



Kerr-McGee Oil & Gas Onshore LP  
1099 18<sup>th</sup> Street, Suite 1800  
Denver, Colorado 80202  
Phone: 720-929-6000

February 10, 2020

Mr. Alex Fischer  
Colorado Oil and Gas Conservation Commission  
1120 Lincoln Street, Suite 801  
Denver, Colorado 80203

**Re: Facility Summary and Fourth Quarter 2019 Monitoring Report  
Aggregate Recycle Facility  
COGCC Facility ID #: 456644  
NESE Sec. 9-T2N-R66W  
Weld County, Colorado**

Dear Mr. Fischer:

On behalf of Kerr-McGee Oil & Gas Onshore LP (Kerr-McGee), Tasman Geosciences, Inc. (Tasman) has prepared this Facility Summary and Fourth Quarter 2019 Monitoring Report (Report) to document facility operation updates, groundwater monitoring activities, and spill response measures at the Kerr-McGee Aggregate Recycle Facility (ARF).

### **Facility Location and Summary**

The ARF is permitted as a Centralized E&P Waste Management Facility, and began operations in 2016 under Colorado Oil and Gas Conservation Commission (COGCC) Facility ID 456644. The purpose of this facility is to recycle and recondition used mud/fluids from drilling, completions, production, and workover activities for re-use in exploration and production (E&P) operations. If needed, the facility can be used for the production of fresh mud for workover and drilling activities. Waste manifests for material accepted at the ARF are tracked internally and are available upon request.

The ARF occupies approximately 5.43 acres in the northeast quarter of the southeast quarter of Section 9, Township 2 North, Range 66 West, as illustrated on Figure 1. The topography generally slopes gradually from the southeast to the northwest. Surrounding land use is cropland, rangeland, and rural residential. The nearest residence is located approximately 0.25 miles to the east, across County Road 31. Additional residences are located along County Road 31 to the northeast, and to the south along County Road 22.

A Use by Special Review (USR) permit was approved by Weld County in 2019 under Document No. 18-0069. In accordance with the approved USR, improvements were made to the facility entrance, roadway, Site drainage, septic system, and potable water supply. Documentation of these activities and the approved USR permit were previously transmitted to the COGCC via Form 4 Sundry Notification (COGCC Document No. 402248629).

## ARF Operational Parameters

This section provides a summary of the waste material accepted for beneficial reuse at the ARF during 2019. The total volumes of liquid waste received, and recycled water produced at the ARF in 2019 are presented below:

- 660,840.95 barrels of liquid waste were received from truck deliveries.
- 488,455 barrels of recycled water were produced for reuse in E&P operations.

A summary of the monthly volumes of liquid waste received and recycled water produced at the ARF in 2019 is provided in Table 1.

## Groundwater Monitoring Summary

This section describes the groundwater monitoring activities that were performed to assess shallow aquifer conditions at the ARF. These monitoring activities are intended to satisfy the requirements outlined in COGCC Rule 908 for Centralized E&P Waste Management Facilities. Groundwater monitoring activities were initiated at the ARF in 2017 by a third-party environmental consultant. Historical groundwater monitoring data is provided in Tables 2 and 3.

Fourth Quarter 2019 monitoring activities were scheduled for completion in December 2019; however, this event was delayed due to the transfer of environmental management services to Tasman. As such, Fourth Quarter 2019 groundwater monitoring activities were conducted at the Site on January 23, 2020, as described in the following sections.

### Monitoring Well Gauging

The three (3) groundwater monitoring wells at the ARF (MW01 – MW03) were gauged for the presence and depth of groundwater and 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 the 3 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 2. Monitoring well locations and the groundwater elevation contour map for the Fourth Quarter 2019 monitoring event are illustrated on Figure 2.

### Groundwater Purging, Sample Collection, and Analysis

Prior to sample collection, 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 analysis.

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 4 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 (Origins). Groundwater samples were submitted for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency (USEPA) Method 8260C.

### Groundwater Monitoring Results

Laboratory analytical results indicated that BTEX concentrations were below the laboratory reporting limits in all 3 monitoring wells, and as such were in full compliance with COGCC standards. Groundwater sample results are summarized in Table 3. The Fourth Quarter 2019 laboratory analytical data report is provided in Attachment A.

## **Agency Reportable Releases**

### February 2019 Hydraulic Oil Release

On February 19, 2019, Kerr-McGee reported a hydraulic oil release to the Colorado Department of Public Health and Environment (CDPHE) Emergency Preparedness and Response Division, and was issued Spill Number 2019-0069. This section describes the nature of the release, initial spill response actions, impacted soil removal activities, and the results of post-remediation confirmation soil sampling activities.

#### *Initial Spill Response*

On February 19, 2019, approximately 40 gallons of hydraulic oil were released to the ground surface at the ARF. The release occurred when a hydraulic line on a truck failed during routine facility operations. The line was immediately shut off, and absorbent saw dust was applied to the spill. The release area measured approximately 15 feet by 7 feet, as illustrated on Figure 3.

Kerr-McGee conducted surface excavation activities in the release area on February 20, 2019, to remove impacted material. Approximately 10 cubic yards of impacted soil were excavated and transported to the Buffalo Ridge Landfill in Keenesburg, Colorado for disposal. The surface excavation area is illustrated on Figure 3.

### *Confirmation Soil Sampling*

Following completion of surface excavation activities, Tasman conducted confirmation soil sampling in the release area. Two (2) confirmation soil samples (SS01@0-3" and SS02@0-3") were collected on February 20, 2019, from the surface excavation area, and submitted to Origins for the following analyses in accordance with the CDPHE Emergency Petroleum Spill Waste Management Guidance document:

- Polychlorinated Biphenyls (PCBs) by United States Environmental Protection Agency (USEPA) Method 8082A
- Halogenated Volatile Organic Compounds (VOCs) by USEPA Method 8260C
- Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX) by USEPA Method 8260C
- Total Petroleum Hydrocarbon (TPH) - Oil & Grease (O&G) on a dry weight basis by USEPA Method 9071 (equivalent to USEPA Method 1664 with silica gel cleanup)

Sample SS01@0-3" was selected for Polynuclear Aromatic Hydrocarbon (PAH) analysis by USEPA Method 8270D SIM, based on the TPH-O&G results.

### *Soil Sampling Results*

Laboratory analytical results indicated that the PCB, VOC, and BTEX concentrations in both confirmation soil samples, and the PAH concentrations in soil sample SS01@0-3" were below the applicable USEPA and CDPHE screening levels and standards.

Laboratory analytical results for the confirmation soil samples are presented in Table 4, and the soil sample locations are illustrated on Figure 3. The laboratory analytical report is provided in Attachment A. A summary of these spill response, remediation, and confirmation soil sampling activities was provided to the CDPHE in a report dated April 2, 2019.

### **Conclusions**

Based on the groundwater analytical data presented herein, BTEX concentrations in the 3 monitoring wells at the ARF were in full compliance with COGCC standards. Quarterly groundwater monitoring for BTEX will be continued, with the next sampling events scheduled for completion in February and May 2020.

Based on the results of confirmation soil sampling for PCB, VOC, BTEX, and PAH analysis, the soil samples collected from the Hydraulic Oil Release surface excavation area in February 2019 were in full compliance with the USEPA and CDPHE screening levels and standards. CDPHE Spill Number 2019-0069 has been closed and no further action is required for this release.

The ARF will continue to receive liquid and solid waste material for from Kerr-McGee's various exploration and production waste streams for treatment. The total waste volumes will continue to be tracked and reported to the COGCC on a semi-annual basis. Semi-Annual Facility Summary and Monitoring Reports will be prepared for this location, with the next report scheduled for submittal in July 2020.

Please contact me at (970) 515-1353 if you have any questions regarding this report or require additional information.

Sincerely,

Kerr-McGee Oil & Gas Onshore LP

Taylor Rowley  
Senior HSE Representative

**Attachments:**

Figure 1 – Site Location Map

Figure 2 – Groundwater Elevation Contour Map (01/23/2020)

Figure 3 – Hydraulic Oil Release Sample Location Map

Table 1 – 2019 Operational Parameters Summary Table

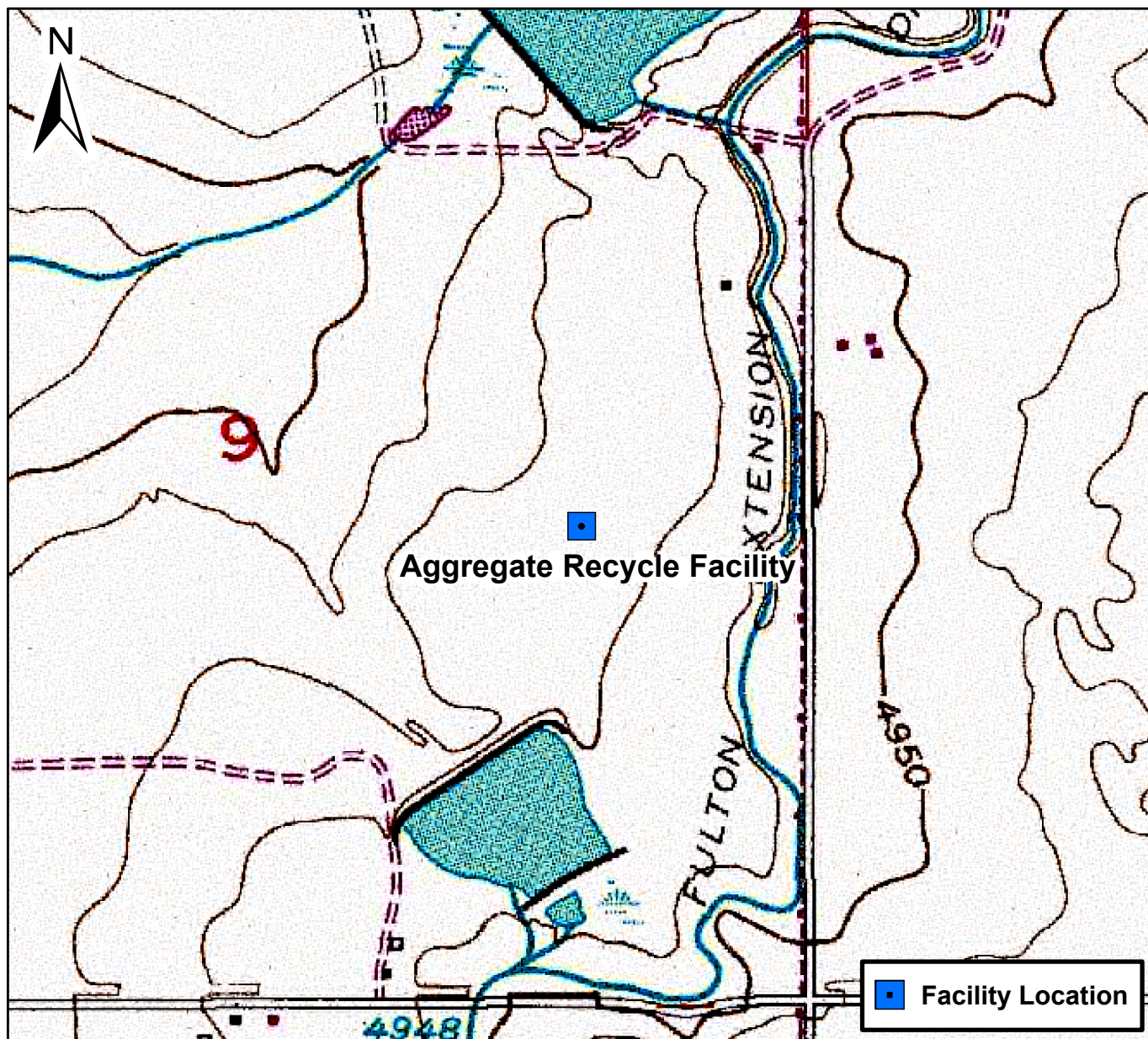
Table 2 – Groundwater Gauging Results Summary Table

Table 3 – Groundwater Sample Results Summary Table

Table 4 – Hydraulic Oil Release Soil Sample Results Summary Table

Attachment A – Laboratory Analytical Reports

## **FIGURES**



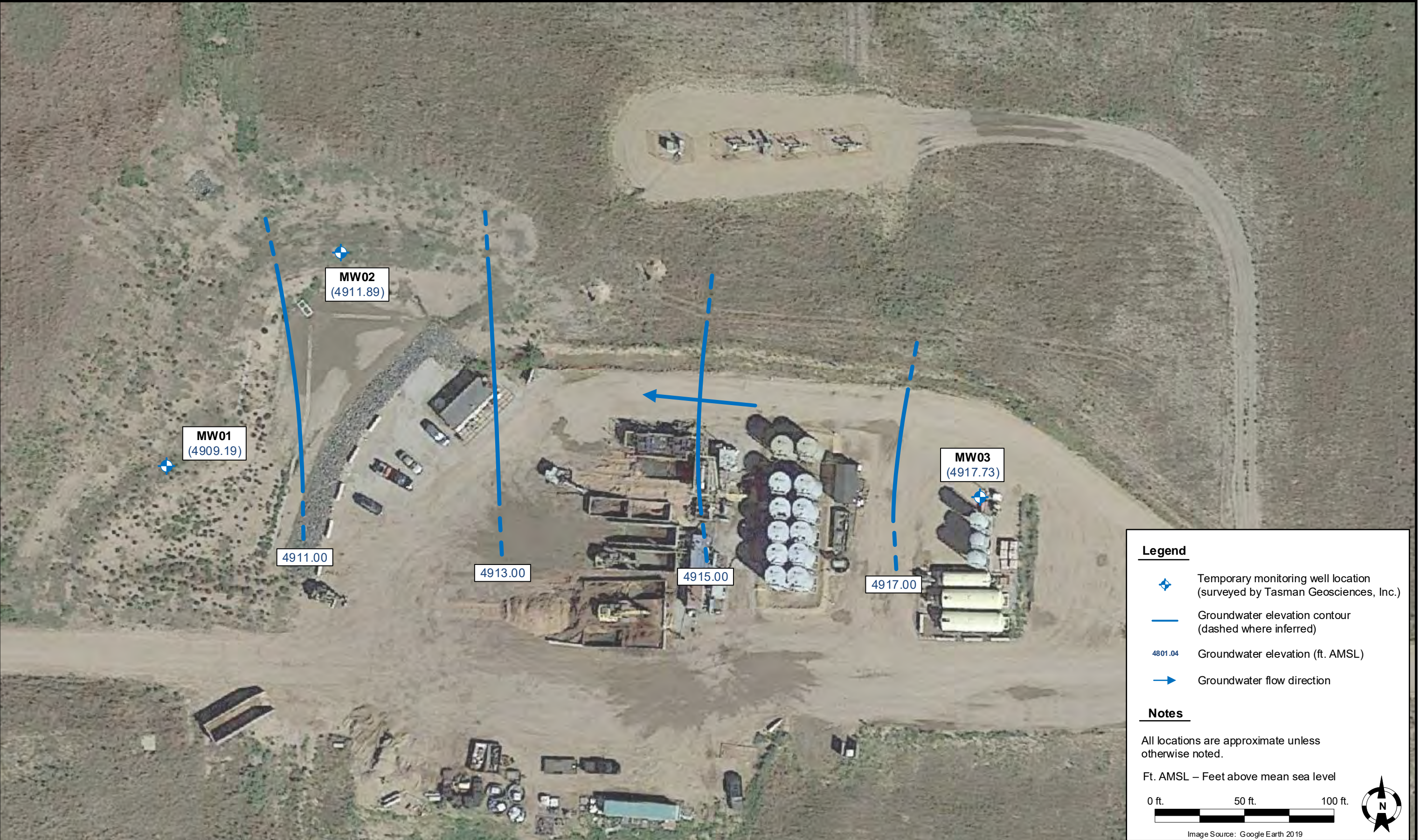
0 750 1,500 Feet

## Figure 1

Site Location Map  
Aggregate Recycle Facility  
NESE Sec. 9-T2N-R66W  
Weld County, Colorado







DATE:	January 29, 2020
DESIGNED BY:	E. Siegel
DRAWN BY:	L. Martin



**Kerr-McGee Oil and Gas Onshore LP**  
**Aggregate Recycle Facility**  
NESE Sec. 9-T2N-R66W  
Weld County, Colorado

Groundwater Elevation Contour  
Map (01/23/2020)

