg	1000	318	69.3	53-125	3.96	20	
Residual Range Organics (C28-C40)	1040	200	"	1000	423	61.6	47-133	8.97	20	
Surrogate: o-Terphenyl	38		"	50.0		75.2	59-131			

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Bob Cornez
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 Project: KMG - Heit 8-13A

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 B7I2106 - NO PREP										
Duplicate (B7I2106-DUP1)		Source: Y709250-01			Prepared: 09/21/2017 Analyzed: 09/21/2017					
pH	7.85		pH Units		8.50			7.95	25	
Batch B7I2107 - NO PREP										
Blank (B7I2107-BLK1)		Prepared: 09/21/2017 Analyzed: 09/21/2017								
Specific Conductance (EC)	0.00580		mmhos/cm							
Duplicate (B7I2107-DUP1)		Source: Y709250-01			Prepared: 09/21/2017 Analyzed: 09/21/2017					
Specific Conductance (EC)	0.0677		mmhos/cm		0.0654			3.46	25	

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Project: KMG - Heit 8-13A

Notes and Definitions

U Sample is Non-Detect.

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

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

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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