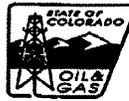


State of Colorado  
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303) 894-2100 Fax 894-2109



FOR OGCC USE ONLY

**SITE INVESTIGATION AND REMEDIATION WORKPLAN**

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

OGCC Employee:

Spill  Complaint  
 Inspection  NOAV

Tracking No:

**CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED**

Spill or Release  Plug & Abandon  Central Facility Closure  Site/Facility Closure  Other (describe): \_\_\_\_\_

**GENERAL INFORMATION**

<b>OGCC Operator Number:</b> 47121 Name of Operator: <u>Kerr-McGee Gathering LLC</u> Address: <u>P.O. Box 173779</u> City: <u>Denver</u> State: <u>CO</u> Zip: <u>80202</u>		Contact Name and Telephone <b>Name:</b> <u>Erik Mickelson</u> No: <u>720-929-4306</u> Fax: _____	
API/Facility No: _____ Facility Name: <u>Pipeline 38-0000-5854-4"</u> Well Name: _____ Location (Qtr, Sec, Twp, Rng, Meridian): <u>SESE S11 T4S R63W</u>		County: <u>Arapahoe</u> Facility Number: _____ Well Number: _____ Latitude: <u>39.709735</u> Longitude: <u>-104.396589</u>	

**TECHNICAL CONDITIONS**

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): Condensate

Site Conditions: Is location within a sensitive area (according to Rule 901e)?  Y  N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Non-Crop Land

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Clayey Sand

Potential receptors (water wells within 1/4 mi, surface waters, etc.): There are no potential receptors within 1/4 mile of the site.

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):	Extent of Impact:	How Determined:
<input checked="" type="checkbox"/> Soils	<u>22' (E-W) x 37' (N-S) x 23' bgs</u>	<u>Excavation, drilling, soil sampling, and laboratory analysis</u>
<input type="checkbox"/> Vegetation	_____	_____
<input type="checkbox"/> Groundwater	_____	_____
<input type="checkbox"/> Surface water	_____	_____

**REMEDIATION WORKPLAN**

Describe initial action taken (if previously provided, refer to that form or document):

On September 23, 2015, a release due to internal corrosion of the pipeline was discovered at the 38-0000-5854-4" Pipeline. The pipeline was isolated, blown down, and excavation activities commenced. An Initial/Supplemental Form 19 was submitted to the COGCC on September 30, 2015, under COGCC Document No.400908441. The COGCC has issued Spill Tracking number 443445 for this release.

Describe how source is to be removed:

On September 23, 2015, excavation activities commenced and approximately 140 cubic yards of impacted material were removed and transported to the Tower Landfill in Commerce City, Colorado for disposal. Excavation activities were guided in the field using a photoionization detector (PID) to measure volatile organic compound (VOC) concentrations in soil. Soil samples were collected from the sidewalls and base of the final extent of the excavation area at approximately 19 and 20 feet below ground surface (bgs), respectively. Soil samples were submitted to Origins Laboratory in Denver, Colorado for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) by USEPA Method 8260, TPH - diesel range organics and oil range organics (DRO and ORO) by USEPA Method 8015. Laboratory results indicated that constituent concentrations in the soil samples collected from the final extent of the excavation area were below the applicable COGCC Table 910-1 standards at all locations except BH02@20, which exceeded the COGCC Table 910-1 standards for benzene and TPH. Soil analytical results are summarized in Table 1. Soil sample locations are illustrated in Figure 1 and laboratory analytical reports are included as Attachment A.

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

Impacted soil was excavated and transported to the Tower Landfill in Commerce City, Colorado for disposal. Additional assessment and proposed soil remediation measures are described on the following page.



Tracking Number: Name of Operator: OGCC Operator No: Received Date: Well Name & No: Facility Name & No.:

REMEDIATION WORKPLAN (CONT.)

OGCC Employee:

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.): Groundwater was not encountered during the excavation or soil boring activities.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required. The excavation has been backfilled with clean soil and graded to match the adjacent topography. Reclamation activities at the site will be compliant with COGCC regulations.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing. Is further site investigation required? [ ] Y [X] N If yes, describe: On November 30, 2015, five soil borings were advanced in order to delineate the vertical and lateral extent of soil impacts confirmed in excavation soil sample B02@20. Soil samples were collected from various depths and submitted to Origins Laboratory in Denver, Colorado for analysis of BTEX and TPH-GRO by USEPA Method 8260, TPH-DRO and TPH-ORO by USEPA Method 8015. Laboratory results indicated that constituent concentrations in the soil samples collected from the soil borings were below the applicable COGCC Table 910-1 standards. Vertical profiling and lateral assessment data indicate that soil impacts extend from approximately 20 to 23 feet bgs in the immediate vicinity of excavation soil sample B02@20. Soil analytical results are summarized in Table 1 and soil boring and sample locations are illustrated in Figure 1. The laboratory analytical reports and boring logs are included as Attachments A and B, respectively. Remaining soil impacts will be addressed through the application of insitu remediation technology. Following treatment of the remaining soil impacts, confirmation soil samples will be collected to verify the success of the remedial application.

Final disposition of E&P waste (land treated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.): Impacted soil was transported to the Tower Landfill in Commerce City, Colorado.

IMPLEMENTATION SCHEDULE

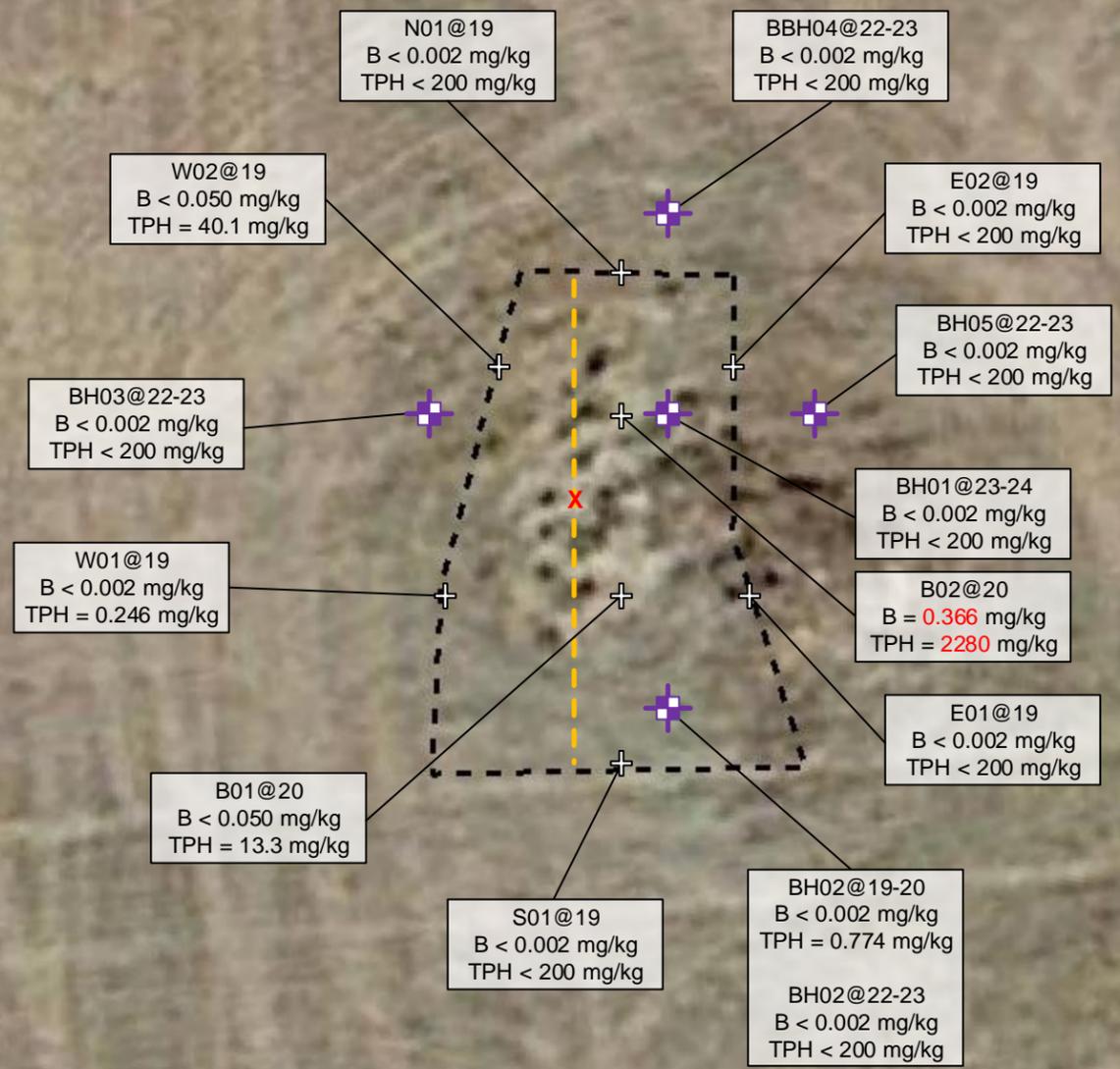
Date Site Investigation Began: 9/23/2015 Date Site Investigation Completed: 11/30/2015 Remediation Plan Submitted: Remediation Start Date: 9/23/2015 Anticipated Completion Date: 5/30/2017 Actual Completion Date:

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete. Print Name: Erik Mickelson

Signed: [Signature] Title: Senior HSE Representative Date: 1/18/16

OGCC Approved: Title: Date:

**FIGURE**



**Legend**

- Excavation Extent (Collected via Trimble GPS)
- Area of Release
- Soil Sample Location
- Soil Boring Location
- Pipeline 38-0000-5854-4"

**Notes**

All Locations are Approximate Unless Otherwise Noted.

