FORM
27
Rev 6/99

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

Document 2315180
Received 7/31/2015
REM 9218

OGCC Employee:

[X] Spill [ ] Complaint
[ ] Inspection [ ] NOAV

Tracking No: 437364 400613268

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.

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

[x] Spill or Release [ ] Plug & Abandon Central Facility Closure [ ] Site/Facility Closure [ ] Other (describe):

GENERAL INFORMATION

OGCC Operator Number: 47120
Name of Operator: Kerr-McGee Oil & Gas Onshore LP
Address: 1099 18th Street, Suite 1800
City: Denver State: CO Zip: 80202

Contact Name and Telephone
Name: Phil Hamlin
No: 970-336-3500
Fax: 970-336-3656

API/Facility No: 05-123-08180
County: Weld
Facility Name: Reynolds Cattle Company
Facility Number: GU 1
Well Name: Reynolds Cattle Company
Well Number: GU 1
Location (QtrQtr, Sec, Twp, Rng, Meridian): SWNE S24 T3N R68W
Latitude: 40.214516 Longitude: -104.947667

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): Produced Water / Condensate
Site Conditions: Is location within a sensitive area (according to Rule 901e)? [x] Y [ ] N If yes, attach evaluation.
Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Crop Land
Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Fine sand
Potential receptors (water wells within 1/4 mi, surface waters, etc.): Surface water is located approximately 20' east of the site.

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

Impacted Media (check):		Extent of Impact:	How Determined:
[x]	Soils	25'(E-W) x 20'(N-S) x 7' bgs	Excavation, soil sampling, and laboratory analysis
[ ]	Vegetation		
[x]	Groundwater	Refer to Table 2 and Figure 3	Groundwater sampling and laboratory analysis
[ ]	Surface water		

REMEDIATION WORKPLAN

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

On May 21, 2014, a historical release was discovered while plugging and abandoning the Reynolds Cattle Company GU 1 wellhead. The flow line was flushed, cut and capped following the discovery, and impacted soil was excavated and transported off-site for disposal. Groundwater was encountered in the excavation at approximately 7 feet below ground surface (bgs). An Initial Form 19 was submitted to the COGCC on May 22, 2014, and a Supplemental Form 19 was submitted on May 28, 2014. The COGCC has issued Spill Tracking number 437364 for this release.

Describe how source is to be removed:

On May 21, 2014, excavation activities commenced following the discovery of a historical release while plugging and abandoning the Reynolds Cattle Company GU 1 wellhead. Approximately 150 cubic yards of impacted soil were excavated and transported to the Front Range Regional Landfill in Erie, Colorado for disposal. Excavation activities were guided in the field using a photoionization detector (PID) to measure volatile organic compound (VOC) concentrations in soil. Four soil samples were collected from the sidewalls of the final extent of the excavation area and submitted to eAnalytics Laboratory in Loveland, Colorado for laboratory analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX) and total petroleum hydrocarbons (TPH) – gasoline range organics (GRO) by USEPA Method 8260B, TPH – diesel range organics (DRO) and oil range organics (ORO) by USEPA Method 8015. Analytical results indicated that constituent concentrations were below applicable COGCC Table 910-1 soil standards at the final extent of the excavation. Groundwater was encountered in the excavation at approximately 7 feet bgs. A groundwater sample (GW01) was collected and submitted for laboratory analysis of BTEX. Analytical results received on May 22, 2014, indicated that sample GW01 exhibited a benzene concentration of 67 µg/L, exceeding the applicable COGCC groundwater standard. Soil analytical results are summarized in Table 1 and groundwater analytical results are summarized in table 2. Soil and excavation groundwater sample locations illustrated on 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.:

The impacted soil was excavated and transported to the Front Range Regional Landfill in Erie, Colorado. 200 pounds of activated carbon were introduced to the groundwater table to mitigate remaining hydrocarbon concentrations above regulatory standards in groundwater.

Submit Page 2 with Page 1.

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Page 2

State of Colorado
Oil and Gas Conservation Commission
1120 Lincoln Street, Suite 801, Denver, Colorado
(303) 894-2100 Fax 894-2109

REMEDIATION WORKPLAN (CONT.)

OGCC Employee:

Tracking Number:	437364
Name of Operator:	Kerr-McGee Oil & Gas Onshore LP
OGCC Operator No:	47120
Received Date:	
Well Name & No:	Reynolds Cattle Company GU 1
Facility Name & No.:	Reynolds Cattle Company 336225

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

On December 4, 2014, three temporary groundwater monitoring wells (BH01 - BH03) were installed for monitoring and remediation purposes, using direct push methodology. Groundwater samples were most recently collected from the temporary monitoring wells on March 18, 2015. Samples were analyzed by Origins Laboratory in Denver, Colorado for BTEX. Analytical results indicated that benzene concentrations were above Table 910-1 standards in temporary monitoring wells BH01 (16.6 µg/L) and BH02 (11.4 µg/L). On April 23, 2015, 4 additional temporary monitoring wells (BH03R, BH04, BH05, and BH06) were installed to further delineate hydrocarbon impacts in groundwater and/or for remediation purposes. Temporary monitoring well locations and groundwater analytical results are illustrated on Figure 2, and a groundwater elevation contour map is presented on Figure 3. Groundwater analytical results are summarized in Table 2, and the groundwater analytical laboratory reports and well completion diagrams are included as attachments. Quarterly groundwater monitoring at the temporary monitoring locations will be conducted until BTEX concentrations remain below COGCC groundwater standards for four consecutive quarters.

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? [X] Y [ ] N If yes, describe:

Data indicate that impacted soil has been delineated and removed from the site. Remediation and monitoring will be performed as necessary until the site has met applicable COGCC closure criteria. Soil analytical results are summarized in Table 1, and groundwater analytical results are summarized in Table 2. The analytical laboratory reports are included as Attachment A.