**FIGURE**  
**2**





DATE:	March 21, 2019
DESIGNED BY:	E. Siegel
DRAWN BY:	E. Siegel



**Kerr-McGee Oil and Gas Onshore LP**  
**Aggregate Recycle Facility**  
NESE Sec. 9-T2N-R66W  
Weld County, Colorado

Hydraulic Oil Release  
Sample Location Map

**FIGURE**  
**3**

## **TABLES**

**TABLE 1**  
**2019 OPERATIONAL PARAMETERS SUMMARY TABLE**  
**AGGREGATE RECYCLE FACILITY**  
**KERR-McGEE OIL & GAS ONSHORE LP**

<i><b>Date Range</b></i>	<i><b>Liquid Waste Received (barrels)</b></i>	<i><b>Recycled Water Produced (barrels)</b></i>
January 2019	56,571.1	41,300
February 2019	46,763	35,250
March 2019	43,877	30,450
April 2019	49,047	34,990
May 2019	56,954.5	42,265
June 2019	57,849	44,100
July 2019	65,197.5	46,950
August 2019	61,186.9	45,060
September 2019	58,741.25	43,805
October 2019	58,952.79	42,030
November 2019	55,300.77	43,540
December 2019	50,400.14	38,715
<i><b>2019 Total</b></i>	<i><b>660,840.95</b></i>	<i><b>488,455</b></i>
<b>Total Barrels Received / Produced To-Date (2016 - 2019)</b>	<i><b>2,113,950.45</b></i>	<i><b>1,511,864</b></i>



**TABLE 2**  
**AGGREGATE RECYCLE FACILITY (ARF)**  
**GROUNDWATER GAUGING RESULTS SUMMARY TABLE**  
**KERR-McGEE OIL & GAS ONSHORE LP**

Well ID	Date	Top of Casing Elevation (ft. AMSL)	Depth to Water (ft. BTOC)	Depth to Water (ft. BGS)	Groundwater Elevation (ft. AMSL)
MW01	8/18/2017	4,925.03	14.33	12.12	4,910.70
	12/27/2017	4,925.03	15.94	13.73	4,909.09
	3/29/2018	4,925.03	15.25	13.04	4,909.78
	6/5/2018	4,925.03	15.95	13.74	4,909.08
	8/16/2018	4,925.03	14.50	12.29	4,910.53
	11/26/2018	4,925.03	14.30	12.09	4,910.73
	3/5/2019	4,925.03	15.80	13.59	4,909.23
	6/28/2019	4,925.03	14.90	12.69	4,910.13
	9/17/2019	4,925.03	14.40	12.19	4,910.63
	1/23/2020	4,923.64 <sup>(1)</sup>	14.45	12.24	4,909.19
MW02	8/18/2017	4,924.11	11.00	11.19	4,913.11
	12/27/2017	4,924.11	12.05	12.24	4,912.06
	3/29/2018	4,924.11	11.50	11.69	4,912.61
	6/5/2018	4,924.11	9.50	9.69	4,914.61
	8/16/2018	4,924.11	9.46	9.65	4,914.65
	11/27/2018	4,924.11	9.40	9.59	4,914.71
	3/5/2019	4,924.11	9.10	9.29	4,915.01
	6/28/2019	4,924.11	8.70	8.89	4,915.41
	9/17/2019	4,924.11	11.80	11.99	4,912.31
	1/23/2020	4,922.94 <sup>(1)</sup>	11.05	11.24	4,911.89
MW03	8/18/2017	4,929.48	8.53	6.68	4,920.95
	12/27/2017	4,929.48	8.05	6.20	4,921.43
	3/29/2018	4,929.48	9.16	7.31	4,920.32
	6/5/2018	4,929.48	9.50	7.65	4,919.98
	8/16/2018	4,929.48	14.50	12.65	4,914.98
	11/26/2018	4,929.48	14.30	12.45	4,915.18
	3/5/2019	4,929.48	15.80	13.95	4,913.68
	6/28/2019	4,929.48	14.90	13.05	4,914.58
	9/17/2019	4,929.48	10.00	8.15	4,919.48
	1/23/2020	4,926.93 <sup>(1)</sup>	9.20	7.35	4,917.73

**Notes:**

(1) Top of casing elevation re-surveyed by Tasman Geosciences, Inc.

ft. = Feet.

AMSL = Above mean sea level.

BTOC = Below top of casing.

BGS = Below ground surface.

Blue = Denotes data collected by Quandry Consultants, LLC.

**TABLE 3**  
**AGGREGATE RECYCLE FACILITY (ARF)**  
**GROUNDWATER SAMPLE RESULTS SUMMARY TABLE**  
**KERR-McGEE OIL AND GAS ONSHORE LP**

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth To Water (ft. BGS)
<b>COGCC Table 910-1 standards for groundwater (µg/L)<sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1400</b>	
MW01	8/18/2017	<1.00	<1.00	<1.00	<1.00	12.12
	12/27/2017	<1.00	<1.00	<1.00	<1.00	13.73
	3/29/2018	<1.00	<1.00	<1.00	<1.00	13.04
	6/5/2018	<1.00	<1.00	<1.00	<1.00	13.74
	8/16/2018	<1.00	<1.00	<1.00	<1.00	12.29
	11/27/2018	<1.00	<1.00	<1.00	<1.00	12.09
	3/5/2019	<1.00	<1.00	<1.00	<1.00	13.59
	6/28/2019	<1.00	<1.00	<1.00	<1.00	12.69
	9/17/2019	<1.00	<1.00	<1.00	<1.00	12.19
	1/23/2020	<1.00	<1.00	<1.00	<1.00	12.24
MW02	8/18/2017	<1.00	<1.00	<1.00	<1.00	11.19
	12/27/2017	<1.00	<1.00	<1.00	<1.00	12.24
	3/29/2018	<1.00	<1.00	<1.00	<1.00	11.69
	6/5/2018	<1.00	<1.00	<1.00	<1.00	9.69
	8/16/2018	<1.00	<1.00	<1.00	<1.00	9.65
	11/27/2018	<1.00	<1.00	<1.00	<1.00	9.59
	3/5/2019	<1.00	<1.00	<1.00	<1.00	9.29
	6/28/2019	<1.00	<1.00	<1.00	<1.00	8.89
	9/17/2019	<1.00	<1.00	<1.00	<1.00	11.99
	1/23/2020	<1.00	<1.00	<1.00	<1.00	11.24
MW02	8/18/2017	<1.00	<1.00	<1.00	<1.00	6.68
	12/27/2017	<1.00	<1.00	<1.00	<1.00	6.20
	3/29/2018	<1.00	<1.00	<1.00	<1.00	7.31
	6/5/2018	<1.00	<1.00	<1.00	<1.00	7.65
	8/16/2018	<1.00	<1.00	<1.00	<1.00	12.65
	11/27/2018	<1.00	<1.00	<1.00	<1.00	12.45
	3/5/2019	<1.00	<1.00	<1.00	<1.00	13.95
	6/28/2019	<1.00	<1.00	<1.00	<1.00	13.05
	9/17/2019	<1.00	<1.00	<1.00	<1.00	8.15
	1/23/2020	<1.00	<1.00	<1.00	<1.00	7.35

**TABLE 3**  
**AGGREGATE RECYCLE FACILITY (ARF)**  
**GROUNDWATER SAMPLE RESULTS SUMMARY TABLE**  
**KERR-McGEE OIL AND GAS ONSHORE LP**

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth To Water (ft. BGS)
<b>COGCC Table 910-1 standards for groundwater (µg/L)<sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1400</b>	

**Notes:**

(1) Standards for groundwater are taken from 2 CCR 404-1, Table 910-1, effective May 1, 2018.

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.

Blue = Denotes data collected by Quandry Consultants, LLC.



Table 4  
Hydraulic Oil Release Soil Sample Results Summary Table  
Aggregate Recycle Facility (ARF)  
Kerr-McGee Oil & Gas Onshore LP

Analysis	Constituent	Sample ID	SS01@0-3"	SS02@0-3"	CDPHE / USEPA Limit			
		Date	2/20/2019	2/20/2019	RSL Limit: TQH = 1.0	RSL Limit: TQH = 0.1	GPV Limit	COGCC Limit
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
PAHs	1-Methylnaphthalene		0.0349	-				
	2-Methylnaphthalene		0.0598	-	240	24	7.4	
	Acenaphthene		<0.0498	-	3,600	360	1,000	
	Acenaphthylene		<0.0498	-				
	Anthracene		<0.0498	-	18,000	1,800	1,000	
	Benzo(a)anthracene		0.0498	-	1.1	1.1	1,000	
	Benzo(a)pyrene		<0.0498	-	0.11	0.11	1,000	
	Benzo(b)fluoranthene		<0.0498	-	1.1	1.1	1,000	
	Benzo(g,h,i)perylene		<0.0498	-				
	Benzo(k)fluoranthene		<0.0498	-	11	11	1,000	
	Chrysene		<0.0498	-	110	110	1,000	
	Dibenzo(a,h)anthracene		<0.0498	-	0.11	0.11	1,000	
	Fluoranthene		<0.0498	-	2400	240	1,000	
	Fluorene		<0.0498	-	2400	240	1,000	
	Indeno(1,2,3-c,d)pyrene		<0.0498	-	1.1	1.1	1,000	
	Naphthalene		<0.0498	-	3.8	3.8	23	
	Phenanthrene		0.0349	-				
	Pyrene		0.0947	-	1,800	180	1,000	
TPH	Oil and Grease		5,390	1,970				500
BTEX	Benzene		<0.00200	<0.00200	1.2	1.2	0.17	
	Toluene		0.0134	0.0154	4,900	490	50	
	Ethylbenzene		<0.00200	<0.00200	5.8	5.8	100	
	Xylenes, total		<0.00400	0.00488	560	55	75	
VOCs	1,1,1,2-Tetrachloroethane		<0.00200	<0.00200	2.0	2.0	0.16	
	1,1,1-Trichloroethane		<0.00200	<0.00200	8,100	810	62	
	1,1,2,2-Tetrachloroethane		<0.00200	<0.00200	0.60	0.60	0.0024	
	1,1,2-Trichloroethane		<0.00200	<0.00200	1.10	0.150	0.038	
	1,1-Dichloroethane		<0.00200	<0.00200	3.60	3.6	1.8	
	1,1-Dichloroethene		<0.00200	<0.00200	230	23	12	
	1,1-Dichloropropene		<0.00200	<0.00200				
	1,2,3-Trichlorobenzene		<0.00500	<0.00500	63	6.3		
	1,2,3-Trichloropropane		<0.00500	<0.00500	0.0051	0.0051	0.00048	
	1,2,4-Trichlorobenzene		<0.00500	<0.00500	24	5.8	13	
	1,2,4-Trimethylbenzene		<0.00200	<0.00200	300	30		
	1,2-Dibromo-3-chloropropane		<0.00500	<0.00500	0.0053	0.0053	0.0020	
	1,2-Dibromoethane (EDB)		<0.00200	<0.00200	0.0360	0.0360	0.00018	
	1,2-Dichlorobenzene		<0.00200	<0.00200	1,800	180	57	
	1,2-Dichloroethane		<0.00200	<0.00200	0.460	0.460	0.0036	
	1,2-Dichloropropane		<0.00200	<0.00200	2.9	1.6	0.0087	
	1,3,5-Trimethylbenzene		<0.00200	<0.00200	270	27	23	
	1,3-Dichlorobenzene		<0.00200	<0.00200			8.5	
	1,3-Dichloropropane		<0.00200	<0.00200	1,600	160	0.084	
	1,4-Dichlorobenzene		<0.00200	<0.00200	2.6	2.6	7.8	
	2,2-Dichloropropane		<0.00200	<0.00200				
	2-Butanone		<0.0100	<0.0100	27,000	2,700	18	
	2-Chlorotoluene		<0.00200	<0.00200				
	2-Hexanone		<0.0100	<0.0100	200	20	0.21	
	4-Chlorotoluene		<0.00200	<0.00200				
	4-Isopropyltoluene		<0.00200	<0.00200				
	4-Methyl-2-pentanone		<0.0100	<0.0100	33,000	3,300		
	Acetone		<0.0200	<0.0200	61,000	6,100	32	
	Bromobenzene		<0.00200	<0.00200	290	29	3	
	Bromochloromethane		<0.00200	<0.00200	150	15		
	Bromodichloromethane		<0.00200	<0.00200	0.290	0.290	0.007	
	Bromoform		<0.00200	<0.00200	19	19	0.048	
	Bromomethane		<0.00200	<0.00200	6.8	0.680	0.16	
	Carbon disulfide		<0.00500	<0.00500	770	77	1,000	
	Carbon tetrachloride		<0.00200	<0.00200	0.650	0.650	1.704	
	Chlorobenzene		<0.00200	<0.00200	280	28	5.3	
	Chloroethane		<0.00500	<0.00500	14,000	1,400		
	Chloroform		<0.00200	<0.00200	0.320	0.320	0.085	
	Chloromethane		<0.00200	<0.00200	110	11		
	cis-1,2-Dichloroethene		<0.00200	<0.00200	160	16	0.261	
	cis-1,3-Dichloropropene		<0.00200	<0.00200				
	Dibromochloromethane		<0.00200	<0.00200	8.3	8.3	0.11	
	Dibromomethane		<0.00200	<0.00200	24	2.4		
	Hexachlorobutadiene		<0.00500	<0.00500	1.2	1.2	0.17	
	Iodomethane		< 0.0150	< 0.0150				
	Isopropylbenzene		<0.00200	<0.00200				
	Methyl tert-Butyl Ether		<0.00200	<0.00200	47	47		
	Methylene Chloride		<0.0200	<0.0200	57	35	0.06	
	Naphthalene		<0.0100	<0.0100	3.8	3.8	23	
	n-Butylbenzene		<0.00200	<0.00200	3,900	390		
	n-Propylbenzene		<0.00200	<0.00200			77	
	sec-Butylbenzene		<0.00200	<0.00200	7,800	780		
	Styrene		<0.00200	<0.00200	6,000	600	14	
	tert-Butylbenzene		<0.00200	<0.00200	7,800	780		
	Tetrachloroethene		<0.00200	<0.00200	24	8.1	1.9	
	trans-1,2-Dichloroethene		<0.00200	<0.00200	1,600	160	5.4	
	trans-1,3-Dichloropropene		<0.00200	<0.00200				
	Trichloroethene		<0.00200	<0.00200	0.940	0.410	0.68	
	Trichlorofluoromethane		<0.00300	<0.00300	23,000	2,300	1,000	
	Vinyl chloride		<0.00200	<0.00200	0.0590	0.0590	0.11	
PCBs	Aroclor-1016		<0.0365	<0.0354	4.1	0.41	1,000	
	Aroclor-1221		<0.0365	<0.0354	0.20	0.20		
	Aroclor-1232		<0.0365	<0.0354	0.17	0.17		
	Aroclor-1242		<0.0365	<0.0354	0.23	0.23		
	Aroclor-1248		<0.0365	<0.0354	0.23	0.23		
	Aroclor-1254		<0.0365	<0.0354	0.24	0.12	1,000	
	Aroclor-1260		<0.0365	<0.0354	0.24	0.24	1,000	

Table 4  
Hydraulic Oil Release Soil Sample Results Summary Table  
Aggregate Recycle Facility (ARF)  
Kerr-McGee Oil & Gas Onshore LP

Notes:

USEPA	United States Environmental Protection Agency
CDPHE	Colorado Department of Public Health and Environment
COGCC	Colorado Oil and Gas Conservation Comission
RSL	Regional Screening Level
THQ	Target Hazard Quotient
GPV	Groundwater Protection Value
PAHs	Polynuclear Aromatic Hydrocarbons, analyzed by USEPA Method 8270D SIM
TPH	Total Petroleum Hydrocarbons , analyzed by USEPA Method 9071
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes, analyzed by USEPA Method 8260C
VOCs	Volatile Organic Compounds, analyzed by USEPA Method 8260C
PCBs	Polychlorinated Biphenyls, analyzed by USEPA Method 8082A
mg/kg	Milligrams per kilogram
<	Result is below the indicated laboratroy reporting limit
-	Constituent not analyzed
<b>Bold</b>	Result is greater than CDPHE/USEPA Limit and/or COGCC Guidance

**ATTACHMENT A**  
**LABORATORY ANALYTICAL REPORTS**





January 28, 2020

Tasman Geosciences

Bob Cornez

6855 West 119th Avenue

Broomfield CO 80020

**Project Name - KMG - Aggregate Recycling  
Facility**

**Project Number - [none]**

Attached are your analytical results for KMG - Aggregate Recycling Facility received by Origins Laboratory, Inc. January 24, 2020. This project is associated with Origins project number Y001331-01.