B – Benzene  
 TPH – Total Petroleum Hydrocarbons  
 mg/kg – Milligrams Per Kilogram

0 ft. 15 ft. 30 ft.

Image Source: Google Earth 2015

DATE: December 30, 2015

DESIGNED BY: D. Wade

DRAWN BY: D. Wade



**Kerr-McGee Gathering, LLC**  
**Pipeline 38-00005854-4"**  
 SESE, Section 11, Township 4 South, Range 63 West  
 Arapahoe County, Colorado

Sample Location  
 Map

FIGURE  
 1

# TABLE

**TABLE 1**  
**PIPELINE 38-0000-5854-4"**  
**SOIL SAMPLE RESULTS SUMMARY TABLE**  
**KERR-McGEE GATHERING, LLC**

Sample ID	Date	Depth (ft. bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TVPH-GRO (mg/kg)	TEPH-DRO (mg/kg)	TEPH-ORO (mg/kg)
<b>COGCC standards for soil (mg/kg) <sup>(1)</sup></b>			<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	<b>500</b>		
B01@20	09/23/15	20	<0.050	<0.050	<0.050	0.116	13.3	<50	<200
B02@20	09/25/15	20	<b>0.366</b>	3.29	6.84	69.8	<b>1820</b>	<b>460</b>	<200
N01@19	09/25/15	19	<0.002	<0.002	<0.002	<0.002	<0.200	<50	<200
W01@19	09/25/15	19	<0.002	<0.002	<0.002	<0.002	0.246	<50	<200
W02@19	09/25/15	19	<0.050	<0.050	<0.050	0.066	40.1	<50	<200
E01@19	09/25/15	19	<0.002	<0.002	<0.002	<0.002	<0.200	<50	<200
E02@19	09/25/15	19	<0.002	<0.002	<0.002	<0.002	<0.200	<50	<200
S01@19	09/25/15	19	<0.002	<0.002	<0.002	<0.002	<0.200	<50	<200
BH01@23-24	11/30/15	23-24	<0.002	<0.002	<0.002	<0.002	<0.200	<50	<200
BH02@19-20	11/09/15	19-20	<0.002	<0.002	0.003	0.018	0.774	<50	<200
BH02@22-23	11/30/15	22-23	<0.002	<0.002	<0.002	<0.002	<0.200	<50	<200
BH03@22-23	11/30/15	22-23	<0.002	<0.002	<0.002	<0.002	<0.200	<50	<200
BH04@22-23	11/30/15	22-23	<0.002	<0.002	<0.002	<0.002	<0.200	<50	<200
BH05@22-23	11/30/15	22-23	<0.002	<0.002	<0.002	<0.002	<0.200	<50	<200

**Notes:**

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

COGCC = Colorado Oil and Gas Conservation Commission

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

TVPH - GRO = Total volatile petroleum hydrocarbons - gasoline range organics

TEPH - DRO = Total extractable petroleum hydrocarbons - diesel range organics

TEPH - ORO = Total extractable petroleum hydrocarbons - oil range organics

mg/kg = Milligrams per kilogram.

ft. bgs = Feet below ground surface.

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

**ATTACHMENT A**  
**LABORATORY ANALYTICAL DATA**

September 24, 2015

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver CO 80211

**Project Name - KMG - 5854-4" Maintenance**

**Project Number - 88855826**

Attached are your analytical results for KMG - 5854-4" Maintenance received by Origins Laboratory, Inc. September 23, 2015. This project is associated with Origins project number X509316-01.

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: 88855826  
Project: KMG - 5854-4" Maintenance

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B01 @ 20'	X509316-01	Soil	September 23, 2015 16:27	09/23/2015 18:02

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: 88855826  
 Project: KMG - 5854-4" Maintenance

Origins Laboratory

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

**Sample Receipt Checklist**

Origins Work Order: X509316 Client: Tasman  
 Client Project ID: 5854-4" Maintenance  
 Checklist Completed by: gpc Shipped Via: \_\_\_\_\_  
 Date/time completed: 9/23/15 @ 2003 (UPS, FedE, Hand Delivered, Pick-up, etc.)  
 Airbill #: \_\_\_\_\_  
 Matrix(s) Received: (Check all that apply):  Soil/Solid \_\_\_\_\_ Water \_\_\_\_\_ Other: \_\_\_\_\_  
 Cooler Number/Temperature: \_\_\_\_\_ / 7.4 °C \_\_\_\_\_ / \_\_\_\_\_ °C \_\_\_\_\_ / \_\_\_\_\_ °C \_\_\_\_\_ / \_\_\_\_\_ °C (Describe)  
 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"/>		client had sampled two hours prior
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)			<input checked="" type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)			<input checked="" type="checkbox"/>	
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked <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 HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)			<input checked="" 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.

Gabriel Cornez Reviewed by (Project Manager) 9/23/15 Date/Time Reviewed

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: 88855826  
 Project: KMG - 5854-4" Maintenance

**B01 @ 20'**  
**9/23/2015 4:27:00PM**

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

**Origins Laboratory, Inc.**  
**X509316-01 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	5123008	09/23/2015	09/23/2015	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 79.2 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	<b>13.3</b>	5.00	mg/kg	25	5123007	09/23/2015	09/24/2015	
Benzene	ND	0.050	"	"	"	"	"	
Toluene	ND	0.050	"	"	"	"	"	
Ethylbenzene	ND	0.050	"	"	"	"	"	
Xylenes, total	<b>0.116</b>	0.050	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 96.5 % 70-130 " " "  
*Surrogate: Toluene-d8* 95.3 % 70-130 " " "  
*Surrogate: 4-Bromofluorobenzene* 98.9 % 70-130 " " "

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: 88855826  
 Project: KMG - 5854-4" Maintenance

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

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

**Batch 5123007 - EPA 5030 (soil)**

**Blank (5123007-BLK1)**

Prepared: 09/23/2015 Analyzed: 09/23/2015

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							
Benzene	ND	0.002	"							
Toluene	ND	0.002	"							
Ethylbenzene	ND	0.002	"							
Xylenes, total	ND	0.002	"							
Surrogate: 1,2-Dichloroethane-d4	64.5		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	59.8		"	62.5		95.6	70-130			
Surrogate: 4-Bromofluorobenzene	60.7		"	62.5		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  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: 88855826  
 Project: KMG - 5854-4" Maintenance

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

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

**Batch 5123007 - EPA 5030 (soil)**

**LCS (5123007-BS1)**

Prepared: 09/23/2015 Analyzed: 09/23/2015

Benzene	0.098	0.002	mg/kg	0.100		97.8	77.1-124			
Toluene	0.097	0.002	"	0.100		96.7	74.5-128			
Ethylbenzene	0.108	0.002	"	0.100		108	66.4-127			
m,p-Xylene	0.210	0.004	"	0.200		105	76.6-124			
o-Xylene	0.108	0.002	"	0.100		108	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	64.5		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	60.2		"	62.5		96.4	70-130			
Surrogate: 4-Bromofluorobenzene	63.6		"	62.5		102	70-130			

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: 88855826  
 Project: KMG - 5854-4" Maintenance

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

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

Batch 5123007 - EPA 5030 (soil)

Matrix Spike (5123007-MS1)	Source: X509303-01			Prepared: 09/23/2015 Analyzed: 09/23/2015						
Benzene	0.109	0.002	mg/kg	0.100	ND	109	71.8-126			
Toluene	0.108	0.002	"	0.100	ND	108	65.1-130			
Ethylbenzene	0.113	0.002	"	0.100	ND	113	62.2-130			
m,p-Xylene	0.230	0.004	"	0.200	ND	115	46.5-137			
o-Xylene	0.115	0.002	"	0.100	ND	115	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	66.6		ug/kg	62.5		107	70-130			
Surrogate: Toluene-d8	61.2		"	62.5		97.9	70-130			
Surrogate: 4-Bromofluorobenzene	64.6		"	62.5		103	70-130			