Final disposition of E&P waste (land treated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

150 cubic yards of impacted soil was transported to Front Range Regional Landfill in Erie, Colorado, a licensed disposal facility. Impacted groundwater was not removed from the site.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began:	5/21/2014	Date Site Investigation Completed:	TBD	Remediation Plan Submitted:	
Remediation Start Date:	5/21/2014	Anticipated Completion Date:	3/21/16	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: Phil Hamlin

Signed: [signature] Title: Senior HSE Representative Date: 7/17/15

OGCC Approved: Chris Canfield, P.G. Title: Date:

Digitally signed by Chris Canfield, P.G.
DN: cn=Chris Canfield, P.G., o=Colorado Oil & Gas Conversation Commission, ou=Environmental Protection Specialists, email=chris.canfield@state.co.us, c=US
Date: 2015.08.13 11:38:37 -06'00'

FIGURES

Image Source:
Google Earth 2014

B – Benzene
TPH - Total Petroleum Hydrocarbons
mg/kg – Milligrams Per Kilogram
µg/L – Micrograms Per Liter

WORK ORDER #: 88551711 DRAWN BY: CAW DATE: 5/22/2014	Kerr-McGee Oil and Gas Onshore, LP REYNOLDS CATTLE COMPANY GU 1 SWNE S24 T3N R68W Weld County, CO	TASMAN GEOSCIENCES 6899 Pecos St., Unit C Denver, CO 80221	LEGEND Approximate Excavation Extent Approximate Area of Release Sub-Surface Kerr-McGee Flow Lines Approximate Groundwater Sample Location Approximate Soil Sample Location	FIGURE 1 SITE AND SAMPLE LOCATION MAP

BH01		
Compound	12/5/2014 (µg/L)	3/18/2015 (µg/L)
Benzene	**36.3**	**16.6**
Toluene	<10.0	<1.0
Ethylbenzene	<10.0	1.8
Total Xylenes	125	<10

BH03		
Compound	12/5/2014 (µg/L)	3/18/2015 (µg/L)
Benzene	DRY	<1.0
Toluene	DRY	<1.0
Ethylbenzene	DRY	<1.0
Total Xylenes	DRY	<1.0

BH02		
Compound	12/5/2014 (µg/L)	3/18/2015 (µg/L)
Benzene	**15.8**	**11.4**
Toluene	<4.0	<1.0
Ethylbenzene	42.3	73.2
Total Xylenes	16.5	17.2

DATE: March 2015
DESIGNED BY: C. Wasko
DRAWN BY: D. Arnold

TASMAN GEOSCIENCES
Tasman Geosciences Inc.
6899 Pecos Street - Unit C
Denver, CO 80221

Kerr-McGee Oil & Gas Onshore LP
Reynolds Cattle Company
SWNE Section 24, Township 3 North, Range 68 West
Weld Conty, Colorado

Groundwater Analytical Results Map

Figure 2

DATE: March 2015 DESIGNED BY: C. Wasko DRAWN BY: D. Arnold	TASMAN GEOSCIENCES Tasman Geosciences Inc. 6899 Pecos Street - Unit C Denver, CO 80221	**Kerr-McGee Oil & Gas Onshore LP** **Reynolds Cattle Company GU #1** SWNE Section 24, Township 3 North, Range 68 West Weld Conty, Colorado	Groundwater Elevation Contour Map (March 18, 2015)	Figure 3

ANALYTICAL TABLES

TABLE 1
REYNOLDS CATTLE COMPANY GU 1
SOIL SAMPLE RESULTS SUMMARY TABLE
KERR-McGEE OIL AND GAS ONSHORE LP

Sample ID	Date Sampled	Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TVPH - GRO (mg/kg)	TEPH - DRO + ORO (mg/kg)
COGCC standards for soil (mg/kg) (1)			**0.17**	**85**	**100**	**175**	**500**	
N01 @ 5.5	5/21/2014	5.5	<0.01	<0.01	<0.01	<0.01	<50	<50
E01 @ 5.5	5/21/2014	5.5	<0.01	<0.01	<0.01	<0.01	<50	<50
S01 @ 5.5	5/21/2014	5.5	<0.01	<0.01	<0.01	<0.01	<50	<50
W01 @ 5.5	5/21/2014	5.5	<0.01	0.020	<0.01	0.029	<50	71.1

Notes:
1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective February 1, 2014.
COGCC = Colorado Oil and Gas Conservation Commission
(<) = Analytical result is less than the indicated laboratory reporting limit.
TVPH - GRO = Total volatile petroleum hydrocarbons - gasoline range organics
TEPH - DRO = Total extractable petroleum hydrocarbons - diesel range organics
TEPH - ORO = Total extractable petroleum hydrocarbons - oil range organics
mg/kg = Milligrams per kilogram.
bgs = Below ground surface.
BOLD= Analytical result is in exceedance of COGCC Table 910-1 soil standards.

TABLE 2
REYNOLDS CATTLE COMPANY GU 1
GROUNDWATER SAMPLE RESULTS SUMMARY TABLE
KERR-McGEE OIL AND GAS ONSHORE LP

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth To Water (ft bgs)
COGCC Table 910-1 Groundwater Standard (µg/L) [1]		5	560	700	1,400	
GW01	5/21/2014	**67.0**	4.29	33.4	19.1	~7.0
BH01	12/5/2014	**36.3**	<10.0	<10.0	125	7.96
BH01	3/18/2015	**16.6**	<1.0	1.8	<1.0	8.19
BH02	12/5/2014	**15.8**	<4.0	42.3	16.5	8.94
BH02	3/18/2015	**11.4**	<1.0	73.2	17.2	8.05
BH03	12/5/2015	NS	NS	NS	NS	NS
BH03	3/18/2015	<1.0	<1.0	1.0	<1.0	8.28

Notes:
1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective February 1, 2014.
COGCC = Colorado Oil and Gas Conservation Commission
µg/L = Micrograms per liter
(<) = Analytical result is less than the indicated laboratory reporting limit.
ft bgs = Feet below ground surface
NS = Not Sampled
BOLD= Analytical result is in exceedance of COGCC groundwater standards.

ATTACHMENT A

LABORATORY ANALYTICAL REPORTS

Test Report

eANALYTICS LABORATORY

May 22, 2014

Client:	Tasman Geosciences / Anadarko
Project:	Reynolds Cattle Company GV1
Lab ID:	1428
Date Samples Received:	5/21/2014
Number of Samples:	5
Sample Condition:	Samples arrived intact and in appropriate sample containers
Sample Temperature:	Within acceptable range of 2-6° C, or as specified in EPA Method

The quality control procedures associated with the requested analyses were satisfactorily passed before the samples were run.

