

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

OGCC Employee:

Spill Complaint

Inspection NOAV

Tracking No: _____

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

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

GENERAL INFORMATION

OGCC Operator Number: <u>47120</u>		Contact Name and Telephone	
Name of Operator: <u>Kerr-McGee Oil and Gas Onshore LP</u>		Name: <u>Phillip Hamlin</u>	
Address: <u>1099 18th Street, Suite 1800</u>		No: <u>(970) 336-3500</u>	
City: <u>Denver</u> State: <u>CO</u> Zip: <u>80202</u>		Fax: <u>(720) 929-7726</u>	
API/Facility No: <u>05-123-07848</u>	County: <u>Weld</u>		
Facility Name: _____	Facility Number: _____		
Well Name: <u>UPRR 22 Pan Am G#1</u>	Well Number: _____		
Location (QtrQtr, Sec, Twp, Rng, Meridian): <u>SWSW 13-T3N-R66W</u>		Latitude: <u>40.2212716</u>	Longitude: <u>-104.7311002</u>

TECHNICAL CONDITIONS

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

Site Conditions: Is location within a sensitive area (according to Rule 901e)? Y N If yes, attach evaluation. Groundwater < 20 ft.

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

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

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Buildings approximately 950' south, water well approximately 1.025' south, surface water approximately 715' east, and wetland approximately 500' northwest.

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

Impacted Media (check):	Extent of Impact:	How Determined:
<input checked="" type="checkbox"/> Soils	<u>Two excavations: 20' N-S x 15' E-W x 0.5' bgs.</u>	<u>Collected soil samples for laboratory analysis.</u>
<input type="checkbox"/> Vegetation	_____	_____
<input type="checkbox"/> Groundwater	<u>Unknown</u>	<u>A subsurface assessment will be performed to determine potential impact.</u>
<input type="checkbox"/> Surface water	_____	_____

REMEDATION WORKPLAN

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

During plug and abandonment operations at the UPRR 22 Pan Am G #1 well, approximately 5 barrels (bbls) of water-based drilling fluid used in the plug and abandonment process surfaced off the well pad at two locations. A vacuum truck was utilized to recover approximately 4 bbls of the released water-based drilling fluid from the ground surface. A topographic Site Location Map showing the general location of the release is attached as Figure 1.

Describe how source is to be removed:

The surfaced water-based drilling fluid was sampled for total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and total xylenes (BTEX) analysis. The laboratory analytical results indicated that petroleum hydrocarbons were present in the water-based drilling fluid. Two confirmation soil samples were collected from the base of the northern (N01@0.5' and N02@0.5') and the base of the southern (S01@0.5' and S02@0.5') shallow hydro-vac excavations. The soil samples were submitted for laboratory analysis of TPH, BTEX, pH, and specific conductivity (EC). Laboratory analytical results for the soil samples indicated that TPH, BTEX, pH, and EC levels are in compliance with the Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 allowable levels within the two shallow hydro-vac excavations. Due to the fluid surfacing approximately 60 feet from the well, a subsurface assessment will be conducted at the site to determine if subsurface soil and/or shallow groundwater has been impacted. A total of approximately 12 cubic yards of impacted soil were removed from the two shallow hydro-vac excavations and transported to the Kerr-McGee land treatment facility in Weld County, Colorado. The general site layout, excavation dimensions, and soil sample locations are shown on the attached Figure 2. The soil and water-based drilling fluid analytical results are summarized in Tables 1 and 2, respectively. The laboratory analytical report is attached.

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 and fluid was transported to the Kerr-McGee land treatment facility in Weld County, Colorado.



REMEDIATION WORKPLAN (CONT.)