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: 88855826  
 Project: KMG - 5854-4" Maintenance

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

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

Batch 5123007 - EPA 5030 (soil)

Matrix Spike Dup (5123007-MSD1)	Source: X509303-01			Prepared: 09/23/2015 Analyzed: 09/23/2015						
Benzene	0.106	0.002	mg/kg	0.100	ND	106	71.8-126	2.67	11.3	
Toluene	0.103	0.002	"	0.100	ND	103	65.1-130	4.28	15.4	
Ethylbenzene	0.106	0.002	"	0.100	ND	106	62.2-130	6.83	19.6	
m,p-Xylene	0.215	0.004	"	0.200	ND	107	46.5-137	6.77	19.2	
o-Xylene	0.109	0.002	"	0.100	ND	109	54.2-134	5.13	17.9	
Surrogate: 1,2-Dichloroethane-d4	68.2		ug/kg	62.5		109	70-130			
Surrogate: Toluene-d8	60.4		"	62.5		96.6	70-130			
Surrogate: 4-Bromofluorobenzene	65.3		"	62.5		105	70-130			

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Bob Cornez  
 Project Number: 88855826  
 Project: KMG - 5854-4" Maintenance

**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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

**Extractable Petroleum Hydrocarbons by 8015C - Quality Control**  
**Origins Laboratory, Inc.**

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

**Batch 5I23008 - EPA 3580**

**Blank (5I23008-BLK1)**

Prepared: 09/23/2015 Analyzed: 09/23/2015

Diesel (C10-C28)	ND	50	mg/kg							
Residual Range Organics (C28-C36)	ND	200	"							
Surrogate: o-Terphenyl	48		"	50.0		96.7	59-131			

**LCS (5I23008-BS1)**

Prepared: 09/23/2015 Analyzed: 09/23/2015

Diesel (C10-C28)	900	50	mg/kg	1000		90.1	64-121			
Residual Range Organics (C28-C36)	990	200	"	1000		99.0	58-124			
Surrogate: o-Terphenyl	52		"	50.0		103	59-131			

**Matrix Spike (5I23008-MS1)**

**Source: X509303-01**

Prepared: 09/23/2015 Analyzed: 09/23/2015

Diesel (C10-C28)	1000	50	mg/kg	1000	130	88.9	53-125			
Residual Range Organics (C28-C36)	790	200	"	1000	70	72.0	47-133			
Surrogate: o-Terphenyl	46		"	50.0		91.2	59-131			

**Matrix Spike Dup (5I23008-MSD1)**

**Source: X509303-01**

Prepared: 09/23/2015 Analyzed: 09/23/2015

Diesel (C10-C28)	1000	50	mg/kg	1000	130	91.7	53-125	2.72	20	
Residual Range Organics (C28-C36)	950	200	"	1000	70	87.7	47-133	18.0	20	
Surrogate: o-Terphenyl	49		"	50.0		97.3	59-131			

Origins Laboratory, Inc.



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

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Bob Cornez  
Project Number: 88855826  
Project: KMG - 5854-4" Maintenance

---

**Notes and Definitions**

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



*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.*

September 27, 2015

Tasman Geosciences

Christine Wasko

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - KMG - Pipeline 5854-4"

Project Number - [none]

Attached are your analytical results for KMG - Pipeline 5854-4" received by Origins Laboratory, Inc. September 25, 2015. This project is associated with Origins project number X509342-01.

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

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

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

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

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

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



Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Christine Wasko  
Project Number: [none]  
Project: KMG - Pipeline 5854-4"

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B02 @ 20	X509342-01	Soil	September 25, 2015 9:20	09/25/2015 16:30
N01 @ 19	X509342-02	Soil	September 25, 2015 9:22	09/25/2015 16:30
W01 @ 19	X509342-03	Soil	September 25, 2015 9:24	09/25/2015 16:30
W02 @ 19	X509342-04	Soil	September 25, 2015 9:26	09/25/2015 16:30
E01 @ 19	X509342-05	Soil	September 25, 2015 9:28	09/25/2015 16:30
E02 @ 19	X509342-06	Soil	September 25, 2015 9:30	09/25/2015 16:30
S01 @ 19	X509342-07	Soil	September 25, 2015 9:32	09/25/2015 16:30

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: KMG - Pipeline 5854-4"

www.originslaboratory.com  
 X509342  
 page 1 of 1

Client: Ape Industries/Tasman  
 Address: \_\_\_\_\_  
 Project Manager: C Wasko  
 Project Name: Pipeline 5854-4"  
 Project Number: \_\_\_\_\_  
 Samples Collected By: EWist Dillon-Herzog  
 Telephone Number: 312 694 5394  
 Email Address: c.wasko@tasman-geo.com

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative					Matrix			Analysis	Sample Instructions	Turnaround Time	
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summ #	Other				
Bφ2 @ 20	9/25/15	920	1	X						X			BTEX 8240 4-KO 8260 ORO/DRO 8015		Same Day <input checked="" type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/>
Nφ1 @ 19		922													
Wφ1 @ 19		924													
Wφ2 @ 19		926													
Eφ1 @ 19		928													
Eφ2 @ 19		930													
Sφ1 @ 19		932													
Relinquished By: <u>[Signature]</u>	Date: 9/25/15	Time: 15:00	Time: 15:00	Received By: <u>[Signature]</u>	Date: 9.25.15	Time: 16:30	Date: 9.25.15	Time: 16:30	Received By: <u>[Signature]</u>	Date: 9.25.15	Time: 16:30	Date: 9.25.15	Time: 16:30	Time: 16:30	Time: 16:30
Relinquished By: _____	Date: _____	Time: _____	Time: _____	Received By: _____	Date: _____	Time: _____	Date: _____	Time: _____	Received By: _____	Date: _____	Time: _____	Date: _____	Time: _____	Time: _____	Time: _____

1725 Elk Place | Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.255.9645

Origins Laboratory, Inc.  


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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: KMG - Pipeline 5854-4"

Origins Laboratory

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

**Sample Receipt Checklist**

Origins Work Order: X5093412

Client: Tasman

Client Project ID: Pipeline 5854-4"

Checklist Completed by: Jess Smith

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

Date/time completed: 9/25/15

Airbill #: NA

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

Cooler Number/Temperature: 1 / 4.1 °C 1 °C 1 °C 1 °C

Thermometer ID: 1003

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

Jess Smith  
 Reviewed by (Project Manager)

9/25/15  
 Date/Time Reviewed

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: KMG - Pipeline 5854-4"

B02 @ 20  
 9/25/2015 9:20:00AM

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

**Origins Laboratory, Inc.**  
 X509342-01 (Soil)

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	460	50	mg/kg	1	5125012	09/25/2015	09/25/2015	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	
<i>Surrogate: o-Terphenyl</i>	91.9 %	59-131			"	"	"	

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	1820	50.0	mg/kg	250	5125013	09/25/2015	09/25/2015	
Benzene	0.366	0.050	"	25	"	"	09/25/2015	
Toluene	3.29	0.050	"	"	"	"	"	
Ethylbenzene	6.84	0.050	"	"	"	"	"	
Xylenes, total	69.8	0.498	"	250	"	"	09/25/2015	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	102 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	103 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	109 %	70-130			"	"	"	

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: KMG - Pipeline 5854-4"

N01 @ 19  
 9/25/2015 9:22:00AM

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

**Origins Laboratory, Inc.**  
 X509342-02 (Soil)

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	5125012	09/25/2015	09/25/2015	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl*      69.7 %      59-131      "      "      "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	5125013	09/25/2015	09/25/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4*      108 %      70-130      "      "      "

*Surrogate: Toluene-d8*      96.9 %      70-130      "      "      "

*Surrogate: 4-Bromofluorobenzene*      100 %      70-130      "      "      "

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: KMG - Pipeline 5854-4"

W01 @ 19  
 9/25/2015 9:24:00AM

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

Origins Laboratory, Inc.  
 X509342-03 (Soil)

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	5125012	09/25/2015	09/25/2015	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl*      74.7 %      59-131      "      "      "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	0.246	0.200	mg/kg	1	5125013	09/25/2015	09/25/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4*      108 %      70-130      "      "      "

*Surrogate: Toluene-d8*      97.1 %      70-130      "      "      "

*Surrogate: 4-Bromofluorobenzene*      101 %      70-130      "      "      "

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: KMG - Pipeline 5854-4"

W02 @ 19  
 9/25/2015 9:26:00AM

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

Origins Laboratory, Inc.  
 X509342-04 (Soil)

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	5125012	09/25/2015	09/25/2015	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 81.9 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	40.1	5.00	mg/kg	25	5125013	09/25/2015	09/25/2015	
Benzene	ND	0.050	"	"	"	"	"	
Toluene	ND	0.050	"	"	"	"	"	
Ethylbenzene	ND	0.050	"	"	"	"	"	
Xylenes, total	0.066	0.050	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 99.1 % 70-130 " " "

*Surrogate: Toluene-d8* 97.6 % 70-130 " " "

*Surrogate: 4-Bromofluorobenzene* 98.5 % 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.

