

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

OGCC Operator Number: 47120		Contact Name and Telephone	
Name of Operator: Kerr-McGee Oil and Gas Onshore, LP		Name: Phillip Hamlin	
Address: 1099 18th Street, Suite 1800		No: 970-336-3500	
City: Denver State: CO Zip: 80202		Fax: 970-336-3656	
API/Facility No: 328075		County: Weld	
Facility Name: UPRC		Facility Number: 63N66W15SENW	
Well Name: UPRC		Well Number: 15-6K	
Location (Qtr, Sec, Twp, Rng, Meridian): NENW S15 T3N R66W		Latitude: 40.22755 Longitude: -104.76654	

TECHNICAL CONDITIONS

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

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.): Crop land

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Silty sand to silty clay

Potential receptors (water wells within 1/4 mi, surface waters, etc.): The nearest water well is located approximately 1.315' southwest of the release area.

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	25' (E-W) x 20' (N-S) x 2' bgs	Excavation, soil sampling, and laboratory analysis
<input type="checkbox"/> Vegetation		
<input checked="" type="checkbox"/> Groundwater	See attached data	Groundwater sampling and laboratory analysis
<input type="checkbox"/> Surface water		

REMEDIALATION WORKPLAN

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

On August 25, 2014, historical hydrocarbon impacts were discovered during removal of the produced water sump at the UPRC 63N66W15SENW production facility. The volume of released material is unknown. The well was shut in, associated underground infrastructure removed, and excavation activities commenced. Groundwater was encountered in the excavation at approximately 2 feet below ground surface (bgs). An Initial Form 19 was submitted to the COGCC on August 29, 2014 (COGCC Document No. 400676395), and a Supplemental Form 19 was submitted to the COGCC on September 5, 2014 (COGCC Document No. 400679246). The COGCC has issued Spill Tracking number 438733 for this release.

Describe how source is to be removed:

On August 25, 2014, excavation activities commenced and approximately 100 cubic yards of impacted material were excavated and transported to the Buffalo Ridge Landfill in Keenesburg, 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 of the final extent of the excavation area at approximately 1 foot bgs. Soil samples were submitted to eAnalytics Laboratory in Loveland, 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 lateral extent of the excavation area were below the applicable COGCC Table 910-1 standards. Soils were excavated into the phreatic zone to address potential hydrocarbon impacts that may have been present below the current groundwater table due to seasonal fluctuations. Groundwater was encountered in the excavation at approximately 2 feet bgs. A groundwater sample (GW01) was collected and submitted for laboratory analysis of BTEX. Analytical results received on August 26, 2015, indicated that the benzene concentration in groundwater sample GW01 was above the applicable COGCC Table 910-1 groundwater standard. On August 28, 2015, approximately 320 barrels of groundwater were removed via vacuum truck and transported to a licensed injection facility for disposal. A second groundwater sample (GW02) was subsequently collected from the excavation area and submitted for laboratory analysis of BTEX. Analytical results received on August 28, 2015, indicated that benzene and total xylenes concentrations in groundwater sample GW02 were above the applicable COGCC Table 910-1 groundwater standards. Soil analytical results are summarized in Table 1 and groundwater analytical results are summarized in Table 2. Soil and excavation groundwater sample locations are 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.:

Impacted soil was excavated and transported to the Buffalo Ridge Landfill in Keenesburg, Colorado. Impacted groundwater was removed via a vacuum truck and transported to a licensed injection facility for disposal. Approximately 200 pounds of activated carbon were added to the groundwater in the excavation prior to backfilling. Additional groundwater remediation measures are described on the following page. The produced water sump was removed during assessment and remediation activities.

State of Colorado
Oil and Gas Conservation Commission

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



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.):

On June 9, 2015, three temporary groundwater monitoring/remediation wells were installed at the site to further assess the extent of groundwater impacts. Groundwater samples were collected from the temporary monitoring wells on June 15 and September 17, 2015. Samples were submitted to Origins Laboratory in Denver, Colorado for analysis of BTEX by USEPA Method 8260. Temporary monitoring/remediation well locations and groundwater analytical results from the most recent monitoring event are illustrated on Figure 2, and a groundwater contour map is presented on Figure 3. Groundwater analytical results are summarized in Table 2 and the groundwater laboratory analytical reports and well completion diagrams are included as Attachments A and B, respectively. 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. Kerr-McGee's tank battery was rebuilt in a new location. 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 ☒ N If yes, describe:

Data indicate that impacted soil has been delineated and removed from the site. Temporary monitoring/remediation wells have been installed to further assess groundwater impacts; groundwater points of compliance have been achieved. Soil and groundwater analytical results are summarized in Tables 1 and 2, respectively. 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.):

Impacted soil was transported to the Buffalo Ridge Landfill in Keenesburg, Colorado for disposal. Impacted groundwater was transported to a licensed injection facility for disposal.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began:	8/25/2014	Date Site Investigation Completed:	6/9/2015	Remediation Plan Submitted:	_____
Remediation Start Date:	8/25/2014	Anticipated Completion Date:	3/17/2016	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: Phillip Hamlin

Signed: [Signature] Title: Senior HSE Representative Date: 11/14/16

OGCC Approved: _____ Title: _____ Date: _____

FIGURES



DATE:	October 29, 2015
DESIGNED BY:	D. Wade
DRAWN BY:	D. Wade



Kerr-McGee Oil and Gas Onshore, LP
UPRC 63N66W15SEnw
NENW, Section 15, Township 3 North, Range 66 West
Weld County, Colorado

Sample Location
Map

FIGURE
1





DATE:	October 29, 2015
DESIGNED BY:	D. Wade
DRAWN BY:	D. Wade



Kerr-McGee Oil and Gas Onshore, LP
UPRC 63N66W15SENW
NENW, Section 15, Township 3 North, Range 66 West
Weld County, Colorado