Thank you for allowing eAnalytics Laboratory to provide laboratory services for you.

Sincerely,

Chris Th

Christopher Dieken
Quality Assurance Manager

Todd Rhea

Todd Rhea
Laboratory Manager

eAnalytics Laboratory
1767 Rocky Mountain Avenue Loveland CO 80538

Chain of Custody

eANALYTICS LABORATORY

Chain of Custody Fo

0 eANALYTICS LABORATORY

1767 Rocky Mountain Avenue Loveland CO 80538 | Phone: (970) 667-6975 | Fax: (970) 669-0941 | www.eAnalyticsLab.com

CLIENT INFORMATION

(*New Clients please fill out completely)

Company:	Tasman Geosciences / Anadarko
Project:	Reynolds Cattle Company EIV 1
Project Manager:	Paul Schneider / Phil Hamlin
Sampler:	Christine Wasko
Phone/Email:	720-409-8791 / cwasko@tasman-geo.com
Address:	6899 Pecos Street, Unit C
	Denver, CO 80221

ANALYSIS INFORMATION

(Select analysis by checking box on corresponding sample line)

Lab ID	Sample Name	Sampling Date/Time	Number of Containers	Matrix:(S) Soil (W) Water (V) Vapor (O) Other	BTEX (EPA 8260)	BTEX/GRO (EPA 8260)	DRO/ORO (EPA 8015)	TPH-GRO/DRO/ORO (EPA 8260/8015)	SAR (US Dept of Ag Method 20B)	EC (US Dept of Ag Method 3)	pH (EPA 9045D)	Other Analysis
1	N01 @ 5.5	5/21/14 1300 AM/PM	1	S		X	X					
2	E01 @ 5.5	5/21/14 1310 AM/PM	↓	↓		↓	↓					
3	S01 @ 5.5	5/21/14 1305 AM/PM	↓	↓		↓	↓					
4	W01 @ 5.5	5/21/14 1400 AM/PM	↓	↓		↓	↓					
		AM/PM										
5	GW01	5/21/14 1330 AM/PM	3	W	X							
		AM/PM										
		AM/PM										
		AM/PM										
		AM/PM										
		AM/PM										
		AM/PM										
		AM/PM										
		AM/PM										
		AM/PM										

Comments: By Tamoleak

Turnaround Time (Business Days)

TAT begins when sample is received by eANALYTICS

- Normal (5-10 Days)
- 3 Day (1.25x)
- 1 Day (2x)
- Same Day (3x)
- Next Bus. Morning (APC Pricing)

Rush analysis requires an extra charge. If possible please inform eANALYTICS in advance for rush analysis.

Record of Custody

Relinquished by: [signature]	Company: Tasman	Date 5/21/14 Time 1430 AM/PM
Received by:	Company:	Date Time AM/PM
Relinquished by:	Company:	Date Time AM/PM
Received by: Todd R[signature]	Company: eANALYTICS	Date 5/21/14 Time 1430 AM/PM

For eANALYTICS Use

Samples Received Intact	Yes No
Received Within Temperature Range (2-6°C)	Yes No
Sample Preservative	Ice None Acid Other

WO # 8551711 1112C

eANALYTICS: Environmental testing made Easy

Page 1 of 1

Soil
Sample Analysis

eANALYTICS LABORATORY

Client:	Tasman Geosciences / Anadarko	Lab ID:	1428
Project:	Reynolds Cattle Company GV1		
Analysis:	Volatile Organics TPH	Method:	EPA8260 EPA8260/8015

Sample Name	Benzene mg/kg	Toluene mg/kg	Ethyl-benzene mg/kg	Total Xylenes mg/kg	TPH GRO C6-C10 mg/kg	TPH DRO C10-C28 mg/kg	TPH ORO C28-C36 mg/kg	Date Sampled	Date Analyzed	Lab ID	
N01 @ 5.5	< 0.01	< 0.01	< 0.01	< 0.01	< 50	< 50	< 50	05/21/14	05/21/14	1428	1
E01 @ 5.5	< 0.01	< 0.01	< 0.01	< 0.01	< 50	< 50	< 50	05/21/14	05/21/14	1428	2
S01 @ 5.5	< 0.01	< 0.01	< 0.01	< 0.01	< 50	< 50	< 50	05/21/14	05/21/14	1428	3
W01 @ 5.5	< 0.01	**0.020**	< 0.01	**0.029**	< 50	**71.1**	< 50	05/21/14	05/21/14	1428	4

Water
Sample Analysis

eANALYTICS
LABORATORY

Client:	Tasman Geosciences / Anadarko	Lab ID:	1428
Project:	Reynolds Cattle Company GV1		
Analysis:	Volatile Organics	Method:	EPA8260

Sample Name	Benzene ug/L	Toluene ug/L	Ethyl-benzene ug/L	Total Xylenes ug/L	Date Sampled	Date Analyzed	Lab ID	
GW01	**67.0**	**4.29**	**33.4**	**19.1**	05/21/14	05/21/14	1428	5

Soil
Quality Control - Surrogate Recoveries

eANALYTICS LABORATORY

Client: Tasman Geosciences / Anadarko

Lab ID: 1428

Project: Reynolds Cattle Company GV1

Method: EPA8260

Sample Name	Dibromo-fluoromethane % Recovery	1,2 Dichloro-ethane-D4 % Recovery	Toluene-D8 % Recovery	Bromo-fluorobenzene % Recovery	Date Sampled	Date Analyzed	Lab ID
N01 @ 5.5	101	109	110	100	05/21/14	05/21/14	1428 1
E01 @ 5.5	97	97	92	104	05/21/14	05/21/14	1428 2
S01 @ 5.5	98	92	100	103	05/21/14	05/21/14	1428 3
W01 @ 5.5	99	107	93	97	05/21/14	05/21/14	1428 4