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: KMG - Pipeline 5854-4"

E01 @ 19  
 9/25/2015 9:28:00AM

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

Origins Laboratory, Inc.  
 X509342-05 (Soil)

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	5125012	09/25/2015	09/25/2015	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl*      64.7 %      59-131      "      "      "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	5125013	09/25/2015	09/25/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4*      111 %      70-130      "      "      "

*Surrogate: Toluene-d8*      98.8 %      70-130      "      "      "

*Surrogate: 4-Bromofluorobenzene*      103 %      70-130      "      "      "

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: KMG - Pipeline 5854-4"

E02 @ 19  
 9/25/2015 9:30:00AM

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

**Origins Laboratory, Inc.**  
 X509342-06 (Soil)

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	5125012	09/25/2015	09/25/2015	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 63.5 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	5125013	09/25/2015	09/25/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 110 % 70-130 " " "

*Surrogate: Toluene-d8* 98.5 % 70-130 " " "

*Surrogate: 4-Bromofluorobenzene* 104 % 70-130 " " "

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: KMG - Pipeline 5854-4"

S01 @ 19  
 9/25/2015 9:32:00AM

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

**Origins Laboratory, Inc.**  
 X509342-07 (Soil)

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	5125012	09/25/2015	09/25/2015	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 75.8 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	5125013	09/25/2015	09/25/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 107 % 70-130 " " "  
*Surrogate: Toluene-d8* 95.1 % 70-130 " " "  
*Surrogate: 4-Bromofluorobenzene* 101 % 70-130 " " "

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: KMG - Pipeline 5854-4"

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

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

Batch 5125013 - EPA 5030 (soil)

**Blank (5125013-BLK1)**

Prepared: 09/25/2015 Analyzed: 09/25/2015

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							
Benzene	ND	0.002	"							
Toluene	ND	0.002	"							
Ethylbenzene	ND	0.002	"							
Xylenes, total	ND	0.002	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>66.2</i>		<i>ug/kg</i>	<i>62.5</i>		<i>106</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>58.6</i>		<i>"</i>	<i>62.5</i>		<i>93.7</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>63.7</i>		<i>"</i>	<i>62.5</i>		<i>102</i>	<i>70-130</i>			

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.*

Noelle Doyle Mathis, President

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: KMG - Pipeline 5854-4"

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

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

Batch 5125013 - EPA 5030 (soil)

LCS (5125013-BS1)

Prepared: 09/25/2015 Analyzed: 09/25/2015

Benzene	0.097	0.002	mg/kg	0.100		96.6	77.1-124			
Toluene	0.097	0.002	"	0.100		96.6	74.5-128			
Ethylbenzene	0.104	0.002	"	0.100		104	66.4-127			
m,p-Xylene	0.208	0.004	"	0.200		104	76.6-124			
o-Xylene	0.106	0.002	"	0.100		106	76.6-124			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>65.5</i>		<i>ug/kg</i>	<i>62.5</i>		<i>105</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>59.0</i>		<i>"</i>	<i>62.5</i>		<i>94.4</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>62.7</i>		<i>"</i>	<i>62.5</i>		<i>100</i>	<i>70-130</i>			

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.*

Noelle Doyle Mathis, President

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: KMG - Pipeline 5854-4"

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

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

Batch 5125013 - EPA 5030 (soil)

Matrix Spike (5125013-MS1)	Source: X509328-01			Prepared: 09/25/2015 Analyzed: 09/25/2015						
Benzene	0.100	0.002	mg/kg	0.100	ND	100	71.8-126			
Toluene	0.100	0.002	"	0.100	ND	99.7	65.1-130			
Ethylbenzene	0.109	0.002	"	0.100	ND	109	62.2-130			
m,p-Xylene	0.214	0.004	"	0.200	ND	107	46.5-137			
o-Xylene	0.108	0.002	"	0.100	ND	108	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	66.1		ug/kg	62.5		106	70-130			
Surrogate: Toluene-d8	60.2		"	62.5		96.3	70-130			
Surrogate: 4-Bromofluorobenzene	63.4		"	62.5		101	70-130			

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: KMG - Pipeline 5854-4"

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

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

Batch 5125013 - EPA 5030 (soil)

Matrix Spike Dup (5125013-MSD1)	Source: X509328-01			Prepared: 09/25/2015 Analyzed: 09/25/2015						
Benzene	0.100	0.002	mg/kg	0.100	ND	99.8	71.8-126	0.679	11.3	
Toluene	0.098	0.002	"	0.100	ND	98.4	65.1-130	1.27	15.4	
Ethylbenzene	0.110	0.002	"	0.100	ND	110	62.2-130	0.110	19.6	
m,p-Xylene	0.216	0.004	"	0.200	ND	108	46.5-137	0.817	19.2	
o-Xylene	0.108	0.002	"	0.100	ND	108	54.2-134	0.704	17.9	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>66.6</i>		<i>ug/kg</i>	<i>62.5</i>		<i>107</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>58.2</i>		<i>"</i>	<i>62.5</i>		<i>93.1</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>62.9</i>		<i>"</i>	<i>62.5</i>		<i>101</i>	<i>70-130</i>			

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Christine Wasko  
 Project Number: [none]  
 Project: KMG - Pipeline 5854-4"

**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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

**Extractable Petroleum Hydrocarbons by 8015C - Quality Control**  
**Origins Laboratory, Inc.**

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

Batch 5125012 - EPA 3580

**Blank (5125012-BLK1)**

Prepared: 09/25/2015 Analyzed: 09/25/2015

Diesel (C10-C28)	ND	50	mg/kg							
Residual Range Organics (C28-C36)	ND	200	"							
Surrogate: o-Terphenyl	38		"	50.0		75.9	59-131			

**LCS (5125012-BS1)**

Prepared: 09/25/2015 Analyzed: 09/25/2015

Diesel (C10-C28)	830	50	mg/kg	1000		83.3	64-121			
Residual Range Organics (C28-C36)	950	200	"	1000		94.8	58-124			
Surrogate: o-Terphenyl	47		"	50.0		93.2	59-131			

**Matrix Spike (5125012-MS1)**

Source: X509328-01

Prepared: 09/25/2015 Analyzed: 09/25/2015

Diesel (C10-C28)	870	50	mg/kg	1000	ND	87.2	53-125			
Residual Range Organics (C28-C36)	950	200	"	1000	16	93.1	47-133			
Surrogate: o-Terphenyl	44		"	50.0		88.9	59-131			

**Matrix Spike Dup (5125012-MSD1)**

Source: X509328-01

Prepared: 09/25/2015 Analyzed: 09/25/2015

Diesel (C10-C28)	860	50	mg/kg	1000	ND	85.6	53-125	1.91	20	
Residual Range Organics (C28-C36)	920	200	"	1000	16	90.8	47-133	2.54	20	
Surrogate: o-Terphenyl	44		"	50.0		88.7	59-131			

Origins Laboratory, Inc.



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

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Christine Wasko  
Project Number: [none]  
Project: KMG - Pipeline 5854-4"

---

### Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



*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.*

---

Noelle Doyle Mathis, President

November 17, 2015

Tasman Geosciences

Dan Wade

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - KMG - Pipeline 38-0000-5854-4

Project Number - [none]

Attached are your analytical results for KMG - Pipeline 38-0000-5854-4 received by Origins Laboratory, Inc. November 10, 2015. This project is associated with Origins project number X511119-01.