Groundwater Elevation Contour
Map (09/17/2015)

FIGURE
3

TABLES

TABLE 1
UPRC 63N66W15SENW
SOIL SAMPLE RESULTS SUMMARY TABLE
KERR-McGEE OIL AND GAS ONSHORE LP

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)
COGCC standards for soil (mg/kg) ⁽¹⁾			0.17	85	100	175	500		
E01@1	08/25/14	1	<0.01	<0.01	<0.01	0.274	68.7	208	<50
N01@1	08/25/14	1	<0.01	<0.01	<0.01	<0.01	<50	<50	<50
S01@1	08/25/14	1	<0.01	<0.01	<0.01	<0.01	<50	<50	<50
W01@1	08/25/14	1	<0.01	<0.01	<0.01	<0.01	<50	<50	<50

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.

ft. bgs = Feet below ground surface.

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

TABLE 2
UPRC 63N66W15SENW
GROUNDWATER RESULTS SUMMARY TABLE
KERR-McGEE OIL AND GAS ONSHORE LP

Sample ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth To Water (ft. bgs)
COGCC Standards for groundwater (µg/L) ⁽¹⁾		5	560	700	1,400	
GW01	8/25/2014	66.5	69.5	7.6	639	~ 2
GW02	8/28/2014	88.4	120	65.1	1,745	~ 2
BH01	6/15/2015	<4.0	<4.0	11.2	249	0.91
BH01	9/17/2015	<4.0	<4.0	15.8	79.6	1.74
BH02	6/15/2015	4.3	<1.0	<1.0	<1.0	0.21
BH02	9/17/2015	<1.0	<1.0	<1.0	<1.0	1.68
BH03	6/15/2015	<1.0	<1.0	<1.0	<1.0	0.00
BH03	9/17/2015	<1.0	<1.0	<1.0	<1.0	1.90

Notes:

1. Standards for groundwater 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.

µg/L = Micrograms per liter.

ft. bgs = Feet below ground surface.

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

ATTACHMENT A
LABORATORY ANALYTICAL DATA

Test Report



August 26, 2014

Client: Tasman Geosciences / Anadarko

Project: UPRC 15-3K & 6K

Lab ID: 2026

Date Samples Received: 8/25/2014

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,

A handwritten signature in black ink, appearing to read "Chris Dieken".

Christopher Dieken
Quality Assurance Manager

A handwritten signature in black ink, appearing to read "Todd Rhea".

Todd Rhea
Laboratory Manager

eAnalytics Laboratory

1767 Rocky Mountain Avenue Loveland CO 80538

Chain of Custody

eANALYTICS

LABORATORY

Chain of Custody Form

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)								ANALYSIS INFORMATION (Select analysis by checking box on corresponding sample line)											
Company: Tasman Geosciences / Anadarko								Other Analysis											
Project: <u>UPRC 15-3K4K</u>																			
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																			
Lab ID	Sample Name	Sampling Date/Time	Number of Containers	Matrix (S) Soil (W) Water (V) Vapor (O) Other	BTX (EPA 8260)	BTX/GRO (EPA 8260)	DRO/RO (EPA 8015)	TPH-GRO/DRO/RO (EPA 8260/8015)	SAR (US Dept of Ag Method 200)	EC (US Dept of Ag Method 3)	pH (EPA 9045D)								
1	GWOI	8/25/14	3	N	X														
2	EOI@1		1	S		X	X												
3	NOI@1		1	S		X	X												
4	SOI@1		1	S		X	X												
5	WOI@1		1	S		X	X												
Comments: <u>By Tam 8/26/14 Please</u>																			
Turnaround Time (Business Days) TAT begins when sample is received by eANALYTICS <input checked="" type="checkbox"/> Normal (5-10 Days) <input type="checkbox"/> 1 Day (1.25x) <input type="checkbox"/> 1 Day (2x) <input type="checkbox"/> Same Day (3x) <input type="checkbox"/> Next Bus. Morning (APC Pricing)				Record of Custody Relinquished by: <u>[Signature]</u> Date: <u>8/25/14</u> Company: _____ Received by: _____ Company: _____				Date: _____ Time: _____ Date: _____ Time: _____ Date: _____ Time: _____											
For eANALYTICS Use Samples Received Intact <input checked="" type="checkbox"/> / No Received Within Temperature Range (2-6°C) <input checked="" type="checkbox"/> / No Sample Preservative: <u>None</u> / Acid / Other				Relinquished by: <u>[Signature]</u> Date: <u>8/25/14</u> Company: <u>eANALYTICS</u> Received by: <u>[Signature]</u> Date: <u>8/25/14</u> Company: <u>eANALYTICS</u>				Date: <u>8/25/14</u> Time: <u>6:00</u>											

WO # 2026

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eANALYTICS
LABORATORY

Client: Tasman Geosciences / Anadarko

Lab ID: 2026

Project: UPRC 15-3K & 6K

Analysis: Volatile Organics
TPHMethod: EPA8260
EPA8260/8015

Sample Name	Benzene	Toluene	Ethyl- benzene	Total Xylenes	TPH GRO C6-C10	TPH DRO C10-C28	TPH ORO C28-C36	Date Sampled	Date Analyzed	Lab ID	
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg				
E01 @ 1'	< 0.01	< 0.01	< 0.01	0.274	68.7	208	< 50	08/25/14	08/25/14	2026	2

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eANALYTICS
LABORATORY

Client: Tasman Geosciences / Anadarko

Lab ID: 2026

Project: UPRC 15-3K & 6K

Analysis: Volatile Organics

Method: EPA8260

Sample Name	Benzene	Toluene	Ethyl- benzene	Total Xylenes	Date Sampled	Date Analyzed	Lab ID	
	ug/L	ug/L	ug/L	ug/L				
GW01	66.5	69.5	7.6	639	08/25/14	08/25/14	2026	1