OGCC Employee: _____

Tracking Number: _____
Name of Operator: Kerr-McGee Oil and Gas Onshore LP
OGCC Operator No: 47120
Received Date: _____
Well Name & No: UPRR 22 Pan Am G#1
Facility Name & No.: _____

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):
Groundwater was not encountered in the excavation. A subsurface assessment will be conducted at the site to determine if subsurface soil and/or shallow groundwater has been impacted. Shallow soil borings will be advanced to groundwater or refusal. Confirmation soil samples will be collected from the boreholes for laboratory analysis of TPH, BTEX, pH, EC, and SAR (if applicable). If refusal is encountered in the borehole before reaching groundwater, the boreholes will be left open for a minimum of 24 hours to see if groundwater is present. If shallow groundwater impacts are encountered, groundwater monitoring wells will be installed to fully define the extent and magnitude of the release. If impacted groundwater is encountered, additional monitoring wells will be installed until point of compliance is achieved. The monitoring wells will be surveyed so that the groundwater flow direction can be accurately determined. Groundwater monitoring activities will be conducted on a quarterly basis and all groundwater samples will be submitted for laboratory analysis of BTEX. If groundwater impacts are not encountered during the subsurface assessment, Kerr-McGee will request a No Further Action status for this site.

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 site was restored to its pre-release grade and the UPRR 22 Pan Am G #1 well was plugged and abandoned.

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:
Groundwater was not encountered in the excavation and the soil sample laboratory analytical results indicated that TPH, BTEX, pH, and EC concentrations were in compliance with the COGCC Table 910-1 allowable levels at the extent of the shallow excavations. However, a subsurface assessment is required at this site to determine if subsurface soil and/or shallow groundwater have been impacted. In the event that groundwater is encountered, groundwater monitoring wells will be installed to fully define the extent and magnitude of the release. The details of the subsurface assessment will be provided on a Form 27 Update Report.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):
The impacted soil and fluid was transported to the Kerr-McGee land treatment facility in Weld County, Colorado.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began:	<u>7/21/14</u>	Date Site Investigation Completed:	<u>Active</u>	Remediation Plan Submitted:	_____
Remediation Start Date:	<u>7/23/14</u>	Anticipated Completion Date:	<u>TBD</u>	Actual Completion Date:	<u>TBD</u>

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: Title: Senior HSE Representative Date: 7/20/2015
OGCC Approved: _____ Title: _____ Date: _____