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  
6855 West 119th Avenue  
Broomfield CO 80020

Bob Cornez  
Project Number: [none]  
Project: KMG - Aggregate Recycling Facility

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01 - 012320	Y001331-01	Water	January 23, 2020 14:38	01/24/2020 17:25
MW02 - 012320	Y001331-02	Water	January 23, 2020 14:42	01/24/2020 17:25
MW03 - 012320	Y001331-03	Water	January 23, 2020 14:14	01/24/2020 17:25

Origins Laboratory, Inc.



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

Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Bob Cornez  
Project Number: [none]  
Project: KMG - Aggregate Recycling Facility

www.originslaboratory.com

page 1 of 1

**ORIGINS**  
LABORATORY, INC

1001331

Client: Oxy  
Address:   
Telephone Number:   
Email Address: Bob.Cornez@tasman-geos.com

Project Manager: Robert Cornez  
Project Name: Aggregate Recycling Facility  
Project Number: 13103361  
Samples Collected By: BL

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 #		
MW1 - 01/23/2020	01/23/2020	1438	3	X				X			BTEX	1
MW2 - 01/23/2020	01/23/2020	1442	1									2
MW3 - 01/23/2020	01/23/2020	1444	1									3
												4
												5
												6
												7
												8
												9
												10

Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:
<u>BL</u>	01/23/2020	1725	<u>[Signature]</u>	01/23/2020	1725	Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input checked="" type="checkbox"/>

Date Results Needed

23

Origins Laboratory, Inc.

*Jefe Pellegrini*

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

Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Bob Cornez  
Project Number: [none]  
Project: KMG - Aggregate Recycling Facility

Origins Laboratory

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

## Sample Receipt Checklist

Origins Work Order: Y001331

Client: Tasman

Client Project ID: Aggregate Recycling

Checklist Completed by: JG

Shipped Via: HD

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

Date/time completed: 1/24/2020

Airbill #: N/A

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

Cooler Number/Temperature: 1/23 °C / °C / °C / °C

Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 5°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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) CP

Date/Time Reviewed 1/27/20

Origins Laboratory, Inc.

*Jefe Pellegrini*

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



Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Bob Cornez  
Project Number: [none]  
Project: KMG - Aggregate Recycling Facility

MW01 - 012320  
1/23/2020 2:38:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	---------	----------	----------	-------

**Origins Laboratory, Inc.**  
**Y001331-01 (Water)**

**BTEX by EPA 8260D**

Benzene	ND	1.00	ug/L	1	B0A2407	KDK	01/24/2020	01/28/2020	U
Toluene	ND	1.00	"	"	"	KDK	"	"	U
Ethylbenzene	ND	1.00	"	"	"	KDK	"	"	U
Xylenes, total	ND	1.00	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	108 %	70-130	"	"	"
Surrogate: Toluene-d8	96.9 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	97.1 %	70-130	"	"	"

Origins Laboratory, Inc.



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

Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Bob Cornez  
Project Number: [none]  
Project: KMG - Aggregate Recycling Facility

MW02 - 012320

1/23/2020 2:42:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	---------	----------	----------	-------

**Origins Laboratory, Inc.**  
**Y001331-02 (Water)**

**BTEX by EPA 8260D**

Benzene	ND	1.00	ug/L	1	B0A2407	KDK	01/24/2020	01/28/2020	U
Toluene	ND	1.00	"	"	"	KDK	"	"	U
Ethylbenzene	ND	1.00	"	"	"	KDK	"	"	U
Xylenes, total	ND	1.00	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	109 %	70-130	"	"	"
Surrogate: Toluene-d8	96.4 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	96.0 %	70-130	"	"	"

Origins Laboratory, Inc.



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

Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Bob Cornez  
Project Number: [none]  
Project: KMG - Aggregate Recycling Facility

**MW03 - 012320**

**1/23/2020 2:14:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	---------	----------	----------	-------

**Origins Laboratory, Inc.**  
**Y001331-03 (Water)**

**BTEX by EPA 8260D**

Benzene	ND	1.00	ug/L	1	B0A2407	KDK	01/24/2020	01/28/2020	U
Toluene	ND	1.00	"	"	"	KDK	"	"	U
Ethylbenzene	ND	1.00	"	"	"	KDK	"	"	U
Xylenes, total	ND	1.00	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	107 %	70-130	"	"	"
Surrogate: Toluene-d8	97.0 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	96.3 %	70-130	"	"	"

Origins Laboratory, Inc.



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

Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Bob Cornez  
Project Number: [none]  
Project: KMG - Aggregate Recycling Facility

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

**Batch B0A2407 - EPA 5030B (Water)**

**Blank (B0A2407-BLK1)**

Prepared: 01/24/2020 Analyzed: 01/27/2020

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	67		"	62.5	107		70-130			
Surrogate: Toluene-d8	61		"	62.5	97.4		70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5	96.1		70-130			

Origins Laboratory, Inc.



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



Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Bob Cornez  
Project Number: [none]  
Project: KMG - Aggregate Recycling Facility

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B0A2407 - EPA 5030B (Water)

**LCS (B0A2407-BS1)**

Prepared: 01/24/2020 Analyzed: 01/27/2020

Benzene	49.5	1.00	ug/L	50.0		99.1	70-130			
Toluene	50.3	1.00	"	50.0		101	70-130			
Ethylbenzene	49.7	1.00	"	50.0		99.4	70-130			
m,p-Xylene	101	2.00	"	100		101	70-130			
o-Xylene	49.8	1.00	"	50.0		99.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		98.6	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.8	70-130			
Surrogate: 4-Bromofluorobenzene	58		"	62.5		93.5	70-130			

Origins Laboratory, Inc.



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

Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Bob Cornez  
Project Number: [none]  
Project: KMG - Aggregate Recycling Facility

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B0A2407 - EPA 5030B (Water)

Matrix Spike (B0A2407-MS1)		Source: Y001329-01			Prepared: 01/24/2020 Analyzed: 01/27/2020					
Benzene	52.3	1.00	ug/L	50.0	ND	105	70-130			
Toluene	53.0	1.00	"	50.0	ND	106	70-130			
Ethylbenzene	53.3	1.00	"	50.0	0.110	106	70-130			
m,p-Xylene	108	2.00	"	100	0.230	108	70-130			
o-Xylene	52.8	1.00	"	50.0	ND	106	70-130			
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		99.6	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.3	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		95.8	70-130			

Origins Laboratory, Inc.



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

Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Bob Cornez  
Project Number: [none]  
Project: KMG - Aggregate Recycling Facility

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

**Batch B0A2407 - EPA 5030B (Water)**

Matrix Spike Dup (B0A2407-MSD1)		Source: Y001329-01			Prepared: 01/24/2020 Analyzed: 01/27/2020					
Benzene	52.4	1.00	ug/L	50.0	ND	105	70-130	0.153	20	
Toluene	53.1	1.00	"	50.0	ND	106	70-130	0.302	20	
Ethylbenzene	52.9	1.00	"	50.0	0.110	106	70-130	0.866	20	
m,p-Xylene	107	2.00	"	100	0.230	107	70-130	0.677	20	
o-Xylene	52.6	1.00	"	50.0	ND	105	70-130	0.342	20	
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5		102	70-130			
Surrogate: Toluene-d8	61		"	62.5		96.9	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		95.2	70-130			

Origins Laboratory, Inc.



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

Tasman Geosciences  
6855 West 119th Avenue  
Broomfield CO 80020

Bob Cornez  
Project Number: [none]  
Project: KMG - Aggregate Recycling Facility

---

### Notes and Definitions

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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

---

Jen Pellegrini For Noelle Doyle Mathis, President



March 05, 2019

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver

CO 80211

**Project Name - KMG - ARF Hydraulic Fluid  
Release****Project Number - [none]**

Attached are your analytical results for KMG - ARF Hydraulic Fluid Release received by Origins Laboratory, Inc. February 20, 2019. This project is associated with Origins project number Y902266-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Bob Cornez

Project Number: [none]

Project: KMG - ARF Hydraulic Fluid Release

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@0-3"	Y902266-01	Soil	February 20, 2019 11:10	02/20/2019 15:51
SS02@0-3"	Y902266-02	Soil	February 20, 2019 11:20	02/20/2019 15:51

PAH taken off hold for sample SS01 @0-3" per the email from Mike on 02/25/2019.

Origins Laboratory, Inc.



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

Jen Pellegrini For Noelle Doyle Mathis, President

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

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page 1 of 1

# ORIGINS

Client: TASMAN GEOSCIENCES  
Address: 6899 Pecos St  
Denver, CO 80221  
Telephone Number: \_\_\_\_\_

Project Manager/Send Report To: Robert CorneZ  
Email Address: SCORNEZ@TASMAN-geo.com  
Project Name/Number: ARF Hydraulic Fluid release  
Samples Collected By: M Randy

Telephone Number: \_\_\_\_\_

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative					Matrix		Analysis/Method					Sample Instructions
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summa #	Other	Halocarbon Volatiles	STEX	D.I. + Grass	PCBs	
S501 @ 0-3"	02/20/14	11:10	3	X					X		X	X	X	X	Run PAHs on 1	
S502 @ 0-3"	11:20	11:20	3	X					X		X	X	X	X	the Sample Having 2 the Highest Oil + 3 Grease value 4	
															5	
															6	
															7	
															8	
															9	
															10	
Reinquished By: 	Date: 02/20/14	Time: 1551	Received By: 	Date: 2/20/19	Time: 1551	Turnaround Time: Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input checked="" type="checkbox"/> Standard <input type="checkbox"/>										
Reinquished By: 	Date: 02/20/14	Time: 1551	Received By: 	Date: 2/20/19	Time: 1551	Turnaround Time: Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input checked="" type="checkbox"/> Standard <input type="checkbox"/>										

Date Results Needed:

2.4

Comments:

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

Origins Laboratory, Inc.

Jose Pellegrini

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

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

Origins Laboratory

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

## Sample Receipt Checklist

Origins Work Order: Y902266

Client: Tasman

Client Project ID: KMG - ARF Hydraulic Fluid Release

Checklist Completed by: JG

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

Date/time completed: 2/20/2019

Airbill #: N/A

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

Cooler Number/Temperature: 1 / 2.4 °C \_\_\_\_\_ / \_\_\_\_\_ °C \_\_\_\_\_ / \_\_\_\_\_ °C \_\_\_\_\_ / \_\_\_\_\_ °C

Thermometer ID: T003

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

Date/Time Reviewed 2/21/19

Origins Laboratory, Inc.

*Jefe Pellegrini*

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

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

SS01@0-3"

2/20/2019 11:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**GEL Laboratories, LLC**  
**Y902266-01 (Soil)**

**PAH by 8270D SIM**

1-Methylnaphthalene	0.0349	0.0498	mg/kg dry	10	1852664	JLD1	02/27/2019	02/27/2019	J
2-Methylnaphthalene	0.0598	0.0498	"	"	"	JLD1	"	"	
Acenaphthene	ND	0.0498	"	"	"	JLD1	"	"	U
Acenaphthylene	ND	0.0498	"	"	"	JLD1	"	"	U
Anthracene	ND	0.0498	"	"	"	JLD1	"	"	U
Benzo(a)anthracene	0.0498	0.0498	"	"	"	JLD1	"	"	
Benzo(a)pyrene	ND	0.0498	"	"	"	JLD1	"	"	U
Benzo(b)fluoranthene	ND	0.0498	"	"	"	JLD1	"	"	U
Benzo(ghi)perylene	ND	0.0498	"	"	"	JLD1	"	"	U
Benzo(k)fluoranthene	ND	0.0498	"	"	"	JLD1	"	"	U
Chrysene	ND	0.0498	"	"	"	JLD1	"	"	U
Dibenzo(a,h)anthracene	ND	0.0498	"	"	"	JLD1	"	"	U
Fluoranthene	ND	0.0498	"	"	"	JLD1	"	"	U
Fluorene	ND	0.0498	"	"	"	JLD1	"	"	U
Indeno(1,2,3-cd)pyrene	ND	0.0498	"	"	"	JLD1	"	"	U
Naphthalene	ND	0.0498	"	"	"	JLD1	"	"	U
Phenanthrene	0.0349	0.0498	"	"	"	JLD1	"	"	J
Pyrene	0.0947	0.0498	"	"	"	JLD1	"	"	

Surrogate: 5-alpha-Androstane 73 % 25-121 " " "

Origins Laboratory, Inc.



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6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

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2/20/2019 11:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**GEL Laboratories, LLC**  
**Y902266-01 (Soil)**

**PCB by 8082A**

Aroclor-1016	ND	0.0365	mg/kg dry	10	1851422	JXM	02/22/2019	02/25/2019	U
Aroclor-1221	ND	0.0365	"	"	"	JXM	"	"	U
Aroclor-1232	ND	0.0365	"	"	"	JXM	"	"	U
Aroclor-1242	ND	0.0365	"	"	"	JXM	"	"	U
Aroclor-1248	ND	0.0365	"	"	"	JXM	"	"	U
Aroclor-1254	ND	0.0365	"	"	"	JXM	"	"	U
Aroclor-1260	ND	0.0365	"	"	"	JXM	"	"	U
Aroclor-Total	ND	0.0365	"	"	"	JXM	"	"	U

Surrogate: 4cmx	45 %	27-116	"	"	"
Surrogate: Decachlorobiphenyl	75 %	28-134	"	"	"

**VOC by EPA 8260C**

1,1,1,2-Tetrachloroethane	ND	0.00200	mg/kg	1	B9B2101	KDK	02/21/2019	02/22/2019	Ua
1,1,1-Trichloroethane	ND	0.00200	"	"	"	KDK	"	"	Ua
1,1,2,2-Tetrachloroethane	ND	0.00200	"	"	"	KDK	"	"	Ua
1,1,2-Trichloroethane	ND	0.00200	"	"	"	KDK	"	"	Ua
1,1-Dichloroethane	ND	0.00200	"	"	"	KDK	"	"	Ua
1,1-Dichloroethene	ND	0.00200	"	"	"	KDK	"	"	Ua
1,1-Dichloropropene	ND	0.00200	"	"	"	KDK	"	"	Ua

Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

SS01@0-3"

2/20/2019 11:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y902266-01 (Soil)**

**VOC by EPA 8260C**

1,2,3-Trichlorobenzene	ND	0.00500	mg/kg	1	B9B2101	KDK	02/21/2019	02/22/2019	Ua
1,2,3-Trichloropropane	ND	0.00500	"	"	"	KDK	"	"	Ua
1,2,4-Trichlorobenzene	ND	0.00500	"	"	"	KDK	"	"	Ua
1,2,4-Trimethylbenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
1,2-Dibromo-3-chloropropane	ND	0.00500	"	"	"	KDK	"	"	Ua
1,2-Dibromoethane (EDB)	ND	0.00200	"	"	"	KDK	"	"	Ua
1,2-Dichlorobenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
1,2-Dichloroethane	ND	0.00200	"	"	"	KDK	"	"	Ua
1,2-Dichloropropane	ND	0.00200	"	"	"	KDK	"	"	Ua
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
1,3-Dichlorobenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
1,3-Dichloropropane	ND	0.00200	"	"	"	KDK	"	"	Ua
1,4-Dichlorobenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
2,2-Dichloropropane	ND	0.00200	"	"	"	KDK	"	"	Ua
2-Butanone	ND	0.0100	"	"	"	KDK	"	"	Ua
2-Chlorotoluene	ND	0.00200	"	"	"	KDK	"	"	Ua
2-Hexanone	ND	0.0100	"	"	"	KDK	"	"	Ua
4-Chlorotoluene	ND	0.00200	"	"	"	KDK	"	"	Ua
4-Isopropyltoluene	ND	0.00200	"	"	"	KDK	"	"	Ua

Origins Laboratory, Inc.