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LABORATORY

Client: Tasman Geosciences / Anadarko

Lab ID: 2026

Project: UPRC 15-3K & 6K

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
E01 @ 1'	105	95	111	91	08/25/14	08/25/14	2026 2

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eANALYTICS
LABORATORY

Client: Tasman Geosciences / Anadarko

Lab ID: 2026

Project: UPRC 15-3K & 6K

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	99	91	97	105	08/25/14	08/25/14	2026 1

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eANALYTICS

LABORATORY

Client: Tasman Geosciences / Anadarko

Lab ID: 2026

Project: UPRC 15-3K & 6K

Analysis: Volatile Organics
TPHMethod: EPA8260
EPA8260/8015

Sample Name	Benzene	Toluene	Ethyl- benzene	Total Xylenes	TPH GRO C6-C10	TPH DRO C10-C28	TPH ORO C28-C36	Date Analyzed	Lab ID		
	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec				
Laboratory Control Sample	91	96	95	101	89	103	90	08/25/14	LCS	2026	1
(70-130%)											
Method Blank	< 0.01	< 0.01	< 0.01	< 0.01	< 50	< 50	< 50	08/25/14	MB	2026	1
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg				

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LABORATORY

Client: Tasman Geosciences / Anadarko

Lab ID: 2026

Project: UPRC 15-3K & 6K

Analysis: Volatile Organics

Method: EPA8260

Sample Name	Benzene	Toluene	Ethyl- benzene	Total Xylenes	Date Analyzed	Lab ID		
	% Rec	% Rec	% Rec	% Rec				
Laboratory Control Sample	96	102	103	97	08/25/14	LCS	2026	1
(70-130%)								
Method Blank	< 1.0	< 1.0	< 1.0	< 1.0	08/25/14	MB	2026	1
	ug/L	ug/L	ug/L	ug/L				

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Test Report



August 26, 2014

Client: Tasman Geosciences / Anadarko

Project: UPRC 15-3K & 6K

Lab ID: 2026

Date Samples Received: 8/25/2014

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,

A handwritten signature in black ink, appearing to read "Chris Dieken".

Christopher Dieken
Quality Assurance Manager

A handwritten signature in black ink, appearing to read "Todd Rhea".

Todd Rhea
Laboratory Manager

eAnalytics Laboratory

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The results contained within this report relate only to the items analyzed

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Client: Tasman Geosciences / Anadarko

Lab ID: 2026

Project: UPRC 15-3K & 6K

Analysis: Volatile Organics
TPHMethod: EPA8260
EPA8260/8015

Sample Name	Benzene	Toluene	Ethyl- benzene	Total Xylenes	TPH GRO C6-C10	TPH DRO C10-C28	TPH ORO C28-C36	Date Sampled	Date Analyzed	Lab ID	
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg				
N01 @ 1'	< 0.01	< 0.01	< 0.01	< 0.01	< 50	< 50	< 50	08/25/14	08/26/14	2026	3
S01 @ 1'	< 0.01	< 0.01	< 0.01	< 0.01	< 50	< 50	< 50	08/25/14	08/26/14	2026	4
W01 @ 1'	< 0.01	< 0.01	< 0.01	< 0.01	< 50	< 50	< 50	08/25/14	08/26/14	2026	5

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LABORATORY

Client: Tasman Geosciences / Anadarko

Lab ID: 2026

Project: UPRC 15-3K & 6K

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 @ 1'	102	100	102	89	08/25/14	08/26/14	2026 3
S01 @ 1'	111	104	108	90	08/25/14	08/26/14	2026 4
W01 @ 1'	94	88	100	110	08/25/14	08/26/14	2026 5

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LABORATORY

Client: Tasman Geosciences / Anadarko

Lab ID: 2026

Project: UPRC 15-3K & 6K

Analysis: Volatile Organics
TPHMethod: EPA8260
EPA8260/8015

Sample Name	Benzene	Toluene	Ethyl- benzene	Total Xylenes	TPH GRO C6-C10	TPH DRO C10-C28	TPH ORO C28-C36	Date Analyzed	Lab ID		
	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec				
Laboratory Control Sample	89	94	102	95	95	89	94	08/26/14	LCS	2026	1
(70-130%)											
Method Blank	< 0.01	< 0.01	< 0.01	< 0.01	< 50	< 50	< 50	08/26/14	MB	2026	1
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg				

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Test Report



August 28, 2014

Client: Tasman Geosciences / Anadarko

Project: UPRC 15-3K & 6K

Lab ID: 2045

Date Samples Received: 8/28/2014

Number of Samples: 1

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,

A handwritten signature in black ink, appearing to read "Chris Dieken".

Christopher Dieken
Quality Assurance Manager

A handwritten signature in black ink, appearing to read "Todd Rhea".