Water
Quality Control - Surrogate Recoveries

eANALYTICS
LABORATORY

Client: Tasman Geosciences / Anadarko
Lab ID: 1428

Project: Reynolds Cattle Company GV1
Method: EPA8260

Sample Name	Dibromo-fluoromethane % Recovery	1,2 Dichloro-ethane-D4 % Recovery	Toluene-D8 % Recovery	Bromo-fluorobenzene % Recovery	Date Sampled	Date Analyzed	Lab ID
GW01	101	108	92	99	05/21/14	05/21/14	1428 5

Soil
Quality Control - Analyses

eANALYTICS
LABORATORY

Client:	Tasman Geosciences / Anadarko	Lab ID:	1428
Project:	Reynolds Cattle Company GV1		
Analysis:	Volatile Organics TPH	Method:	EPA8260 EPA8260/8015

Sample Name	Benzene % Rec	Toluene % Rec	Ethyl-benzene % Rec	Total Xylenes % Rec	TPH GRO C6-C10 % Rec	TPH DRO C10-C28 % Rec	TPH ORO C28-C36 % Rec	Date Analyzed	Lab ID
Laboratory Control Sample	91	100	92	97	101	95	97	05/21/14	LCS 1428 1
(70-130%)									
Method Blank	< 0.01	< 0.01	< 0.01	< 0.01	< 50	< 50	< 50	05/21/14	MB 1428 1
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		

eAnalytics Laboratory
1767 Rocky Mountain Avenue Loveland CO 80538

Water
Quality Control - Analyses

eANALYTICS LABORATORY

Client:	Tasman Geosciences / Anadarko	Lab ID:	1428
Project:	Reynolds Cattle Company GV1		
Analysis:	Volatile Organics	Method:	EPA8260

Sample Name	Benzene % Rec	Toluene % Rec	Ethyl- benzene % Rec	Total Xylenes % Rec	Date Analyzed	Lab ID
Laboratory Control Sample	91	98	89	102	05/21/14	LCS 1428 1
(70-130%)						
Method Blank	< 1.0	< 1.0	< 1.0	< 1.0	05/21/14	MB 1428 1
	ug/L	ug/L	ug/L	ug/L		

eAnalytics Laboratory
1767 Rocky Mountain Avenue Loveland CO 80538

ORIGINS LABORATORY, INC

December 12, 2014

Tasman Geosciences

Christine Wasko

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - Reynolds Cattle Company GU 1 Project Number - [none]

Attached are your analytical results for Reynolds Cattle Company GU 1 received by Origins Laboratory, Inc. December 05, 2014. This project is associated with Origins project number X412121-01.

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

ORIGINS LABORATORY, INC

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: Reynolds Cattle Company GU 1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	X412121-01	Water	December 5, 2014 12:40	12/05/2014 15:50
BH02	X412121-02	Water	December 5, 2014 12:50	12/05/2014 15:50

Origins Laboratory, Inc.

Jen Pellegrini

Jen Pellegrini For Noelle Doyle Mathis, President

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.

ORIGINS LABORATORY, INC

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: Reynolds Cattle Company GU 1

ORIGINS LABORATORY, INC X412121

www.originslaboratory.com

page 1 of 1

Client: Tasman Geo
Address:
Telephone Number: 912 230 2807

Project Manager/Send Report To: Christine Wasko
Email Address: cwasko@tasman-geo.com
Project Name/Number: Reynolds Cattle Company GU 1
Samples Collected By: Brock Nelson

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative: Unpreserved	Preservative: HCl	Preservative: HNO_3	Preservative: Other	Matrix: Groundwater	Matrix: Soil	Matrix: Air Summa Canister #	Matrix: Other	Analysis/Method	Sample Instructions	
BH01	12/5/14	1240	3		X			X				BTEX (8260)		1
BH02	↓	1250	3		X			X				↓		2
														3
														4
														5
														6
														7
														8
														9
														10

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
[signature]	12/5/14	1550			
Relinquished By:	Date:	Time:	Received By: [signature]	Date: 12/5/14	Time: 1550

Turnaround Time: Same Day ☐ 24 Hr ☐ 48 Hr ☐ 72 Hr ☐ Standard ☒ 3.7 S.3

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

Origins Laboratory, Inc.

Jen Pellegrini For Noelle Doyle Mathis, President

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.

ORIGINS LABORATORY, INC

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: Reynolds Cattle Company GU 1

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X412121

Client: Tasman
Client Project ID: Reynolds Cattle Company

Checklist Completed by: Jen Pellegrini
Date/time completed: 12-9-14

Shipped Via: Pickup (UPS, FedEx, Hand Delivered, Pick-up, etc.)
Airbill #: N/A

Matrix(s) Received: (Check all that apply): ____Soil/Solid X Water ____Other: ______ (Describe)

Cooler Number/Temperature: 1 / 5.3 °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[1]?	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[1]?	X			
Was adequate sample volume provided[1]?	X			
Are short holding time analytes or samples with HTs due within 48 hours present[1]?		X		
Is a chain-of-custody (COC) present and filled out completely[1]?	X			
Does the COC agree with the number and type of sample bottles received[1]?	X			
Do the sample IDs on the bottle labels match the COC[1]?	X			
Is the COC properly relinquished by the client with date and time recorded[1]?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? **If yes, contact client and note in narrative.**		X		
Are samples preserved that require preservation and was it checked[1]? *(note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)*	X			HCL
Additional Comments (if any):				

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

Reviewed by (Project Manager) ________ Date/Time Reviewed 12/9/14

Origins Laboratory, Inc.

Jen Pellegrini For Noelle Doyle Mathis, President

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ORIGINS LABORATORY, INC

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: Reynolds Cattle Company GU 1

BH01
12/5/2014 12:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes

Origins Laboratory, Inc.
X412121-01 (Water)

BTEX by EPA 8260C

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Benzene	**36.3**	10.0	ug/L	10	4L11005	12/11/2014	12/11/2014	
Toluene	ND	10.0	"	"	"	"	"	
Ethylbenzene	ND	10.0	"	"	"	"	"	
Xylenes, total	**125**	10.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	*106 %*	*87.3-113*			"	"	"	
Surrogate: Toluene-d8	*100 %*	*90.9-108*			"	"	"	
Surrogate: 4-Bromofluorobenzene	*102 %*	*88.6-111*			"	"	"	

Origins Laboratory, Inc.