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Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

SS01@0-3"

2/20/2019 11:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y902266-01 (Soil)**

**VOC by EPA 8260C**

4-Methyl-2-pentanone	ND	0.0100	mg/kg	1	B9B2101	KDK	02/21/2019	02/22/2019	Ua
Acetone	ND	0.0200	"	"	"	KDK	"	"	Ua
Benzene	ND	0.00200	"	"	"	KDK	"	"	Ua
Bromobenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
Bromochloromethane	ND	0.00200	"	"	"	KDK	"	"	Ua
Bromodichloromethane	ND	0.00200	"	"	"	KDK	"	"	Ua
Bromoform	ND	0.00200	"	"	"	KDK	"	"	Ua
Bromomethane	ND	0.00200	"	"	"	KDK	"	"	Ua
Carbon disulfide	ND	0.00500	"	"	"	KDK	"	"	Ua
Carbon tetrachloride	ND	0.00200	"	"	"	KDK	"	"	Ua
Chlorobenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
Chloroethane	ND	0.00500	"	"	"	KDK	"	"	Ua
Chloroform	ND	0.00200	"	"	"	KDK	"	"	Ua
Chloromethane	ND	0.00200	"	"	"	KDK	"	"	Ua
cis-1,2-Dichloroethene	ND	0.00200	"	"	"	KDK	"	"	Ua
cis-1,3-Dichloropropene	ND	0.00200	"	"	"	KDK	"	"	Ua
Dibromochloromethane	ND	0.00200	"	"	"	KDK	"	"	Ua
Dibromomethane	ND	0.00200	"	"	"	KDK	"	"	Ua
Ethylbenzene	ND	0.00200	"	"	"	KDK	"	"	Ua

Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

SS01@0-3"

2/20/2019 11:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y902266-01 (Soil)**

**VOC by EPA 8260C**

Hexachlorobutadiene	ND	0.00500	mg/kg	1	B9B2101	KDK	02/21/2019	02/22/2019	Ua
Iodomethane	ND	0.0150	"	"	"	KDK	"	"	Ua
Isopropylbenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
m,p-Xylene	ND	0.00400	"	"	"	KDK	"	"	Ua
Methyl tert-Butyl Ether	ND	0.00200	"	"	"	KDK	"	"	Ua
Methylene Chloride	ND	0.0200	"	"	"	KDK	"	"	Ua
Naphthalene	ND	0.0100	"	"	"	KDK	"	"	Ua
n-Butylbenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
n-Propylbenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
o-Xylene	ND	0.00200	"	"	"	KDK	"	"	Ua
sec-Butylbenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
Styrene	ND	0.00200	"	"	"	KDK	"	"	Ua
tert-Butylbenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
Tetrachloroethene	ND	0.00200	"	"	"	KDK	"	"	Ua
Toluene	0.0134	0.00200	"	"	"	KDK	"	"	
trans-1,2-Dichloroethene	ND	0.00200	"	"	"	KDK	"	"	Ua
trans-1,3-Dichloropropene	ND	0.00200	"	"	"	KDK	"	"	Ua
Trichloroethene	ND	0.00200	"	"	"	KDK	"	"	Ua
Trichlorofluoromethane	ND	0.00300	"	"	"	KDK	"	"	Ua

Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

SS01@0-3"

2/20/2019 11:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
Y902266-01 (Soil)

**VOC by EPA 8260C**

Vinyl chloride	ND	0.00200	mg/kg	1	B9B2101	KDK	02/21/2019	02/22/2019	Ua
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Surrogate: 1,2-Dichloroethane-d4

105 % 70-130

"

"

"

Surrogate: Toluene-d8

100 % 70-130

"

"

"

Surrogate: 4-Bromofluorobenzene

102 % 70-130

"

"

"

Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

SS02@0-3"

2/20/2019 11:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**GEL Laboratories, LLC**  
**Y902266-02 (Soil)**

**PCB by 8082A**

Aroclor-1016	ND	0.0354	mg/kg dry	10	1851422	JXM	02/22/2019	02/25/2019	U
Aroclor-1221	ND	0.0354	"	"	"	JXM	"	"	U
Aroclor-1232	ND	0.0354	"	"	"	JXM	"	"	U
Aroclor-1242	ND	0.0354	"	"	"	JXM	"	"	U
Aroclor-1248	ND	0.0354	"	"	"	JXM	"	"	U
Aroclor-1254	ND	0.0354	"	"	"	JXM	"	"	U
Aroclor-1260	ND	0.0354	"	"	"	JXM	"	"	U
Aroclor-Total	ND	0.0354	"	"	"	JXM	"	"	U

Surrogate: 4cmx

75 %

27-116

"

"

"

Surrogate: Decachlorobiphenyl

65 %

28-134

"

"

"

**VOC by EPA 8260C**

1,1,1,2-Tetrachloroethane	ND	0.00200	mg/kg	1	B9B2101	KDK	02/21/2019	02/22/2019	Ua
1,1,1-Trichloroethane	ND	0.00200	"	"	"	KDK	"	"	Ua
1,1,2,2-Tetrachloroethane	ND	0.00200	"	"	"	KDK	"	"	Ua
1,1,2-Trichloroethane	ND	0.00200	"	"	"	KDK	"	"	Ua
1,1-Dichloroethane	ND	0.00200	"	"	"	KDK	"	"	Ua
1,1-Dichloroethene	ND	0.00200	"	"	"	KDK	"	"	Ua
1,1-Dichloropropene	ND	0.00200	"	"	"	KDK	"	"	Ua

Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

SS02@0-3"

2/20/2019 11:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y902266-02 (Soil)**

**VOC by EPA 8260C**

1,2,3-Trichlorobenzene	ND	0.00500	mg/kg	1	B9B2101	KDK	02/21/2019	02/22/2019	Ua
1,2,3-Trichloropropane	ND	0.00500	"	"	"	KDK	"	"	Ua
1,2,4-Trichlorobenzene	ND	0.00500	"	"	"	KDK	"	"	Ua
1,2,4-Trimethylbenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
1,2-Dibromo-3-chloropropane	ND	0.00500	"	"	"	KDK	"	"	Ua
1,2-Dibromoethane (EDB)	ND	0.00200	"	"	"	KDK	"	"	Ua
1,2-Dichlorobenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
1,2-Dichloroethane	ND	0.00200	"	"	"	KDK	"	"	Ua
1,2-Dichloropropane	ND	0.00200	"	"	"	KDK	"	"	Ua
1,3,5-Trimethylbenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
1,3-Dichlorobenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
1,3-Dichloropropane	ND	0.00200	"	"	"	KDK	"	"	Ua
1,4-Dichlorobenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
2,2-Dichloropropane	ND	0.00200	"	"	"	KDK	"	"	Ua
2-Butanone	ND	0.0100	"	"	"	KDK	"	"	Ua
2-Chlorotoluene	ND	0.00200	"	"	"	KDK	"	"	Ua
2-Hexanone	ND	0.0100	"	"	"	KDK	"	"	Ua
4-Chlorotoluene	ND	0.00200	"	"	"	KDK	"	"	Ua
4-Isopropyltoluene	ND	0.00200	"	"	"	KDK	"	"	Ua

Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

SS02@0-3"

2/20/2019 11:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y902266-02 (Soil)**

**VOC by EPA 8260C**

4-Methyl-2-pentanone	ND	0.0100	mg/kg	1	B9B2101	KDK	02/21/2019	02/22/2019	Ua
Acetone	ND	0.0200	"	"	"	KDK	"	"	Ua
Benzene	ND	0.00200	"	"	"	KDK	"	"	Ua
Bromobenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
Bromochloromethane	ND	0.00200	"	"	"	KDK	"	"	Ua
Bromodichloromethane	ND	0.00200	"	"	"	KDK	"	"	Ua
Bromoform	ND	0.00200	"	"	"	KDK	"	"	Ua
Bromomethane	ND	0.00200	"	"	"	KDK	"	"	Ua
Carbon disulfide	ND	0.00500	"	"	"	KDK	"	"	Ua
Carbon tetrachloride	ND	0.00200	"	"	"	KDK	"	"	Ua
Chlorobenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
Chloroethane	ND	0.00500	"	"	"	KDK	"	"	Ua
Chloroform	ND	0.00200	"	"	"	KDK	"	"	Ua
Chloromethane	ND	0.00200	"	"	"	KDK	"	"	Ua
cis-1,2-Dichloroethene	ND	0.00200	"	"	"	KDK	"	"	Ua
cis-1,3-Dichloropropene	ND	0.00200	"	"	"	KDK	"	"	Ua
Dibromochloromethane	ND	0.00200	"	"	"	KDK	"	"	Ua
Dibromomethane	ND	0.00200	"	"	"	KDK	"	"	Ua
Ethylbenzene	ND	0.00200	"	"	"	KDK	"	"	Ua

Origins Laboratory, Inc.



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Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

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2/20/2019 11:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y902266-02 (Soil)**

**VOC by EPA 8260C**

Hexachlorobutadiene	ND	0.00500	mg/kg	1	B9B2101	KDK	02/21/2019	02/22/2019	Ua
Iodomethane	ND	0.0150	"	"	"	KDK	"	"	Ua
Isopropylbenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
m,p-Xylene	0.00488	0.00400	"	"	"	KDK	"	"	
Methyl tert-Butyl Ether	ND	0.00200	"	"	"	KDK	"	"	Ua
Methylene Chloride	ND	0.0200	"	"	"	KDK	"	"	Ua
Naphthalene	ND	0.0100	"	"	"	KDK	"	"	Ua
n-Butylbenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
n-Propylbenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
o-Xylene	ND	0.00200	"	"	"	KDK	"	"	Ua
sec-Butylbenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
Styrene	ND	0.00200	"	"	"	KDK	"	"	Ua
tert-Butylbenzene	ND	0.00200	"	"	"	KDK	"	"	Ua
Tetrachloroethene	ND	0.00200	"	"	"	KDK	"	"	Ua
Toluene	0.0154	0.00200	"	"	"	KDK	"	"	
trans-1,2-Dichloroethene	ND	0.00200	"	"	"	KDK	"	"	Ua
trans-1,3-Dichloropropene	ND	0.00200	"	"	"	KDK	"	"	Ua
Trichloroethene	ND	0.00200	"	"	"	KDK	"	"	Ua
Trichlorofluoromethane	ND	0.00300	"	"	"	KDK	"	"	Ua
Vinyl chloride	ND	0.00200	"	"	"	KDK	"	"	Ua

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Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Bob Cornez

Project Number: [none]

Project: KMG - ARF Hydraulic Fluid Release

SS02@0-3"

2/20/2019 11:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Y902266-02 (Soil)

## VOC by EPA 8260C

Surrogate: 1,2-Dichloroethane-d4	114 %	70-130	B9B21 01	02/21/2019	02/22/2019
Surrogate: Toluene-d8	100 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	104 %	70-130	"	"	"

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Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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 B9B2101 - EPA 5030 (soil)**

**Blank (B9B2101-BLK1)**

Prepared: 02/21/2019 Analyzed: 02/21/2019

1,1,1,2-Tetrachloroethane	ND	0.00200	mg/kg							Ua
1,1,1-Trichloroethane	ND	0.00200	"							Ua
1,1,2,2-Tetrachloroethane	ND	0.00200	"							Ua
1,1,2-Trichloroethane	ND	0.00200	"							Ua
1,1-Dichloroethane	ND	0.00200	"							Ua
1,1-Dichloroethene	ND	0.00200	"							Ua
1,1-Dichloropropene	ND	0.00200	"							Ua
1,2,3-Trichlorobenzene	ND	0.00500	"							Ua
1,2,3-Trichloropropane	ND	0.00500	"							Ua
1,2,4-Trichlorobenzene	ND	0.00500	"							Ua
1,2,4-Trimethylbenzene	ND	0.00200	"							Ua
1,2-Dibromo-3-chloropropane	ND	0.00500	"							Ua
1,2-Dibromoethane (EDB)	ND	0.00200	"							Ua
1,2-Dichlorobenzene	ND	0.00200	"							Ua
1,2-Dichloroethane	ND	0.00200	"							Ua
1,2-Dichloropropane	ND	0.00200	"							Ua
1,3,5-Trimethylbenzene	ND	0.00200	"							Ua
1,3-Dichlorobenzene	ND	0.00200	"							Ua
1,3-Dichloropropane	ND	0.00200	"							Ua
1,4-Dichlorobenzene	ND	0.00200	"							Ua
2,2-Dichloropropane	ND	0.00200	"							Ua
2-Butanone	ND	0.0100	"							Ua
2-Chlorotoluene	ND	0.00200	"							Ua
2-Hexanone	ND	0.0100	"							Ua
4-Chlorotoluene	ND	0.00200	"							Ua
4-Isopropyltoluene	ND	0.00200	"							Ua

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Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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 B9B2101 - EPA 5030 (soil)**

**Blank (B9B2101-BLK1)**

Prepared: 02/21/2019 Analyzed: 02/21/2019

4-Methyl-2-pentanone	ND	0.0100	mg/kg							Ua
Acetone	ND	0.0200	"							Ua
Benzene	ND	0.00200	"							Ua
Bromobenzene	ND	0.00200	"							Ua
Bromochloromethane	ND	0.00200	"							Ua
Bromodichloromethane	ND	0.00200	"							Ua
Bromoform	ND	0.00200	"							Ua
Bromomethane	ND	0.00200	"							Ua
Carbon disulfide	ND	0.00500	"							Ua
Carbon tetrachloride	ND	0.00200	"							Ua
Chlorobenzene	ND	0.00200	"							Ua
Chloroethane	ND	0.00500	"							Ua
Chloroform	ND	0.00200	"							Ua
Chloromethane	ND	0.00200	"							Ua
cis-1,2-Dichloroethene	ND	0.00200	"							Ua
cis-1,3-Dichloropropene	ND	0.00200	"							Ua
Dibromochloromethane	ND	0.00200	"							Ua
Dibromomethane	ND	0.00200	"							Ua
Ethylbenzene	ND	0.00200	"							Ua
Hexachlorobutadiene	ND	0.00500	"							Ua
Iodomethane	ND	0.0150	"							Ua
Isopropylbenzene	ND	0.00200	"							Ua
m,p-Xylene	ND	0.00400	"							Ua
Methyl tert-Butyl Ether	ND	0.00200	"							Ua
Methylene Chloride	ND	0.0200	"							Ua
Naphthalene	ND	0.0100	"							Ua

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Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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
<b>Batch B9B2101 - EPA 5030 (soil)</b>										
<b>Blank (B9B2101-BLK1)</b>					Prepared: 02/21/2019 Analyzed: 02/21/2019					
n-Butylbenzene	ND	0.00200	mg/kg							Ua
n-Propylbenzene	ND	0.00200	"							Ua
o-Xylene	ND	0.00200	"							Ua
sec-Butylbenzene	ND	0.00200	"							Ua
Styrene	ND	0.00200	"							Ua
tert-Butylbenzene	ND	0.00200	"							Ua
Tetrachloroethene	ND	0.00200	"							Ua
Toluene	ND	0.00200	"							Ua
trans-1,2-Dichloroethene	ND	0.00200	"							Ua
trans-1,3-Dichloropropene	ND	0.00200	"							Ua
Trichloroethene	ND	0.00200	"							Ua
Trichlorofluoromethane	ND	0.00300	"							Ua
Vinyl chloride	ND	0.00200	"							Ua
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		104	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		100	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		97.6	70-130			

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6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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 B9B2101 - EPA 5030 (soil)**