Todd Rhea
Laboratory Manager

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LABORATORY

Client: Tasman Geosciences / Anadarko

Lab ID: 2045

Project: UPRC 15-3K & 6K

Analysis: Volatile Organics

Method: EPA8260

Sample Name	Benzene	Toluene	Ethyl- benzene	Total Xylenes	Date Sampled	Date Analyzed	Lab ID	
	ug/L	ug/L	ug/L	ug/L				
GW02	88.4	120	65.1	1745	08/28/14	08/28/14	2045	1

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eANALYTICS
LABORATORY

Client: Tasman Geosciences / Anadarko

Lab ID: 2045

Project: UPRC 15-3K & 6K

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
GW02	91	108	103	90	08/28/14	08/28/14	2045 1

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LABORATORY

Client: Tasman Geosciences / Anadarko

Lab ID: 2045

Project: UPRC 15-3K & 6K

Analysis: Volatile Organics

Method: EPA8260

Sample Name	Benzene	Toluene	Ethyl- benzene	Total Xylenes	Date Analyzed	Lab ID		
	% Rec	% Rec	% Rec	% Rec				
Laboratory Control	94	103	91	92	08/28/14	LCS	2045	1
(70-130%)								
Method Blank	< 1.0	< 1.0	< 1.0	< 1.0	08/28/14	MB	2045	1
	ug/L	ug/L	ug/L	ug/L				

eAnalytics Laboratory

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June 17, 2015

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver

CO 80211

Project Name - KMG - UPRC 15-3K, 6K**Project Number - [none]**

Attached are your analytical results for KMG - UPRC 15-3K, 6K received by Origins Laboratory, Inc. June 15, 2015. This project is associated with Origins project number X506183-01.

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

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

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

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

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

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



Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Bob Cornez

Project Number: [none]

Project: KMG - UPRC 15-3K, 6K

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	X506183-01	Water	June 15, 2015 11:19	06/15/2015 16:35
BH02	X506183-02	Water	June 15, 2015 11:12	06/15/2015 16:35
BH03	X506183-03	Water	June 15, 2015 11:04	06/15/2015 16:35

Origins Laboratory, Inc.



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

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - UPRC 15-3K, 6K

ORIGINS

X506183

page 1 of 1

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

Project Manager: Bob Cornez
Project Name: UPRC 15-3K, 6K
Project Number:
Sampler Collected By: Kak Fasman

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservatives				Matrix			Matrix	Analyst	Sample Instructions
				HCl	HNO ₃	Other	As	Se	Other				
B1b1	6/15/15	1119	3	X	X							B1b1 8260	1
B1b2	6/15/15	1100	1	X	X								2
B1b3	6/15/15	1104	1	X	X								3
													4
													5
													6
													7
													8
													9
													10

Relinquished By: [Signature] Date: 6/15/15 Time: 1630
Relinquished By: [Signature] Date: 6/15/15 Time: 1635

Turnaround Time: Same Day ☐ 24 Hr ☐ 48 Hr ☐ 72 Hr ☒ Standard ☒ 9.1

Date Results Needed: []

Origins Laboratory, Inc.

Jefe Pellegrini

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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - UPRC 15-3K, 6K

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: XS04183

Client: Tasman

Client Project ID: KMG-UPRC 15-3K, 6K

Checklist Completed by: Jen Pellegrini

Shipped Via: HIP

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

Date/time completed: 6/16/15

Airbill #: N/A

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

Cooler Number/Temperature: 1 / 4.1 °C 1 / 1 °C 1 / 1 °C (Describe)

Thermometer ID: 1003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>HCL</u>
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.

Jen Pellegrini
Reviewed by (Project Manager)

6/16/15
Date/Time Reviewed

Origins Laboratory, Inc.

Jen Pellegrini

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

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - UPRC 15-3K, 6K

BH01

6/15/2015 11:19:00AM

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

Origins Laboratory, Inc.
X506183-01 (Water)

BTEX by EPA 8260C

Benzene	ND	4.0	ug/L	4	5F16010	06/16/2015	06/17/2015
Toluene	ND	4.0	"	"	"	"	"
Ethylbenzene	11.2	4.0	"	"	"	"	"
Xylenes, total	249	4.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	98.5 %	87.3-113			"	"	"
Surrogate: Toluene-d8	99.5 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	95.9 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - UPRC 15-3K, 6K

BH02

6/15/2015 11:12:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X506183-02 (Water)

BTEX by EPA 8260C

Benzene	4.3	1.0	ug/L	1	5F16010	06/16/2015	06/17/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	98.5 %	87.3-113			"	"	"
Surrogate: Toluene-d8	96.9 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	98.9 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - UPRC 15-3K, 6K

BH03

6/15/2015 11:04:00AM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X506183-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5F16010	06/16/2015	06/17/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	99.7 %	87.3-113			"	"	"
Surrogate: Toluene-d8	97.0 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	96.8 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - UPRC 15-3K, 6K

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 5F16010 - EPA 5030B (Water)

Blank (5F16010-BLK1)

Prepared: 06/16/2015 Analyzed: 06/17/2015

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5	98.3	87.3-113				
Surrogate: Toluene-d8	62		"	62.5	98.7	90.9-108				
Surrogate: 4-Bromofluorobenzene	63		"	62.5	100	88.6-111				

Origins Laboratory, Inc.



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

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - UPRC 15-3K, 6K

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 5F16010 - EPA 5030B (Water)

LCS (5F16010-BS1)

Prepared: 06/16/2015 Analyzed: 06/17/2015

Benzene	53.9	1.0	ug/L	50.0	108	75-126
Toluene	52.0	1.0	"	50.0	104	78.7-126
Ethylbenzene	52.5	1.0	"	50.0	105	80-130
m,p-Xylene	106	2.0	"	100	106	77.2-133
o-Xylene	51.7	1.0	"	50.0	103	77.9-126
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5	94.6	87.3-113
Surrogate: Toluene-d8	62		"	62.5	99.5	90.9-108
Surrogate: 4-Bromofluorobenzene	61		"	62.5	97.8	88.6-111

Origins Laboratory, Inc.



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

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - UPRC 15-3K, 6K

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 5F16010 - EPA 5030B (Water)

Matrix Spike (5F16010-MS1)		Source: X506186-01			Prepared: 06/16/2015 Analyzed: 06/17/2015					
Benzene	54.8	1.0	ug/L	50.0	ND	110	74-130			
Toluene	51.6	1.0	"	50.0	ND	103	73-131			
Ethylbenzene	54.7	1.0	"	50.0	ND	109	76-132			
m,p-Xylene	107	2.0	"	100	ND	107	69-139			
o-Xylene	51.5	1.0	"	50.0	ND	103	74-131			
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		95.3	87.3-113			
Surrogate: Toluene-d8	62		"	62.5		98.4	90.9-108			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.9	88.6-111			

Origins Laboratory, Inc.