Jen Pellegrini

Jen Pellegrini For Noelle Doyle Mathis, President

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ORIGINS LABORATORY, INC

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: Reynolds Cattle Company GU 1

BH02
12/5/2014 12:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes

Origins Laboratory, Inc.
X412121-02 (Water)

BTEX by EPA 8260C

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Benzene	**15.8**	4.0	ug/L	4	4L11005	12/11/2014	12/11/2014	
Toluene	ND	4.0	"	"	"	"	"	
Ethylbenzene	**42.3**	4.0	"	"	"	"	"	
Xylenes, total	**16.5**	4.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	*106 %*	*87.3-113*			"	"	"	
Surrogate: Toluene-d8	*102 %*	*90.9-108*			"	"	"	
Surrogate: 4-Bromofluorobenzene	*102 %*	*88.6-111*			"	"	"	

Origins Laboratory, Inc.

Jen Pellegrini

Jen Pellegrini For Noelle Doyle Mathis, President

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ORIGINS LABORATORY, INC

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: Reynolds Cattle Company GU 1

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 4L11005 - EPA 5030B (Water)										
Blank (4L11005-BLK1)					Prepared: 12/11/2014 Analyzed: 12/11/2014					
Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	*67*		*"*	*62.5*		*107*	*87.3-113*			
Surrogate: Toluene-d8	*63*		*"*	*62.5*		*101*	*90.9-108*			
Surrogate: 4-Bromofluorobenzene	*64*		*"*	*62.5*		*102*	*88.6-111*			

Origins Laboratory, Inc.

Jen Pellegrini

Jen Pellegrini For Noelle Doyle Mathis, President

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ORIGINS LABORATORY, INC

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: Reynolds Cattle Company GU 1

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 4L11005 - EPA 5030B (Water)										
LCS (4L11005-BS1)					Prepared: 12/11/2014 Analyzed: 12/11/2014					
Benzene	43.6	1.0	ug/L	50.0		87.2	75-126			
Toluene	42.4	1.0	"	50.0		84.8	78.7-126			
Ethylbenzene	44.5	1.0	"	50.0		89.0	80-130			
m,p-Xylene	89.6	2.0	"	100		89.6	77.2-133			
o-Xylene	43.0	1.0	"	50.0		86.0	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	*61*		"	*62.5*		*97.2*	*87.3-113*			
Surrogate: Toluene-d8	*63*		"	*62.5*		*101*	*90.9-108*			
Surrogate: 4-Bromofluorobenzene	*64*		"	*62.5*		*103*	*88.6-111*			

Origins Laboratory, Inc.

Jen Pellegrini For Noelle Doyle Mathis, President

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ORIGINS LABORATORY, INC

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: Reynolds Cattle Company GU 1

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 4L11005 - EPA 5030B (Water)										
Matrix Spike (4L11005-MS1)		**Source: X412082-03**			Prepared: 12/11/2014 Analyzed: 12/11/2014					
Benzene	34.6	1.0	ug/L	50.0	ND	69.2	74-130			QM-07
Toluene	33.9	1.0	"	50.0	ND	67.8	73-131			QM-07
Ethylbenzene	36.4	1.0	"	50.0	ND	72.8	76-132			QM-07
m,p-Xylene	71.8	2.0	"	100	ND	71.8	69-139			
o-Xylene	35.6	1.0	"	50.0	ND	71.2	74-131			QM-07
Surrogate: 1,2-Dichloroethane-d4	*49*		"	*62.5*		*78.9*	*87.3-113*			*S-GC*
Surrogate: Toluene-d8	*62*		"	*62.5*		*99.5*	*90.9-108*			
Surrogate: 4-Bromofluorobenzene	*62*		"	*62.5*		*99.1*	*88.6-111*			

Origins Laboratory, Inc.

Jen Pellegrini

Jen Pellegrini For Noelle Doyle Mathis, President

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ORIGINS LABORATORY, INC

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: Reynolds Cattle Company GU 1

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 4L11005 - EPA 5030B (Water)										
Matrix Spike Dup (4L11005-MSD1)		**Source: X412082-03**			Prepared: 12/11/2014 Analyzed: 12/11/2014					
Benzene	33.9	1.0	ug/L	50.0	ND	67.8	74-130	2.10	20	QM-07
Toluene	32.1	1.0	"	50.0	ND	64.1	73-131	5.61	20	QM-07
Ethylbenzene	33.4	1.0	"	50.0	ND	66.8	76-132	8.56	20	QM-07
m,p-Xylene	65.4	2.0	"	100	ND	65.4	69-139	9.33	20	QM-07
o-Xylene	32.7	1.0	"	50.0	ND	65.3	74-131	8.53	20	QM-07
Surrogate: 1,2-Dichloroethane-d4	*63*		"	*62.5*		*101*	*87.3-113*			
Surrogate: Toluene-d8	*63*		"	*62.5*		*100*	*90.9-108*			
Surrogate: 4-Bromofluorobenzene	*64*		"	*62.5*		*102*	*88.6-111*			

Origins Laboratory, Inc.

Jen Pellegrini

Jen Pellegrini For Noelle Doyle Mathis, President

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ORIGINS LABORATORY, INC

Tasman Geosciences	Christine Wasko
6899 Pecos Street, Unit C	Project Number: [none]
Denver CO 80211	Project: Reynolds Cattle Company GU 1

Notes and Definitions

S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.

Jen Pellegrini

Jen Pellegrini For Noelle Doyle Mathis, President

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ORIGINS LABORATORY, INC

March 24, 2015

Tasman Geosciences

Christine Wasko

6899 Pecos Street, Unit C

Denver CO 80211

Project Name - KMG - Reynolds Cattle Company GU 1 **Project Number - [none]**

Attached are your analytical results for KMG - Reynolds Cattle Company GU 1 received by Origins Laboratory, Inc. March 18, 2015. This project is associated with Origins project number X503222-01.

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

THE NELAC INSTITUTE

ACCREDITED
TESTING CERT # 3494.01

ORIGINS LABORATORY, INC

Tasman Geosciences	Christine Wasko
6899 Pecos Street, Unit C	Project Number: [none]
Denver CO 80211	Project: KMG - Reynolds Cattle Company GU 1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	X503222-01	Water	March 18, 2015 13:24	03/18/2015 15:25
BH02	X503222-02	Water	March 18, 2015 13:22	03/18/2015 15:25
BH03	X503222-03	Water	March 18, 2015 13:29	03/18/2015 15:25

Origins Laboratory, Inc.