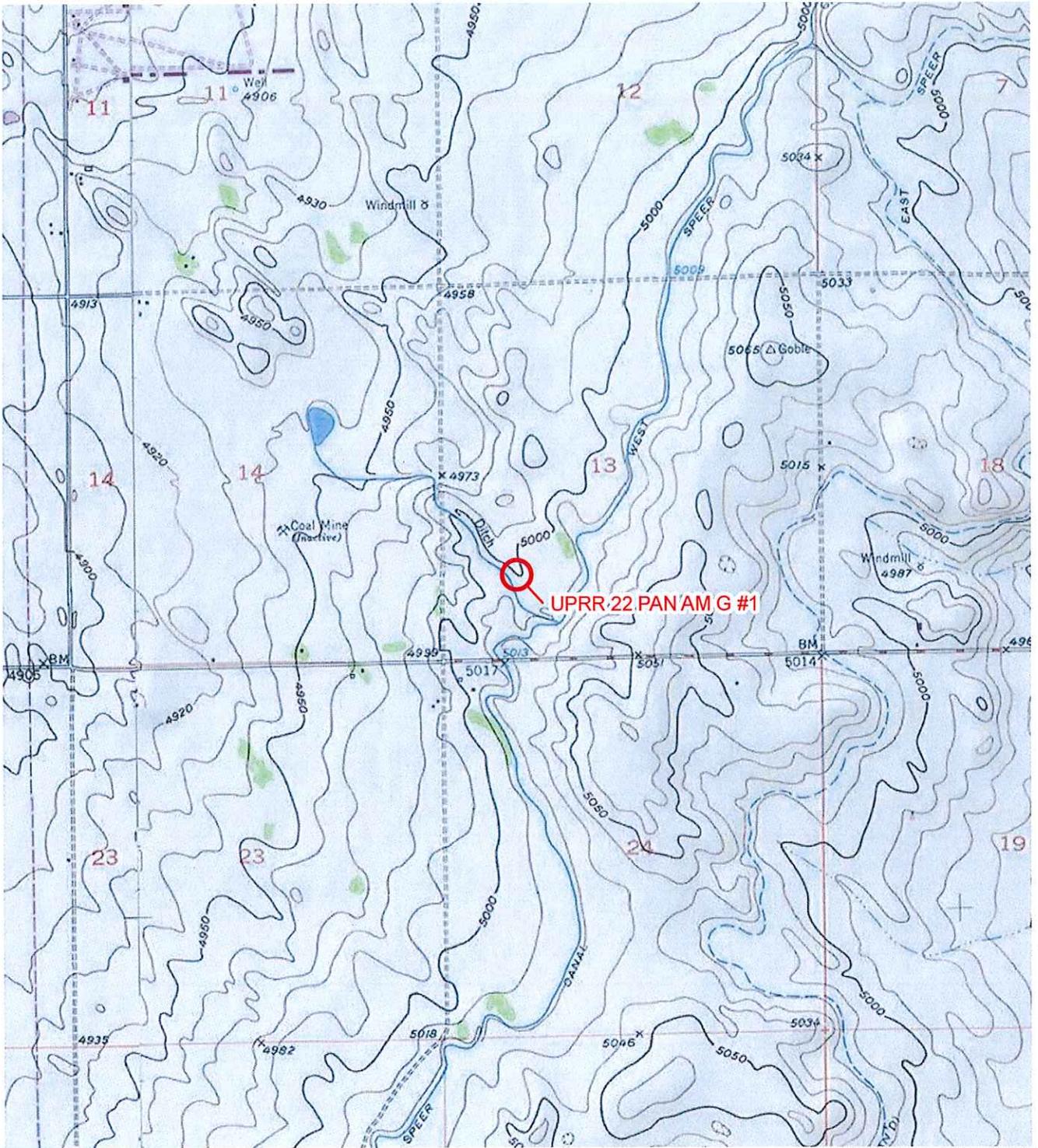


IMAGE COURTESY OF ESRI/USGS

LEGEND

 SITE LOCATION

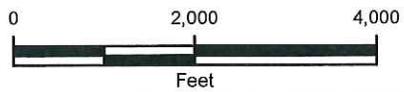
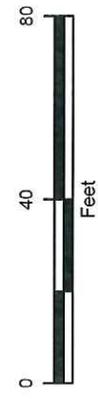


FIGURE 1
SITE LOCATION MAP
 UPRR 22 PAN AM G #1
 SWSW SEC 13-T3N-R66W
 WELD COUNTY, COLORADO
 KERR-MCGEE OIL & GAS ONSHORE LP





IMAGE COURTESY OF ESRI



LEGEND

- RELEASE LOCATION
- SOIL SAMPLE
- WATER BASED DRILLING FLUID SAMPLE
- FORMER WELLHEAD
- ESTIMATED GROUNDWATER FLOW DIRECTION
- EXCAVATION EXTENT
- BERM
- AST: ABOVEGROUND STORAGE TANK

FIGURE 2
 EXCAVATION SITE MAP
 UPRRR 22 PAN AM G #1
 SWSW SEC 13-T3N-R66W
 WELD COUNTY, COLORADO
 KERR-MCGEE OIL & GAS ONSHORE LP



TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
UPRR 22 PAN AM G #1
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Soil Sample ID	Depth (bgs)	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	DRO (mg/kg)	GRO (mg/kg)	ORO (mg/kg)	pH (su)	Specific Conductance (mmhos/cm)
N01 @ 0.5'	0.5'	07/23/2014	<0.01	0.018	<0.01	0.066	<50	<50	<50	7.1	0.276
N02 @ 0.5'	0.5'	07/23/2014	<0.01	<0.01	<0.01	0.023	<50	<50	<50	6.9	0.192
S01 @ 0.5'	0.5'	07/23/2014	<0.01	0.045	0.013	0.839	<50	<50	<50	6.9	0.392
S02 @ 0.5'	0.5'	07/23/2014	<0.01	<0.01	<0.01	0.089	<50	<50	<50	7.0	0.316
COGCC Standards			0.17	85	100	175	500*	500*	500*	6-9	4