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

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - UPRC 15-3K, 6K

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 5F16010 - EPA 5030B (Water)

Matrix Spike Dup (5F16010-MSD1)		Source: X506186-01			Prepared: 06/16/2015 Analyzed: 06/17/2015					
Benzene	56.4	1.0	ug/L	50.0	ND	113	74-130	2.81	20	
Toluene	51.8	1.0	"	50.0	ND	104	73-131	0.290	20	
Ethylbenzene	55.8	1.0	"	50.0	ND	112	76-132	1.94	20	
m,p-Xylene	109	2.0	"	100	ND	109	69-139	2.38	20	
o-Xylene	53.7	1.0	"	50.0	ND	107	74-131	4.30	20	
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		94.2	87.3-113			
Surrogate: Toluene-d8	62		"	62.5		100	90.9-108			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.4	88.6-111			

Origins Laboratory, Inc.



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Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Bob Cornez

Project Number: [none]

Project: KMG - UPRC 15-3K, 6K

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

September 22, 2015

Tasman Geosciences

Bob Cornez

6899 Pecos Street, Unit C

Denver

CO 80211

Project Name - KMG - UPRC 15-6K & 3K

Project Number - [none]

Attached are your analytical results for KMG - UPRC 15-6K & 3K received by Origins Laboratory, Inc. September 17, 2015. This project is associated with Origins project number X509237-01.

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

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

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

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

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

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



Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Bob Cornez

Project Number: [none]

Project: KMG - UPRC 15-6K & 3K

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	X509237-01	Water	September 17, 2015 12:16	09/17/2015 16:35
BH02	X509237-02	Water	September 17, 2015 12:23	09/17/2015 16:35
BH03	X509237-03	Water	September 17, 2015 12:32	09/17/2015 16:35

Origins Laboratory, Inc.



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

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - UPRC 15-6K & 3K

www.originslaboratory.com

page 1 of 1

XS09237

ORIGINS LABORATORY, INC

Client: Tasman Geo

Address:

Project Manager: Bob Cornez

Project Name: UPRC 15-6K & 3K

Project Number:

Samples Collected By: Kyle Forsman

Telephone Number: 352 262 9910

Email Address: lcornez@tasmangeo.com

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix				Analysis	Sample Instructions	
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa Canister #	Other			
B401	9/17/15	1210	3	X				X					B4X 8200	1
B402	9/17/15	1223	1	X				X						2
B403	9/17/15	1232	1	X				X						3
														4
														5
														6
														7
														8
														9
														10

Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:
<u>[Signature]</u>	9/17/15	1430	<u>[Signature]</u>	9/17/15	1635	Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 4/5

Date Results Needed

Origins Laboratory, Inc.

Jefe Pellegrini

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

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - UPRC 15-6K & 3K

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: XS09237

Client: Tasman

Client Project ID: KMG-UPRC 15-6K & 3K

Checklist Completed by: Jeff Smith

Shipped Via: H/D
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 9/18/15

Airbill #: N/A

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

Cooler Number/Temperature: 1 4.5 °C 1 °C 1 °C 1 °C

Thermometer ID: TOUB

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water — is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	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) Jeff Smith

Date/Time Reviewed 9/18/15

Origins Laboratory, Inc.

Jeff Pellegrini

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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - UPRC 15-6K & 3K

BH01

9/17/2015 12:16:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X509237-01 (Water)

BTEX by EPA 8260C

Benzene	ND	4.0	ug/L	4	5121011	09/21/2015	09/21/2015
Toluene	ND	4.0	"	"	"	"	"
Ethylbenzene	15.8	4.0	"	"	"	"	"
Xylenes, total	79.6	4.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	105 %	84-121			"	"	"
Surrogate: Toluene-d8	102 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	84-114			"	"	"

Origins Laboratory, Inc.



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

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - UPRC 15-6K & 3K

BH02

9/17/2015 12:23:00PM

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

Origins Laboratory, Inc.
X509237-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5121011	09/21/2015	09/21/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	108 %	84-121			"	"	"
Surrogate: Toluene-d8	101 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	103 %	84-114			"	"	"

Origins Laboratory, Inc.



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

Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Bob Cornez

Project Number: [none]

Project: KMG - UPRC 15-6K & 3K

BH03

9/17/2015 12:32:00PM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X509237-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5121011	09/21/2015	09/21/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	109 %	84-121			"	"	"
Surrogate: Toluene-d8	100 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	104 %	84-114			"	"	"

Origins Laboratory, Inc.



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

Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - UPRC 15-6K & 3K

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 5121011 - EPA 5030B (Water)

Blank (5121011-BLK1)

Prepared: 09/21/2015 Analyzed: 09/21/2015

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	67		"	62.5	108		84-121			
Surrogate: Toluene-d8	63		"	62.5	100		85-115			
Surrogate: 4-Bromofluorobenzene	64		"	62.5	103		84-114			

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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - UPRC 15-6K & 3K

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 5121011 - EPA 5030B (Water)

LCS (5121011-BS1)

Prepared: 09/21/2015 Analyzed: 09/21/2015

Benzene	52.9	1.0	ug/L	50.0	106	75-126
Toluene	52.6	1.0	"	50.0	105	78.7-126
Ethylbenzene	53.8	1.0	"	50.0	108	80-130
m,p-Xylene	106	2.0	"	100	106	77.2-133
o-Xylene	52.5	1.0	"	50.0	105	77.9-126
Surrogate: 1,2-Dichloroethane-d4	67		"	62.5	108	84-121
Surrogate: Toluene-d8	62		"	62.5	99.0	85-115
Surrogate: 4-Bromofluorobenzene	64		"	62.5	102	84-114

Origins Laboratory, Inc.