Jefe Pellegrini

Jen Pellegrini For Noelle Doyle Mathis, President

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ORIGINS LABORATORY, INC

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Reynolds Cattle Company GU 1

ORIGINS LABORATORY, INC X503222

www.originslaboratory.com

page 1 of 1

Client: Tasman Geo
Address:
Telephone Number: 352 262 9910
Email Address: wasko@tasman-geo.com

Project Manager: Christine Wasko
Project Name: Reynolds Cattle Company GU 1
Project Number:
Samples Collected By: Kate Formanek

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative: Unpreserved	Preservative: HCl	Preservative: HNO_3	Preservative: Other	Matrix: Groundwater	Matrix: Soil	Matrix: Air Summa Canister #	Matrix: Other	Analysis: Btex (8260)	Analysis	Analysis	Analysis	Analysis	Sample Instructions	
BH01	3/18/15	1324	3		X			X				X						1
BH02	↓	1322	3		X			X				X						2
BH03	↓	1329	2		X			X				X						3
																		4
																		5
																		6
																		7
																		8
																		9
																		10

Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:
[signature]	3-18-15	325	[signature]	3.18.15	1225	Same Day ☐ 24 Hr ☐
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	48 Hr ☐ 72 Hr ☐ Standard ☒

Temp Received- 8.5 Date Results Needed

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

Origins Laboratory, Inc.

Jen Pellegrini For Noelle Doyle Mathis, President

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.

ORIGINS LABORATORY, INC

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Reynolds Cattle Company GU 1

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X503222

Client: Tasman

Client Project ID: Reynolds Cattle Company

Checklist Completed by: Jen Pellegrini

Date/time completed: 3/19/15

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

Airbill #: N/A

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

Cooler Number/Temperature: 1 / 2.5 °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[1]?		X		Sampled same day
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[1]?	X			
Was adequate sample volume provided[1]?	X			
Are short holding time analytes or samples with HTs due within 48 hours present[1]?		X		
Is a chain-of-custody (COC) present and filled out completely[1]?	X			
Does the COC agree with the number and type of sample bottles received[1]?	X			
Do the sample IDs on the bottle labels match the COC[1]?	X			
Is the COC properly relinquished by the client with date and time recorded[1]?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? **If yes, contact client and note in narrative.**		X		
Are samples preserved that require preservation and was it checked[1]? *(note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)(pH <2 for samples preserved with HNO3, HCL, H2SO4) / (pH > 10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)*	X			HCL

Additional Comments (if any):

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

Reviewed by (Project Manager) ____ Date/Time Reviewed 3/19/15

Origins Laboratory, Inc.

Jen Pellegrini For Noelle Doyle Mathis, President

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ORIGINS LABORATORY, INC

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Reynolds Cattle Company GU 1

BH01
3/18/2015 1:24:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes

Origins Laboratory, Inc.
X503222-01 (Water)

BTEX by EPA 8260C

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Benzene	**16.6**	1.0	ug/L	1	5C20007	03/20/2015	03/22/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	**1.8**	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	*99.8 %*	*87.3-113*			"	"	"	
Surrogate: Toluene-d8	*103 %*	*90.9-108*			"	"	"	
Surrogate: 4-Bromofluorobenzene	*97.8 %*	*88.6-111*			"	"	"	

Origins Laboratory, Inc.

Jefe Pellegrini

Jen Pellegrini For Noelle Doyle Mathis, President

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ORIGINS LABORATORY, INC

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Reynolds Cattle Company GU 1

BH02
3/18/2015 1:22:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes

Origins Laboratory, Inc.
X503222-02 (Water)

BTEX by EPA 8260C

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Benzene	**11.4**	1.0	ug/L	1	5C20007	03/20/2015	03/22/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	**73.2**	1.0	"	"	"	"	"	
Xylenes, total	**17.2**	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	*100 %*	*87.3-113*			"	"	"	
Surrogate: Toluene-d8	*100 %*	*90.9-108*			"	"	"	
Surrogate: 4-Bromofluorobenzene	*98.0 %*	*88.6-111*			"	"	"	

Origins Laboratory, Inc.

Jen Pellegrini For Noelle Doyle Mathis, President

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ORIGINS LABORATORY, INC

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Reynolds Cattle Company GU 1

BH03
3/18/2015 1:29:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes

Origins Laboratory, Inc.
X503222-03 (Water)

BTEX by EPA 8260C

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Benzene	**3.8**	1.0	ug/L	1	5C20007	03/20/2015	03/22/2015	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	**1.0**	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	*98.5 %*	*87.3-113*			"	"	"	
Surrogate: Toluene-d8	*101 %*	*90.9-108*			"	"	"	
Surrogate: 4-Bromofluorobenzene	*95.3 %*	*88.6-111*			"	"	"	

Origins Laboratory, Inc.

Jen Pellegrini

Jen Pellegrini For Noelle Doyle Mathis, President

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ORIGINS LABORATORY, INC

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Reynolds Cattle Company GU 1

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 5C20007 - EPA 5030B (Water)										
Blank (5C20007-BLK1)					Prepared: 03/20/2015 Analyzed: 03/22/2015					
Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	*63*		*"*	*62.5*		*101*	*87.3-113*			
Surrogate: Toluene-d8	*63*		*"*	*62.5*		*101*	*90.9-108*			
Surrogate: 4-Bromofluorobenzene	*60*		*"*	*62.5*		*96.5*	*88.6-111*			

Origins Laboratory, Inc.