Notes: bgs - below ground surface
 < - less than laboratory reporting limit
 DRO - Diesel Range Organics
 GRO - Oil Range Organics
 ORO - Gasoline Range Organics
 * - Standard applies to combined DRO-GRO-ORO
 COGCC - Colorado Oil and Gas Conservation Commission

mg/kg - milligrams per kilogram
 NA - Not Analyzed/Not Available
 Bold numbers indicate result equaled or exceeded standard.
 su - standard units
 mmhos/cm - millimhos per centimeter

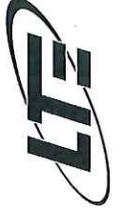


TABLE 2
WATER-BASED DRILLING FLUID ANALYTICAL AND FIELD RESULTS
UPRR 22 PAN AM G #1
WELD COUNTY, COLORADO
KERR-MCGEE OIL & GAS ONSHORE LP

Well Name	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	DRO (ug/L)	GRO (ug/L)	ORO (ug/L)
Fluid 01	07/23/2014	3,445	14,334	373	6,586	145	81.6	17.6

Notes: ug/L - micrograms per Liter
 < - less than laboratory reporting limit
 DRO - Diesel Range Organics
 GRO - Gasoline Range Organics
 ORO - Oil Range Organics

NA - Not Analyzed/Not Available
 NM - Not Measured
 Excavation groundwater depth is approximate



Test Report

eANALYTICS LABORATORY

July 24, 2014

Client: LT Environmental / Anadarko
Project: UPRR 22 Pan Am G#1
Lab ID: 1840
Date Samples Received: 7/23/2014
Number of Samples: 6
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,



Christopher Dieken
Quality Assurance Manager



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 <small>(*New Clients please fill out completely)</small>			ANALYSIS INFORMATION <small>(Select analysis by checking box on corresponding sample line)</small>																			
Company: LT Environmental			Number of Containers	Matrix(S) Seal (W) Water (V) Vapor (O) Other	BTEX (EPA 8260)	BTEX Naphthalene (EPA 8260)	TPH - GRO/DRO (EPA 8260/8015)	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										
Project: UPRR 22 Pap Am G #1																						
Project Manager: John Caroff / Mike Fortaw																						
Sampler: Mike Unger																						
Phone/Email: 303-433-9788																						
Address: 4600 W 60th Ave Arvada, CO 80003																						
Lab ID	Sample Name	Sampling Date/Time																				
1	N01 @ 0.5'	7/23/14 1230 AM/PM	2 S		X			X	X	X												
2	N02 @ 0.5'	1235 AM/PM	2 S		X			X	X	X												
3	S01 @ 0.5'	1240 AM/PM	2 S		X			X	X	X												
4	S02 @ 0.5'	1245 AM/PM	2 S		X			X	X	X												
5	BG @ 0.5'	7/23/14 1250 AM/PM	2 S		X			X	X	X												
6	Fluid Oil	7/23/14 1300 AM/PM	4 W		X			X														

Comments: Please hold all SAR samples. *

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)

For eANALYTICS Use

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

Record of Custody

Relinquished by: Mike Unger Date: 7/23/14
 Company: LTE Time: 1625 AM/PM

Received by: _____ Date: _____
 Company: _____ Time: _____ AM/PM

Relinquished by: _____ Date: _____
 Company: _____ Time: _____ AM/PM

Received by: John Caroff Date: 7/23/14
 Company: eANALYTICS Time: 1625 AM/PM

eANALYTICS
LABORATORY

Client: LT Environmental / Anadarko Lab ID: 1840
 Project: UPRR 22 Pan Am G#1
 Analysis: Volatile Organics Method: EPA8260
 TPH EPA8260/8015