**Blank (B9B2101-BLK2)**

Prepared: 02/21/2019 Analyzed: 02/21/2019

1,1,1,2-Tetrachloroethane	ND	0.00200	mg/kg							Ua
1,1,1-Trichloroethane	ND	0.00200	"							Ua
1,1,2,2-Tetrachloroethane	ND	0.00200	"							Ua
1,1,2-Trichloroethane	ND	0.00200	"							Ua
1,1-Dichloroethane	ND	0.00200	"							Ua
1,1-Dichloroethene	ND	0.00200	"							Ua
1,1-Dichloropropene	ND	0.00200	"							Ua
1,2,3-Trichlorobenzene	ND	0.00500	"							Ua
1,2,3-Trichloropropane	ND	0.00500	"							Ua
1,2,4-Trichlorobenzene	ND	0.00500	"							Ua
1,2,4-Trimethylbenzene	ND	0.00200	"							Ua
1,2-Dibromo-3-chloropropane	ND	0.00500	"							Ua
1,2-Dibromoethane (EDB)	ND	0.00200	"							Ua
1,2-Dichlorobenzene	ND	0.00200	"							Ua
1,2-Dichloroethane	ND	0.00200	"							Ua
1,2-Dichloropropane	ND	0.00200	"							Ua
1,3,5-Trimethylbenzene	ND	0.00200	"							Ua
1,3-Dichlorobenzene	ND	0.00200	"							Ua
1,3-Dichloropropane	ND	0.00200	"							Ua
1,4-Dichlorobenzene	ND	0.00200	"							Ua
2,2-Dichloropropane	ND	0.00200	"							Ua
2-Butanone	ND	0.0100	"							Ua
2-Chlorotoluene	ND	0.00200	"							Ua
2-Hexanone	ND	0.0100	"							Ua
4-Chlorotoluene	ND	0.00200	"							Ua
4-Isopropyltoluene	ND	0.00200	"							Ua

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Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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 B9B2101 - EPA 5030 (soil)**

**Blank (B9B2101-BLK2)**

Prepared: 02/21/2019 Analyzed: 02/21/2019

4-Methyl-2-pentanone	ND	0.0100	mg/kg							Ua
Acetone	ND	0.0200	"							Ua
Benzene	ND	0.00200	"							Ua
Bromobenzene	ND	0.00200	"							Ua
Bromochloromethane	ND	0.00200	"							Ua
Bromodichloromethane	ND	0.00200	"							Ua
Bromoform	ND	0.00200	"							Ua
Bromomethane	ND	0.00200	"							Ua
Carbon disulfide	ND	0.00500	"							Ua
Carbon tetrachloride	ND	0.00200	"							Ua
Chlorobenzene	ND	0.00200	"							Ua
Chloroethane	ND	0.00500	"							Ua
Chloroform	ND	0.00200	"							Ua
Chloromethane	ND	0.00200	"							Ua
cis-1,2-Dichloroethene	ND	0.00200	"							Ua
cis-1,3-Dichloropropene	ND	0.00200	"							Ua
Dibromochloromethane	ND	0.00200	"							Ua
Dibromomethane	ND	0.00200	"							Ua
Ethylbenzene	ND	0.00200	"							Ua
Hexachlorobutadiene	ND	0.00500	"							Ua
Iodomethane	ND	0.0150	"							Ua
Isopropylbenzene	ND	0.00200	"							Ua
m,p-Xylene	ND	0.00400	"							Ua
Methyl tert-Butyl Ether	ND	0.00200	"							Ua
Methylene Chloride	ND	0.0200	"							Ua
Naphthalene	ND	0.0100	"							Ua

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Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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
<b>Batch B9B2101 - EPA 5030 (soil)</b>										
<b>Blank (B9B2101-BLK2)</b>					Prepared: 02/21/2019 Analyzed: 02/21/2019					
n-Butylbenzene	ND	0.00200	mg/kg							Ua
n-Propylbenzene	ND	0.00200	"							Ua
o-Xylene	ND	0.00200	"							Ua
sec-Butylbenzene	ND	0.00200	"							Ua
Styrene	ND	0.00200	"							Ua
tert-Butylbenzene	ND	0.00200	"							Ua
Tetrachloroethene	ND	0.00200	"							Ua
Toluene	ND	0.00200	"							Ua
trans-1,2-Dichloroethene	ND	0.00200	"							Ua
trans-1,3-Dichloropropene	ND	0.00200	"							Ua
Trichloroethene	ND	0.00200	"							Ua
Trichlorofluoromethane	ND	0.00300	"							Ua
Vinyl chloride	ND	0.00200	"							Ua
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		107	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		100	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		99.9	70-130			

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Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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 B9B2101 - EPA 5030 (soil)**

**LCS (B9B2101-BS1)**

Prepared: 02/21/2019 Analyzed: 02/21/2019

1,1,1,2-Tetrachloroethane	0.0833	0.00200	mg/kg	0.100		83.3	70-130			
1,1,1-Trichloroethane	0.0906	0.00200	"	0.100		90.6	70-130			
1,1,2,2-Tetrachloroethane	0.0896	0.00200	"	0.100		89.6	70-130			
1,1,2-Trichloroethane	0.0869	0.00200	"	0.100		86.9	70-130			
1,1-Dichloroethane	0.0912	0.00200	"	0.100		91.2	70-130			
1,1-Dichloroethene	0.0804	0.00200	"	0.100		80.4	70-130			
1,1-Dichloropropene	0.0849	0.00200	"	0.100		84.9	70-130			
1,2,3-Trichlorobenzene	0.0970	0.00500	"	0.100		97.0	70-130			
1,2,3-Trichloropropane	0.0852	0.00500	"	0.100		85.2	70-130			
1,2,4-Trichlorobenzene	0.0907	0.00500	"	0.100		90.7	70-130			
1,2,4-Trimethylbenzene	0.0915	0.00200	"	0.100		91.5	70-130			
1,2-Dibromo-3-chloropropane	0.0765	0.00500	"	0.100		76.5	70-130			
1,2-Dibromoethane (EDB)	0.0866	0.00200	"	0.100		86.6	70-130			
1,2-Dichlorobenzene	0.0882	0.00200	"	0.100		88.2	70-130			
1,2-Dichloroethane	0.0876	0.00200	"	0.100		87.6	70-130			
1,2-Dichloropropane	0.0858	0.00200	"	0.100		85.8	70-130			
1,3,5-Trimethylbenzene	0.0921	0.00200	"	0.100		92.1	70-130			
1,3-Dichlorobenzene	0.0946	0.00200	"	0.100		94.6	70-130			
1,3-Dichloropropane	0.0845	0.00200	"	0.100		84.5	70-130			
1,4-Dichlorobenzene	0.0878	0.00200	"	0.100		87.8	70-130			
2,2-Dichloropropane	0.0895	0.00200	"	0.100		89.5	70-130			
2-Butanone	0.417	0.0100	"	0.500		83.4	70-130			
2-Chlorotoluene	0.0882	0.00200	"	0.100		88.2	70-130			
2-Hexanone	0.413	0.0100	"	0.500		82.7	70-130			
4-Chlorotoluene	0.0895	0.00200	"	0.100		89.5	70-130			
4-Isopropyltoluene	0.0829	0.00200	"	0.100		82.9	70-130			

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Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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 B9B2101 - EPA 5030 (soil)**

**LCS (B9B2101-BS1)**

Prepared: 02/21/2019 Analyzed: 02/21/2019

4-Methyl-2-pentanone	0.426	0.0100	mg/kg	0.500		85.1	70-130			
Acetone	0.407	0.0200	"	0.500		81.5	70-130			
Benzene	0.0887	0.00200	"	0.100		88.7	70-130			
Bromobenzene	0.0859	0.00200	"	0.100		85.9	70-130			
Bromochloromethane	0.0882	0.00200	"	0.100		88.2	70-130			
Bromodichloromethane	0.0856	0.00200	"	0.100		85.6	70-130			
Bromoform	0.0809	0.00200	"	0.100		80.9	70-130			
Bromomethane	0.0918	0.00200	"	0.100		91.8	70-130			
Carbon disulfide	0.107	0.00500	"	0.100		107	70-130			
Carbon tetrachloride	0.0912	0.00200	"	0.100		91.2	70-130			
Chlorobenzene	0.0873	0.00200	"	0.100		87.3	70-130			
Chloroethane	0.0955	0.00500	"	0.100		95.5	70-130			
Chloroform	0.0882	0.00200	"	0.100		88.2	70-130			
Chloromethane	0.100	0.00200	"	0.100		100	70-130			
cis-1,2-Dichloroethene	0.0911	0.00200	"	0.100		91.1	70-130			
cis-1,3-Dichloropropene	0.0855	0.00200	"	0.100		85.5	70-130			
Dibromochloromethane	0.0829	0.00200	"	0.100		82.9	70-130			
Dibromomethane	0.0845	0.00200	"	0.100		84.5	70-130			
Ethylbenzene	0.0805	0.00200	"	0.100		80.5	70-130			
Hexachlorobutadiene	0.104	0.00500	"	0.100		104	70-130			
Iodomethane	0.117	0.0150	"	0.100		117	70-130			
Isopropylbenzene	0.0831	0.00200	"	0.100		83.1	70-130			
m,p-Xylene	0.198	0.00400	"	0.200		98.8	70-130			
Methyl tert-Butyl Ether	0.0907	0.00200	"	0.100		90.7	70-130			
Methylene Chloride	0.0904	0.0200	"	0.100		90.4	70-130			
Naphthalene	0.0968	0.0100	"	0.100		96.8	70-130			

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Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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 B9B2101 - EPA 5030 (soil)**

**LCS (B9B2101-BS1)**

Prepared: 02/21/2019 Analyzed: 02/21/2019

n-Butylbenzene	0.0813	0.00200	mg/kg	0.100		81.3	70-130			
n-Propylbenzene	0.103	0.00200	"	0.100		103	70-130			
o-Xylene	0.0890	0.00200	"	0.100		89.0	70-130			
sec-Butylbenzene	0.101	0.00200	"	0.100		101	70-130			
Styrene	0.0903	0.00200	"	0.100		90.3	70-130			
tert-Butylbenzene	0.0918	0.00200	"	0.100		91.8	70-130			
Tetrachloroethene	0.0916	0.00200	"	0.100		91.6	70-130			
Toluene	0.0866	0.00200	"	0.100		86.6	70-130			
trans-1,2-Dichloroethene	0.0864	0.00200	"	0.100		86.4	70-130			
trans-1,3-Dichloropropene	0.0840	0.00200	"	0.100		84.0	70-130			
Trichloroethene	0.0869	0.00200	"	0.100		86.9	70-130			
Trichlorofluoromethane	0.0914	0.00300	"	0.100		91.4	70-130			
Vinyl chloride	0.101	0.00200	"	0.100		101	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		100	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		99.6	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		103	70-130			

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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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 B9B2101 - EPA 5030 (soil)**

**LCS (B9B2101-BS2)**

Prepared: 02/21/2019 Analyzed: 02/21/2019

1,1,1,2-Tetrachloroethane	0.0962	0.00200	mg/kg	0.100		96.2	70-130			
1,1,1-Trichloroethane	0.106	0.00200	"	0.100		106	70-130			
1,1,2,2-Tetrachloroethane	0.101	0.00200	"	0.100		101	70-130			
1,1,2-Trichloroethane	0.107	0.00200	"	0.100		107	70-130			
1,1-Dichloroethane	0.104	0.00200	"	0.100		104	70-130			
1,1-Dichloroethene	0.0899	0.00200	"	0.100		89.9	70-130			
1,1-Dichloropropene	0.0984	0.00200	"	0.100		98.4	70-130			
1,2,3-Trichlorobenzene	0.107	0.00500	"	0.100		107	70-130			
1,2,3-Trichloropropane	0.107	0.00500	"	0.100		107	70-130			
1,2,4-Trichlorobenzene	0.103	0.00500	"	0.100		103	70-130			
1,2,4-Trimethylbenzene	0.107	0.00200	"	0.100		107	70-130			
1,2-Dibromo-3-chloropropane	0.0884	0.00500	"	0.100		88.4	70-130			
1,2-Dibromoethane (EDB)	0.103	0.00200	"	0.100		103	70-130			
1,2-Dichlorobenzene	0.103	0.00200	"	0.100		103	70-130			
1,2-Dichloroethane	0.112	0.00200	"	0.100		112	70-130			
1,2-Dichloropropane	0.103	0.00200	"	0.100		103	70-130			
1,3,5-Trimethylbenzene	0.107	0.00200	"	0.100		107	70-130			
1,3-Dichlorobenzene	0.110	0.00200	"	0.100		110	70-130			
1,3-Dichloropropane	0.104	0.00200	"	0.100		104	70-130			
1,4-Dichlorobenzene	0.102	0.00200	"	0.100		102	70-130			
2,2-Dichloropropane	0.106	0.00200	"	0.100		106	70-130			
2-Butanone	0.544	0.0100	"	0.500		109	70-130			
2-Chlorotoluene	0.105	0.00200	"	0.100		105	70-130			
2-Hexanone	0.537	0.0100	"	0.500		107	70-130			
4-Chlorotoluene	0.104	0.00200	"	0.100		104	70-130			
4-Isopropyltoluene	0.0944	0.00200	"	0.100		94.4	70-130			

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Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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 B9B2101 - EPA 5030 (soil)**

**LCS (B9B2101-BS2)**

Prepared: 02/21/2019 Analyzed: 02/21/2019

4-Methyl-2-pentanone	0.544	0.0100	mg/kg	0.500		109	70-130			
Acetone	0.528	0.0200	"	0.500		106	70-130			
Benzene	0.104	0.00200	"	0.100		104	70-130			
Bromobenzene	0.101	0.00200	"	0.100		101	70-130			
Bromochloromethane	0.103	0.00200	"	0.100		103	70-130			
Bromodichloromethane	0.104	0.00200	"	0.100		104	70-130			
Bromoform	0.0971	0.00200	"	0.100		97.1	70-130			
Bromomethane	0.113	0.00200	"	0.100		113	70-130			
Carbon disulfide	0.0956	0.00500	"	0.100		95.6	70-130			
Carbon tetrachloride	0.107	0.00200	"	0.100		107	70-130			
Chlorobenzene	0.102	0.00200	"	0.100		102	70-130			
Chloroethane	0.108	0.00500	"	0.100		108	70-130			
Chloroform	0.105	0.00200	"	0.100		105	70-130			
Chloromethane	0.109	0.00200	"	0.100		109	70-130			
cis-1,2-Dichloroethene	0.107	0.00200	"	0.100		107	70-130			
cis-1,3-Dichloropropene	0.102	0.00200	"	0.100		102	70-130			
Dibromochloromethane	0.102	0.00200	"	0.100		102	70-130			
Dibromomethane	0.102	0.00200	"	0.100		102	70-130			
Ethylbenzene	0.0944	0.00200	"	0.100		94.4	70-130			
Hexachlorobutadiene	0.117	0.00500	"	0.100		117	70-130			
Iodomethane	0.0953	0.0150	"	0.100		95.3	70-130			
Isopropylbenzene	0.0931	0.00200	"	0.100		93.1	70-130			
m,p-Xylene	0.234	0.00400	"	0.200		117	70-130			
Methyl tert-Butyl Ether	0.102	0.00200	"	0.100		102	70-130			
Methylene Chloride	0.111	0.0200	"	0.100		111	70-130			
Naphthalene	0.103	0.0100	"	0.100		103	70-130			

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Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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 B9B2101 - EPA 5030 (soil)**

**LCS (B9B2101-BS2)**

Prepared: 02/21/2019 Analyzed: 02/21/2019

n-Butylbenzene	0.0938	0.00200	mg/kg	0.100		93.8	70-130			
n-Propylbenzene	0.119	0.00200	"	0.100		119	70-130			
o-Xylene	0.104	0.00200	"	0.100		104	70-130			
sec-Butylbenzene	0.116	0.00200	"	0.100		116	70-130			
Styrene	0.0999	0.00200	"	0.100		99.9	70-130			
tert-Butylbenzene	0.105	0.00200	"	0.100		105	70-130			
Tetrachloroethene	0.104	0.00200	"	0.100		104	70-130			
Toluene	0.103	0.00200	"	0.100		103	70-130			
trans-1,2-Dichloroethene	0.0985	0.00200	"	0.100		98.5	70-130			
trans-1,3-Dichloropropene	0.103	0.00200	"	0.100		103	70-130			
Trichloroethene	0.102	0.00200	"	0.100		102	70-130			
Trichlorofluoromethane	0.111	0.00300	"	0.100		111	70-130			
Vinyl chloride	0.108	0.00200	"	0.100		108	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		104	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		100	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		103	70-130			