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

Dan Wade  
Project Number: [none]  
Project: KMG - Pipeline 38-0000-5854-4

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH02 @ 19-20	X511119-01	Soil	November 9, 2015 15:50	11/10/2015 16:53

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

Dan Wade  
 Project Number: [none]  
 Project: KMG - Pipeline 38-0000-5854-4

Origins Laboratory

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

**Sample Receipt Checklist**

Origins Work Order: XS11119 Client: Tasman  
 Client Project ID: KMG - Pipeline  
 Checklist Completed by: Jeff Smith Shipped Via: HD  
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Date/time completed: 11/11/15 Airbill #: N/A  
 Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_  
 Cooler Number/Temperature: 1 13.8 °c / \_\_\_\_\_ °c / \_\_\_\_\_ °c / \_\_\_\_\_ °c (Describe)  
 Thermometer ID: TOCS

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	X			
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact <sup>(1)</sup> ?	X			
Was adequate sample volume provided <sup>(1)</sup> ?	✓			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		X		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	X			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	✓			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	✓			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	✓			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			✓	
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 HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)			✓	
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) Jeff Smith Date/Time Reviewed 11/11/15

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

Dan Wade  
 Project Number: [none]  
 Project: KMG - Pipeline 38-0000-5854-4

**BH02 @ 19-20**  
**11/9/2015 3:50:00PM**

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

**Origins Laboratory, Inc.**  
**X511119-01 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	B5K1106	11/11/2015	11/12/2015	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 91.5 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	<b>0.774</b>	0.200	mg/kg	1	B5K1105	11/11/2015	11/11/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	<b>0.003</b>	0.002	"	"	"	"	"	
Xylenes, total	<b>0.018</b>	0.002	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 112 % 70-130 " " "  
*Surrogate: Toluene-d8* 102 % 70-130 " " "  
*Surrogate: 4-Bromofluorobenzene* 98.4 % 70-130 " " "

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Dan Wade  
 Project Number: [none]  
 Project: KMG - Pipeline 38-0000-5854-4

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

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

**Batch B5K1105 - EPA 5030 (soil)**

**Blank (B5K1105-BLK1)**

Prepared: 11/11/2015 Analyzed: 11/11/2015

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							
Benzene	ND	0.002	"							
Toluene	ND	0.002	"							
Ethylbenzene	ND	0.002	"							
Xylenes, total	ND	0.002	"							
Surrogate: 1,2-Dichloroethane-d4	65.0		ug/kg	62.5		104	70-130			
Surrogate: Toluene-d8	63.9		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	61.8		"	62.5		98.9	70-130			

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Dan Wade  
 Project Number: [none]  
 Project: KMG - Pipeline 38-0000-5854-4

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

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

**Batch B5K1105 - EPA 5030 (soil)**

**LCS (B5K1105-BS1)**

Prepared: 11/11/2015 Analyzed: 11/11/2015

Benzene	0.099	0.002	mg/kg	0.100		99.5	77.1-124			
Toluene	0.100	0.002	"	0.100		99.8	74.5-128			
Ethylbenzene	0.094	0.002	"	0.100		94.3	66.4-127			
m,p-Xylene	0.186	0.004	"	0.200		93.2	76.6-124			
o-Xylene	0.092	0.002	"	0.100		92.4	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	63.2		ug/kg	62.5		101	70-130			
Surrogate: Toluene-d8	63.6		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	63.4		"	62.5		101	70-130			

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Dan Wade  
 Project Number: [none]  
 Project: KMG - Pipeline 38-0000-5854-4

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

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

Batch B5K1105 - EPA 5030 (soil)

Matrix Spike (B5K1105-MS1)	Source: X511119-01			Prepared: 11/11/2015 Analyzed: 11/11/2015						
Benzene	0.077	0.002	mg/kg	0.100	ND	77.2	71.8-126			
Toluene	0.077	0.002	"	0.100	ND	77.1	65.1-130			
Ethylbenzene	0.080	0.002	"	0.100	0.003	77.3	62.2-130			
m,p-Xylene	0.168	0.004	"	0.200	0.015	76.2	46.5-137			
o-Xylene	0.076	0.002	"	0.100	0.003	73.9	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	67.5		ug/kg	62.5		108	70-130			
Surrogate: Toluene-d8	63.0		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	64.0		"	62.5		102	70-130			

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Dan Wade  
 Project Number: [none]  
 Project: KMG - Pipeline 38-0000-5854-4

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

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

Batch B5K1105 - EPA 5030 (soil)

Matrix Spike Dup (B5K1105-MSD1)	Source: X511119-01			Prepared: 11/11/2015 Analyzed: 11/11/2015						
Benzene	0.073	0.002	mg/kg	0.100	ND	73.3	71.8-126	5.18	11.3	
Toluene	0.070	0.002	"	0.100	ND	69.9	65.1-130	9.76	15.4	
Ethylbenzene	0.072	0.002	"	0.100	0.003	68.8	62.2-130	11.3	19.6	
m,p-Xylene	0.153	0.004	"	0.200	0.015	68.7	46.5-137	9.44	19.2	
o-Xylene	0.071	0.002	"	0.100	0.003	68.1	54.2-134	7.78	17.9	
Surrogate: 1,2-Dichloroethane-d4	71.3		ug/kg	62.5		114	70-130			
Surrogate: Toluene-d8	63.4		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	64.3		"	62.5		103	70-130			

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Dan Wade  
 Project Number: [none]  
 Project: KMG - Pipeline 38-0000-5854-4

**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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

**Extractable Petroleum Hydrocarbons by 8015C - Quality Control**  
**Origins Laboratory, Inc.**

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

**Batch B5K1106 - EPA 3580**

**Blank (B5K1106-BLK1)**

Prepared: 11/11/2015 Analyzed: 11/12/2015

Diesel (C10-C28)	ND	50	mg/kg							
Residual Range Organics (C28-C36)	ND	200	"							
Surrogate: o-Terphenyl	47		"	50.0		94.0	59-131			

**LCS (B5K1106-BS1)**

Prepared: 11/11/2015 Analyzed: 11/12/2015

Diesel (C10-C28)	790	50	mg/kg	1000		79.4	64-121			
Residual Range Organics (C28-C36)	790	200	"	1000		78.9	58-124			
Surrogate: o-Terphenyl	45		"	50.0		90.1	59-131			

**Matrix Spike (B5K1106-MS1)**

Source: X511119-01

Prepared: 11/11/2015 Analyzed: 11/12/2015

Diesel (C10-C28)	930	50	mg/kg	1000	ND	92.6	53-125			
Residual Range Organics (C28-C36)	960	200	"	1000	15	94.9	47-133			
Surrogate: o-Terphenyl	48		"	50.0		95.2	59-131			

**Matrix Spike Dup (B5K1106-MSD1)**

Source: X511119-01

Prepared: 11/11/2015 Analyzed: 11/12/2015

Diesel (C10-C28)	990	50	mg/kg	1000	ND	99.1	53-125	6.72	20	
Residual Range Organics (C28-C36)	1100	200	"	1000	15	105	47-133	9.60	20	
Surrogate: o-Terphenyl	56		"	50.0		111	59-131			

Origins Laboratory, Inc.



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

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Dan Wade  
Project Number: [none]  
Project: KMG - Pipeline 38-0000-5854-4

---

### Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



*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

December 04, 2015

Tasman Geosciences

Dan Wade

6899 Pecos Street, Unit C

Denver CO 80211

**Project Name - KMG - Pipeline 38-0000-5854-4"      Project Number - [none]**

Attached are your analytical results for KMG - Pipeline 38-0000-5854-4" received by Origins Laboratory, Inc. December 01, 2015. This project is associated with Origins project number X512020-01.

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

Dan Wade  
Project Number: [none]  
Project: KMG - Pipeline 38-0000-5854-4"

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01 @ 23-24'	X512020-01	Soil	November 30, 2015 10:45	12/01/2015 17:04
BH02 @ 22-23'	X512020-02	Soil	November 30, 2015 12:40	12/01/2015 17:04
BH03 @ 22-23'	X512020-03	Soil	November 30, 2015 14:00	12/01/2015 17:04
BH04 @ 22-23'	X512020-04	Soil	November 30, 2015 15:20	12/01/2015 17:04
BH05 @ 22-23'	X512020-05	Soil	November 30, 2015 16:25	12/01/2015 17:04

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

Dan Wade  
 Project Number: [none]  
 Project: KMG - Pipeline 38-0000-5854-4"

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: XS2020 Client: Tasman  
 Client Project ID: Pipeline 38-0000-5854-4"  
 Checklist Completed by: Jeff Smith Shipped Via: Pick Up  
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Date/time completed: 12/2/15 Airbill #: NA  
 Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_ (Describe)  
 Cooler Number/Temperature: 1 / 4.2 °C  / \_\_\_\_\_ °C  / \_\_\_\_\_ °C  / \_\_\_\_\_ °C  
 Thermometer ID: 705

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	X			
Is there ice present (document if blue ice is used)	Y			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		f		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		f		
Were all samples received intact <sup>(1)</sup> ?	f			
Was adequate sample volume provided <sup>(1)</sup> ?	f			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		X		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	X			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	f			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	f			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	f			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			f	
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 HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)			f	
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: [Signature] (Project Manager)