Sample Name	Benzene mg/kg	Toluene mg/kg	Ethyl- benzene mg/kg	Total Xylenes mg/kg	TPH	TPH	TPH	Date Sampled	Date Analyzed	Lab ID
					GRO C6-C10 mg/kg	DRO C10-C28 mg/kg	ORO C28-C36 mg/kg			
N01 @ 0.5'	< 0.01	0.018	< 0.01	0.066	< 50	< 50	< 50	07/23/14	07/23/14	1840 1
N02 @ 0.5'	< 0.01	< 0.01	< 0.01	0.023	< 50	< 50	< 50	07/23/14	07/23/14	1840 2
S01 @ 0.5'	< 0.01	0.045	0.013	0.839	< 50	< 50	< 50	07/23/14	07/23/14	1840 3
S02 @ 0.5'	< 0.01	< 0.01	< 0.01	0.089	< 50	< 50	< 50	07/23/14	07/23/14	1840 4

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eANALYTICS
LABORATORY

Client: LT Environmental / Anadarko Lab ID: 1840
 Project: UPRR 22 Pan Am G#1
 Analysis: Volatile Organics Method: EPA8260

Sample Name	Benzene ug/L	Toluene ug/L	Ethyl- benzene ug/L	Total Xylenes ug/L	TPH	TPH	TPH	Date Sampled	Date Analyzed	Lab ID
					GRO C6-C10 mg/L	DRO C10-C28 mg/L	ORO C28-C36 mg/kg			
Fluid 01	3445	14334	373	6586	81.6	145	17.6	07/23/14	07/23/14	1840 6

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eANALYTICS
LABORATORY

Client: LT Environmental / Anadarko Lab ID: 1840
 Project: UPRR 22 Pan Am G#1
 Analysis: pH Method: EPA9045D
 EC USDA 60 (3)

Sample Name	pH	EC	Date	Date	Lab ID
	su	mmhos/cm	Sampled	Analyzed	
N01 @ 0.5'	7.1	0.276	07/23/14	07/23/14	1840 1
N02 @ 0.5'	6.9	0.192	07/23/14	07/23/14	1840 2
S01 @ 0.5'	6.9	0.392	07/23/14	07/23/14	1840 3
S02 @ 0.5'	7.0	0.316	07/23/14	07/23/14	1840 4

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Soil
Quality Control - Surrogate Recoveries



Client: LT Environmental / Anadarko

Lab ID: 1840

Project: UPRR 22 Pan Am G#1

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 @ 0.5'	111	93	88	106	07/23/14	07/23/14	1840 1
N02 @ 0.5'	91	88	110	87	07/23/14	07/23/14	1840 2
S01 @ 0.5'	88	88	97	92	07/23/14	07/23/14	1840 3
S02 @ 0.5'	95	106	106	98	07/23/14	07/23/14	1840 4

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Water
Quality Control - Surrogate Recoveries



Client: LT Environmental / Anadarko

Lab ID: 1840

Project: UPRR 22 Pan Am G#1

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
Fluid 01	99	103	107	98	07/23/14	07/23/14	1840 6

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eANALYTICALS
LABORATORY

Client: LT Environmental / Anadarko Lab ID: 1840
 Project: UPRR 22 Pan Am G#1
 Analysis: Volatile Organics Method: EPA8260
 TPH 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 (70-130%)	90	92	104	102	99	99	101	07/23/14	LCS 1840 1
Method Blank	< 0.01 mg/kg	< 0.01 mg/kg	< 0.01 mg/kg	< 0.01 mg/kg	< 50 mg/kg	< 50 mg/kg	< 50 mg/kg	07/23/14	MB 1840 1

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Water
Quality Control - Analyses



Client: LT Environmental / Anadarko Lab ID: 1840
 Project: UPRR 22 Pan Am G#1
 Analysis: Volatile Organics Method: EPA8260

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 (70-130%)	100	97	104	103	98	93	95	07/23/14	LCS 1840 1
Method Blank	< 1.0 ug/L	< 1.0 ug/L	< 1.0 ug/L	< 1.0 ug/L	< 50 mg/L	< 50 mg/L	< 50 mg/kg	07/23/14	MB 1840 1

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