Jen Pellegrini

Jen Pellegrini For Noelle Doyle Mathis, President

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ORIGINS LABORATORY, INC

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Reynolds Cattle Company GU 1

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 5C20007 - EPA 5030B (Water)										
LCS (5C20007-BS1)					Prepared: 03/20/2015 Analyzed: 03/22/2015					
Benzene	55.6	1.0	ug/L	50.0		111	75-126			
Toluene	55.0	1.0	"	50.0		110	78.7-126			
Ethylbenzene	56.2	1.0	"	50.0		112	80-130			
m,p-Xylene	113	2.0	"	100		113	77.2-133			
o-Xylene	55.8	1.0	"	50.0		112	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	*59*		*"*	*62.5*		*95.0*	*87.3-113*			
Surrogate: Toluene-d8	*63*		*"*	*62.5*		*100*	*90.9-108*			
Surrogate: 4-Bromofluorobenzene	*60*		*"*	*62.5*		*95.4*	*88.6-111*			

Origins Laboratory, Inc.

Jen Pellegrini

Jen Pellegrini For Noelle Doyle Mathis, President

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ORIGINS LABORATORY, INC

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Reynolds Cattle Company GU 1

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 5C20007 - EPA 5030B (Water)										
Matrix Spike (5C20007-MS1)		**Source: X503194-02**			Prepared: 03/20/2015 Analyzed: 03/22/2015					
Benzene	50.1	1.0	ug/L	50.0	ND	100	74-130			
Toluene	51.1	1.0	"	50.0	ND	102	73-131			
Ethylbenzene	52.5	1.0	"	50.0	ND	105	76-132			
m,p-Xylene	105	2.0	"	100	ND	105	69-139			
o-Xylene	53.4	1.0	"	50.0	ND	107	74-131			
Surrogate: 1,2-Dichloroethane-d4	*60*		"	*62.5*		*95.4*	*87.3-113*			
Surrogate: Toluene-d8	*63*		"	*62.5*		*100*	*90.9-108*			
Surrogate: 4-Bromofluorobenzene	*60*		"	*62.5*		*95.6*	*88.6-111*			

Origins Laboratory, Inc.

Jefe Pellegrini

Jen Pellegrini For Noelle Doyle Mathis, President

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.

ORIGINS LABORATORY, INC

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Reynolds Cattle Company GU 1

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 5C20007 - EPA 5030B (Water)										
Matrix Spike Dup (5C20007-MSD1)		**Source: X503194-02**			Prepared: 03/20/2015 Analyzed: 03/22/2015					
Benzene	51.0	1.0	ug/L	50.0	ND	102	74-130	1.74	20	
Toluene	53.5	1.0	"	50.0	ND	107	73-131	4.55	20	
Ethylbenzene	54.8	1.0	"	50.0	ND	110	76-132	4.19	20	
m,p-Xylene	112	2.0	"	100	ND	112	69-139	6.42	20	
o-Xylene	57.4	1.0	"	50.0	ND	115	74-131	7.26	20	
Surrogate: 1,2-Dichloroethane-d4	*59*		"	*62.5*		*93.9*	*87.3-113*			
Surrogate: Toluene-d8	*62*		"	*62.5*		*99.7*	*90.9-108*			
Surrogate: 4-Bromofluorobenzene	*60*		"	*62.5*		*95.2*	*88.6-111*			

Origins Laboratory, Inc.

Jen Pellegrini

Jen Pellegrini For Noelle Doyle Mathis, President

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ORIGINS LABORATORY, INC

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Christine Wasko
Project Number: [none]
Project: KMG - Reynolds Cattle Company GU 1

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.

Jen Pellegrini

Jen Pellegrini For Noelle Doyle Mathis, President

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.

ATTACHMENT B

WELL COMPLETION DIAGRAMS

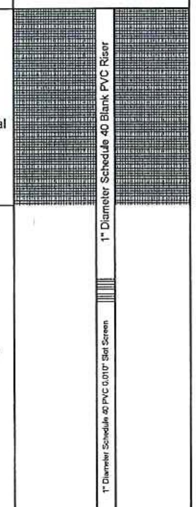
Tasman Geosciences

6899 Pecos St, Unit C
Denver, CO 80221

WELL ID: BH01	**SITE:** Reynolds Cattle Company GU 1
DATE: 12/4/2014	**Driller:** Clayton Robertson
DRILLING METHOD: AMS Powerprobe 9300-SK	
SAMPLING EQUIPMENT: N/A	

Depth (ft bgs)	From	To	Material Description[1]	Lab Samples	PID (ppm)	Well Completion Material
0 – 6			Hydro-excavation - no recovery			Hydrated Granular Bentonite Seal (0 – 4)
6 – 7			Borehole geology not logged			10-20 Silica Sand (4 – 10.5)
7 – 8			Groundwater interface approximately 7 ft bgs			
8 – 9						
9 – 10						
10 – 11			Borehole TD= 10.5' ft bgs			
11 – 12						
12 – 13						
13 – 14						
14 – 15						
15 – 16						
16 – 17						
17 – 18						
18 – 19						
19 – 20						
20 – 21						
21 – 22						
22 – 23						
23 – 24						
24 – 25						
25 – 26						
26 – 27						
27 – 28						
28 – 29						
29 – 30						
30 – 31						
31 – 32						

Well Completion Detail



Threaded PVC End Cap

Notes:
1. Material Description to include: Soil type, color; grain size; texture; moisture content; odor

NOTES:
Flush mount installed for temporary monitoring well.

Tasman Geosciences
6899 Pecos St, Unit C
Denver, CO 80221

WELL ID: BH02 **SITE:** Reynolds Cattle Company GU 1
DATE: 12/4/2014 **Driller:** Clayton Robertson
DRILLING METHOD: AMS Powerprobe 9300-SK
SAMPLING EQUIPMENT: N/A

Depth (ft bgs)	From	To	Material Description[1]	Lab Samples	PID (ppm)	Well Completion Material
0			Hydro-excavation - no recovery			Hydrated Granular Bentonite Seal (0–4)
6			Borehole geology not logged			10-20 Silica Sand (4–10.5)
7			Groundwater interface approximately 7 ft bgs			
8						
9						
10			Borehole TD= 10.5' ft bgs			
11						
12						
13						
14						
15						
16						
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18						
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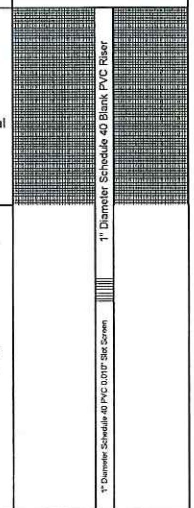
31						
32						

Well Completion Detail



Notes:
1. Material Description to include: Soil type, color; grain size; texture; moisture content; odor

NOTES:
Flush mount installed for temporary monitoring well.

Tasman Geosciences

6899 Pecos St, Unit C
Denver, CO 80221

WELL ID: BH03	**SITE:** Reynolds Cattle Company GU 1
DATE: 12/4/2014	**Driller:** Clayton Robertson
DRILLING METHOD: AMS Powerprobe 9300-SK	
SAMPLING EQUIPMENT: N/A	

Depth (ft bgs)	Lithology						Well Completion Detail
	From	To	Material Description[1]	Lab Samples	PID (ppm)	Well Completion Material	
0 – 6			Hydro-excavation - no recovery			Hydrated Granular Bentonite Seal (0–4)	1" Diameter Schedule 40 Blank PVC Riser
6 – 7			Borehole geology not logged			10-20 Silica Sand (4–10.5)	1" Diameter Schedule 40 PVC 0.010" Slot Screen
7 – 8			Groundwater interface approximately 7 ft bgs				
8 – 9							
9 – 10							
10 – 11			Borehole TD= 10.5' ft bgs				Threaded PVC End Cap
11 – 32							

Notes:
1. Material Description to include: Soil type, color; grain size; texture; moisture content; odor

NOTES:
Flush mount installed for temporary monitoring well.

Tasman Geosciences

6899 Pecos St, Unit C
Denver, CO 80221

WELL ID: BH03R **SITE:** Reynolds Cattle Company GU 1
DATE: 4/23/2015 **Driller:** Brandon LeVasseur
DRILLING METHOD: AMS Powerprobe 9300-SK
SAMPLING EQUIPMENT: N/A

Depth (ft bgs)	Lithology						Well Completion Detail
	From	To	Material Description[1]	Lab Samples	PID (ppm)	Well Completion Material	
0 – 6			Hydro-excavation - no recovery			Hydrated Granular Bentonite Seal (0–5)	1" Diameter Schedule 40 Blank PVC Riser
6 – 7			Borehole geology not logged			10-20 Silica Sand (5–16)	1" Diameter Schedule 40 PVC 0.010" Slot Screen
7 – 10							
10 – 11			Groundwater interface approximately 10.2 ft bgs				
11 – 16							Threaded PVC End Cap
16 – 17			Borehole TD= 16' ft bgs				
17 – 32							

Notes:
1. Material Description to include: Soil type, color; grain size; texture; moisture content; odor

NOTES:
Flush mount installed for temporary monitoring well.

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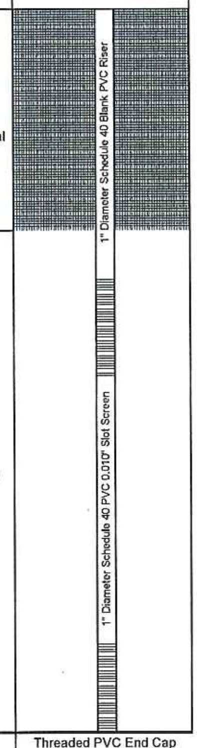
Denver, CO 80221

WELL ID: BH04 **SITE:** Reynolds Cattle Company GU 1
DATE: 4/23/2015 **Driller:** Brandon LeVasseur
DRILLING METHOD: AMS Powerprobe 9300-SK
SAMPLING EQUIPMENT: N/A

Depth (ft bgs)	From	To	Material Description[1]	Lab Samples	PID (ppm)	Well Completion Material
0–6			Hydro-excavation - no recovery			Hydrated Granular Bentonite Seal (0–4.5)
6–7			Borehole geology not logged			10-20 Silica Sand (4.5–15.5)
7–10						
10–11			Groundwater interface approximately 10.2 ft bgs			
11–15						
15–16			Borehole TD= 15.5' ft bgs			
16–32						

Well Completion Detail



Notes:
1. Material Description to include: Soil type, color; grain size; texture; moisture content; odor

NOTES:
Flush mount installed for temporary monitoring well.

Tasman Geosciences

6899 Pecos St, Unit C
Denver, CO 80221

WELL ID: BH05
DATE: 4/23/2015
DRILLING METHOD: AMS Powerprobe 9300-SK
SAMPLING EQUIPMENT: N/A
SITE: Reynolds Cattle Company GU 1
Driller: Brandon LeVasseur

Depth (ft bgs)	From	To	Material Description[1]	Lab Samples	PID (ppm)	Well Completion Material	Well Completion Detail
0–6			Hydro-excavation - no recovery			Hydrated Granular Bentonite Seal (0–4.5)	1" Diameter Schedule 40 Blank PVC Riser
6–7			Borehole geology not logged			10-20 Silica Sand (4.5–15.5)	1" Diameter Schedule 40 PVC 0.010" Slot Screen
10–11			Groundwater interface approximately 10.2 ft bgs				
15–16			Borehole TD= 15.5' ft bgs				Threaded PVC End Cap

Notes:
1. Material Description to include: Soil type, color; grain size; texture; moisture content; odor

NOTES:
Flush mount installed for temporary monitoring well.

Tasman Geosciences
6899 Pecos St, Unit C
Denver, CO 80221

WELL ID: BH06
DATE: 4/23/2015
DRILLING METHOD: AMS Powerprobe 9300-SK
SAMPLING EQUIPMENT: N/A
SITE: Reynolds Cattle Company GU 1
Driller: Brandon LeVasseur

Depth (ft bgs)	From	To	Material Description[1]	Lab Samples	PID (ppm)	Well Completion Material	Well Completion Detail
0–6			Hydro-excavation - no recovery			Hydrated Granular Bentonite Seal (0–4.5)	1" Diameter Schedule 40 Blank PVC Riser
6–7			Borehole geology not logged			10-20 Silica Sand (4.5–15.5)	1" Diameter Schedule 40 PVC 0.010" Slot Screen
10–11			Groundwater interface approximately 10.2 ft bgs				
15–16			Borehole TD= 15.5' ft bgs				Threaded PVC End Cap

Notes:
1. Material Description to include: Soil type, color; grain size; texture; moisture content; odor

NOTES:
Flush mount installed for temporary monitoring well.