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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - UPRC 15-6K & 3K

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 5121011 - EPA 5030B (Water)

Matrix Spike (5121011-MS1)		Source: X509247-01			Prepared: 09/21/2015 Analyzed: 09/21/2015					
Benzene	46.6	1.0	ug/L	50.0	ND	93.1	74-130			
Toluene	46.6	1.0	"	50.0	ND	93.3	73-131			
Ethylbenzene	48.8	1.0	"	50.0	ND	97.5	76-132			
m,p-Xylene	96.8	2.0	"	100	ND	96.8	69-139			
o-Xylene	47.6	1.0	"	50.0	ND	95.2	74-131			
Surrogate: 1,2-Dichloroethane-d4	68		"	62.5		108	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	84-114			

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Tasman Geosciences
6899 Pecos Street, Unit C
Denver CO 80211

Bob Cornez
Project Number: [none]
Project: KMG - UPRC 15-6K & 3K

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 5121011 - EPA 5030B (Water)

Matrix Spike Dup (5121011-MSD1)		Source: X509247-01			Prepared: 09/21/2015 Analyzed: 09/21/2015					
Benzene	42.2	1.0	ug/L	50.0	ND	84.3	74-130	9.96	20	
Toluene	42.4	1.0	"	50.0	ND	84.8	73-131	9.57	20	
Ethylbenzene	43.6	1.0	"	50.0	ND	87.1	76-132	11.2	20	
m,p-Xylene	87.5	2.0	"	100	ND	87.5	69-139	10.1	20	
o-Xylene	43.2	1.0	"	50.0	ND	86.4	74-131	9.71	20	
Surrogate: 1,2-Dichloroethane-d4	66		"	62.5		105	84-121			
Surrogate: Toluene-d8	63		"	62.5		100	85-115			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		103	84-114			

Origins Laboratory, Inc.



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Tasman Geosciences

6899 Pecos Street, Unit C

Denver CO 80211

Bob Cornez

Project Number: [none]

Project: KMG - UPRC 15-6K & 3K

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.



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Jen Pellegrini For Noelle Doyle Mathis, President

ATTACHMENT B
WELL COMPLETION LOGS



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Kerr-McGee Oil and Gas Onshore, LP
DRILLED BY: Brandon LeVasseur & Tyler Blessing
PROJECT MANAGER: Robert Cornez
DRILLING CONTRACTOR: Tasman Geosciences
DRILLING EQUIPMENT: AMS Powerprobe
DRILL BIT SIZE (INCHES): 2 3/8"
DATE STARTED - COMPLETED: 6/9/2015 - 6/9/2015
TOTAL WELL DEPTH (FT. BGS): 12
DEPTH TO WATER (FT. BGS): 1.74 (09/17/15) ▼

