



November 23, 2016

Mr. Mike Dinkel, REM, CSEM  
Kerr-McGee Oil & Gas Onshore, LP  
P.O. Box 173779  
Denver, Colorado 80217-3779

**Re: Quarterly Site Groundwater Monitoring Report – Fourth Quarter 2016**  
DFMF #2 – Strear Farms  
Facility Number: 437129  
Weld County, Colorado

Dear Mr. Dinkel:

On behalf of Kerr-McGee Oil & Gas Onshore, LP (Kerr-McGee), Tasman Geosciences, Inc. (Tasman) has prepared this Fourth Quarter 2016 Groundwater Monitoring Report (Report) to document groundwater monitoring activities at the above-referenced facility (Site – Figure 1). Tasman provided environmental services at the Site that included: groundwater level measurements at the five (5) Site groundwater monitoring wells; groundwater purging, sample collection, and analysis; documentation of field activities, and; analytical data review and evaluation, as described below.

### **Site Monitoring Activities**

The monitoring activities described herein were performed with the purpose of assessing shallow aquifer conditions at the Site. The activities described in this Report were performed in accordance with the Form 27 – Site Investigation and Remediation Workplan (Form 27) submitted to the Colorado Oil and Gas Conservation Commission (COGCC) on August 30, 2016 (Remediation No. pending).

Fourth Quarter 2016 monitoring activities were conducted at the Site on October 13, 2016. The activities conducted are described below:

#### Monitoring Well Gauging

The 5 on-Site groundwater monitoring wells (MW01R, MW02 - MW05) were gauged for the presence and depth of groundwater and/or free hydrocarbons (light non-aqueous phase liquid [LNAPL]) using an interface probe (IP). Fluid levels were measured on the north side of the well casing to the nearest 0.01-foot. Monitoring well total depths were also measured with the IP.

LNAPL was not detected in any of the 5 groundwater monitoring wells. Measured depths to groundwater were converted to elevation in feet above mean sea level (ft. AMSL) by subtracting the measured depth to groundwater from the surveyed top-of-casing elevation at each location. Measured depths to water and the corresponding groundwater elevations are presented in Table 1. Monitoring well locations and the Fourth Quarter 2016 groundwater contour map are illustrated on Figure 2. Groundwater monitoring well boring and construction logs for MW01R – MW05 were presented in the Form 27.

### Groundwater Purging, Sample Collection, and Analysis

Subsequent to groundwater gauging activities, a minimum of three casing volumes of groundwater (calculated by subtracting the measured depth to groundwater from the total depth of the well and multiplying the difference by the area of the well) were purged from each groundwater monitoring well using a new, disposable polyethylene bailer. Observations of groundwater color, odor, and turbidity were recorded after each casing volume was removed.

Subsequent to the completion of purging activities, groundwater samples were collected from each groundwater monitoring well. Monitoring wells were sampled using the dedicated bailer that was used to purge each specific well to limit the potential for cross-contamination between sampling points. Clean sample containers (hydrochloric acid [HCl]-preserved 40-milliliter [ml] volatile organic analysis [VOA] vials) supplied by the analytical laboratory were used to contain the groundwater samples for subsequent analyses.

VOA vials were overfilled and capped to reduce the potential for headspace and to prevent the loss of volatile analytes during transport to the laboratory. Subsequent to capping, VOA vials were inverted to confirm that no gas bubbles/void spaces were present within the sample container. Sample bottles were then labeled with the corresponding date, time of collection, and well identification information prior to placement into an ice-filled cooler, which maintained storage temperature at approximately four degrees Celsius (°C) for transportation to the laboratory.

The groundwater samples were packed using standard analytical laboratory protocols and transferred for analysis under chain-of-custody procedures to Origins Laboratory in Denver, CO. As specified in the Form 27, groundwater samples were submitted for analysis of the full volatile organic compound (VOC) suite (including benzene, toluene, ethylbenzene, and total xylenes [BTEX]) and total petroleum hydrocarbons (TPH) – gasoline range organics (GRO) by United States Environmental Protection Agency (USEPA) Method 8260C, and TPH – diesel range organics (DRO) and oil range organics (ORO) by USEPA Method 8015C. A laboratory-prepared trip blank was included in the sample cooler for analysis of the full VOC suite to verify that cross-contamination of samples did not occur during sampling handling and transport.

## Groundwater Monitoring Results

Groundwater sample laboratory analytical results are presented in Table 2. As presented in the table, all VOC results were below the laboratory reporting limits, and as such below the applicable COGCC Table 910-1 groundwater standards. TPH-DRO was detected in MW04 at a concentration of 10.5 milligrams per liter (mg/L); all other TPH results were below the laboratory reporting limits. Methylene chloride was detected in the trip blank, at a concentration of 5.35 micrograms per liter ( $\mu\text{g/L}$ ); however, this compound was not detected in any of the samples. The Fourth Quarter 2016 laboratory analytical data report is presented in Attachment A.

## Conclusions

Based on the groundwater analytical data presented herein, VOCs (including BTEX) are not presented in groundwater beneath the Site. Quarterly monitoring for VOCs and TPH will be continued, with the next event scheduled for January 2017.

Please contact me at (970) 927-0393 if you have any questions regarding this report or require additional information.

Sincerely,

A handwritten signature in blue ink, appearing to read "Robert M. Cornez".

Robert M. Cornez  
Principal – Remediation

## Attachments:

Figure 1 – Site Overview Map

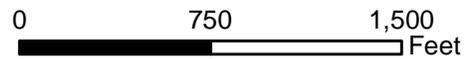
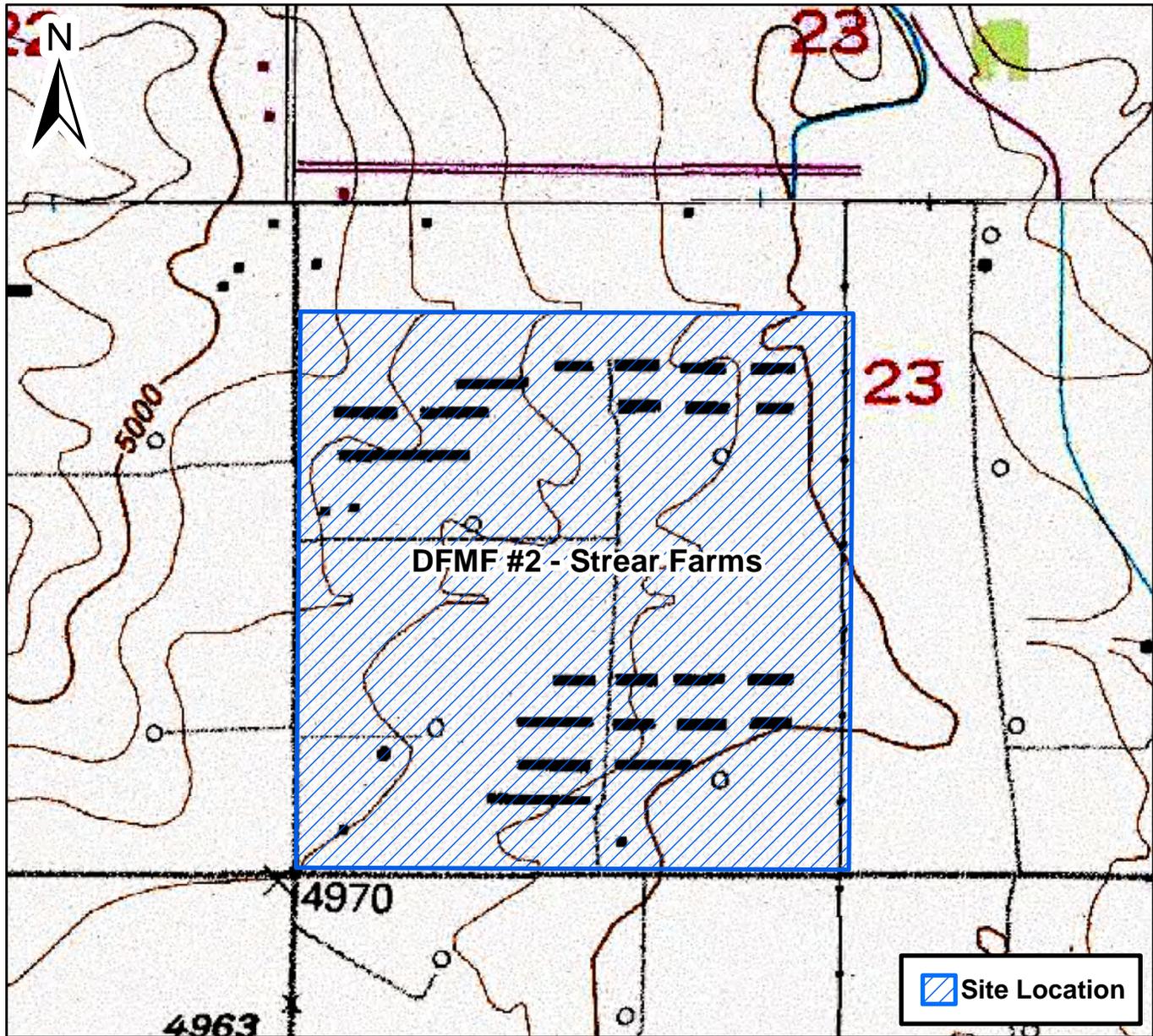
Figure 2 – Monitoring Well Location and Groundwater Elevation Contour Map (October 13, 2016)

Table 1 – Groundwater Gauging Results Summary Table

Table 2 – Groundwater Sample Results Summary Table

Attachment A – Laboratory Analytical Reports

## **FIGURES**



**Figure 1**  
 Site Overview Map  
 DFMF #2 - Strear Farms  
 SW S23 T2N R67W  
 Weld County, Colorado





DATE: November 7, 2016  
 DESIGNED BY: M. Jahn  
 DRAWN BY: D. Arnold



**Kerr-McGee Oil and Gas Onshore, LP**  
**DFMF #2 - Strear Farms**  
 SW, Section 23, Township 2 North, Range 67 West  
 Weld County, Colorado

Monitoring Well Location and  
 Groundwater Elevation Contour Map  
 (October 13, 2016)

**FIGURE**  
**2**

## **TABLES**

**TABLE 1**  
**GROUNDWATER GAUGING RESULTS SUMMARY TABLE**  
**DFMF #2 - STREAR FARMS**  
**WELD COUNTY, COLORADO**  
**KERR-MCGEE OIL & GAS ONSHORE LP**

Temporary Monitoring Well ID	Date	Top of Casing Elevation (ft. AMSL)	Total Depth (ft. BTOC)	Depth to Water (ft. BTOC)	Depth to LNAPL (ft. BTOC)	LNAPL Thickness (ft.)	Groundwater Elevation (ft. AMSL)
MW01R	5/12/2016	NM	27.00	12.79	ND	ND	NA
	6/30/2016	4969.90	27.02	11.94	ND	ND	4957.96
	7/28/2016	4969.90	22.06	11.87	ND	ND	4958.03
	10/13/2016	4969.90	26.87	12.89	ND	ND	4957.01
MW02	5/12/2016	NM	27.85	12.85	ND	ND	NA
	6/30/2016	4969.30	27.85	11.91	ND	ND	4957.39
	7/28/2016	4969.30	27.57	11.79	ND	ND	4957.51
	10/13/2016	4969.30	27.64	12.29	ND	ND	4957.01
MW03	5/12/2016	NM	NM	NM	ND	ND	NA
	6/30/2016	NM	NM	NM	ND	ND	NA
	7/28/2016	4983.20	21.28	13.31	ND	ND	4969.89
	10/13/2016	4983.20	21.28	14.19	ND	ND	4969.01
MW04	5/12/2016	NM	27.00	10.37	ND	ND	NA
	6/30/2016	4959.60	27.00	9.74	ND	ND	4949.86
	7/28/2016	4959.60	27.34	16.26	ND	ND	4943.34
	10/13/2016	4959.60	27.41	11.75	ND	ND	4947.85
MW05	5/12/2016	NM	26.81	9.68	ND	ND	NA
	6/30/2016	4960.90	26.81	9.31	ND	ND	4951.59
	7/28/2016	4960.90	26.64	9.99	ND	ND	4950.91
	10/13/2016	4960.90	26.34	11.01	ND	ND	4949.89

Notes:

ft. = Feet

AMSL = Above mean sea level

11/8/2016



**TABLE 1**  
**GROUNDWATER GAUGING RESULTS SUMMARY TABLE**  
**DFMF #2 - STREAR FARMS**  
**WELD COUNTY, COLORADO**  
**KERR-MCGEE OIL & GAS ONSHORE LP**

BTOC = Below top of casing  
LNAPL = Light non-aqueous phase liquid  
ND = No LNAPL detected  
NM = Not measured  
NA = Non-applicable

11/8/2016



**TABLE 2**  
**DFMF #2 - STREAR FARMS**  
**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)	Gasoline Range Hydrocarbons (µg/L)	Diesel Range Hydrocarbons (mg/L)	Residual Range Organics (mg/L)	Acetone (µg/L)	2-Butanone (µg/L)	Depth To Water (ft. BTOC)
<b>COGCC Standards for groundwater (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
MW01R	05/12/16	<1.0	<1.0	<1.0	<1.0	<100	<5.0	<10	NS	NS	12.79
MW01R	06/30/16	<1.00	<1.00	<1.00	<2.00	<100	<5.00	<20.0	11.0	<5.00	11.94
MW01R	07/28/16	<1.00	<1.00	<1.00	<2.00	<100	<5.00	<10.0	<8.00	<5.00	11.87
MW01R	10/13/16	<1.00	<1.00	<1.00	<2.00	<100	<5.00	<10.0	<8.00	<5.00	12.89
MW02	05/12/16	<1.0	<1.0	<1.0	<1.0	<100	22	<10	NS	NS	12.85
MW02	06/30/16	<1.00	<1.00	<1.00	<2.00	<100	<5.00	<20.0	<8.00	<5.00	11.91
MW02	07/28/16	<1.00	<1.00	<1.00	<2.00	<100	<5.00	<10.0	<8.00	<5.00	11.79
MW02	10/13/16	<1.00	<1.00	<1.00	<2.00	<100	<5.00	<10.0	<8.00	<5.00	12.29
MW03	05/12/16	<1.0	<1.0	<1.0	<1.0	<100	<5.0	<10	NS	NS	NM
MW03	06/30/16	NS	NS	NS	NS	NS	NS	NS	NS	NS	NM
MW03	07/28/16	<1.00	<1.00	<1.00	<2.00	<100	15.1	<10.0	<8.00	5.65	13.31
MW03	10/13/16	<1.00	<1.00	<1.00	<2.00	<100	<5.00	<10.0	<8.00	<5.00	14.19
MW04	05/12/16	<4.0	<4.0	<4.0	<4.0	<400	9.8	<10	NS	NS	10.37
MW04	06/30/16	<1.00	<1.00	<1.00	<2.00	<100	<5.00	<20.0	11.0	<5.00	9.74
MW04	07/28/16	<1.00	<1.00	<1.00	<2.00	<100	<5.00	<10.0	<8.00	<5.00	10.26
MW04	10/13/16	<1.00	<1.00	<1.00	<2.00	<100	10.5	<10.0	<8.00	<5.00	11.75
MW05	05/12/16	<1.0	<1.0	<1.0	<1.0	102	<5.0	<10	NS	NS	9.68
MW05	06/30/16	<1.00	<1.00	<1.00	<2.00	<100	<5.00	<20.0	8.34	<5.00	9.31
MW05	07/28/16	<1.00	<1.00	<1.00	<2.00	<100	<5.00	<10.0	<8.00	<5.00	9.99
MW05	10/13/16	<1.00	<1.00	<1.00	<2.00	<100	<5.00	<10.0	<8.00	<5.00	11.01
Trip Blank	10/13/16	<1.00	<1.00	<1.00	<2.00	NS	NS	NS	<8.00	<5.00	NA

**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.

mg/L = Milligrams per liter.

ft. BTOC = Feet below top of casing.

NM = Not measured.

NS = Not sampled.

NA = Non-applicable

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

Beginning in June 2016, groundwater samples analyzed for full 8260 VOC suite; results presented for detected VOC analytes only.

## **ATTACHMENTS**



October 20, 2016

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - KMG - DFMF #2

Project Number - AFE.2107112.CON

Attached are your analytical results for KMG - DFMF #2 received by Origins Laboratory, Inc. October 13, 2016. This project is associated with Origins project number X610143-01.

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



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

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: AFE.2107112.CON  
Project: KMG - DFMF #2

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01R-10/13/16	X610143-01	Water	October 13, 2016 10:11	10/13/2016 12:08
MW02-10/13/16	X610143-02	Water	October 13, 2016 9:45	10/13/2016 12:08
MW03-10/13/16	X610143-03	Water	October 13, 2016 9:05	10/13/2016 12:08
MW04-10/13/16	X610143-04	Water	October 13, 2016 10:45	10/13/2016 12:08
MW05-10/13/16	X610143-05	Water	October 13, 2016 11:15	10/13/2016 12:08
Trip Blank	X610143-06	Water	October 13, 2016 0:00	10/13/2016 12:08

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: AFE.2107112.CON  
 Project: KMG - DFMF #2

www.originslaboratory.com



210143

page 1 of 1

Client: Anadarko / Tasman Geosciences Project Manager: Bob Cornez  
 Address: 6899 Pecos St, Unit C Project Name: DFMF #2  
Denver, CO 80221 Project Number: AFE.2107112.CON  
 Telephone Number: \_\_\_\_\_ Samples Collected By: Mitch Weller / Max Garza  
 Email Address: rcornee@tasman-geo.com

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	Sample Instructions	
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summa #	Other			GC/MS
MW 01R - 10/13/16	10-13-16	1011	6					X						Per the previous call with Zach on 10/17/16 samples need a full VOC list, GC/MS (22.00) + DRO/ORO ap 10/17/16
MW 02 - 10/13/16	10-13-16	0945	6											
MW 03 - 10/13/16	10-13-16	0905	6											
MW 04 - 10/13/16	10-13-16	1045	6											
MW 05 - 10/13/16	10-13-16	1115	6											
Trip Blank	10-13-16	-	1											
Relinquished By: <u>Michael Weller</u>	Date: <u>10-13-16</u>	Time: <u>1203</u>	Received By: <u>MA</u>	Date: <u>10/13/16</u>	Time: <u>1208</u>	Turnaround Time: Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input checked="" type="checkbox"/> Standard								

Date Results Needed

Temp Received - V1

Origins Laboratory, Inc.

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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

Origins Laboratory

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

**Sample Receipt Checklist**

Origins Work Order: X610143 Client: Tasman  
 Client Project ID: DFMF #2  
 Checklist Completed by: Jeff Smith Shipped Via: HD  
 Date/time completed: 12/14/16 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Airbill #: NA  
 Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_  
 Cooler Number/Temperature: 1 / 4.1 °C \_\_\_\_\_ / \_\_\_\_\_ °C \_\_\_\_\_ / \_\_\_\_\_ °C (Describe) \_\_\_\_\_ °C  
 Thermometer ID: TC03

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	X			
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		✓		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		✓		
Were all samples received intact <sup>(1)</sup> ?	✓			
Was adequate sample volume provided <sup>(1)</sup> ?	✓			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		✓		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	✓			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	✓			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	✓			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	✓			
For volatiles in water – is there headspace (> ¼ inch bubble) present? <b>If yes, contact client and note in narrative.</b>		✓		
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (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 <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH >10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)	X			HCL
Additional Comments (if any):				

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

Reviewed by (Project Manager) [Signature] Date/Time Reviewed 12/14/16

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: AFE.2107112.CON  
 Project: KMG - DFMF #2

**MW01R-10/13/16**  
**10/13/2016 10:11:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X610143-01 (Water)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	5.00	mg/L	1	B6J1704	10/17/2016	10/19/2016	U
Residual Range Organics (C28-C40)	ND	10.0	"	"	"	"	"	U

Surrogate: *o*-Terphenyl 104 % 54-117 " " "

**GRO/TVPH by EPA 8260C**

Gasoline Range Hydrocarbons	ND	100	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
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**VOC by EPA 8260C**

1,1,1,2-Tetrachloroethane	ND	1.00	ug/L	1	B6J1801	"	10/19/2016	U
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	U
1,1,2,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	U
1,1,2-Trichloroethane	ND	1.00	"	"	"	"	"	U
1,1-Dichloroethane	ND	1.00	"	"	"	"	"	U
1,1-Dichloroethene	ND	1.00	"	"	"	"	"	U
1,1-Dichloropropene	ND	1.00	"	"	"	"	"	U
1,2,3-Trichlorobenzene	ND	5.00	"	"	"	"	"	U
1,2,3-Trichloropropane	ND	5.00	"	"	"	"	"	U
1,2,4-Trichlorobenzene	ND	5.00	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	U

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

**MW01R-10/13/16**  
**10/13/2016 10:11:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X610143-01 (Water)**

**VOC by EPA 8260C**

1,2-Dibromo-3-chloropropane	ND	5.00	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
1,2-Dibromoethane (EDB)	ND	1.00	"	"	"	"	"	U
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	U
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	U
1,2-Dichloropropane	ND	1.00	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	U
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	U
1,3-Dichloropropane	ND	1.00	"	"	"	"	"	U
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	U
2,2-Dichloropropane	ND	1.00	"	"	"	"	"	U
2-Butanone	ND	5.00	"	"	"	"	"	U
2-Chlorotoluene	ND	1.00	"	"	"	"	"	U
2-Hexanone	ND	5.00	"	"	"	"	"	U
4-Chlorotoluene	ND	1.00	"	"	"	"	"	U
4-Isopropyltoluene	ND	1.00	"	"	"	"	"	U
4-Methyl-2-pentanone	ND	5.00	"	"	"	"	"	U
Acetone	ND	8.00	"	"	"	"	"	U
Benzene	ND	1.00	"	"	"	"	"	U
Bromobenzene	ND	1.00	"	"	"	"	"	U

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

**MW01R-10/13/16**  
**10/13/2016 10:11:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X610143-01 (Water)**

**VOC by EPA 8260C**

Bromochloromethane	ND	1.00	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
Bromodichloromethane	ND	1.00	"	"	"	"	"	U
Bromoform	ND	1.00	"	"	"	"	"	U
Bromomethane	ND	1.00	"	"	"	"	"	U
Carbon disulfide	ND	5.00	"	"	"	"	"	U
Carbon tetrachloride	ND	1.00	"	"	"	"	"	U
Chlorobenzene	ND	1.00	"	"	"	"	"	U
Chloroethane	ND	1.00	"	"	"	"	"	U
Chloroform	ND	1.00	"	"	"	"	"	U
Chloromethane	ND	1.00	"	"	"	"	"	U
cis-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	U
cis-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	U
Dibromochloromethane	ND	1.00	"	"	"	"	"	U
Dibromomethane	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Hexachlorobutadiene	ND	5.00	"	"	"	"	"	U
Iodomethane	ND	10.0	"	"	"	"	"	U
Isopropylbenzene	ND	1.00	"	"	"	"	"	U
m,p-Xylene	ND	2.00	"	"	"	"	"	U

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

**MW01R-10/13/16**  
**10/13/2016 10:11:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X610143-01 (Water)**

**VOC by EPA 8260C**

Methylene Chloride	ND	5.00	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
Methyl tert-Butyl Ether	ND	1.00	"	"	"	"	"	U
Naphthalene	ND	4.00	"	"	"	"	"	U
n-Butylbenzene	ND	1.00	"	"	"	"	"	U
n-Propylbenzene	ND	1.00	"	"	"	"	"	U
o-Xylene	ND	1.00	"	"	"	"	"	U
sec-Butylbenzene	ND	1.00	"	"	"	"	"	U
Styrene	ND	1.00	"	"	"	"	"	U
tert-Butylbenzene	ND	1.00	"	"	"	"	"	U
Tetrachloroethene	ND	1.00	"	"	"	"	"	U
Toluene	ND	1.00	"	"	"	"	"	U
trans-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	U
trans-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	U
Trichloroethene	ND	1.00	"	"	"	"	"	U
Trichlorofluoromethane	ND	1.00	"	"	"	"	"	U
Vinyl chloride	ND	1.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	125 %	84-121			"	"	"	S-07
Surrogate: Toluene-d8	95.8 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	84-114			"	"	"	

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

MW02-10/13/16  
 10/13/2016 9:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X610143-02 (Water)

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	5.00	mg/L	1	B6J1704	10/17/2016	10/18/2016	U
Residual Range Organics (C28-C40)	ND	10.0	"	"	"	"	"	U

Surrogate: *o*-Terphenyl 63.7 % 54-117 " " "

**GRO/TVPH by EPA 8260C**

Gasoline Range Hydrocarbons	ND	100	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
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**VOC by EPA 8260C**

1,1,1,2-Tetrachloroethane	ND	1.00	ug/L	1	B6J1801	"	10/19/2016	U
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	U
1,1,2,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	U
1,1,2-Trichloroethane	ND	1.00	"	"	"	"	"	U
1,1-Dichloroethane	ND	1.00	"	"	"	"	"	U
1,1-Dichloroethene	ND	1.00	"	"	"	"	"	U
1,1-Dichloropropene	ND	1.00	"	"	"	"	"	U
1,2,3-Trichlorobenzene	ND	5.00	"	"	"	"	"	U
1,2,3-Trichloropropane	ND	5.00	"	"	"	"	"	U
1,2,4-Trichlorobenzene	ND	5.00	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	U

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

MW02-10/13/16  
 10/13/2016 9:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X610143-02 (Water)**

**VOC by EPA 8260C**

1,2-Dibromo-3-chloropropane	ND	5.00	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
1,2-Dibromoethane (EDB)	ND	1.00	"	"	"	"	"	U
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	U
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	U
1,2-Dichloropropane	ND	1.00	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	U
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	U
1,3-Dichloropropane	ND	1.00	"	"	"	"	"	U
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	U
2,2-Dichloropropane	ND	1.00	"	"	"	"	"	U
2-Butanone	ND	5.00	"	"	"	"	"	U
2-Chlorotoluene	ND	1.00	"	"	"	"	"	U
2-Hexanone	ND	5.00	"	"	"	"	"	U
4-Chlorotoluene	ND	1.00	"	"	"	"	"	U
4-Isopropyltoluene	ND	1.00	"	"	"	"	"	U
4-Methyl-2-pentanone	ND	5.00	"	"	"	"	"	U
Acetone	ND	8.00	"	"	"	"	"	U
Benzene	ND	1.00	"	"	"	"	"	U
Bromobenzene	ND	1.00	"	"	"	"	"	U

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

MW02-10/13/16  
 10/13/2016 9:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X610143-02 (Water)**

**VOC by EPA 8260C**

Bromochloromethane	ND	1.00	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
Bromodichloromethane	ND	1.00	"	"	"	"	"	U
Bromoform	ND	1.00	"	"	"	"	"	U
Bromomethane	ND	1.00	"	"	"	"	"	U
Carbon disulfide	ND	5.00	"	"	"	"	"	U
Carbon tetrachloride	ND	1.00	"	"	"	"	"	U
Chlorobenzene	ND	1.00	"	"	"	"	"	U
Chloroethane	ND	1.00	"	"	"	"	"	U
Chloroform	ND	1.00	"	"	"	"	"	U
Chloromethane	ND	1.00	"	"	"	"	"	U
cis-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	U
cis-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	U
Dibromochloromethane	ND	1.00	"	"	"	"	"	U
Dibromomethane	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Hexachlorobutadiene	ND	5.00	"	"	"	"	"	U
Iodomethane	ND	10.0	"	"	"	"	"	U
Isopropylbenzene	ND	1.00	"	"	"	"	"	U
m,p-Xylene	ND	2.00	"	"	"	"	"	U

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

MW02-10/13/16  
 10/13/2016 9:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X610143-02 (Water)**

**VOC by EPA 8260C**

Methylene Chloride	ND	5.00	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
Methyl tert-Butyl Ether	ND	1.00	"	"	"	"	"	U
Naphthalene	ND	4.00	"	"	"	"	"	U
n-Butylbenzene	ND	1.00	"	"	"	"	"	U
n-Propylbenzene	ND	1.00	"	"	"	"	"	U
o-Xylene	ND	1.00	"	"	"	"	"	U
sec-Butylbenzene	ND	1.00	"	"	"	"	"	U
Styrene	ND	1.00	"	"	"	"	"	U
tert-Butylbenzene	ND	1.00	"	"	"	"	"	U
Tetrachloroethene	ND	1.00	"	"	"	"	"	U
Toluene	ND	1.00	"	"	"	"	"	U
trans-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	U
trans-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	U
Trichloroethene	ND	1.00	"	"	"	"	"	U
Trichlorofluoromethane	ND	1.00	"	"	"	"	"	U
Vinyl chloride	ND	1.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	116 %	84-121			"	"	"
Surrogate: Toluene-d8	96.6 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	99.8 %	84-114			"	"	"

Origins Laboratory, Inc.



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 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

MW03-10/13/16  
 10/13/2016 9:05:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X610143-03 (Water)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	5.00	mg/L	1	B6J1704	10/17/2016	10/18/2016	U
Residual Range Organics (C28-C40)	ND	10.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	61.4 %	54-117			"	"	"	
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**GRO/TVPH by EPA 8260C**

Gasoline Range Hydrocarbons	ND	100	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
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**VOC by EPA 8260C**

1,1,1,2-Tetrachloroethane	ND	1.00	ug/L	1	B6J1801	"	10/19/2016	U
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	U
1,1,2,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	U
1,1,2-Trichloroethane	ND	1.00	"	"	"	"	"	U
1,1-Dichloroethane	ND	1.00	"	"	"	"	"	U
1,1-Dichloroethene	ND	1.00	"	"	"	"	"	U
1,1-Dichloropropene	ND	1.00	"	"	"	"	"	U
1,2,3-Trichlorobenzene	ND	5.00	"	"	"	"	"	U
1,2,3-Trichloropropane	ND	5.00	"	"	"	"	"	U
1,2,4-Trichlorobenzene	ND	5.00	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	U

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

MW03-10/13/16  
 10/13/2016 9:05:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X610143-03 (Water)

**VOC by EPA 8260C**

1,2-Dibromo-3-chloropropane	ND	5.00	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
1,2-Dibromoethane (EDB)	ND	1.00	"	"	"	"	"	U
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	U
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	U
1,2-Dichloropropane	ND	1.00	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	U
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	U
1,3-Dichloropropane	ND	1.00	"	"	"	"	"	U
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	U
2,2-Dichloropropane	ND	1.00	"	"	"	"	"	U
2-Butanone	ND	5.00	"	"	"	"	"	U
2-Chlorotoluene	ND	1.00	"	"	"	"	"	U
2-Hexanone	ND	5.00	"	"	"	"	"	U
4-Chlorotoluene	ND	1.00	"	"	"	"	"	U
4-Isopropyltoluene	ND	1.00	"	"	"	"	"	U
4-Methyl-2-pentanone	ND	5.00	"	"	"	"	"	U
Acetone	ND	8.00	"	"	"	"	"	U
Benzene	ND	1.00	"	"	"	"	"	U
Bromobenzene	ND	1.00	"	"	"	"	"	U

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

MW03-10/13/16  
 10/13/2016 9:05:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X610143-03 (Water)**

**VOC by EPA 8260C**

Bromochloromethane	ND	1.00	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
Bromodichloromethane	ND	1.00	"	"	"	"	"	U
Bromoform	ND	1.00	"	"	"	"	"	U
Bromomethane	ND	1.00	"	"	"	"	"	U
Carbon disulfide	ND	5.00	"	"	"	"	"	U
Carbon tetrachloride	ND	1.00	"	"	"	"	"	U
Chlorobenzene	ND	1.00	"	"	"	"	"	U
Chloroethane	ND	1.00	"	"	"	"	"	U
Chloroform	ND	1.00	"	"	"	"	"	U
Chloromethane	ND	1.00	"	"	"	"	"	U
cis-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	U
cis-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	U
Dibromochloromethane	ND	1.00	"	"	"	"	"	U
Dibromomethane	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Hexachlorobutadiene	ND	5.00	"	"	"	"	"	U
Iodomethane	ND	10.0	"	"	"	"	"	U
Isopropylbenzene	ND	1.00	"	"	"	"	"	U
m,p-Xylene	ND	2.00	"	"	"	"	"	U

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

MW03-10/13/16  
 10/13/2016 9:05:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X610143-03 (Water)**

**VOC by EPA 8260C**

Methylene Chloride	ND	5.00	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
Methyl tert-Butyl Ether	ND	1.00	"	"	"	"	"	U
Naphthalene	ND	4.00	"	"	"	"	"	U
n-Butylbenzene	ND	1.00	"	"	"	"	"	U
n-Propylbenzene	ND	1.00	"	"	"	"	"	U
o-Xylene	ND	1.00	"	"	"	"	"	U
sec-Butylbenzene	ND	1.00	"	"	"	"	"	U
Styrene	ND	1.00	"	"	"	"	"	U
tert-Butylbenzene	ND	1.00	"	"	"	"	"	U
Tetrachloroethene	ND	1.00	"	"	"	"	"	U
Toluene	ND	1.00	"	"	"	"	"	U
trans-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	U
trans-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	U
Trichloroethene	ND	1.00	"	"	"	"	"	U
Trichlorofluoromethane	ND	1.00	"	"	"	"	"	U
Vinyl chloride	ND	1.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	119 %	84-121			"	"	"
Surrogate: Toluene-d8	97.2 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	98.9 %	84-114			"	"	"

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

MW04-10/13/16  
 10/13/2016 10:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X610143-04 (Water)

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	10.5	5.00	mg/L	1	B6J1704	10/17/2016	10/19/2016	
Residual Range Organics (C28-C40)	ND	10.0	"	"	"	"	"	U

Surrogate: o-Terphenyl 77.8 % 54-117 " " "

**GRO/TVPH by EPA 8260C**

Gasoline Range Hydrocarbons	ND	100	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
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**VOC by EPA 8260C**

1,1,1,2-Tetrachloroethane	ND	1.00	ug/L	1	B6J1801	"	10/19/2016	U
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	U
1,1,2,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	U
1,1,2-Trichloroethane	ND	1.00	"	"	"	"	"	U
1,1-Dichloroethane	ND	1.00	"	"	"	"	"	U
1,1-Dichloroethene	ND	1.00	"	"	"	"	"	U
1,1-Dichloropropene	ND	1.00	"	"	"	"	"	U
1,2,3-Trichlorobenzene	ND	5.00	"	"	"	"	"	U
1,2,3-Trichloropropane	ND	5.00	"	"	"	"	"	U
1,2,4-Trichlorobenzene	ND	5.00	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	U

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

MW04-10/13/16  
 10/13/2016 10:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X610143-04 (Water)

**VOC by EPA 8260C**

1,2-Dibromo-3-chloropropane	ND	5.00	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
1,2-Dibromoethane (EDB)	ND	1.00	"	"	"	"	"	U
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	U
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	U
1,2-Dichloropropane	ND	1.00	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	U
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	U
1,3-Dichloropropane	ND	1.00	"	"	"	"	"	U
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	U
2,2-Dichloropropane	ND	1.00	"	"	"	"	"	U
2-Butanone	ND	5.00	"	"	"	"	"	U
2-Chlorotoluene	ND	1.00	"	"	"	"	"	U
2-Hexanone	ND	5.00	"	"	"	"	"	U
4-Chlorotoluene	ND	1.00	"	"	"	"	"	U
4-Isopropyltoluene	ND	1.00	"	"	"	"	"	U
4-Methyl-2-pentanone	ND	5.00	"	"	"	"	"	U
Acetone	ND	8.00	"	"	"	"	"	U
Benzene	ND	1.00	"	"	"	"	"	U
Bromobenzene	ND	1.00	"	"	"	"	"	U

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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

MW04-10/13/16  
 10/13/2016 10:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X610143-04 (Water)

**VOC by EPA 8260C**

Bromochloromethane	ND	1.00	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
Bromodichloromethane	ND	1.00	"	"	"	"	"	U
Bromoform	ND	1.00	"	"	"	"	"	U
Bromomethane	ND	1.00	"	"	"	"	"	U
Carbon disulfide	ND	5.00	"	"	"	"	"	U
Carbon tetrachloride	ND	1.00	"	"	"	"	"	U
Chlorobenzene	ND	1.00	"	"	"	"	"	U
Chloroethane	ND	1.00	"	"	"	"	"	U
Chloroform	ND	1.00	"	"	"	"	"	U
Chloromethane	ND	1.00	"	"	"	"	"	U
cis-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	U
cis-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	U
Dibromochloromethane	ND	1.00	"	"	"	"	"	U
Dibromomethane	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Hexachlorobutadiene	ND	5.00	"	"	"	"	"	U
Iodomethane	ND	10.0	"	"	"	"	"	U
Isopropylbenzene	ND	1.00	"	"	"	"	"	U
m,p-Xylene	ND	2.00	"	"	"	"	"	U

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

MW04-10/13/16  
 10/13/2016 10:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X610143-04 (Water)**

**VOC by EPA 8260C**

Methylene Chloride	ND	5.00	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
Methyl tert-Butyl Ether	ND	1.00	"	"	"	"	"	U
Naphthalene	ND	4.00	"	"	"	"	"	U
n-Butylbenzene	ND	1.00	"	"	"	"	"	U
n-Propylbenzene	ND	1.00	"	"	"	"	"	U
o-Xylene	ND	1.00	"	"	"	"	"	U
sec-Butylbenzene	ND	1.00	"	"	"	"	"	U
Styrene	ND	1.00	"	"	"	"	"	U
tert-Butylbenzene	ND	1.00	"	"	"	"	"	U
Tetrachloroethene	ND	1.00	"	"	"	"	"	U
Toluene	ND	1.00	"	"	"	"	"	U
trans-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	U
trans-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	U
Trichloroethene	ND	1.00	"	"	"	"	"	U
Trichlorofluoromethane	ND	1.00	"	"	"	"	"	U
Vinyl chloride	ND	1.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	117 %	84-121			"	"	"	
Surrogate: Toluene-d8	96.1 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	84-114			"	"	"	

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

MW05-10/13/16  
 10/13/2016 11:15:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X610143-05 (Water)

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	5.00	mg/L	1	B6J1704	10/17/2016	10/18/2016	U
Residual Range Organics (C28-C40)	ND	10.0	"	"	"	"	"	U

Surrogate: *o*-Terphenyl 65.3 % 54-117 " " "

**GRO/TVPH by EPA 8260C**

Gasoline Range Hydrocarbons	ND	100	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
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**VOC by EPA 8260C**

1,1,1,2-Tetrachloroethane	ND	1.00	ug/L	1	B6J1801	"	10/19/2016	U
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	U
1,1,2,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	U
1,1,2-Trichloroethane	ND	1.00	"	"	"	"	"	U
1,1-Dichloroethane	ND	1.00	"	"	"	"	"	U
1,1-Dichloroethene	ND	1.00	"	"	"	"	"	U
1,1-Dichloropropene	ND	1.00	"	"	"	"	"	U
1,2,3-Trichlorobenzene	ND	5.00	"	"	"	"	"	U
1,2,3-Trichloropropane	ND	5.00	"	"	"	"	"	U
1,2,4-Trichlorobenzene	ND	5.00	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	U

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

MW05-10/13/16  
 10/13/2016 11:15:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X610143-05 (Water)

**VOC by EPA 8260C**

1,2-Dibromo-3-chloropropane	ND	5.00	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
1,2-Dibromoethane (EDB)	ND	1.00	"	"	"	"	"	U
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	U
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	U
1,2-Dichloropropane	ND	1.00	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	U
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	U
1,3-Dichloropropane	ND	1.00	"	"	"	"	"	U
1,4-Dichlorobenzene	ND	1.00	"	"	"	"	"	U
2,2-Dichloropropane	ND	1.00	"	"	"	"	"	U
2-Butanone	ND	5.00	"	"	"	"	"	U
2-Chlorotoluene	ND	1.00	"	"	"	"	"	U
2-Hexanone	ND	5.00	"	"	"	"	"	U
4-Chlorotoluene	ND	1.00	"	"	"	"	"	U
4-Isopropyltoluene	ND	1.00	"	"	"	"	"	U
4-Methyl-2-pentanone	ND	5.00	"	"	"	"	"	U
Acetone	ND	8.00	"	"	"	"	"	U
Benzene	ND	1.00	"	"	"	"	"	U
Bromobenzene	ND	1.00	"	"	"	"	"	U

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

MW05-10/13/16  
 10/13/2016 11:15:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X610143-05 (Water)**

**VOC by EPA 8260C**

Bromochloromethane	ND	1.00	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
Bromodichloromethane	ND	1.00	"	"	"	"	"	U
Bromoform	ND	1.00	"	"	"	"	"	U
Bromomethane	ND	1.00	"	"	"	"	"	U
Carbon disulfide	ND	5.00	"	"	"	"	"	U
Carbon tetrachloride	ND	1.00	"	"	"	"	"	U
Chlorobenzene	ND	1.00	"	"	"	"	"	U
Chloroethane	ND	1.00	"	"	"	"	"	U
Chloroform	ND	1.00	"	"	"	"	"	U
Chloromethane	ND	1.00	"	"	"	"	"	U
cis-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	U
cis-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	U
Dibromochloromethane	ND	1.00	"	"	"	"	"	U
Dibromomethane	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Hexachlorobutadiene	ND	5.00	"	"	"	"	"	U
Iodomethane	ND	10.0	"	"	"	"	"	U
Isopropylbenzene	ND	1.00	"	"	"	"	"	U
m,p-Xylene	ND	2.00	"	"	"	"	"	U

Origins Laboratory, Inc.



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 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

MW05-10/13/16  
 10/13/2016 11:15:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 X610143-05 (Water)

**VOC by EPA 8260C**

Methylene Chloride	ND	5.00	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
Methyl tert-Butyl Ether	ND	1.00	"	"	"	"	"	U
Naphthalene	ND	4.00	"	"	"	"	"	U
n-Butylbenzene	ND	1.00	"	"	"	"	"	U
n-Propylbenzene	ND	1.00	"	"	"	"	"	U
o-Xylene	ND	1.00	"	"	"	"	"	U
sec-Butylbenzene	ND	1.00	"	"	"	"	"	U
Styrene	ND	1.00	"	"	"	"	"	U
tert-Butylbenzene	ND	1.00	"	"	"	"	"	U
Tetrachloroethene	ND	1.00	"	"	"	"	"	U
Toluene	ND	1.00	"	"	"	"	"	U
trans-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	U
trans-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	U
Trichloroethene	ND	1.00	"	"	"	"	"	U
Trichlorofluoromethane	ND	1.00	"	"	"	"	"	U
Vinyl chloride	ND	1.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	117 %	84-121			"	"	"
Surrogate: Toluene-d8	94.8 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	102 %	84-114			"	"	"

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

**Trip Blank**  
**10/13/2016 12:00:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X610143-06 (Water)**

**VOC by EPA 8260C**

1,1,1,2-Tetrachloroethane	ND	1.00	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	U
1,1,2,2-Tetrachloroethane	ND	1.00	"	"	"	"	"	U
1,1,2-Trichloroethane	ND	1.00	"	"	"	"	"	U
1,1-Dichloroethane	ND	1.00	"	"	"	"	"	U
1,1-Dichloroethene	ND	1.00	"	"	"	"	"	U
1,1-Dichloropropene	ND	1.00	"	"	"	"	"	U
1,2,3-Trichlorobenzene	ND	5.00	"	"	"	"	"	U
1,2,3-Trichloropropane	ND	5.00	"	"	"	"	"	U
1,2,4-Trichlorobenzene	ND	5.00	"	"	"	"	"	U
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	U
1,2-Dibromo-3-chloropropane	ND	5.00	"	"	"	"	"	U
1,2-Dibromoethane (EDB)	ND	1.00	"	"	"	"	"	U
1,2-Dichlorobenzene	ND	1.00	"	"	"	"	"	U
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	U
1,2-Dichloropropane	ND	1.00	"	"	"	"	"	U
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	U
1,3-Dichlorobenzene	ND	1.00	"	"	"	"	"	U
1,3-Dichloropropane	ND	1.00	"	"	"	"	"	U

Origins Laboratory, Inc.



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 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

**Trip Blank**  
**10/13/2016 12:00:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X610143-06 (Water)**

**VOC by EPA 8260C**

1,4-Dichlorobenzene	ND	1.00	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
2,2-Dichloropropane	ND	1.00	"	"	"	"	"	U
2-Butanone	ND	5.00	"	"	"	"	"	U
2-Chlorotoluene	ND	1.00	"	"	"	"	"	U
2-Hexanone	ND	5.00	"	"	"	"	"	U
4-Chlorotoluene	ND	1.00	"	"	"	"	"	U
4-Isopropyltoluene	ND	1.00	"	"	"	"	"	U
4-Methyl-2-pentanone	ND	5.00	"	"	"	"	"	U
Acetone	ND	8.00	"	"	"	"	"	U
Benzene	ND	1.00	"	"	"	"	"	U
Bromobenzene	ND	1.00	"	"	"	"	"	U
Bromochloromethane	ND	1.00	"	"	"	"	"	U
Bromodichloromethane	ND	1.00	"	"	"	"	"	U
Bromoform	ND	1.00	"	"	"	"	"	U
Bromomethane	ND	1.00	"	"	"	"	"	U
Carbon disulfide	ND	5.00	"	"	"	"	"	U
Carbon tetrachloride	ND	1.00	"	"	"	"	"	U
Chlorobenzene	ND	1.00	"	"	"	"	"	U
Chloroethane	ND	1.00	"	"	"	"	"	U

Origins Laboratory, Inc.



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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

**Trip Blank**  
**10/13/2016 12:00:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X610143-06 (Water)**

**VOC by EPA 8260C**

Chloroform	ND	1.00	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
Chloromethane	ND	1.00	"	"	"	"	"	U
cis-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	U
cis-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	U
Dibromochloromethane	ND	1.00	"	"	"	"	"	U
Dibromomethane	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Hexachlorobutadiene	ND	5.00	"	"	"	"	"	U
Iodomethane	ND	10.0	"	"	"	"	"	U
Isopropylbenzene	ND	1.00	"	"	"	"	"	U
m,p-Xylene	ND	2.00	"	"	"	"	"	U
Methylene Chloride	<b>5.35</b>	5.00	"	"	"	"	"	O-01
Methyl tert-Butyl Ether	ND	1.00	"	"	"	"	"	U
Naphthalene	ND	4.00	"	"	"	"	"	U
n-Butylbenzene	ND	1.00	"	"	"	"	"	U
n-Propylbenzene	ND	1.00	"	"	"	"	"	U
o-Xylene	ND	1.00	"	"	"	"	"	U
sec-Butylbenzene	ND	1.00	"	"	"	"	"	U
Styrene	ND	1.00	"	"	"	"	"	U

Origins Laboratory, Inc.



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 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

**Trip Blank**  
**10/13/2016 12:00:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X610143-06 (Water)**

**VOC by EPA 8260C**

tert-Butylbenzene	ND	1.00	ug/L	1	B6J1801	10/18/2016	10/19/2016	U
Tetrachloroethene	ND	1.00	"	"	"	"	"	U
Toluene	ND	1.00	"	"	"	"	"	U
trans-1,2-Dichloroethene	ND	1.00	"	"	"	"	"	U
trans-1,3-Dichloropropene	ND	1.00	"	"	"	"	"	U
Trichloroethene	ND	1.00	"	"	"	"	"	U
Trichlorofluoromethane	ND	1.00	"	"	"	"	"	U
Vinyl chloride	ND	1.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	123 %	84-121			"	"	"	S-07
Surrogate: Toluene-d8	97.6 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	84-114			"	"	"	

Origins Laboratory, Inc.



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 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

**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 B6J1801 - EPA 5030B (Water)**

**Blank (B6J1801-BLK1)**

Prepared: 10/18/2016 Analyzed: 10/18/2016

1,1,1,2-Tetrachloroethane	ND	1.00	ug/L							U
1,1,1-Trichloroethane	ND	1.00	"							U
1,1,2,2-Tetrachloroethane	ND	1.00	"							U
1,1,2-Trichloroethane	ND	1.00	"							U
1,1-Dichloroethane	ND	1.00	"							U
1,1-Dichloroethene	ND	1.00	"							U
1,1-Dichloropropene	ND	1.00	"							U
1,2,3-Trichlorobenzene	ND	5.00	"							U
1,2,3-Trichloropropane	ND	5.00	"							U
1,2,4-Trichlorobenzene	ND	5.00	"							U
1,2,4-Trimethylbenzene	ND	1.00	"							U
1,2-Dibromo-3-chloropropane	ND	5.00	"							U
1,2-Dibromoethane (EDB)	ND	1.00	"							U
1,2-Dichlorobenzene	ND	1.00	"							U
1,2-Dichloroethane	ND	1.00	"							U
1,2-Dichloropropane	ND	1.00	"							U
1,3,5-Trimethylbenzene	ND	1.00	"							U
1,3-Dichlorobenzene	ND	1.00	"							U
1,3-Dichloropropane	ND	1.00	"							U
1,4-Dichlorobenzene	ND	1.00	"							U
2,2-Dichloropropane	ND	1.00	"							U
2-Butanone	ND	5.00	"							U
2-Chlorotoluene	ND	1.00	"							U
2-Hexanone	ND	5.00	"							U
4-Chlorotoluene	ND	1.00	"							U
4-Isopropyltoluene	ND	1.00	"							U

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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

**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 B6J1801 - EPA 5030B (Water)**

**Blank (B6J1801-BLK1)**

Prepared: 10/18/2016 Analyzed: 10/18/2016

4-Methyl-2-pentanone	ND	5.00	ug/L							U
Acetone	ND	8.00	"							U
Benzene	ND	1.00	"							U
Bromobenzene	ND	1.00	"							U
Bromochloromethane	ND	1.00	"							U
Bromodichloromethane	ND	1.00	"							U
Bromoform	ND	1.00	"							U
Bromomethane	ND	1.00	"							U
Carbon disulfide	ND	5.00	"							U
Carbon tetrachloride	ND	1.00	"							U
Chlorobenzene	ND	1.00	"							U
Chloroethane	ND	1.00	"							U
Chloroform	ND	1.00	"							U
Chloromethane	ND	1.00	"							U
cis-1,2-Dichloroethene	ND	1.00	"							U
cis-1,3-Dichloropropene	ND	1.00	"							U
Dibromochloromethane	ND	1.00	"							U
Dibromomethane	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Hexachlorobutadiene	ND	5.00	"							U
Iodomethane	ND	10.0	"							U
Isopropylbenzene	ND	1.00	"							U
m,p-Xylene	ND	2.00	"							U
Methylene Chloride	ND	5.00	"							U
Methyl tert-Butyl Ether	ND	1.00	"							U
Naphthalene	ND	4.00	"							U

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Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

**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 B6J1801 - EPA 5030B (Water)**

**Blank (B6J1801-BLK1)**

Prepared: 10/18/2016 Analyzed: 10/18/2016

n-Butylbenzene	ND	1.00	ug/L							U
n-Propylbenzene	ND	1.00	"							U
o-Xylene	ND	1.00	"							U
sec-Butylbenzene	ND	1.00	"							U
Styrene	ND	1.00	"							U
tert-Butylbenzene	ND	1.00	"							U
Tetrachloroethene	ND	1.00	"							U
Toluene	ND	1.00	"							U
trans-1,2-Dichloroethene	ND	1.00	"							U
trans-1,3-Dichloropropene	ND	1.00	"							U
Trichloroethene	ND	1.00	"							U
Trichlorofluoromethane	ND	1.00	"							U
Vinyl chloride	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5		104	84-121			
Surrogate: Toluene-d8	60		"	62.5		95.4	85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.8	84-114			

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**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 B6J1801 - EPA 5030B (Water)**

**LCS (B6J1801-BS1)**

Prepared: 10/18/2016 Analyzed: 10/18/2016

1,1,1,2-Tetrachloroethane	49.3	1.00	ug/L	50.0		98.7	78.8-128			
1,1,1-Trichloroethane	50.7	1.00	"	50.0		101	82.3-118			
1,1,2,2-Tetrachloroethane	52.9	1.00	"	50.0		106	67.9-119			
1,1,2-Trichloroethane	55.0	1.00	"	50.0		110	75.4-116			
1,1-Dichloroethane	48.1	1.00	"	50.0		96.2	80-120			
1,1-Dichloroethene	46.2	1.00	"	50.0		92.3	79.4-118			
1,1-Dichloropropene	49.5	1.00	"	50.0		98.9	78-120			
1,2,3-Trichlorobenzene	54.0	5.00	"	50.0		108	63.8-134			
1,2,3-Trichloropropane	57.2	5.00	"	50.0		114	63.3-121			
1,2,4-Trichlorobenzene	56.7	5.00	"	50.0		113	70.4-125			
1,2,4-Trimethylbenzene	50.0	1.00	"	50.0		100	73.3-123			
1,2-Dibromo-3-chloropropane	56.6	5.00	"	50.0		113	80-120			
1,2-Dibromoethane (EDB)	53.3	1.00	"	50.0		107	74.7-127			
1,2-Dichlorobenzene	55.6	1.00	"	50.0		111	81.3-116			
1,2-Dichloroethane	50.2	1.00	"	50.0		100	71.1-120			
1,2-Dichloropropane	49.4	1.00	"	50.0		98.9	80-120			
1,3,5-Trimethylbenzene	50.9	1.00	"	50.0		102	71.9-128			
1,3-Dichlorobenzene	55.6	1.00	"	50.0		111	82.1-117			
1,3-Dichloropropane	53.0	1.00	"	50.0		106	75.1-123			
1,4-Dichlorobenzene	56.2	1.00	"	50.0		112	76.8-119			
2,2-Dichloropropane	53.6	1.00	"	50.0		107	84-120			
2-Butanone	271	5.00	"	250		108	64.9-123			
2-Chlorotoluene	55.0	1.00	"	50.0		110	66-133			
2-Hexanone	270	5.00	"	250		108	80-120			
4-Chlorotoluene	53.2	1.00	"	50.0		106	73.2-119			
4-Isopropyltoluene	52.4	1.00	"	50.0		105	79.8-120			

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Bob Cornez  
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 Project: KMG - DFMF #2

**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 B6J1801 - EPA 5030B (Water)**

**LCS (B6J1801-BS1)**

Prepared: 10/18/2016 Analyzed: 10/18/2016

4-Methyl-2-pentanone	260	5.00	ug/L	250		104	58.5-122			
Acetone	219	8.00	"	250		87.7	65.4-125			
Benzene	49.8	1.00	"	50.0		99.6	75.5-116			
Bromobenzene	54.7	1.00	"	50.0		109	70-130			
Bromochloromethane	53.4	1.00	"	50.0		107	80-120			
Bromodichloromethane	50.5	1.00	"	50.0		101	73-123			
Bromoform	55.7	1.00	"	50.0		111	75-128			
Bromomethane	47.4	1.00	"	50.0		94.8	72-138			
Carbon disulfide	45.5	5.00	"	50.0		90.9	69-129			
Carbon tetrachloride	50.5	1.00	"	50.0		101	80-124			
Chlorobenzene	52.7	1.00	"	50.0		105	78-121			
Chloroethane	47.4	1.00	"	50.0		94.8	77-138			
Chloroform	47.0	1.00	"	50.0		94.0	75-117			
Chloromethane	47.9	1.00	"	50.0		95.8	72-130			
cis-1,2-Dichloroethene	49.2	1.00	"	50.0		98.4	78-118			
cis-1,3-Dichloropropene	51.9	1.00	"	50.0		104	73-122			
Dibromochloromethane	56.4	1.00	"	50.0		113	78-119			
Dibromomethane	50.9	1.00	"	50.0		102	79-116			
Ethylbenzene	48.4	1.00	"	50.0		96.8	78-130			
Hexachlorobutadiene	53.7	5.00	"	50.0		107	72-129			
Iodomethane	47.1	10.0	"	50.0		94.1	74-121			
Isopropylbenzene	48.3	1.00	"	50.0		96.7	75-128			
m,p-Xylene	97.7	2.00	"	100		97.7	75-134			
Methylene Chloride	46.2	5.00	"	50.0		92.5	80-122			
Methyl tert-Butyl Ether	57.4	1.00	"	50.0		115	72-125			
Naphthalene	55.9	4.00	"	50.0		112	65-128			

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 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

**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 B6J1801 - EPA 5030B (Water)**

**LCS (B6J1801-BS1)**

Prepared: 10/18/2016 Analyzed: 10/18/2016

n-Butylbenzene	52.2	1.00	ug/L	50.0		104	69-134			
n-Propylbenzene	51.3	1.00	"	50.0		103	74-132			
o-Xylene	48.6	1.00	"	50.0		97.2	76-129			
sec-Butylbenzene	50.8	1.00	"	50.0		102	74-128			
Styrene	53.0	1.00	"	50.0		106	74-126			
tert-Butylbenzene	51.8	1.00	"	50.0		104	72-123			
Tetrachloroethene	52.3	1.00	"	50.0		105	78-132			
Toluene	47.6	1.00	"	50.0		95.2	76-128			
trans-1,2-Dichloroethene	50.7	1.00	"	50.0		101	79-120			
trans-1,3-Dichloropropene	56.5	1.00	"	50.0		113	74-122			
Trichloroethene	49.9	1.00	"	50.0		99.8	76-125			
Trichlorofluoromethane	43.7	1.00	"	50.0		87.3	66-149			
Vinyl chloride	46.6	1.00	"	50.0		93.1	70-137			
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		99.9	84-121			
Surrogate: Toluene-d8	62		"	62.5		98.8	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		100	84-114			

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**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 B6J1801 - EPA 5030B (Water)**

<b>Matrix Spike (B6J1801-MS1)</b>	<b>Source: X610121-01</b>			<b>Prepared: 10/18/2016 Analyzed: 10/19/2016</b>						
1,1,1,2-Tetrachloroethane	48.7	1.00	ug/L	50.0	0.280	96.9	82-130			
1,1,1-Trichloroethane	57.5	1.00	"	50.0	ND	115	81-125			
1,1,2,2-Tetrachloroethane	42.7	1.00	"	50.0	ND	85.4	74-120			
1,1,2-Trichloroethane	48.1	1.00	"	50.0	ND	96.1	80-118			
1,1-Dichloroethane	50.9	1.00	"	50.0	ND	102	79-120			
1,1-Dichloroethene	47.0	1.00	"	50.0	ND	94.0	73-130			
1,1-Dichloropropene	52.7	1.00	"	50.0	ND	105	77-124			
1,2,3-Trichlorobenzene	50.3	5.00	"	50.0	ND	101	55-144			
1,2,3-Trichloropropane	48.0	5.00	"	50.0	ND	96.0	67-126			
1,2,4-Trichlorobenzene	53.4	5.00	"	50.0	ND	107	56-141			
1,2,4-Trimethylbenzene	49.0	1.00	"	50.0	ND	98.1	62-132			
1,2-Dibromo-3-chloropropane	46.0	5.00	"	50.0	ND	92.0	56-142			
1,2-Dibromoethane (EDB)	48.7	1.00	"	50.0	ND	97.4	84-124			
1,2-Dichlorobenzene	52.1	1.00	"	50.0	ND	104	74-124			
1,2-Dichloroethane	50.7	1.00	"	50.0	ND	101	76-120			
1,2-Dichloropropane	49.2	1.00	"	50.0	ND	98.5	78-117			
1,3,5-Trimethylbenzene	49.4	1.00	"	50.0	ND	98.8	64-138			
1,3-Dichlorobenzene	53.6	1.00	"	50.0	ND	107	73-126			
1,3-Dichloropropane	48.1	1.00	"	50.0	ND	96.3	83-120			
1,4-Dichlorobenzene	52.6	1.00	"	50.0	ND	105	64-130			
2,2-Dichloropropane	56.4	1.00	"	50.0	ND	113	77-129			
2-Butanone	235	5.00	"	250	ND	93.9	66-128			
2-Chlorotoluene	52.8	1.00	"	50.0	ND	106	71-130			
2-Hexanone	226	5.00	"	250	ND	90.3	74-123			
4-Chlorotoluene	51.6	1.00	"	50.0	ND	103	66-128			
4-Isopropyltoluene	52.3	1.00	"	50.0	ND	105	60-140			

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**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 B6J1801 - EPA 5030B (Water)**

<b>Matrix Spike (B6J1801-MS1)</b>	<b>Source: X610121-01</b>			<b>Prepared: 10/18/2016 Analyzed: 10/19/2016</b>						
4-Methyl-2-pentanone	224	5.00	ug/L	250	ND	89.7	65-125			
Acetone	225	8.00	"	250	ND	90.0	63-134			
Benzene	52.4	1.00	"	50.0	ND	105	74-130			
Bromobenzene	49.6	1.00	"	50.0	ND	99.2	70-130			
Bromochloromethane	54.0	1.00	"	50.0	ND	108	80-118			
Bromodichloromethane	50.0	1.00	"	50.0	ND	100	76-122			
Bromoform	49.2	1.00	"	50.0	0.130	98.2	80-128			
Bromomethane	51.8	1.00	"	50.0	ND	104	69-144			
Carbon disulfide	48.2	5.00	"	50.0	ND	96.4	70-131			
Carbon tetrachloride	56.5	1.00	"	50.0	ND	113	81-130			
Chlorobenzene	52.5	1.00	"	50.0	ND	105	72-128			
Chloroethane	49.9	1.00	"	50.0	ND	99.8	79-140			
Chloroform	49.4	1.00	"	50.0	0.280	98.1	76-118			
Chloromethane	47.8	1.00	"	50.0	ND	95.6	72-128			
cis-1,2-Dichloroethene	50.8	1.00	"	50.0	ND	102	78-120			
cis-1,3-Dichloropropene	48.9	1.00	"	50.0	ND	97.9	79-120			
Dibromochloromethane	51.5	1.00	"	50.0	ND	103	81-121			
Dibromomethane	48.5	1.00	"	50.0	ND	96.9	84-115			
Ethylbenzene	51.2	1.00	"	50.0	ND	102	76-132			
Hexachlorobutadiene	54.6	5.00	"	50.0	ND	109	70-130			
Iodomethane	49.6	10.0	"	50.0	ND	99.3	72-127			
Isopropylbenzene	50.6	1.00	"	50.0	0.250	101	66-135			
m,p-Xylene	104	2.00	"	100	ND	104	69-139			
Methylene Chloride	37.9	5.00	"	50.0	ND	75.9	87-118			QM-07
Methyl tert-Butyl Ether	50.3	1.00	"	50.0	ND	101	62-138			
Naphthalene	47.9	4.00	"	50.0	ND	95.8	59-148			

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**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 B6J1801 - EPA 5030B (Water)**

<b>Matrix Spike (B6J1801-MS1)</b>	<b>Source: X610121-01</b>			<b>Prepared: 10/18/2016 Analyzed: 10/19/2016</b>						
n-Butylbenzene	52.2	1.00	ug/L	50.0	ND	104	52-146			
n-Propylbenzene	49.5	1.00	"	50.0	ND	99.0	66-141			
o-Xylene	51.2	1.00	"	50.0	ND	102	74-131			
sec-Butylbenzene	50.7	1.00	"	50.0	ND	101	63-138			
Styrene	53.0	1.00	"	50.0	0.210	106	72-128			
tert-Butylbenzene	50.8	1.00	"	50.0	ND	102	67-129			
Tetrachloroethene	56.8	1.00	"	50.0	0.290	113	76-134			
Toluene	51.0	1.00	"	50.0	ND	102	73-131			
trans-1,2-Dichloroethene	52.4	1.00	"	50.0	ND	105	78-123			
trans-1,3-Dichloropropene	50.6	1.00	"	50.0	ND	101	75-125			
Trichloroethene	54.1	1.00	"	50.0	ND	108	73-131			
Trichlorofluoromethane	47.0	1.00	"	50.0	ND	93.9	83-141			
Vinyl chloride	50.3	1.00	"	50.0	0.590	99.5	73-139			
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		99.6	84-121			
Surrogate: Toluene-d8	63		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.3	84-114			

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**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 B6J1801 - EPA 5030B (Water)**

<b>Matrix Spike Dup (B6J1801-MSD1)</b>	<b>Source: X610121-01</b>			<b>Prepared: 10/18/2016 Analyzed: 10/19/2016</b>						
1,1,1,2-Tetrachloroethane	48.4	1.00	ug/L	50.0	0.280	96.2	82-130	0.762	20	
1,1,1-Trichloroethane	55.8	1.00	"	50.0	ND	112	81-125	3.13	20	
1,1,2,2-Tetrachloroethane	44.2	1.00	"	50.0	ND	88.4	74-120	3.43	20	
1,1,2-Trichloroethane	48.9	1.00	"	50.0	ND	97.8	80-118	1.77	20	
1,1-Dichloroethane	49.0	1.00	"	50.0	ND	98.0	79-120	3.78	20	
1,1-Dichloroethene	46.0	1.00	"	50.0	ND	92.1	73-130	2.06	20	
1,1-Dichloropropene	50.1	1.00	"	50.0	ND	100	77-124	5.10	20	
1,2,3-Trichlorobenzene	50.5	5.00	"	50.0	ND	101	55-144	0.416	20	
1,2,3-Trichloropropane	49.8	5.00	"	50.0	ND	99.5	67-126	3.62	20	
1,2,4-Trichlorobenzene	52.2	5.00	"	50.0	ND	104	56-141	2.25	20	
1,2,4-Trimethylbenzene	48.0	1.00	"	50.0	ND	96.0	62-132	2.14	20	
1,2-Dibromo-3-chloropropane	48.6	5.00	"	50.0	ND	97.2	56-142	5.52	20	
1,2-Dibromoethane (EDB)	49.7	1.00	"	50.0	ND	99.4	84-124	2.03	20	
1,2-Dichlorobenzene	52.2	1.00	"	50.0	ND	104	74-124	0.192	20	
1,2-Dichloroethane	50.2	1.00	"	50.0	ND	100	76-120	0.931	20	
1,2-Dichloropropane	48.3	1.00	"	50.0	ND	96.6	78-117	1.89	20	
1,3,5-Trimethylbenzene	49.4	1.00	"	50.0	ND	98.9	64-138	0.121	20	
1,3-Dichlorobenzene	53.3	1.00	"	50.0	ND	107	73-126	0.524	20	
1,3-Dichloropropane	49.1	1.00	"	50.0	ND	98.2	83-120	2.02	20	
1,4-Dichlorobenzene	52.4	1.00	"	50.0	ND	105	64-130	0.267	20	
2,2-Dichloropropane	57.4	1.00	"	50.0	ND	115	77-129	1.72	20	
2-Butanone	248	5.00	"	250	ND	99.2	66-128	5.41	20	
2-Chlorotoluene	53.0	1.00	"	50.0	ND	106	71-130	0.416	20	
2-Hexanone	234	5.00	"	250	ND	93.6	74-123	3.60	20	
4-Chlorotoluene	51.7	1.00	"	50.0	ND	103	66-128	0.174	20	
4-Isopropyltoluene	51.2	1.00	"	50.0	ND	102	60-140	2.22	20	

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Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: AFE.2107112.CON  
 Project: KMG - DFMF #2

**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 B6J1801 - EPA 5030B (Water)**

<b>Matrix Spike Dup (B6J1801-MSD1)</b>	<b>Source: X610121-01</b>			<b>Prepared: 10/18/2016 Analyzed: 10/19/2016</b>						
4-Methyl-2-pentanone	224	5.00	ug/L	250	ND	89.7	65-125	0.0758	20	
Acetone	232	8.00	"	250	ND	92.7	63-134	2.93	20	
Benzene	50.5	1.00	"	50.0	ND	101	74-130	3.67	20	
Bromobenzene	49.8	1.00	"	50.0	ND	99.6	70-130	0.443	20	
Bromochloromethane	53.0	1.00	"	50.0	ND	106	80-118	1.78	20	
Bromodichloromethane	50.0	1.00	"	50.0	ND	100	76-122	0.0800	20	
Bromoform	50.0	1.00	"	50.0	0.130	99.7	80-128	1.55	20	
Bromomethane	51.9	1.00	"	50.0	ND	104	69-144	0.270	20	
Carbon disulfide	48.0	5.00	"	50.0	ND	96.0	70-131	0.457	20	
Carbon tetrachloride	55.0	1.00	"	50.0	ND	110	81-130	2.65	20	
Chlorobenzene	52.0	1.00	"	50.0	ND	104	72-128	0.995	20	
Chloroethane	48.3	1.00	"	50.0	ND	96.7	79-140	3.16	20	
Chloroform	48.4	1.00	"	50.0	0.280	96.3	76-118	1.84	20	
Chloromethane	48.6	1.00	"	50.0	ND	97.2	72-128	1.70	20	
cis-1,2-Dichloroethene	49.6	1.00	"	50.0	ND	99.2	78-120	2.31	20	
cis-1,3-Dichloropropene	49.0	1.00	"	50.0	ND	98.0	79-120	0.123	20	
Dibromochloromethane	51.8	1.00	"	50.0	ND	104	81-121	0.542	20	
Dibromomethane	49.6	1.00	"	50.0	ND	99.1	84-115	2.22	20	
Ethylbenzene	49.8	1.00	"	50.0	ND	99.6	76-132	2.75	20	
Hexachlorobutadiene	52.2	5.00	"	50.0	ND	104	70-130	4.57	20	
Iodomethane	49.2	10.0	"	50.0	ND	98.4	72-127	0.891	20	
Isopropylbenzene	48.7	1.00	"	50.0	0.250	96.8	66-135	3.93	20	
m,p-Xylene	101	2.00	"	100	ND	101	69-139	3.10	20	
Methylene Chloride	37.8	5.00	"	50.0	ND	75.5	87-118	0.423	20	QM-07
Methyl tert-Butyl Ether	50.7	1.00	"	50.0	ND	101	62-138	0.752	20	
Naphthalene	48.5	4.00	"	50.0	ND	97.1	59-148	1.26	20	

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**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 B6J1801 - EPA 5030B (Water)**

<b>Matrix Spike Dup (B6J1801-MSD1)</b>	<b>Source: X610121-01</b>			<b>Prepared: 10/18/2016 Analyzed: 10/19/2016</b>						
n-Butylbenzene	51.5	1.00	ug/L	50.0	ND	103	52-146	1.37	20	
n-Propylbenzene	50.3	1.00	"	50.0	ND	101	66-141	1.60	20	
o-Xylene	49.8	1.00	"	50.0	ND	99.5	74-131	2.95	20	
sec-Butylbenzene	50.1	1.00	"	50.0	ND	100	63-138	1.15	20	
Styrene	51.4	1.00	"	50.0	0.210	102	72-128	3.01	20	
tert-Butylbenzene	50.6	1.00	"	50.0	ND	101	67-129	0.395	20	
Tetrachloroethene	55.2	1.00	"	50.0	0.290	110	76-134	2.82	20	
Toluene	48.8	1.00	"	50.0	ND	97.6	73-131	4.39	20	
trans-1,2-Dichloroethene	50.7	1.00	"	50.0	ND	101	78-123	3.28	20	
trans-1,3-Dichloropropene	50.4	1.00	"	50.0	ND	101	75-125	0.376	20	
Trichloroethene	52.9	1.00	"	50.0	ND	106	73-131	2.36	20	
Trichlorofluoromethane	48.2	1.00	"	50.0	ND	96.3	83-141	2.50	20	
Vinyl chloride	48.3	1.00	"	50.0	0.590	95.4	73-139	4.08	20	
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5		100	84-121			
Surrogate: Toluene-d8	62		"	62.5		99.7	85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.4	84-114			

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**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 B6J1704 - EPA 3511 Mod.**

**Blank (B6J1704-BLK1)**

Prepared: 10/17/2016 Analyzed: 10/18/2016

Diesel (C10-C28)	ND	5.00	mg/L							U
Residual Range Organics (C28-C40)	ND	10.0	"							U
Surrogate: o-Terphenyl	3.9		"	5.00		78.0	54-117			

**LCS (B6J1704-BS1)**

Prepared: 10/17/2016 Analyzed: 10/18/2016

Diesel (C10-C28)	105	5.00	mg/L	100		105	61-120			
Residual Range Organics (C28-C40)	107	10.0	"	100		107	66-113			
Surrogate: o-Terphenyl	4.3		"	5.00		86.8	54-117			

**Matrix Spike (B6J1704-MS1)**

**Source: X610140-06**

Prepared: 10/17/2016 Analyzed: 10/19/2016

Diesel (C10-C28)	129	5.00	mg/L	100	2.60	127	54-126			QM-07
Residual Range Organics (C28-C40)	137	10.0	"	100	ND	137	50-128			QM-07
Surrogate: o-Terphenyl	5.6		"	5.00		113	54-117			

**Matrix Spike Dup (B6J1704-MSD1)**

**Source: X610140-06**

Prepared: 10/17/2016 Analyzed: 10/19/2016

Diesel (C10-C28)	118	5.00	mg/L	100	2.60	115	54-126	9.41	20	
Residual Range Organics (C28-C40)	119	10.0	"	100	ND	119	50-128	13.7	20	
Surrogate: o-Terphenyl	4.6		"	5.00		91.3	54-117			

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**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B6J1801 - EPA 5030B (Water)</b>										
<b>Blank (B6J1801-BLK1)</b>					Prepared: 10/18/2016 Analyzed: 10/18/2016					
Gasoline Range Hydrocarbons	ND	100	ug/L							U
<b>LCS (B6J1801-BS1)</b>					Prepared: 10/18/2016 Analyzed: 10/18/2016					
Gasoline Range Hydrocarbons	2100	100	ug/L	2000		105	80-120			
<b>LCS Dup (B6J1801-BSD1)</b>					Prepared: 10/18/2016 Analyzed: 10/18/2016					
Gasoline Range Hydrocarbons	2180	100	ug/L	2000		109	80-120	3.60	20	

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### Notes and Definitions

- U Sample is Non-Detect.
- S-07 High surrogate in sample, however sample is non-detect. High surrogate indicates result values are biased high.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- O-01 This compound is a common laboratory contaminant.
- 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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