Date/Time Reviewed: 12/2/15

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

Dan Wade  
 Project Number: [none]  
 Project: KMG - Pipeline 38-0000-5854-4"

**BH01 @ 23-24'**  
**11/30/2015 10:45:00AM**

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

**Origins Laboratory, Inc.**  
**X512020-01 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	B5L0201	12/02/2015	12/02/2015	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 75.6 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B5L0202	12/02/2015	12/02/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 92.5 % 70-130 " " "

*Surrogate: Toluene-d8* 104 % 70-130 " " "

*Surrogate: 4-Bromofluorobenzene* 94.9 % 70-130 " " "

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Dan Wade  
 Project Number: [none]  
 Project: KMG - Pipeline 38-0000-5854-4"

**BH02 @ 22-23'**  
**11/30/2015 12:40:00PM**

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

**Origins Laboratory, Inc.**  
**X512020-02 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	B5L0201	12/02/2015	12/02/2015	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl*      75.9 %      59-131      "      "      "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B5L0202	12/02/2015	12/02/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4*      93.0 %      70-130      "      "      "

*Surrogate: Toluene-d8*      105 %      70-130      "      "      "

*Surrogate: 4-Bromofluorobenzene*      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  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Dan Wade  
 Project Number: [none]  
 Project: KMG - Pipeline 38-0000-5854-4"

**BH03 @ 22-23'**  
**11/30/2015 2:00:00PM**

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

**Origins Laboratory, Inc.**  
**X512020-03 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	B5L0201	12/02/2015	12/02/2015	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 70.2 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B5L0202	12/02/2015	12/02/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 94.2 % 70-130 " " "  
*Surrogate: Toluene-d8* 105 % 70-130 " " "  
*Surrogate: 4-Bromofluorobenzene* 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.*

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Dan Wade  
 Project Number: [none]  
 Project: KMG - Pipeline 38-0000-5854-4"

**BH04 @ 22-23'**  
**11/30/2015 3:20:00PM**

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

**Origins Laboratory, Inc.**  
**X512020-04 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	B5L0201	12/02/2015	12/02/2015	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 70.9 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B5L0202	12/02/2015	12/02/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 98.0 % 70-130 " " "

*Surrogate: Toluene-d8* 106 % 70-130 " " "

*Surrogate: 4-Bromofluorobenzene* 97.0 % 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  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Dan Wade  
 Project Number: [none]  
 Project: KMG - Pipeline 38-0000-5854-4"

**BH05 @ 22-23'**  
**11/30/2015 4:25:00PM**

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

**Origins Laboratory, Inc.**  
**X512020-05 (Soil)**

**DRO/RRO by EPA8015C**

Diesel (C10-C28)	ND	50	mg/kg	1	B5L0201	12/02/2015	12/02/2015	
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"	

*Surrogate: o-Terphenyl* 77.3 % 59-131 " " "

**GBTEX by EPA 8260C**

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B5L0202	12/02/2015	12/02/2015	
Benzene	ND	0.002	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	
Xylenes, total	ND	0.002	"	"	"	"	"	

*Surrogate: 1,2-Dichloroethane-d4* 92.0 % 70-130 " " "  
*Surrogate: Toluene-d8* 104 % 70-130 " " "  
*Surrogate: 4-Bromofluorobenzene* 91.4 % 70-130 " " "

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Dan Wade  
 Project Number: [none]  
 Project: KMG - Pipeline 38-0000-5854-4"

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

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

**Batch B5L0202 - EPA 5030 (soil)**

**Blank (B5L0202-BLK1)**

Prepared: 12/02/2015 Analyzed: 12/02/2015

Gasoline Range Hydrocarbons	ND	0.200	mg/kg							
Benzene	ND	0.002	"							
Toluene	ND	0.002	"							
Ethylbenzene	ND	0.002	"							
Xylenes, total	ND	0.002	"							
Surrogate: 1,2-Dichloroethane-d4	58.0		ug/kg	62.5		92.7	70-130			
Surrogate: Toluene-d8	64.9		"	62.5		104	70-130			
Surrogate: 4-Bromofluorobenzene	60.0		"	62.5		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  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Dan Wade  
 Project Number: [none]  
 Project: KMG - Pipeline 38-0000-5854-4"

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

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

**Batch B5L0202 - EPA 5030 (soil)**

**LCS (B5L0202-BS1)**

Prepared: 12/02/2015 Analyzed: 12/02/2015

Benzene	0.090	0.002	mg/kg	0.100		90.4	77.1-124			
Toluene	0.093	0.002	"	0.100		93.4	74.5-128			
Ethylbenzene	0.081	0.002	"	0.100		80.9	66.4-127			
m,p-Xylene	0.164	0.004	"	0.200		81.8	76.6-124			
o-Xylene	0.083	0.002	"	0.100		83.1	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	53.1		ug/kg	62.5		85.0	70-130			
Surrogate: Toluene-d8	63.0		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	59.8		"	62.5		95.6	70-130			

Origins Laboratory, Inc.



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

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Dan Wade  
Project Number: [none]  
Project: KMG - Pipeline 38-0000-5854-4"

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

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

Batch B5L0202 - EPA 5030 (soil)

Matrix Spike (B5L0202-MS1)	Source: X512020-01			Prepared: 12/02/2015 Analyzed: 12/02/2015						
Benzene	0.106	0.002	mg/kg	0.100	ND	106	71.8-126			
Toluene	0.104	0.002	"	0.100	ND	104	65.1-130			
Ethylbenzene	0.091	0.002	"	0.100	ND	90.7	62.2-130			
m,p-Xylene	0.180	0.004	"	0.200	ND	89.8	46.5-137			
o-Xylene	0.090	0.002	"	0.100	ND	90.4	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	55.8		ug/kg	62.5		89.2	70-130			
Surrogate: Toluene-d8	64.4		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	59.3		"	62.5		94.9	70-130			

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Dan Wade  
 Project Number: [none]  
 Project: KMG - Pipeline 38-0000-5854-4"

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

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

Batch B5L0202 - EPA 5030 (soil)

Matrix Spike Dup (B5L0202-MSD1)	Source: X512020-01			Prepared: 12/02/2015 Analyzed: 12/02/2015						
Benzene	0.108	0.002	mg/kg	0.100	ND	108	71.8-126	2.49	11.3	
Toluene	0.109	0.002	"	0.100	ND	109	65.1-130	4.19	15.4	
Ethylbenzene	0.095	0.002	"	0.100	ND	94.7	62.2-130	4.32	19.6	
m,p-Xylene	0.186	0.004	"	0.200	ND	92.8	46.5-137	3.25	19.2	
o-Xylene	0.096	0.002	"	0.100	ND	95.8	54.2-134	5.84	17.9	
Surrogate: 1,2-Dichloroethane-d4	56.8		ug/kg	62.5		90.9	70-130			
Surrogate: Toluene-d8	65.4		"	62.5		105	70-130			
Surrogate: 4-Bromofluorobenzene	60.9		"	62.5		97.4	70-130			

Origins Laboratory, Inc.



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

Tasman Geosciences  
 6899 Pecos Street, Unit C  
 Denver CO 80211

Dan Wade  
 Project Number: [none]  
 Project: KMG - Pipeline 38-0000-5854-4"

**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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

**Extractable Petroleum Hydrocarbons by 8015C - Quality Control**  
**Origins Laboratory, Inc.**

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

**Batch B5L0201 - EPA 3580**

**Blank (B5L0201-BLK1)**

Prepared: 12/02/2015 Analyzed: 12/02/2015

Diesel (C10-C28)	ND	50	mg/kg							
Residual Range Organics (C28-C36)	ND	200	"							
Surrogate: o-Terphenyl	44		"	50.0		87.5	59-131			

**LCS (B5L0201-BS1)**

Prepared: 12/02/2015 Analyzed: 12/02/2015

Diesel (C10-C28)	810	50	mg/kg	1000		80.9	64-121			
Residual Range Organics (C28-C36)	860	200	"	1000		86.0	58-124			
Surrogate: o-Terphenyl	45		"	50.0		89.4	59-131			

**Matrix Spike (B5L0201-MS1)**

Source: X512020-01

Prepared: 12/02/2015 Analyzed: 12/02/2015

Diesel (C10-C28)	730	50	mg/kg	1000	ND	73.2	53-125			
Residual Range Organics (C28-C36)	760	200	"	1000	24	73.2	47-133			
Surrogate: o-Terphenyl	41		"	50.0		81.7	59-131			

**Matrix Spike Dup (B5L0201-MSD1)**

Source: X512020-01

Prepared: 12/02/2015 Analyzed: 12/02/2015

Diesel (C10-C28)	840	50	mg/kg	1000	ND	84.2	53-125	14.0	20	
Residual Range Organics (C28-C36)	900	200	"	1000	24	88.0	47-133	17.9	20	
Surrogate: o-Terphenyl	43		"	50.0		85.9	59-131			

Origins Laboratory, Inc.