UPRC 63N66W15SENW

BORING / WELL ID: BH01

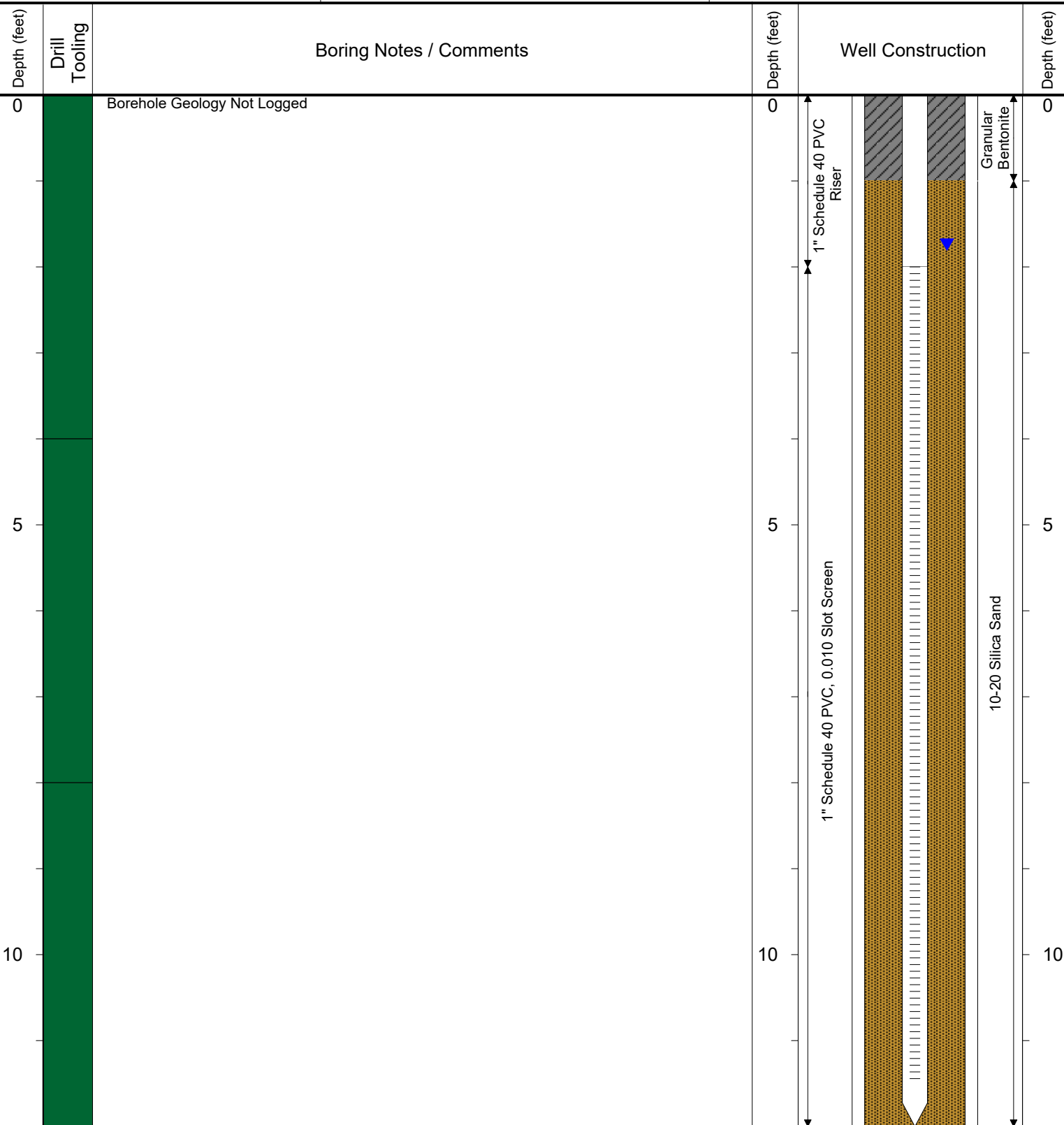
LOCATION: Weld County, Colorado

LATITUDE (UTM - NAD 83): 40.23196

LONGITUDE (UTM - NAD 83): -104.764309

CASING ELEVATION (FT. AMSL): 4860.41

GROUND ELEVATION (FT. AMSL): 4860.64



Drilling / Sample Method:

- Macro-Core
- Expendable Well Tip
- Perforated Injection Tool

Laboratory Sample Types:

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



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Kerr-McGee Oil and Gas Onshore, LP
DRILLED BY: Brandon LeVasseur & Tyler Blessing
PROJECT MANAGER: Robert Cornez
DRILLING CONTRACTOR: Tasman Geosciences
DRILLING EQUIPMENT: AMS Powerprobe
DRILL BIT SIZE (INCHES): 2 3/8"
DATE STARTED - COMPLETED: 6/9/2015 - 6/9/2015
TOTAL WELL DEPTH (FT. BGS): 11.5
DEPTH TO WATER (FT. BGS): 1.68 (09/17/15) ▼

UPRC 63N66W15SENW

BORING / WELL ID: BH02

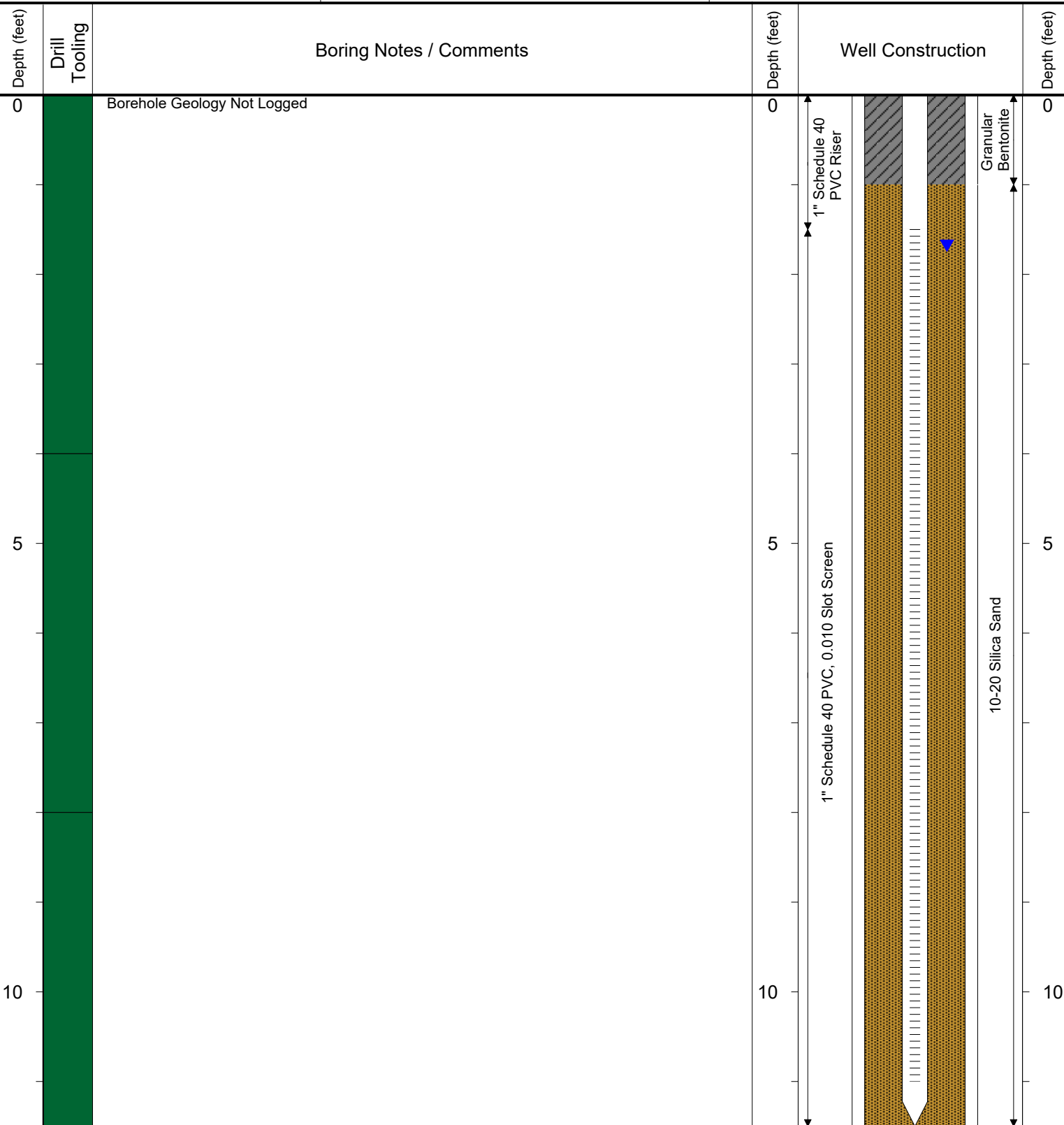
LOCATION: Weld County, Colorado

LATITUDE (UTM - NAD 83): 40.231958

LONGITUDE (UTM - NAD 83): -104.764415

CASING ELEVATION (FT. AMSL): 4860.14

GROUND ELEVATION (FT. AMSL): 4860.26



Drilling / Sample Method:

- Macro-Core
- Expendable Well Tip
- Perforated Injection Tool

Laboratory Sample Types:

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



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: Kerr-McGee Oil and Gas Onshore, LP
DRILLED BY: Brandon LeVasseur & Tyler Blessing
PROJECT MANAGER: Robert Cornez
DRILLING CONTRACTOR: Tasman Geosciences
DRILLING EQUIPMENT: AMS Powerprobe
DRILL BIT SIZE (INCHES): 2 3/8"
DATE STARTED - COMPLETED: 6/9/2015 - 6/9/2015
TOTAL WELL DEPTH (FT. BGS): 11.5
DEPTH TO WATER (FT. BGS): 1.90 (09/17/15) ▼

UPRC 63N66W15SENW

BORING / WELL ID: BH03

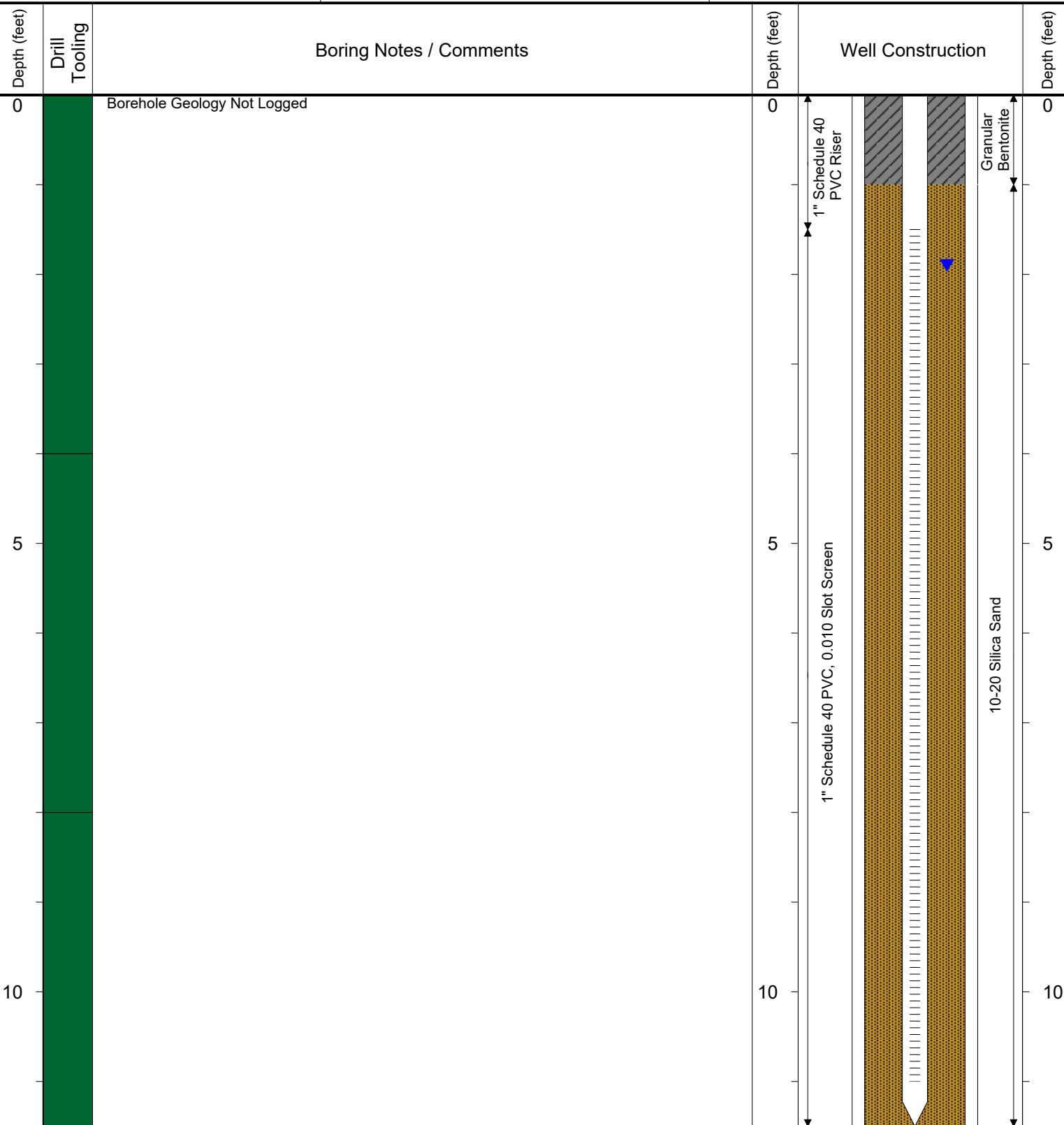
LOCATION: Weld County, Colorado

LATITUDE (UTM - NAD 83): 40.231907

LONGITUDE (UTM - NAD 83): -104.764409

CASING ELEVATION (FT. AMSL): 4860.02

GROUND ELEVATION (FT. AMSL): 4860.24



Drilling / Sample Method:

- Macro-Core
- Expendable Well Tip
- Perforated Injection Tool

Laboratory Sample Types:

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