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6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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
<b>Batch B9B2101 - EPA 5030 (soil)</b>										
<b>Matrix Spike (B9B2101-MS1)</b>		<b>Source: Y902261-02</b>			Prepared: 02/21/2019 Analyzed: 02/21/2019					
1,1,1,2-Tetrachloroethane	0.0947	0.00200	mg/kg	0.100	ND	94.7	70-130			
1,1,1-Trichloroethane	0.102	0.00200	"	0.100	ND	102	70-130			
1,1,2,2-Tetrachloroethane	0.0971	0.00200	"	0.100	ND	97.1	70-130			
1,1,2-Trichloroethane	0.0970	0.00200	"	0.100	ND	97.0	70-130			
1,1-Dichloroethane	0.101	0.00200	"	0.100	ND	101	70-130			
1,1-Dichloroethene	0.0874	0.00200	"	0.100	ND	87.4	70-130			
1,1-Dichloropropene	0.0948	0.00200	"	0.100	ND	94.8	70-130			
1,2,3-Trichlorobenzene	0.0887	0.00500	"	0.100	ND	88.7	70-130			
1,2,3-Trichloropropane	0.104	0.00500	"	0.100	ND	104	70-130			
1,2,4-Trichlorobenzene	0.0899	0.00500	"	0.100	ND	89.9	70-130			
1,2,4-Trimethylbenzene	0.103	0.00200	"	0.100	ND	103	70-130			
1,2-Dibromo-3-chloropropane	0.0874	0.00500	"	0.100	ND	87.4	70-130			
1,2-Dibromoethane (EDB)	0.0971	0.00200	"	0.100	ND	97.1	70-130			
1,2-Dichlorobenzene	0.0966	0.00200	"	0.100	ND	96.6	70-130			
1,2-Dichloroethane	0.103	0.00200	"	0.100	ND	103	70-130			
1,2-Dichloropropane	0.0993	0.00200	"	0.100	ND	99.3	70-130			
1,3,5-Trimethylbenzene	0.103	0.00200	"	0.100	ND	103	70-130			
1,3-Dichlorobenzene	0.104	0.00200	"	0.100	ND	104	70-130			
1,3-Dichloropropane	0.0990	0.00200	"	0.100	ND	99.0	70-130			
1,4-Dichlorobenzene	0.0969	0.00200	"	0.100	ND	96.9	70-130			
2,2-Dichloropropane	0.107	0.00200	"	0.100	ND	107	70-130			
2-Butanone	0.500	0.0100	"	0.500	ND	100	70-130			
2-Chlorotoluene	0.0998	0.00200	"	0.100	ND	99.8	70-130			
2-Hexanone	0.486	0.0100	"	0.500	ND	97.3	70-130			
4-Chlorotoluene	0.100	0.00200	"	0.100	ND	100	70-130			
4-Isopropyltoluene	0.0884	0.00200	"	0.100	ND	88.4	70-130			

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Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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
<b>Batch B9B2101 - EPA 5030 (soil)</b>										
<b>Matrix Spike (B9B2101-MS1)</b>		<b>Source: Y902261-02</b>			Prepared: 02/21/2019 Analyzed: 02/21/2019					
4-Methyl-2-pentanone	0.504	0.0100	mg/kg	0.500	ND	101	70-130			
Acetone	0.475	0.0200	"	0.500	ND	95.0	70-130			
Benzene	0.101	0.00200	"	0.100	ND	101	70-130			
Bromobenzene	0.0978	0.00200	"	0.100	ND	97.8	70-130			
Bromochloromethane	0.100	0.00200	"	0.100	ND	100	70-130			
Bromodichloromethane	0.0985	0.00200	"	0.100	ND	98.5	70-130			
Bromoform	0.0947	0.00200	"	0.100	ND	94.7	70-130			
Bromomethane	0.104	0.00200	"	0.100	ND	104	70-130			
Carbon disulfide	0.0949	0.00500	"	0.100	ND	94.9	70-130			
Carbon tetrachloride	0.102	0.00200	"	0.100	ND	102	70-130			
Chlorobenzene	0.0986	0.00200	"	0.100	ND	98.6	70-130			
Chloroethane	0.104	0.00500	"	0.100	ND	104	70-130			
Chloroform	0.101	0.00200	"	0.100	ND	101	70-130			
Chloromethane	0.104	0.00200	"	0.100	ND	104	70-130			
cis-1,2-Dichloroethene	0.103	0.00200	"	0.100	ND	103	70-130			
cis-1,3-Dichloropropene	0.0989	0.00200	"	0.100	ND	98.9	70-130			
Dibromochloromethane	0.0966	0.00200	"	0.100	ND	96.6	70-130			
Dibromomethane	0.0972	0.00200	"	0.100	ND	97.2	70-130			
Ethylbenzene	0.0932	0.00200	"	0.100	ND	93.2	70-130			
Hexachlorobutadiene	0.0960	0.00500	"	0.100	ND	96.0	70-130			
Iodomethane	0.0954	0.0150	"	0.100	ND	95.4	70-130			
Isopropylbenzene	0.0908	0.00200	"	0.100	ND	90.8	70-130			
m,p-Xylene	0.228	0.00400	"	0.200	ND	114	70-130			
Methyl tert-Butyl Ether	0.101	0.00200	"	0.100	ND	101	70-130			
Methylene Chloride	0.104	0.0200	"	0.100	ND	104	70-130			
Naphthalene	0.0921	0.0100	"	0.100	ND	92.1	70-130			

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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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 B9B2101 - EPA 5030 (soil)**

Matrix Spike (B9B2101-MS1)		Source: Y902261-02			Prepared: 02/21/2019 Analyzed: 02/21/2019					
n-Butylbenzene	0.0851	0.00200	mg/kg	0.100	ND	85.1	70-130			
n-Propylbenzene	0.114	0.00200	"	0.100	ND	114	70-130			
o-Xylene	0.103	0.00200	"	0.100	ND	103	70-130			
sec-Butylbenzene	0.109	0.00200	"	0.100	ND	109	70-130			
Styrene	0.0993	0.00200	"	0.100	ND	99.3	70-130			
tert-Butylbenzene	0.100	0.00200	"	0.100	ND	100	70-130			
Tetrachloroethene	0.0993	0.00200	"	0.100	ND	99.3	70-130			
Toluene	0.0998	0.00200	"	0.100	ND	99.8	70-130			
trans-1,2-Dichloroethene	0.0956	0.00200	"	0.100	ND	95.6	70-130			
trans-1,3-Dichloropropene	0.0974	0.00200	"	0.100	ND	97.4	70-130			
Trichloroethene	0.0993	0.00200	"	0.100	ND	99.3	70-130			
Trichlorofluoromethane	0.101	0.00300	"	0.100	ND	101	70-130			
Vinyl chloride	0.101	0.00200	"	0.100	ND	101	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		101	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		99.7	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		103	70-130			

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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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 B9B2101 - EPA 5030 (soil)**

Matrix Spike (B9B2101-MS2)		Source: Y902291-04			Prepared: 02/21/2019 Analyzed: 02/22/2019					
1,1,1,2-Tetrachloroethane	0.0855	0.00200	mg/kg	0.100	ND	85.5	70-130			
1,1,1-Trichloroethane	0.0898	0.00200	"	0.100	ND	89.8	70-130			
1,1,2,2-Tetrachloroethane	0.0876	0.00200	"	0.100	ND	87.6	70-130			
1,1,2-Trichloroethane	0.0931	0.00200	"	0.100	ND	93.1	70-130			
1,1-Dichloroethane	0.0905	0.00200	"	0.100	ND	90.5	70-130			
1,1-Dichloroethene	0.0775	0.00200	"	0.100	ND	77.5	70-130			
1,1-Dichloropropene	0.0849	0.00200	"	0.100	ND	84.9	70-130			
1,2,3-Trichlorobenzene	0.0848	0.00500	"	0.100	ND	84.8	70-130			
1,2,3-Trichloropropane	0.0913	0.00500	"	0.100	ND	91.3	70-130			
1,2,4-Trichlorobenzene	0.0815	0.00500	"	0.100	ND	81.5	70-130			
1,2,4-Trimethylbenzene	0.0932	0.00200	"	0.100	ND	93.2	70-130			
1,2-Dibromo-3-chloropropane	0.0775	0.00500	"	0.100	ND	77.5	70-130			
1,2-Dibromoethane (EDB)	0.0889	0.00200	"	0.100	ND	88.9	70-130			
1,2-Dichlorobenzene	0.0886	0.00200	"	0.100	ND	88.6	70-130			
1,2-Dichloroethane	0.0923	0.00200	"	0.100	ND	92.3	70-130			
1,2-Dichloropropane	0.0919	0.00200	"	0.100	ND	91.9	70-130			
1,3,5-Trimethylbenzene	0.0932	0.00200	"	0.100	ND	93.2	70-130			
1,3-Dichlorobenzene	0.0933	0.00200	"	0.100	ND	93.3	70-130			
1,3-Dichloropropane	0.0903	0.00200	"	0.100	ND	90.3	70-130			
1,4-Dichlorobenzene	0.0872	0.00200	"	0.100	ND	87.2	70-130			
2,2-Dichloropropane	0.0851	0.00200	"	0.100	ND	85.1	70-130			
2-Butanone	0.472	0.0100	"	0.500	ND	94.4	70-130			
2-Chlorotoluene	0.0894	0.00200	"	0.100	ND	89.4	70-130			
2-Hexanone	0.460	0.0100	"	0.500	ND	91.9	70-130			
4-Chlorotoluene	0.0899	0.00200	"	0.100	ND	89.9	70-130			
4-Isopropyltoluene	0.0792	0.00200	"	0.100	ND	79.2	70-130			

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Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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 B9B2101 - EPA 5030 (soil)**

Matrix Spike (B9B2101-MS2)		Source: Y902291-04			Prepared: 02/21/2019 Analyzed: 02/22/2019					
4-Methyl-2-pentanone	0.465	0.0100	mg/kg	0.500	ND	93.0	70-130			
Acetone	0.463	0.0200	"	0.500	ND	92.5	70-130			
Benzene	0.0926	0.00200	"	0.100	ND	92.6	70-130			
Bromobenzene	0.0885	0.00200	"	0.100	ND	88.5	70-130			
Bromochloromethane	0.0906	0.00200	"	0.100	ND	90.6	70-130			
Bromodichloromethane	0.0892	0.00200	"	0.100	ND	89.2	70-130			
Bromoform	0.0822	0.00200	"	0.100	ND	82.2	70-130			
Bromomethane	0.0894	0.00200	"	0.100	ND	89.4	70-130			
Carbon disulfide	0.0824	0.00500	"	0.100	ND	82.4	70-130			
Carbon tetrachloride	0.0899	0.00200	"	0.100	ND	89.9	70-130			
Chlorobenzene	0.0906	0.00200	"	0.100	ND	90.6	70-130			
Chloroethane	0.0907	0.00500	"	0.100	ND	90.7	70-130			
Chloroform	0.0914	0.00200	"	0.100	ND	91.4	70-130			
Chloromethane	0.0909	0.00200	"	0.100	ND	90.9	70-130			
cis-1,2-Dichloroethene	0.0916	0.00200	"	0.100	ND	91.6	70-130			
cis-1,3-Dichloropropene	0.0889	0.00200	"	0.100	ND	88.9	70-130			
Dibromochloromethane	0.0862	0.00200	"	0.100	ND	86.2	70-130			
Dibromomethane	0.0889	0.00200	"	0.100	ND	88.9	70-130			
Ethylbenzene	0.0830	0.00200	"	0.100	ND	83.0	70-130			
Hexachlorobutadiene	0.0865	0.00500	"	0.100	ND	86.5	70-130			
Iodomethane	0.0843	0.0150	"	0.100	ND	84.3	70-130			
Isopropylbenzene	0.0816	0.00200	"	0.100	ND	81.6	70-130			
m,p-Xylene	0.203	0.00400	"	0.200	ND	101	70-130			
Methyl tert-Butyl Ether	0.0900	0.00200	"	0.100	ND	90.0	70-130			
Methylene Chloride	0.0993	0.0200	"	0.100	ND	99.3	70-130			
Naphthalene	0.0882	0.0100	"	0.100	ND	88.2	70-130			

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6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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 B9B2101 - EPA 5030 (soil)**

Matrix Spike (B9B2101-MS2)		Source: Y902291-04			Prepared: 02/21/2019 Analyzed: 02/22/2019					
n-Butylbenzene	0.0754	0.00200	mg/kg	0.100	ND	75.4	70-130			
n-Propylbenzene	0.102	0.00200	"	0.100	ND	102	70-130			
o-Xylene	0.0921	0.00200	"	0.100	ND	92.1	70-130			
sec-Butylbenzene	0.0990	0.00200	"	0.100	ND	99.0	70-130			
Styrene	0.0920	0.00200	"	0.100	ND	92.0	70-130			
tert-Butylbenzene	0.0917	0.00200	"	0.100	ND	91.7	70-130			
Tetrachloroethene	0.0902	0.00200	"	0.100	ND	90.2	70-130			
Toluene	0.0912	0.00200	"	0.100	ND	91.2	70-130			
trans-1,2-Dichloroethene	0.0841	0.00200	"	0.100	ND	84.1	70-130			
trans-1,3-Dichloropropene	0.0864	0.00200	"	0.100	ND	86.4	70-130			
Trichloroethene	0.0897	0.00200	"	0.100	ND	89.7	70-130			
Trichlorofluoromethane	0.0887	0.00300	"	0.100	ND	88.7	70-130			
Vinyl chloride	0.0883	0.00200	"	0.100	ND	88.3	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		102	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		99.1	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		103	70-130			

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Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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
<b>Batch B9B2101 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B9B2101-MSD1)</b>		<b>Source: Y902261-02</b>			<b>Prepared: 02/21/2019 Analyzed: 02/21/2019</b>					
1,1,1,2-Tetrachloroethane	0.0844	0.00200	mg/kg	0.100	ND	84.4	70-130	11.6	20	
1,1,1-Trichloroethane	0.0898	0.00200	"	0.100	ND	89.8	70-130	12.4	20	
1,1,2,2-Tetrachloroethane	0.0882	0.00200	"	0.100	ND	88.2	70-130	9.61	20	
1,1,2-Trichloroethane	0.0879	0.00200	"	0.100	ND	87.9	70-130	9.91	20	
1,1-Dichloroethane	0.0901	0.00200	"	0.100	ND	90.1	70-130	11.6	20	
1,1-Dichloroethene	0.0770	0.00200	"	0.100	ND	77.0	70-130	12.7	20	
1,1-Dichloropropene	0.0840	0.00200	"	0.100	ND	84.0	70-130	12.0	20	
1,2,3-Trichlorobenzene	0.0829	0.00500	"	0.100	ND	82.9	70-130	6.81	20	
1,2,3-Trichloropropane	0.0925	0.00500	"	0.100	ND	92.5	70-130	11.4	20	
1,2,4-Trichlorobenzene	0.0805	0.00500	"	0.100	ND	80.5	70-130	11.0	20	
1,2,4-Trimethylbenzene	0.0899	0.00200	"	0.100	ND	89.9	70-130	13.5	20	
1,2-Dibromo-3-chloropropane	0.0817	0.00500	"	0.100	ND	81.7	70-130	6.76	20	
1,2-Dibromoethane (EDB)	0.0882	0.00200	"	0.100	ND	88.2	70-130	9.54	20	
1,2-Dichlorobenzene	0.0849	0.00200	"	0.100	ND	84.9	70-130	12.9	20	
1,2-Dichloroethane	0.0917	0.00200	"	0.100	ND	91.7	70-130	11.3	20	
1,2-Dichloropropane	0.0900	0.00200	"	0.100	ND	90.0	70-130	9.82	20	
1,3,5-Trimethylbenzene	0.0901	0.00200	"	0.100	ND	90.1	70-130	13.7	20	
1,3-Dichlorobenzene	0.0906	0.00200	"	0.100	ND	90.6	70-130	13.7	20	
1,3-Dichloropropane	0.0905	0.00200	"	0.100	ND	90.5	70-130	9.04	20	
1,4-Dichlorobenzene	0.0849	0.00200	"	0.100	ND	84.9	70-130	13.2	20	
2,2-Dichloropropane	0.0939	0.00200	"	0.100	ND	93.9	70-130	12.7	20	
2-Butanone	0.474	0.0100	"	0.500	ND	94.9	70-130	5.32	20	
2-Chlorotoluene	0.0873	0.00200	"	0.100	ND	87.3	70-130	13.4	20	
2-Hexanone	0.453	0.0100	"	0.500	ND	90.6	70-130	7.11	20	
4-Chlorotoluene	0.0874	0.00200	"	0.100	ND	87.4	70-130	13.4	20	
4-Isopropyltoluene	0.0767	0.00200	"	0.100	ND	76.7	70-130	14.2	20	

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Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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
<b>Batch B9B2101 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B9B2101-MSD1)</b>		<b>Source: Y902261-02</b>			Prepared: 02/21/2019 Analyzed: 02/21/2019					
4-Methyl-2-pentanone	0.469	0.0100	mg/kg	0.500	ND	93.8	70-130	7.27	20	
Acetone	0.459	0.0200	"	0.500	ND	91.8	70-130	3.49	20	
Benzene	0.0904	0.00200	"	0.100	ND	90.4	70-130	11.3	20	
Bromobenzene	0.0863	0.00200	"	0.100	ND	86.3	70-130	12.5	20	
Bromochloromethane	0.0900	0.00200	"	0.100	ND	90.0	70-130	10.7	20	
Bromodichloromethane	0.0890	0.00200	"	0.100	ND	89.0	70-130	10.1	20	
Bromoform	0.0848	0.00200	"	0.100	ND	84.8	70-130	11.0	20	
Bromomethane	0.0900	0.00200	"	0.100	ND	90.0	70-130	14.5	20	
Carbon disulfide	0.0832	0.00500	"	0.100	ND	83.2	70-130	13.1	20	
Carbon tetrachloride	0.0895	0.00200	"	0.100	ND	89.5	70-130	12.9	20	
Chlorobenzene	0.0871	0.00200	"	0.100	ND	87.1	70-130	12.4	20	
Chloroethane	0.0883	0.00500	"	0.100	ND	88.3	70-130	16.8	20	
Chloroform	0.0900	0.00200	"	0.100	ND	90.0	70-130	11.4	20	
Chloromethane	0.0892	0.00200	"	0.100	ND	89.2	70-130	15.2	20	
cis-1,2-Dichloroethene	0.0924	0.00200	"	0.100	ND	92.4	70-130	11.1	20	
cis-1,3-Dichloropropene	0.0892	0.00200	"	0.100	ND	89.2	70-130	10.3	20	
Dibromochloromethane	0.0871	0.00200	"	0.100	ND	87.1	70-130	10.3	20	
Dibromomethane	0.0884	0.00200	"	0.100	ND	88.4	70-130	9.51	20	
Ethylbenzene	0.0815	0.00200	"	0.100	ND	81.5	70-130	13.4	20	
Hexachlorobutadiene	0.0830	0.00500	"	0.100	ND	83.0	70-130	14.4	20	
Iodomethane	0.0833	0.0150	"	0.100	ND	83.3	70-130	13.5	20	
Isopropylbenzene	0.0796	0.00200	"	0.100	ND	79.6	70-130	13.2	20	
m,p-Xylene	0.200	0.00400	"	0.200	ND	99.9	70-130	13.4	20	
Methyl tert-Butyl Ether	0.0922	0.00200	"	0.100	ND	92.2	70-130	8.98	20	
Methylene Chloride	0.0912	0.0200	"	0.100	ND	91.2	70-130	13.1	20	
Naphthalene	0.0881	0.0100	"	0.100	ND	88.1	70-130	4.46	20	

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Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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 B9B2101 - EPA 5030 (soil)**

Matrix Spike Dup (B9B2101-MSD1)		Source: Y902261-02			Prepared: 02/21/2019 Analyzed: 02/21/2019					
n-Butylbenzene	0.0742	0.00200	mg/kg	0.100	ND	74.2	70-130	13.8	20	
n-Propylbenzene	0.0989	0.00200	"	0.100	ND	98.9	70-130	14.3	20	
o-Xylene	0.0904	0.00200	"	0.100	ND	90.4	70-130	12.9	20	
sec-Butylbenzene	0.0944	0.00200	"	0.100	ND	94.4	70-130	14.0	20	
Styrene	0.0868	0.00200	"	0.100	ND	86.8	70-130	13.4	20	
tert-Butylbenzene	0.0881	0.00200	"	0.100	ND	88.1	70-130	12.8	20	
Tetrachloroethene	0.0875	0.00200	"	0.100	ND	87.5	70-130	12.6	20	
Toluene	0.0895	0.00200	"	0.100	ND	89.5	70-130	10.9	20	
trans-1,2-Dichloroethene	0.0841	0.00200	"	0.100	ND	84.1	70-130	12.8	20	
trans-1,3-Dichloropropene	0.0881	0.00200	"	0.100	ND	88.1	70-130	10.0	20	
Trichloroethene	0.0882	0.00200	"	0.100	ND	88.2	70-130	11.8	20	
Trichlorofluoromethane	0.0879	0.00300	"	0.100	ND	87.9	70-130	13.7	20	
Vinyl chloride	0.0889	0.00200	"	0.100	ND	88.9	70-130	13.1	20	
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		101	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		99.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		103	70-130			

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Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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
<b>Batch B9B2101 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B9B2101-MSD2)</b>		<b>Source: Y902291-04</b>			Prepared: 02/21/2019 Analyzed: 02/22/2019					
1,1,1,2-Tetrachloroethane	0.0743	0.00200	mg/kg	0.100	ND	74.3	70-130	14.0	20	
1,1,1-Trichloroethane	0.0821	0.00200	"	0.100	ND	82.1	70-130	8.96	20	
1,1,2,2-Tetrachloroethane	0.0753	0.00200	"	0.100	ND	75.3	70-130	15.2	20	
1,1,2-Trichloroethane	0.0805	0.00200	"	0.100	ND	80.5	70-130	14.5	20	
1,1-Dichloroethane	0.0814	0.00200	"	0.100	ND	81.4	70-130	10.5	20	
1,1-Dichloroethene	0.0705	0.00200	"	0.100	ND	70.5	70-130	9.35	20	
1,1-Dichloropropene	0.0762	0.00200	"	0.100	ND	76.2	70-130	10.8	20	
1,2,3-Trichlorobenzene	0.0732	0.00500	"	0.100	ND	73.2	70-130	14.7	20	
1,2,3-Trichloropropane	0.0798	0.00500	"	0.100	ND	79.8	70-130	13.5	20	
1,2,4-Trichlorobenzene	0.0717	0.00500	"	0.100	ND	71.7	70-130	12.9	20	
1,2,4-Trimethylbenzene	0.0807	0.00200	"	0.100	ND	80.7	70-130	14.4	20	
1,2-Dibromo-3-chloropropane	0.0668	0.00500	"	0.100	ND	66.8	70-130	14.8	20	QM-07
1,2-Dibromoethane (EDB)	0.0784	0.00200	"	0.100	ND	78.4	70-130	12.6	20	
1,2-Dichlorobenzene	0.0764	0.00200	"	0.100	ND	76.4	70-130	14.9	20	
1,2-Dichloroethane	0.0855	0.00200	"	0.100	ND	85.5	70-130	7.65	20	
1,2-Dichloropropane	0.0804	0.00200	"	0.100	ND	80.4	70-130	13.3	20	
1,3,5-Trimethylbenzene	0.0801	0.00200	"	0.100	ND	80.1	70-130	15.1	20	
1,3-Dichlorobenzene	0.0820	0.00200	"	0.100	ND	82.0	70-130	13.0	20	
1,3-Dichloropropane	0.0793	0.00200	"	0.100	ND	79.3	70-130	12.9	20	
1,4-Dichlorobenzene	0.0738	0.00200	"	0.100	ND	73.8	70-130	16.7	20	
2,2-Dichloropropane	0.0815	0.00200	"	0.100	ND	81.5	70-130	4.37	20	
2-Butanone	0.415	0.0100	"	0.500	ND	83.0	70-130	12.9	20	
2-Chlorotoluene	0.0788	0.00200	"	0.100	ND	78.8	70-130	12.7	20	
2-Hexanone	0.404	0.0100	"	0.500	ND	80.8	70-130	12.8	20	
4-Chlorotoluene	0.0784	0.00200	"	0.100	ND	78.4	70-130	13.7	20	
4-Isopropyltoluene	0.0687	0.00200	"	0.100	ND	68.7	70-130	14.1	20	QM-07

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Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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
<b>Batch B9B2101 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B9B2101-MSD2)</b>		<b>Source: Y902291-04</b>			Prepared: 02/21/2019 Analyzed: 02/22/2019					
4-Methyl-2-pentanone	0.412	0.0100	mg/kg	0.500	ND	82.4	70-130	12.0	20	
Acetone	0.408	0.0200	"	0.500	ND	81.6	70-130	12.6	20	
Benzene	0.0806	0.00200	"	0.100	ND	80.6	70-130	13.8	20	
Bromobenzene	0.0766	0.00200	"	0.100	ND	76.6	70-130	14.5	20	
Bromochloromethane	0.0805	0.00200	"	0.100	ND	80.5	70-130	11.9	20	
Bromodichloromethane	0.0806	0.00200	"	0.100	ND	80.6	70-130	10.2	20	
Bromoform	0.0720	0.00200	"	0.100	ND	72.0	70-130	13.3	20	
Bromomethane	0.0712	0.00200	"	0.100	ND	71.2	70-130	22.8	20	QR-02
Carbon disulfide	0.0741	0.00500	"	0.100	ND	74.1	70-130	10.6	20	
Carbon tetrachloride	0.0827	0.00200	"	0.100	ND	82.7	70-130	8.25	20	
Chlorobenzene	0.0787	0.00200	"	0.100	ND	78.7	70-130	14.1	20	
Chloroethane	0.0704	0.00500	"	0.100	ND	70.4	70-130	25.2	20	QR-02
Chloroform	0.0825	0.00200	"	0.100	ND	82.5	70-130	10.3	20	
Chloromethane	0.0726	0.00200	"	0.100	ND	72.6	70-130	22.5	20	QR-02
cis-1,2-Dichloroethene	0.0835	0.00200	"	0.100	ND	83.5	70-130	9.27	20	
cis-1,3-Dichloropropene	0.0786	0.00200	"	0.100	ND	78.6	70-130	12.2	20	
Dibromochloromethane	0.0781	0.00200	"	0.100	ND	78.1	70-130	9.91	20	
Dibromomethane	0.0785	0.00200	"	0.100	ND	78.5	70-130	12.5	20	
Ethylbenzene	0.0717	0.00200	"	0.100	ND	71.7	70-130	14.6	20	
Hexachlorobutadiene	0.0748	0.00500	"	0.100	ND	74.8	70-130	14.6	20	
Iodomethane	0.0745	0.0150	"	0.100	ND	74.5	70-130	12.3	20	
Isopropylbenzene	0.0707	0.00200	"	0.100	ND	70.7	70-130	14.3	20	
m,p-Xylene	0.178	0.00400	"	0.200	ND	88.9	70-130	13.2	20	
Methyl tert-Butyl Ether	0.0797	0.00200	"	0.100	ND	79.7	70-130	12.1	20	
Methylene Chloride	0.0851	0.0200	"	0.100	ND	85.1	70-130	15.4	20	
Naphthalene	0.0735	0.0100	"	0.100	ND	73.5	70-130	18.2	20	

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Bob Cornez  
Project Number: [none]  
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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
<b>Batch B9B2101 - EPA 5030 (soil)</b>										
<b>Matrix Spike Dup (B9B2101-MSD2)</b>		<b>Source: Y902291-04</b>			Prepared: 02/21/2019 Analyzed: 02/22/2019					
n-Butylbenzene	0.0669	0.00200	mg/kg	0.100	ND	66.9	70-130	12.0	20	QM-07
n-Propylbenzene	0.0881	0.00200	"	0.100	ND	88.1	70-130	14.2	20	
o-Xylene	0.0799	0.00200	"	0.100	ND	79.9	70-130	14.2	20	
sec-Butylbenzene	0.0850	0.00200	"	0.100	ND	85.0	70-130	15.2	20	
Styrene	0.0761	0.00200	"	0.100	ND	76.1	70-130	18.9	20	
tert-Butylbenzene	0.0783	0.00200	"	0.100	ND	78.3	70-130	15.8	20	
Tetrachloroethene	0.0793	0.00200	"	0.100	ND	79.3	70-130	12.8	20	
Toluene	0.0806	0.00200	"	0.100	ND	80.6	70-130	12.4	20	
trans-1,2-Dichloroethene	0.0760	0.00200	"	0.100	ND	76.0	70-130	10.1	20	
trans-1,3-Dichloropropene	0.0777	0.00200	"	0.100	ND	77.7	70-130	10.7	20	
Trichloroethene	0.0796	0.00200	"	0.100	ND	79.6	70-130	11.9	20	
Trichlorofluoromethane	0.0729	0.00300	"	0.100	ND	72.9	70-130	19.6	20	
Vinyl chloride	0.0717	0.00200	"	0.100	ND	71.7	70-130	20.8	20	QR-02
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		109	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		100	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		102	70-130			

Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**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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**PAH by 8270D SIM - Quality Control**  
**GEL Laboratories, LLC**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

**Batch 1852664 - SW846 3541**

**BLANK (1204227397-BLK)**

Prepared: 02/27/2019 Analyzed: 02/27/2019

Chrysene	ND	0.00333	mg/kg				-			U
Dibenzo(a,h)anthracene	ND	0.00333	"				-			U
Fluoranthene	ND	0.00333	"				-			U
Fluorene	ND	0.00333	"				-			U
Indeno(1,2,3-cd)pyrene	ND	0.00333	"				-			U
Phenanthrene	ND	0.00333	"				-			U
Pyrene	ND	0.00333	"				-			U
Benzo(k)fluoranthene	ND	0.00333	"				-			U
Acenaphthylene	ND	0.00333	"				-			U
Naphthalene	ND	0.00333	"				-			U
Benzo(b)fluoranthene	ND	0.00333	"				-			U
Benzo(a)pyrene	ND	0.00333	"				-			U
Anthracene	ND	0.00333	"				-			U
Acenaphthene	ND	0.00333	"				-			U
2-Methylnaphthalene	ND	0.00333	"				-			U
1-Methylnaphthalene	ND	0.00333	"				-			U
Benzo(ghi)perylene	ND	0.00333	"				-			U
Benzo(a)anthracene	ND	0.00333	"				-			U

Surrogate: 5-alpha-Androstane

0.143

"

0.167

86

25-121

**LCS (1204227398-BKS)**

Prepared: 02/27/2019 Analyzed: 02/27/2019

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: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**PAH by 8270D SIM - Quality Control**  
**GEL Laboratories, LLC**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 1852664 - SW846 3541**

**LCS (1204227398-BKS)**

Prepared: 02/27/2019 Analyzed: 02/27/2019

Benzo(ghi)perylene	0.253	0.00333	mg/kg	0.333		76	35-121
Benzo(k)fluoranthene	0.301	0.00333	"	0.333		90	39-119
Chrysene	0.272	0.00333	"	0.333		81	53-108
Pyrene	0.266	0.00333	"	0.333		80	42-114
Fluoranthene	0.252	0.00333	"	0.333		76	43-116
Dibenzo(a,h)anthracene	0.292	0.00333	"	0.333		88	40-137
Indeno(1,2,3-cd)pyrene	0.283	0.00333	"	0.333		85	40-132
Phenanthrene	0.251	0.00333	"	0.333		75	53-106
Naphthalene	0.245	0.00333	"	0.333		73	52-106
1-Methylnaphthalene	0.242	0.00333	"	0.333		73	50-109
Fluorene	0.263	0.00333	"	0.333		79	42-113
2-Methylnaphthalene	0.253	0.00333	"	0.333		76	50-109
Acenaphthene	0.256	0.00333	"	0.333		77	48-107
Acenaphthylene	0.282	0.00333	"	0.333		85	42-114
Anthracene	0.272	0.00333	"	0.333		82	49-113
Benzo(a)anthracene	0.274	0.00333	"	0.333		82	51-118
Benzo(a)pyrene	0.285	0.00333	"	0.333		85	42-123
Benzo(b)fluoranthene	0.283	0.00333	"	0.333		85	42-119

Surrogate: 5-alpha-Androstane

0.122

"

0.167

73

25-121

**MS (1204227399 S)**

**Source: Y902266-01**

Prepared: 02/27/2019 Analyzed: 02/27/2019

Benzo(b)fluoranthene	0.274	0.0608	mg/kg dry	0.369	<0.0201	74	22-130
Chrysene	0.371	0.0608	"	0.369	<0.0201	101	31-119
Pyrene	0.456	0.0608	"	0.369	0.0947	98	19-139
Phenanthrene	0.347	0.0608	"	0.369	0.0349	85	27-124
Naphthalene	0.280	0.0608	"	0.369	<0.0201	76	29-122
Indeno(1,2,3-cd)pyrene	0.322	0.0608	"	0.369	<0.0201	87	14-132

Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**PAH by 8270D SIM - Quality Control**  
**GEL Laboratories, LLC**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 1852664 - SW846 3541**

<b>MS (1204227399 S)</b>		<b>Source: Y902266-01</b>			<b>Prepared: 02/27/2019 Analyzed: 02/27/2019</b>					
Fluorene	0.335	0.0608	mg/kg dry	0.369	<0.0201	91	26-123			
Fluoranthene	0.286	0.0608	"	0.369	<0.0201	78	21-122			
Dibenzo(a,h)anthracene	0.322	0.0608	"	0.369	<0.0201	87	16-139			
2-Methylnaphthalene	0.493	0.0608	"	0.369	0.0598	117	23-124			
Benzo(a)pyrene	0.316	0.0608	"	0.369	<0.0201	86	24-129			
Benzo(a)anthracene	0.335	0.0608	"	0.369	0.0498	77	31-124			
Anthracene	0.286	0.0608	"	0.369	<0.0201	78	29-127			
Acenaphthylene	0.298	0.0608	"	0.369	<0.0201	81	27-122			
Acenaphthene	0.268	0.0608	"	0.369	<0.0201	73	29-118			
Benzo(ghi)perylene	0.286	0.0608	"	0.369	<0.0201	78	16-124			
Benzo(k)fluoranthene	0.298	0.0608	"	0.369	<0.0201	81	26-130			
1-Methylnaphthalene	0.365	0.0608	"	0.369	0.0349	90	30-129			

*Surrogate: 5-alpha-Androstane*

0.140

"

0.184

0.135

76

25-121

<b>MSD (1204227400 SD)</b>		<b>Source: Y902266-01</b>			<b>Prepared: 02/27/2019 Analyzed: 02/27/2019</b>					
Chrysene	0.319	0.0591	mg/kg dry	0.369	<0.0195	86	31-119	15	30	
Pyrene	0.355	0.0591	"	0.369	0.0947	70	19-139	25	30	
Dibenzo(a,h)anthracene	0.307	0.0591	"	0.369	<0.0195	83	16-139	5	30	
Fluoranthene	0.278	0.0591	"	0.369	<0.0195	75	21-122	3	30	
Fluorene	0.284	0.0591	"	0.369	<0.0195	77	26-123	16	30	
Indeno(1,2,3-cd)pyrene	0.295	0.0591	"	0.369	<0.0195	80	14-132	9	30	
Phenanthrene	0.325	0.0591	"	0.369	0.0349	79	27-124	6	30	
Anthracene	0.260	0.0591	"	0.369	<0.0195	70	29-127	9	30	
Benzo(k)fluoranthene	0.278	0.0591	"	0.369	<0.0195	75	26-130	7	30	
Naphthalene	0.242	0.0591	"	0.369	<0.0195	66	29-122	14	30	
Benzo(b)fluoranthene	0.254	0.0591	"	0.369	<0.0195	69	22-130	7	30	
Benzo(a)anthracene	0.295	0.0591	"	0.369	0.0498	67	31-124	12	30	

Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

PAH by 8270D SIM - Quality Control  
GEL Laboratories, LLC

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1852664 - SW846 3541										
MSD (1204227400 SD)		Source: Y902266-01			Prepared: 02/27/2019 Analyzed: 02/27/2019					
Acenaphthylene	0.284	0.0591	mg/kg dry	0.369	<0.0195	77	27-122	5	30	
Acenaphthene	0.248	0.0591	"	0.369	<0.0195	67	29-118	8	30	
2-Methylnaphthalene	0.319	0.0591	"	0.369	0.0598	70	23-124	43	30	
1-Methylnaphthalene	0.272	0.0591	"	0.369	0.0349	64	30-129	29	30	
Benzo(a)pyrene	0.290	0.0591	"	0.369	<0.0195	78	24-129	9	30	
Benzo(ghi)perylene	0.290	0.0591	"	0.369	<0.0195	78	16-124	1	30	
Surrogate: 5-alpha-Androstane	0.124		"	0.185	0.135	67	25-121			

Origins Laboratory, Inc.



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Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: [none]  
Project: KMG - ARF Hydraulic Fluid Release

**PCB by 8082A - Quality Control**  
**GEL Laboratories, LLC**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 1851422 - SW846 3541</b>										
<b>BLANK (1204224457-BLK)</b>										
					Prepared: 02/22/2019 Analyzed: 02/25/2019					
Aroclor-1248	ND	0.00332	mg/kg				-			U
Aroclor-Total	ND	0.00332	"				-			U
Aroclor-1254	ND	0.00332	"				-			U
Aroclor-1232	ND	0.00332	"				-			U
Aroclor-1221	ND	0.00332	"				-			U
Aroclor-1016	ND	0.00332	"				-			U
Aroclor-1260	ND	0.00332	"				-			U
Aroclor-1242	ND	0.00332	"				-			U
Surrogate: Decachlorobiphenyl	0.00566		"	0.00664		85	28-134			
Surrogate: 4cmx	0.00513		"	0.00664		77	27-116			
<b>LCS (1204224458-BKS)</b>										
					Prepared: 02/22/2019 Analyzed: 02/25/2019					
Aroclor-1260	0.0269	0.00332	mg/kg	0.0332		81	53-115			
Aroclor-1016	0.0217	0.00332	"	0.0332		65	50-102			
Surrogate: Decachlorobiphenyl	0.00585		"	0.00664		88	28-134			
Surrogate: 4cmx	0.00508		"	0.00664		77	27-116			
<b>MS (1204224459 S)</b>										
			<b>Source: 471149024</b>		Prepared: 02/22/2019 Analyzed: 02/25/2019					
Aroclor-1016	0.0879	0.0139	mg/kg dry	0.139	<0.00462	63	29-125			
Aroclor-1260	0.110	0.0139	"	0.139	<0.00462	79	32-129			
Surrogate: Decachlorobiphenyl	0.0223		"	0.0277	0.0201	81	28-134			
Surrogate: 4cmx	0.0207		"	0.0277	0.0201	75	27-116			
<b>MSD (1204224460 SD)</b>										
			<b>Source: 471149024</b>		Prepared: 02/22/2019 Analyzed: 02/25/2019					
Aroclor-1016	0.0926	0.0136	mg/kg dry	0.136	<0.00452	68	29-125	5	32	
Aroclor-1260	0.110	0.0136	"	0.136	<0.00452	81	32-129	1	37	
Surrogate: Decachlorobiphenyl	0.0223		"	0.0272	0.0201	82	28-134			
Surrogate: 4cmx	0.0207		"	0.0272	0.0201	76	27-116			

Origins Laboratory, Inc.



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Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Bob Cornez

Project Number: [none]

Project: KMG - ARF Hydraulic Fluid Release

**PCB by 8082A - Quality Control**  
**GEL Laboratories, LLC**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1851422 - SW846 3541

Origins Laboratory, Inc.



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

Jen Pellegrini For Noelle Doyle Mathis, President

Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Bob Cornez

Project Number: [none]

Project: KMG - ARF Hydraulic Fluid Release

## Notes and Definitions

Ua Sample is Non-Detect.

U Result not detected above the detection limit

QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

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

J Greater than the detection limit but less than the reporting limit

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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

Jen Pellegrini For Noelle Doyle Mathis, President

February 22, 2019

Noelle Doyle  
Origins Lab  
1725 Elk Place  
Denver, CO 80211

RE: Project: Y902266  
Pace Project No.: 10464704

Dear Noelle Doyle:

Enclosed are the analytical results for sample(s) received by the laboratory on February 21, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Ryan Thibault  
ryan.thibault@pacelabs.com  
(612)607-1700  
Project Manager

Enclosures

cc: Jennifer Pellegrini, Origins Lab



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## CERTIFICATIONS

Project: Y902266

Pace Project No.: 10464704

---

### Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485

A2LA Certification #: 2926.01

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

CNMI Saipan Certification #: MP0003

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605

Georgia Certification #: 959

Guam EPA Certification #: MN00064

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: 03086

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064

Maryland Certification #: 322

Massachusetts Certification #: M-MN064

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137

Minnesota Dept of Ag Certification #: via MN 027-053-137

Minnesota Petrofund Certification #: 1240

Mississippi Certification #: MN00064

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081

New Jersey Certification #: MN002

New York Certification #: 11647

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon NwTPH Certification #: MN300001

Oregon Secondary Certification #: MN200001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification #: MN00064

South Carolina Certification #: 74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Virginia Certification #: 460163

Washington Certification #: C486

West Virginia DW Certification #: 9952 C

West Virginia DEP Certification #: 382

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Y902266

Pace Project No.: 10464704

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10464704001	Y902266-01	Solid	02/20/19 11:10	02/21/19 09:10
10464704002	Y902266-02	Solid	02/20/19 11:20	02/21/19 09:10

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE ANALYTE COUNT

Project: Y902266

Pace Project No.: 10464704

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10464704001	Y902266-01	ASTM D2974	JDL	1	PASI-M
		EPA 9071	AR3	1	PASI-M
10464704002	Y902266-02	ASTM D2974	JDL	1	PASI-M
		EPA 9071	AR3	1	PASI-M

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Y902266  
Pace Project No.: 10464704

**Sample: Y902266-01**      **Lab ID: 10464704001**      Collected: 02/20/19 11:10      Received: 02/21/19 09:10      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b>	Analytical Method: ASTM D2974								
Percent Moisture	<b>7.3</b>	%	0.10	0.10	1		02/21/19 14:38		
<b>9071 SGT-HEM, TPH</b>	Analytical Method: EPA 9071      Preparation Method: EPA 9071								
Total Petroleum Hydrocarbons	<b>5390</b>	mg/kg	268	82.6	1	02/21/19 12:21	02/22/19 11:02		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Y902266  
Pace Project No.: 10464704

**Sample: Y902266-02**      **Lab ID: 10464704002**      Collected: 02/20/19 11:20      Received: 02/21/19 09:10      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b>	Analytical Method: ASTM D2974								
Percent Moisture	<b>12.0</b>	%	0.10	0.10	1		02/21/19 14:39		
<b>9071 SGT-HEM, TPH</b>	Analytical Method: EPA 9071      Preparation Method: EPA 9071								
Total Petroleum Hydrocarbons	<b>1970</b>	mg/kg	285	87.6	1	02/21/19 12:21	02/22/19 11:02		

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: Y902266

Pace Project No.: 10464704

QC Batch: 590889

Analysis Method: ASTM D2974

QC Batch Method: ASTM D2974

Analysis Description: Dry Weight / %M by ASTM D2974

Associated Lab Samples: 10464704001, 10464704002

SAMPLE DUPLICATE: 3195440

Parameter	Units	10464704002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	12.0	12.3	3	30	

SAMPLE DUPLICATE: 3195441

Parameter	Units	92418231004 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	15.9	15.8	0	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: Y902266

Pace Project No.: 10464704

QC Batch: 590841

Analysis Method: EPA 9071

QC Batch Method: EPA 9071

Analysis Description: 9071 SGT-HEM, TPH

Associated Lab Samples: 10464704001, 10464704002

METHOD BLANK: 3195161

Matrix: Solid

Associated Lab Samples: 10464704001, 10464704002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Petroleum Hydrocarbons	mg/kg	<77.0	250	77.0	02/22/19 11:02	

LABORATORY CONTROL SAMPLE: 3195162

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Petroleum Hydrocarbons	mg/kg	1000	790	79	64-132	

MATRIX SPIKE SAMPLE: 3195163

Parameter	Units	10464667001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Petroleum Hydrocarbons	mg/kg	267000	1070	234000	-3060	64-132	M1

SAMPLE DUPLICATE: 3195164

Parameter	Units	10464667001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Petroleum Hydrocarbons	mg/kg	267000	268000	1	34	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.

## QUALIFIERS

Project: Y902266  
Pace Project No.: 10464704

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

### ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Y902266

Pace Project No.: 10464704

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10464704001	Y902266-01	ASTM D2974	590889		
10464704002	Y902266-02	ASTM D2974	590889		
10464704001	Y902266-01	EPA 9071	590841	EPA 9071	590870
10464704002	Y902266-02	EPA 9071	590841	EPA 9071	590870

## REPORT OF LABORATORY ANALYSIS

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**Your Lab's letterhead here...**

Address

City, St. Zip

Phone/Fax

**WO# : 10464704**



10464704

**Sending Laboratory:**

Origins Laboratory, Inc.  
1725 West Elk Place  
Denver, CO 80211  
Phone: 303.433.1322  
Fax: 303.265.9645

Project Manager: Noelle Doyle Mathis

**Subcontracted Laboratory:**

Pace Analytical  
1700 Elm St, Suite 200  
Minneapolis, MN 55414  
Phone: (612) 607-6436  
Fax: -

**Work Order: Y902266**

Analysis	Due	Expires	Comments
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**Sample ID: Y902266-01** *Soil* **Sampled: 02/20/2019 11:10**

*001*

Oil and Grease-SGT by 9071 02/25/2019 03/20/2019 11:10

Containers Supplied:

**Sample ID: Y902266-02** *Soil* **Sampled: 02/20/2019 11:20**

*002*

Oil and Grease-SGT by 9071 02/25/2019 03/20/2019 11:20

Containers Supplied:

Released By

*[Signature]*

Date


*2/20/19*

Received By

*Jennifer Johnson Pace 2/21/19 9:10*

Date

*T=2.3*

	Document Name: <b>Sample Condition Upon Receipt Form</b>	Document Revised: 06Feb2019 Page 1 of 1
	Document No.: <b>F-MN-L-213-rev.25</b>	Issuing Authority: Pace Minnesota Quality Office

<b>Sample Condition Upon Receipt</b> Courier: <input checked="" type="checkbox"/> Fed-Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Client <input type="checkbox"/> Pace <input type="checkbox"/> SpeedDee <input type="checkbox"/> Commercial See Exception	<b>Client Name:</b> <u>Origins Laboratory</u>	<b>Project #:</b> <b>WO# : 10464704</b>
<b>Tracking Number:</b> <u>7745 2078 1569</u>	<b>PM:</b> RT1 <b>Due Date:</b> 02/25/19 <b>CLIENT:</b> ORIGINS LAB	
<b>Custody Seal on Cooler/Box Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <b>Seals Intact?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <b>Biological Tissue Frozen?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		
<b>Packing Material:</b> <input type="checkbox"/> Bubble Wrap <input checked="" type="checkbox"/> Bubble Bags <input type="checkbox"/> None <input type="checkbox"/> Other: _____ <b>Temp Blank?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
<b>Thermometer:</b> <input checked="" type="checkbox"/> G87A9155100842 <input type="checkbox"/> G87A9170600254 <b>Type of Ice:</b> <input checked="" type="checkbox"/> Wet <input type="checkbox"/> Blue <input type="checkbox"/> None <input type="checkbox"/> Dry <input type="checkbox"/> Melted		

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C	Cooler Temp Read w/temp blank: _____ °C	Average Corrected Temp (no temp blank only): <u>2.3</u> °C	See Exceptions <input type="checkbox"/>
Correction Factor: <u>-0.2</u>	Cooler Temp Corrected w/temp blank: _____ °C		

USDA Regulated Soil: ( ☐ N/A, water sample/Other: \_\_\_\_\_ )

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Date/Initials of Person Examining Contents: JJ 2/21/19

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present and Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
-Pace Containers Used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	11. If no, write ID/ Date/Time on Container Below: _____ See Exception <input type="checkbox"/>
Matrix: <input type="checkbox"/> Water <input checked="" type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other	
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Sulfide, NaOH >12 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<input type="checkbox"/> NaOH <input type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Positive for Res. <input type="checkbox"/> Yes <input type="checkbox"/> No See Exception <input type="checkbox"/>
Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. See Exception <input type="checkbox"/>
Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14. Pace Trip Blank Lot # (if purchased): _____
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

#### CLIENT NOTIFICATION/RESOLUTION

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Field Data Required? ☐ Yes ☐ No

Comments/Resolution: \_\_\_\_\_

Project Manager Review: [Signature]

Date: 2/21/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).