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

Tasman Geosciences  
6899 Pecos Street, Unit C  
Denver CO 80211

Dan Wade  
Project Number: [none]  
Project: KMG - Pipeline 38-0000-5854-4"

---

### Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



*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

**ATTACHMENT B**  
**BORING LOGS**



6899 Pecos Street, Unit C  
Denver, Colorado 80221

917 1st Avenue North, Suite 3  
Billings, Montana 59101

CLIENT: Kerr-McGee Gathering, LLC

LOGGED BY: Eric Siegel, P.G.

PROJECT MANAGER: Dan Wade, P.G.

DRILLING CONTRACTOR: Site Services Drilling

DRILLING EQUIPMENT: CME 55

DRILL BIT SIZE (INCHES): 8.25"

DATE STARTED - COMPLETED: 11/30/2015

TOTAL BORING DEPTH (FT. BGS): 29

DEPTH TO WATER (FT. BGS): Not Encountered ▼

Pipeline 38-0000-5854-4"

BORING / WELL ID: BH-01

SURFACE COMPLETION: Native Soil

NORTHING (CO STATE PLANE): NS

EASTING (CO STATE PLANE): NS

GROUND ELEVATION (FT. AMSL): NS

ABANDONMENT METHOD: Bentonite Backfill

Depth (feet)	Drill Tooling	% Rec.			Lithologic Description	USCS	PID (ppm)		Lab	Depth (feet)
		25	50	75			100	1000		
0	Hollow Stem Auger				Hydrovac - No Recovery					0
10	Split Spoon Sampler				Light brown, sandy clay, moist, soft, medium plasticity, fill material					10
13	Split Spoon Sampler				Gray and brown mottled, clay, dry, moderately stiff, low plasticity, laminations, oxidation	CL				13
14	Split Spoon Sampler				As above, gray					14
16	Split Spoon Sampler				As above, stiff, slight hydrocarbon odor					16
19	Split Spoon Sampler				Light brown, clayey fine grained sand, dry, high density, laminations, gray staining/streaks, hydrocarbon odor	SC				19
21	Split Spoon Sampler				Gray, fine grained sand with clay, dry, medium density, hydrocarbon odor	SP				21
23	Split Spoon Sampler				Light brown, clayey fine grained sand, dry, high density, laminations	SC				23
24	Split Spoon Sampler				Gray, clay, dry, stiff, low plasticity, friable, blocky, oxidation in fractures	CL				24
29	Split Spoon Sampler				Light brown, fine to medium grained sand, dry, high density	SP				29

**Drill Tooling / Sample Method:**

- Solid Stem Auger
- Split Spoon Sampler
- Hollow Stem Auger
- CME Continuous Sample Tube

**Laboratory Sample Types:**

- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab



6899 Pecos Street, Unit C  
Denver, Colorado 80221

917 1st Avenue North, Suite 3  
Billings, Montana 59101

CLIENT: Kerr-McGee Gathering, LLC

LOGGED BY: Eric Siegel, P.G.

PROJECT MANAGER: Dan Wade, P.G.

DRILLING CONTRACTOR: Site Services Drilling

DRILLING EQUIPMENT: CME 55

DRILL BIT SIZE (INCHES): 8.25"

DATE STARTED - COMPLETED: 11/30/2015

TOTAL BORING DEPTH (FT. BGS): 24

DEPTH TO WATER (FT. BGS): Not Encountered ▼

Pipeline 38-0000-5854-4"

BORING / WELL ID: BH-02

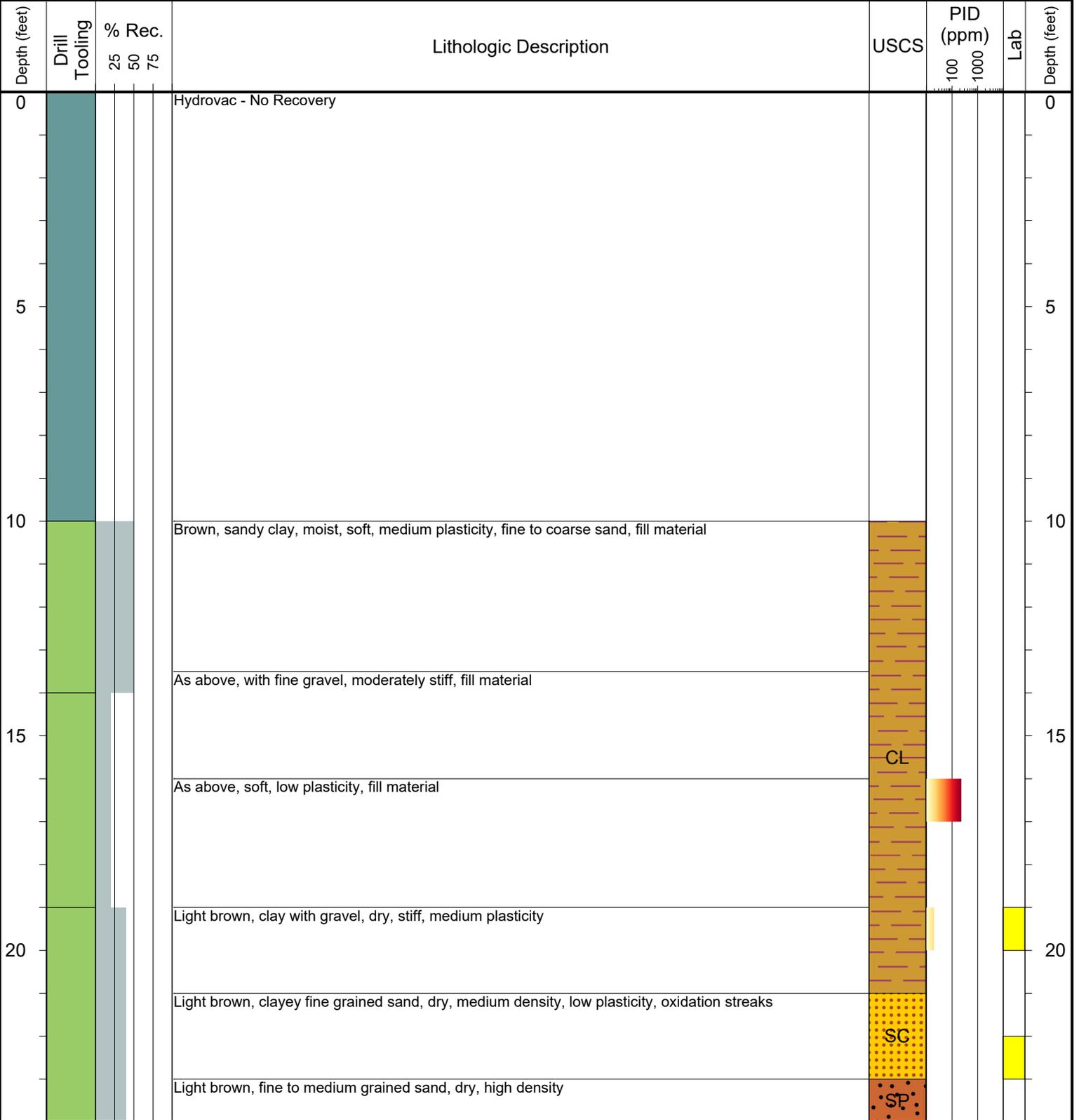
SURFACE COMPLETION: Native Soil

NORTHING (CO STATE PLANE): NS

EASTING (CO STATE PLANE): NS

GROUND ELEVATION (FT. AMSL): NS

ABANDONMENT METHOD: Bentonite Backfill



**Drill Tooling / Sample Method:**

- Solid Stem Auger
- Split Spoon Sampler
- Hollow Stem Auger
- CME Continuous Sample Tube

**Laboratory Sample Types:**

- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab



6899 Pecos Street, Unit C  
Denver, Colorado 80221

917 1st Avenue North, Suite 3  
Billings, Montana 59101

CLIENT: Kerr-McGee Gathering, LLC

LOGGED BY: Eric Siegel, P.G.

PROJECT MANAGER: Dan Wade, P.G.

DRILLING CONTRACTOR: Site Services Drilling

DRILLING EQUIPMENT: CME 55

DRILL BIT SIZE (INCHES): 8.25"

DATE STARTED - COMPLETED: 11/30/2015

TOTAL BORING DEPTH (FT. BGS): 24.5

DEPTH TO WATER (FT. BGS): Not Encountered ▼

Pipeline 38-0000-5854-4"

BORING / WELL ID: BH-03

SURFACE COMPLETION: Native Soil

NORTHING (CO STATE PLANE): NS

EASTING (CO STATE PLANE): NS

GROUND ELEVATION (FT. AMSL): NS

ABANDONMENT METHOD: Bentonite Backfill

Depth (feet)	Drill Tooling	% Rec.			Lithologic Description	USCS	PID (ppm)		Lab	Depth (feet)
		25	50	75			100	1000		
0	Hollow Stem Auger				Hydrovac - No Recovery					0
10	Split Spoon Sampler				Brown, clay with fine grained sand, moist, soft, medium plasticity, oxidation streaks	CL				10
15	CME Continuous Sample Tube				Light brown, clayey fine grained sand, dry, medium density, low plasticity	SC				15
18	CME Continuous Sample Tube				Dark grayish brown, clay, dry, moderately stiff, low plasticity, laminations, oxidation streaks	CL				18
20	CME Continuous Sample Tube				Tan and gray mottled, clayey fine grained sand, dry, high density, oxidation streaks	SC				20
22	CME Continuous Sample Tube				Gray, clay, dry, stiff, low plasticity, few sandy lenses up to 1" thick, oxidation streaks	CL				22

**Drill Tooling / Sample Method:**

- Solid Stem Auger
- Split Spoon Sampler
- Hollow Stem Auger
- CME Continuous Sample Tube

**Laboratory Sample Types:**

- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab



6899 Pecos Street, Unit C  
Denver, Colorado 80221

917 1st Avenue North, Suite 3  
Billings, Montana 59101

CLIENT: Kerr-McGee Gathering, LLC

LOGGED BY: Eric Siegel, P.G.

PROJECT MANAGER: Dan Wade, P.G.

DRILLING CONTRACTOR: Site Services Drilling

DRILLING EQUIPMENT: CME 55

DRILL BIT SIZE (INCHES): 8.25"

DATE STARTED - COMPLETED: 11/30/2015

TOTAL BORING DEPTH (FT. BGS): 24

DEPTH TO WATER (FT. BGS): Not Encountered ▼

Pipeline 38-0000-5854-4"

BORING / WELL ID: BH-04

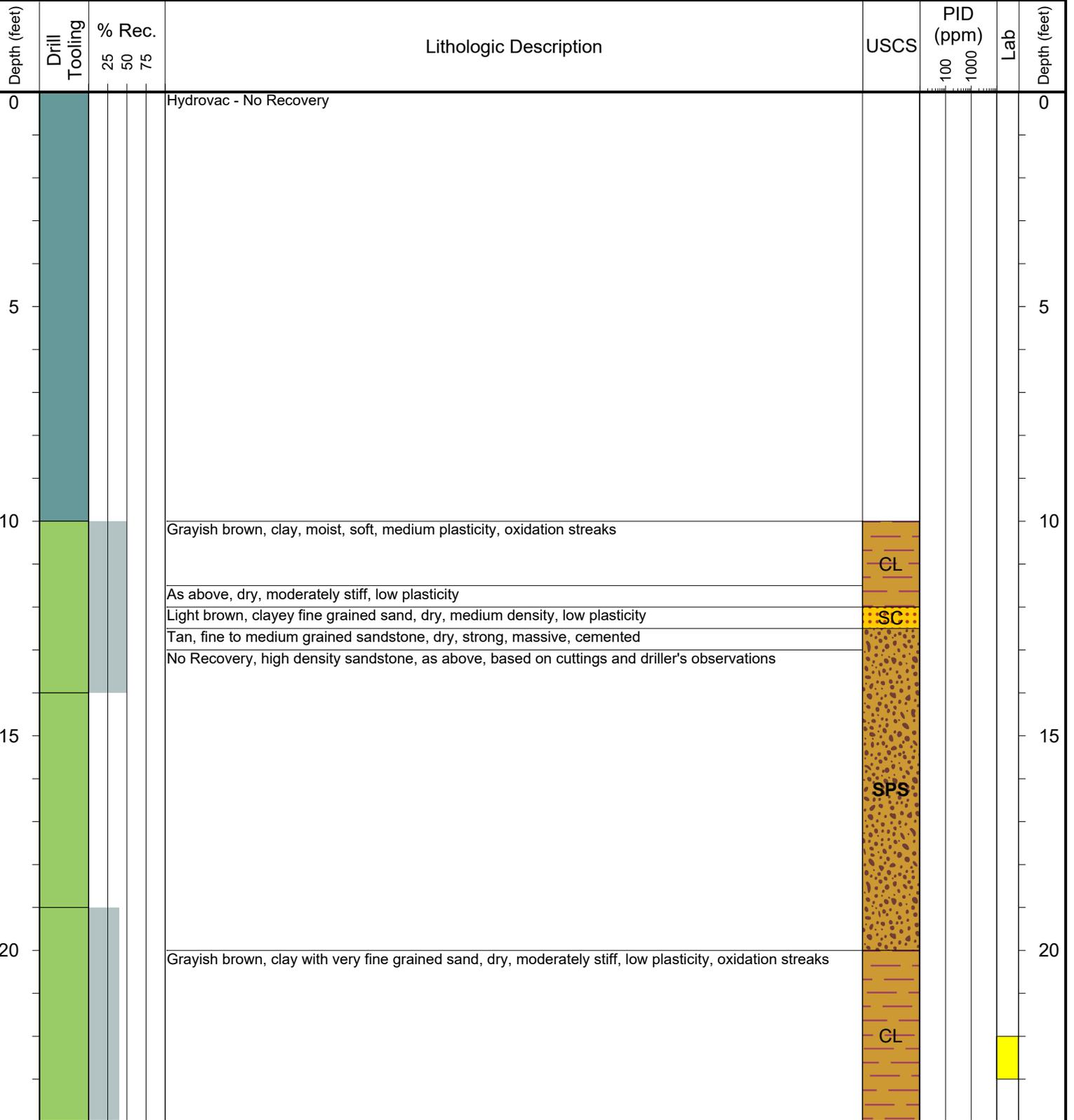
SURFACE COMPLETION: Native Soil

NORTHING (CO STATE PLANE): NS

EASTING (CO STATE PLANE): NS

GROUND ELEVATION (FT. AMSL): NS

ABANDONMENT METHOD: Bentonite Backfill



**Drill Tooling / Sample Method:**

- Solid Stem Auger
- Split Spoon Sampler
- Hollow Stem Auger
- CME Continuous Sample Tube

**Laboratory Sample Types:**

- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab



6899 Pecos Street, Unit C  
Denver, Colorado 80221

917 1st Avenue North, Suite 3  
Billings, Montana 59101

CLIENT: Kerr-McGee Gathering, LLC

LOGGED BY: Eric Siegel, P.G.

PROJECT MANAGER: Dan Wade, P.G.

DRILLING CONTRACTOR: Site Services Drilling

DRILLING EQUIPMENT: CME 55

DRILL BIT SIZE (INCHES): 8.25"

DATE STARTED - COMPLETED: 11/30/2015

TOTAL BORING DEPTH (FT. BGS): 24

DEPTH TO WATER (FT. BGS): Not Encountered ▼

Pipeline 38-0000-5854-4"

BORING / WELL ID: BH-05

SURFACE COMPLETION: Native Soil

NORTHING (CO STATE PLANE): NS

EASTING (CO STATE PLANE): NS

GROUND ELEVATION (FT. AMSL): NS

ABANDONMENT METHOD: Bentonite Backfill

Depth (feet)	Drill Tooling	% Rec.			Lithologic Description	USCS	PID (ppm)		Lab	Depth (feet)
		25	50	75			100	1000		
0	Hollow Stem Auger				Hydrovac - No Recovery					0
10	Split Spoon Sampler				Brown, sandy clay, dry, soft, medium plasticity, fine grained sand, oxidation streaks	CL				10
18	Split Spoon Sampler				Light brown, clayey fine grained sand, dry, medium density, low plasticity					18
20	CME Continuous Sample Tube				As above, high density	SC				20
22	CME Continuous Sample Tube				As above, oxidation streaks					22
24	CME Continuous Sample Tube				Brown, clay with fine grained sand, dry, stiff, low plasticity, oxidation streaks	CL				24

**Drill Tooling / Sample Method:**

- Solid Stem Auger
- Split Spoon Sampler
- Hollow Stem Auger
- CME Continuous Sample Tube

**Laboratory Sample Types:**

- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab