



Page 1

FORM
4
Rev 12/05

State of Colorado

Oil and Gas Conservation Commission

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



RECEIVED

MAR - 5 2013

COGCC

SUNDRY NOTICE

Submit original plus one copy. This form is to be used for general, technical and environmental sundry information. For proposed or completed operations, describe in full on Technical Information Page (Page 2 of this form.) Identify well or other facility by API Number or by OGCC Facility ID. Operator shall send an informational copy of all sundry notices for wells located in High Density Areas to the Local Government Designee (Rule 603b.)

1. OGCC Operator Number: 10079	4. Contact Name: Cole Kilstrom	Complete the Attachment Checklist OGCC
2. Name of Operator: Antero Resources Piceance Corporation	Phone: 303-357-6709	
3. Address: 1625 17th St STE 300 ATTN: Cole Kilstrom City: Denver State: CO Zip: 80202	Fax: 303-357-7315	
5. API Number 05-045-13935	OGCC Facility ID Number 336015	Survey Plat
6. Well/Facility Name: Robinson A Pad	7. Well/Facility Number A3	Directional Survey
8. Location (Qtr/Sec, Twp, Rng, Meridian): SWSW 8 6S 92W 6		Surface Equipmt Diagram
9. County: Garfield	10. Field Name: Mamm Creek	Technical Info Page <input checked="" type="checkbox"/>
11. Federal, Indian or State Lease Number:		Other

General Notice

<input type="checkbox"/> CHANGE OF LOCATION: Attach New Survey Plat (a change of surface qtr/qtr is substantive and requires a new permit)	
Change of Surface Footage from Exterior Section Lines:	<input type="checkbox"/> FNL/FSL <input type="checkbox"/> FEL/FWL
Change of Surface Footage to Exterior Section Lines:	<input type="checkbox"/>
Change of Bottomhole Footage from Exterior Section Lines:	<input type="checkbox"/>
Change of Bottomhole Footage to Exterior Section Lines:	<input type="checkbox"/> attach directional survey
Bottomhole location Qtr/Sec, Twp, Rng, Mer	
Latitude	Distance to nearest property line
Longitude	Distance to nearest bldg, public rd, utility or RR
Ground Elevation	Distance to nearest lease line
	Is location in a High Density Area (rule 603b)? Yes/No
	Distance to nearest well same formation
	Surface owner consultation date:
GPS DATA:	
Date of Measurement	PDOP Reading
	Instrument Operator's Name
<input type="checkbox"/> CHANGE SPACING UNIT	<input type="checkbox"/> Remove from surface bond
Formation	Signed surface use agreement attached
Formation Code	
Spacing order number	
Unit Acreage	
Unit configuration	
<input type="checkbox"/> CHANGE OF OPERATOR (prior to drilling):	<input type="checkbox"/> CHANGE WELL NAME
Effective Date:	From:
Plugging Bond: <input type="checkbox"/> Blanket <input type="checkbox"/> Individual	To:
	Effective Date:
<input type="checkbox"/> ABANDONED LOCATION:	<input type="checkbox"/> NOTICE OF CONTINUED SHUT IN STATUS
Was location ever built? <input type="checkbox"/> Yes <input type="checkbox"/> No	Date well shut in or temporarily abandoned:
Is site ready for inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No	Has Production Equipment been removed from site? <input type="checkbox"/> Yes <input type="checkbox"/> No
Date Ready for Inspection:	MIT required if shut in longer than two years. Date of last MIT
<input type="checkbox"/> SPUD DATE:	<input type="checkbox"/> REQUEST FOR CONFIDENTIAL STATUS (5 mos from date casing set)
<input type="checkbox"/> SUBSEQUENT REPORT OF STAGE, SQUEEZE OR REMEDIAL CEMENT WORK	
*submit cbl and cement job summaries	
Method used	Date
Cementing tool setting/perf depth	
Cement volume	
Cement top	
Cement bottom	
<input type="checkbox"/> RECLAMATION: Attach technical page describing final reclamation procedures per Rule 1004.	
Final reclamation will commence on approximately	
<input type="checkbox"/> Final reclamation is completed and site is ready for inspection.	

Technical Engineering/Environmental Notice

<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Report of Work Done
Approximate Start Date:	Date Work Completed:
Details of work must be described in full on Technical Information Page (Page 2 must be submitted.)	
<input type="checkbox"/> Intent to Recomplete (submit form 2)	<input type="checkbox"/> Request to Vent or Flare
<input type="checkbox"/> Change Drilling Plans	<input type="checkbox"/> Repair Well
<input type="checkbox"/> Gross Interval Changed?	<input type="checkbox"/> Rule 502 variance requested
<input type="checkbox"/> Casing/Cementing Program Change	<input type="checkbox"/> Other:
<input type="checkbox"/> E&P Waste Disposal	<input checked="" type="checkbox"/> Status Update/Change of Remediation Plans
<input type="checkbox"/> Beneficial Reuse of E&P Waste	for Spills and Releases

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

Signed: Cole Kilstrom
Print Name: Cole KilstromDate: 3/5/2013 Email: CKilstrom@anteroresources.com
Title: ENV SpecialistCOGCC Approved: Carolyn Fischer
CONDITIONS OF APPROVAL, IF ANY:Title: FOR Date: 03/06/2013

Alex Fischer
Supervisor
Western Region

TECHNICAL INFORMATION PAGE



FOR OGCC USE ONLY

1. OGCC Operator Number: 10079 API Number: 05-045-13935
2. Name of Operator: Antero Resources Piceance Corp. OGCC Facility ID # 336015
3. Well/Facility Name: Robinson A Pad Well/Facility Number: A3
4. Location (QtrQtr, Sec, Twp, Rng, Meridian): SWSW 8 6S 92W 6

This form is to be completed whenever a Sundry Notice is submitted requiring detailed report of work to be performed or completed. This form shall be transmitted within 30 days of work completed as a "subsequent" report and must accompany Form 4, page 1.

5. **DESCRIBE PROPOSED OR COMPLETED OPERATIONS**

Summary of Corrective Action and Request for Spill Report Closure:

This Sundry Form 4 is being resubmitted in response to COGCC Conditions of Approval issued on December 18, 2012. This resubmission includes the materials initially provided to the COGCC and additional information and materials in response to the Conditions of Approval.

On May 26, 2012, approximately 87 bbls of water overflowed from temporary water tanks at Antero's Robinson A3 well in Garfield County. In the hours following the incident, Antero contained the spilled water on the site and dispatched a vacuum truck to remove the 87 bbls of water and the saturated soil. During initial fluid recovery, Antero contractors dug over 10 potholes in and around the affected area to support the fluid recovery. Antero added additional tanks to the site to prevent a similar occurrence in the future.

Following initial fluid recovery, Antero engaged HRL Compliance Solutions ("HRL") to develop and conduct remediation activities at the site. HRL was sent to the site to determine the vertical and horizontal extent of the spill. The vertical extent was determined by field screening the soil in the impacted area. HRL determined that the vertical extent of impact was approximately four inches in depth. The aerial extent of impact was mapped by HRL utilizing a Trimble GPS unit based upon easily observable wet and stained soil. The extent and location of the affected area is shown on the sample location map, attached hereto as Attachment 1A. Based upon the mapping by HRL, the contaminated soil was then excavated for disposal.

On June 19, 2012, Antero submitted a Waste Management Plan for the site, at the request of the COGCC, explaining that the contaminated soils would be sent to South Canyon Landfill in Glenwood Springs. This report is included in the Prior History section of this submittal. Despite that the contaminated soil was characterized and scheduled for disposal in July, 2012, the soil disposal did not occur as scheduled. Upon determining that the soil disposal did not occur as previously reported, Antero immediately scheduled and disposed of the soil. A total of eight (8) truckloads were disposed of at the South Canyon Landfill on January 18, 2013, totaling 87.48 tons, or approximately 70 cubic yards of contaminated soil. The waste manifest and truck tickets are attached here as Attachment 2.

Confirmation sampling was conducted on June 7, 2012, and the sampling report is attached as Attachment 1. The sample was taken in the affected area and three background samples were taken in the vicinity of the pad as shown on the sample location map (Attachment 1A). The confirmation sampling demonstrated that the site was in compliance with COGCC Table 910-1 standards.

Because Antero has remediated the site and demonstrated site compliance with COGCC standards, Antero respectfully requests final COGCC closure of Spill Report # 2224964 in accordance with COGCC Rule 909(e).

ATTACHMENT 1



22-Jun-2012

Mark Mumby
HRL Compliance Solutions
744 Horizon Ct. Suite 140
Grand Junction, CO 81506

Re: **Antero Robinson A Produced Water Spill 6/7/12**

Work Order: **1206468**

Dear Mark,

ALS Environmental received 4 samples on 14-Jun-2012 02:30 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 30.

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

Sincerely,

A handwritten signature in cursive script that reads "Ann Preston".

Electronically approved by: Ann Preston

Ann Preston
Project Manager



Certificate No: MN331938

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Group A Campbell Brothers Limited Company

Environmental The ALS logo, a stylized blue triangle with a yellow flame.

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: HRL Compliance Solutions
Project: Antero Robinson A Produced Water Spill 6/7/12
Work Order: 1206468

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1206468-01	Robinson A	Soil		6/7/2012 11:20	6/14/2012 14:30	<input type="checkbox"/>
1206468-02	Robinson A BKGD 1	Soil		6/7/2012 11:30	6/14/2012 14:30	<input type="checkbox"/>
1206468-03	Robinson A BKGD 2	Soil		6/7/2012 11:35	6/14/2012 14:30	<input type="checkbox"/>
1206468-04	Robinson A BKGD 3	Soil		6/7/2012 11:40	6/14/2012 14:30	<input type="checkbox"/>

Client: HRL Compliance Solutions
Project: Antero Robinson A Produced Water Spill 6/7/12
Work Order: 1206468

Case Narrative

Batch 41725 MS/MSD data for Metals is not related to this project's samples.

Batch 41768 sample Robinson A MSD recovery for Hexavalent Chromium was below control limits. Both the MS recovery and RPD met quality control criteria. No data requires qualification.

Batch R106010 samples 1206468-01 and 1206468-04 were received after the hold time for pH had expired. Results should be considered estimated.

Batch R106099 sample Robinson A BKGD 3 % Moisture Duplicate holding time had expired before the samples was received. All samples for this work order were received after the hold time for % Moisture had expired.

Batch R106114 MS/MSD data for GRO is not related to this project's samples.

Client: HRL Compliance Solutions
Project: Antero Robinson A Produced Water Spill 6/7/12
WorkOrder: 1206468

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
µg/Kg-dry as noted	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight
s.u.	Standard Units

ALS Group USA, Corp

Date: 22-Jun-12

Client: HRL Compliance Solutions

Project: Antero Robinson A Produced Water Spill 6/7/12

Work Order: 1206468

Sample ID: Robinson A

Lab ID: 1206468-01

Collection Date: 6/7/2012 11:20 AM

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
			SW8015M		Prep Date: 6/19/2012	Analyst: CW
DRO (C10-C28)	27		4.5	mg/Kg-dry	1	6/21/2012 10:34 AM
Surr: 4-Terphenyl-d14	57.2		39-115	%REC	1	6/21/2012 10:34 AM
GASOLINE RANGE ORGANICS BY GC-FID						
			SW8015			Analyst: JD
GRO (C6-C10)	ND		2.8	mg/Kg-dry	50	6/18/2012 06:14 PM
Surr: Toluene-d8	98.6		50-150	%REC	50	6/18/2012 06:14 PM
MERCURY BY CVAA						
			SW7471		Prep Date: 6/18/2012	Analyst: LR
Mercury	ND		0.020	mg/Kg-dry	1	6/20/2012 11:01 AM
METALS BY ICP-MS						
			SW6020A		Prep Date: 6/19/2012	Analyst: ML
Arsenic	2.5		0.73	mg/Kg-dry	2	6/20/2012 08:18 PM
Barium	150		0.73	mg/Kg-dry	2	6/20/2012 08:18 PM
Cadmium	ND		0.29	mg/Kg-dry	2	6/20/2012 08:18 PM
Chromium	10		0.73	mg/Kg-dry	2	6/20/2012 08:18 PM
Copper	10		0.73	mg/Kg-dry	2	6/20/2012 08:18 PM
Lead	10		0.73	mg/Kg-dry	2	6/20/2012 08:18 PM
Nickel	11		0.73	mg/Kg-dry	2	6/20/2012 08:18 PM
Selenium	1.1		0.73	mg/Kg-dry	2	6/20/2012 08:18 PM
Silver	ND		0.73	mg/Kg-dry	2	6/20/2012 08:18 PM
Zinc	51		1.5	mg/Kg-dry	2	6/20/2012 08:18 PM
SUBCONTRACTED ANALYSES						
Subcontracted Analyses	Rcvd 6/20/12		SUBCONTRACT			Analyst: A&LGL
			as noted		1	6/20/2012
SEMI-VOLATILE ORGANIC COMPOUNDS						
			SW8270		Prep Date: 6/19/2012	Analyst: RM
Acenaphthene	ND		16	µg/Kg-dry	1	6/20/2012 04:43 PM
Anthracene	ND		16	µg/Kg-dry	1	6/20/2012 04:43 PM
Benzo(a)anthracene	ND		22	µg/Kg-dry	1	6/20/2012 04:43 PM
Benzo(a)pyrene	ND		22	µg/Kg-dry	1	6/20/2012 04:43 PM
Benzo(b)fluoranthene	ND		22	µg/Kg-dry	1	6/20/2012 04:43 PM
Benzo(g,h,i)perylene	ND		33	µg/Kg-dry	1	6/20/2012 04:43 PM
Benzo(k)fluoranthene	ND		33	µg/Kg-dry	1	6/20/2012 04:43 PM
Chrysene	ND		16	µg/Kg-dry	1	6/20/2012 04:43 PM
Dibenzo(a,h)anthracene	ND		20	µg/Kg-dry	1	6/20/2012 04:43 PM
Fluoranthene	ND		16	µg/Kg-dry	1	6/20/2012 04:43 PM
Fluorene	ND		16	µg/Kg-dry	1	6/20/2012 04:43 PM
Indeno(1,2,3-cd)pyrene	ND		22	µg/Kg-dry	1	6/20/2012 04:43 PM
Naphthalene	19		16	µg/Kg-dry	1	6/20/2012 04:43 PM
Pyrene	ND		16	µg/Kg-dry	1	6/20/2012 04:43 PM
Surr: 2-Fluorobiphenyl	63.8		12-100	%REC	1	6/20/2012 04:43 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 22-Jun-12

Client: HRL Compliance Solutions

Project: Antero Robinson A Produced Water Spill 6/7/12

Work Order: 1206468

Sample ID: Robinson A

Lab ID: 1206468-01

Collection Date: 6/7/2012 11:20 AM

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Surr: 4-Terphenyl-d14	90.5		25-137	%REC	1	6/20/2012 04:43 PM
Surr: Nitrobenzene-d5	61.7		37-107	%REC	1	6/20/2012 04:43 PM
VOLATILE ORGANIC COMPOUNDS			SW8260		Prep Date: 6/15/2012	Analyst: AK
Benzene	ND		34	µg/Kg-dry	1	6/16/2012 06:32 AM
Ethylbenzene	ND		34	µg/Kg-dry	1	6/16/2012 06:32 AM
m,p-Xylene	ND		67	µg/Kg-dry	1	6/16/2012 06:32 AM
o-Xylene	ND		34	µg/Kg-dry	1	6/16/2012 06:32 AM
Toluene	ND		34	µg/Kg-dry	1	6/16/2012 06:32 AM
Xylenes, Total	ND		100	µg/Kg-dry	1	6/16/2012 06:32 AM
Surr: 1,2-Dichloroethane-d4	96.6		70-130	%REC	1	6/16/2012 06:32 AM
Surr: 4-Bromofluorobenzene	101		70-130	%REC	1	6/16/2012 06:32 AM
Surr: Dibromofluoromethane	96.6		70-130	%REC	1	6/16/2012 06:32 AM
Surr: Toluene-d8	102		70-130	%REC	1	6/16/2012 06:32 AM
CHROMIUM, TRIVALENT			CALCULATION			Analyst: JJG
Chromium, Trivalent	10		0.56	mg/Kg-dry	1	6/21/2012 08:13 AM
CHROMIUM, HEXAVALENT			SW7196A		Prep Date: 6/18/2012	Analyst: MB
Chromium, Hexavalent	ND		0.55	mg/Kg-dry	1	6/19/2012 02:30 PM
MOISTURE			A2540 G			Analyst: CG
Moisture	11	H	0.050	% of sample	1	6/15/2012 02:43 PM
PH			SW9045D			Analyst: KV
pH	8.42	H		s.u.	1	6/14/2012 11:20 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 22-Jun-12

Client: HRL Compliance Solutions

Project: Antero Robinson A Produced Water Spill 6/7/12

Work Order: 1206468

Sample ID: Robinson A BKGD 1

Lab ID: 1206468-02

Collection Date: 6/7/2012 11:30 AM

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			SW6020A		Prep Date: 6/19/2012	Analyst: ML
Arsenic	1.3		0.70	mg/Kg-dry	2	6/20/2012 08:25 PM
MOISTURE			A2540 G			Analyst: CG
Moisture	3.9	H	0.050	% of sample	1	6/15/2012 02:43 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 22-Jun-12

Client: HRL Compliance Solutions

Project: Antero Robinson A Produced Water Spill 6/7/12

Work Order: 1206468

Sample ID: Robinson A BKGD 2

Lab ID: 1206468-03

Collection Date: 6/7/2012 11:35 AM

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			SW6020A		Prep Date: 6/19/2012	Analyst: ML
Arsenic	1.9		0.75	mg/Kg-dry	2	6/20/2012 08:31 PM
MOISTURE			A2540 G			Analyst: CG
Moisture	1.4	H	0.050	% of sample	1	6/15/2012 02:43 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp**Date:** 22-Jun-12**Client:** HRL Compliance Solutions**Project:** Antero Robinson A Produced Water Spill 6/7/12**Work Order:** 1206468**Sample ID:** Robinson A BKGD 3**Lab ID:** 1206468-04**Collection Date:** 6/7/2012 11:40 AM**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS						
Arsenic	2.1		SW6020A 0.83	mg/Kg-dry	Prep Date: 6/19/2012 2	Analyst: ML 6/20/2012 08:37 PM
SUBCONTRACTED ANALYSES						
Subcontracted Analyses	Rcvd 6/20/12		SUBCONTRACT as noted		1	Analyst: A&LGL 6/20/2012
MOISTURE						
Moisture	19	H	A2540 G 0.050	% of sample	1	Analyst: CG 6/15/2012 02:43 PM
PH						
pH	8.26	H	SW9045D	s.u.	1	Analyst: KV 6/14/2012 11:20 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Report Number: F12170-0222

Account Number: 91000

A & L GREAT LAKES LABORATORIES, INC.

3505 Conestoga Drive • Fort Wayne, Indiana 46808-4413 • Phone 260-483-4759 • Fax 260-483-5274

www.algreatlakes.com • lab@algreatlakes.com



QUALITY ANALYSES FOR INFORMED DECISIONS

TO: ALS LABORATORY GROUP
3352 128TH AVE
HOLLAND, MI 49424-9263

RE: 1206468

DATE RECEIVED: 06/18/2012

DATE REPORTED: 06/20/2012

PAGE: 1

P.O. NUMBER: 20-1206468

ATTN: ANN PRESTON

REPORT OF ANALYSIS

LAB NO.	SAMPLE ID	ANALYSIS	RESULT	UNIT	METHOD
37104	ROBINSON A	Sat'd Paste Extraction with DIW			USDA Handbook 60
		Conductivity (ECe)	2.84	mmho/cm	USDA Handbook 60
		Calcium (Sat'd Paste)	118	ppm	USDA Handbook 60
		Magnesium (Sat'd Paste)	105	ppm	USDA Handbook 60
		Sodium (Sat'd Paste)	1718	ppm	USDA Handbook 60
		Sodium Adsorption Ratio (SAR)	27.6	-	USDA Handbook 60
37105	ROBINSON A BKGD 3	Sat'd Paste Extraction with DIW			USDA Handbook 60
		Conductivity (ECe)	1.04	mmho/cm	USDA Handbook 60
		Calcium (Sat'd Paste)	69	ppm	USDA Handbook 60
		Magnesium (Sat'd Paste)	21	ppm	USDA Handbook 60
		Sodium (Sat'd Paste)	494	ppm	USDA Handbook 60
		Sodium Adsorption Ratio (SAR)	13.3	-	USDA Handbook 60

Client: HRL Compliance Solutions

QC BATCH REPORT

Work Order: 1206468

Project: Antero Robinson A Produced Water Spill 6/7/12

Batch ID: 41749

Instrument ID GC8

Method: SW8015M

MBLK		Sample ID: DBLKS1-41749-41749				Units: mg/Kg		Analysis Date: 6/19/2012 03:32 PM		
Client ID:		Run ID: GC8_120619A				SeqNo: 2004634		Prep Date: 6/19/2012		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	ND	4.2								
Surr: 4-Terphenyl-d14	1.295	0	1.667	0	77.7	39-115	0			

LCS		Sample ID: DLCSS1-41749-41749				Units: mg/Kg		Analysis Date: 6/19/2012 03:57 PM		
Client ID:		Run ID: GC8_120619A				SeqNo: 2004635		Prep Date: 6/19/2012		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	142.4	4.2	166.7	0	85.4	60-130	0			
Surr: 4-Terphenyl-d14	1.302	0	1.667	0	78.1	39-115	0			

MS		Sample ID: 1206417-13A MS				Units: mg/Kg		Analysis Date: 6/19/2012 04:21 PM		
Client ID:		Run ID: GC8_120619A				SeqNo: 2004636		Prep Date: 6/19/2012		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	435.8	12	491.5	0	88.7	60-130	0			
Surr: 4-Terphenyl-d14	3.918	0	4.915	0	79.7	39-115	0			

MSD		Sample ID: 1206417-13A MSD				Units: mg/Kg		Analysis Date: 6/19/2012 04:46 PM		
Client ID:		Run ID: GC8_120619A				SeqNo: 2004637		Prep Date: 6/19/2012		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	438.8	12	479.6	0	91.5	60-130	435.8	0.677	30	
Surr: 4-Terphenyl-d14	3.811	0	4.796	0	79.5	39-115	3.918	2.76	30	

The following samples were analyzed in this batch: 1206468-01B

Client: HRL Compliance Solutions
Work Order: 1206468
Project: Antero Robinson A Produced Water Spill 6/7/12

QC BATCH REPORT

Batch ID: **R106114** Instrument ID **GC10** Method: **SW8015**

MBLK		Sample ID: MBLK-R106114-R106114				Units: µg/L		Analysis Date: 6/18/2012 12:20 PM		
Client ID:		Run ID: GC10_120618A				SeqNo: 2002262		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	ND	200								
<i>Surr: Toluene-d8</i>	<i>104.4</i>	<i>0</i>	<i>100</i>	<i>0</i>	<i>104</i>	<i>70-130</i>	<i>0</i>			

LCS		Sample ID: LCS-R106114-R106114				Units: µg/L		Analysis Date: 6/18/2012 11:31 AM		
Client ID:		Run ID: GC10_120618A				SeqNo: 2002261		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	27890	200	25000	0	112	70-130	0			
<i>Surr: Toluene-d8</i>	<i>103</i>	<i>0</i>	<i>100</i>	<i>0</i>	<i>103</i>	<i>70-130</i>	<i>0</i>			

MS		Sample ID: 1206484-03A MS				Units: µg/L		Analysis Date: 6/18/2012 09:12 PM		
Client ID:		Run ID: GC10_120618A				SeqNo: 2003850		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	22240	200	25000	0	89	70-130	0			
<i>Surr: Toluene-d8</i>	<i>56.22</i>	<i>0</i>	<i>100</i>	<i>0</i>	<i>56.2</i>	<i>70-130</i>	<i>0</i>			<i>S</i>

MSD		Sample ID: 1206484-03A MSD				Units: µg/L		Analysis Date: 6/18/2012 09:37 PM		
Client ID:		Run ID: GC10_120618A				SeqNo: 2003851		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	23710	200	25000	0	94.9	70-130	22240	6.41	30	
<i>Surr: Toluene-d8</i>	<i>93.88</i>	<i>0</i>	<i>100</i>	<i>0</i>	<i>93.9</i>	<i>70-130</i>	<i>56.22</i>	<i>50.2</i>	<i>30</i>	<i>R</i>

The following samples were analyzed in this batch:

1206468-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: HRL Compliance Solutions
Work Order: 1206468
Project: Antero Robinson A Produced Water Spill 6/7/12

QC BATCH REPORT

Batch ID: **41727** Instrument ID **HG1** Method: **SW7471**

MBLK	Sample ID: MBLK-41727-41727					Units: mg/Kg		Analysis Date: 6/19/2012 03:51 PM		
Client ID:	Run ID: HG1_120619B				SeqNo: 2004237		Prep Date: 6/18/2012		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury ND 0.020

LCS	Sample ID: LCS-41727-41727					Units: mg/Kg		Analysis Date: 6/19/2012 03:59 PM		
Client ID:	Run ID: HG1_120619B				SeqNo: 2004239		Prep Date: 6/18/2012		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.163 0.020 0.1665 0 97.9 80-120 0

MS	Sample ID: 1206565-10AMS					Units: mg/Kg		Analysis Date: 6/19/2012 04:10 PM		
Client ID:	Run ID: HG1_120619B				SeqNo: 2004243		Prep Date: 6/18/2012		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1453 0.017 0.1386 0.01881 91.3 75-125 0

MSD	Sample ID: 1206565-10AMSD					Units: mg/Kg		Analysis Date: 6/19/2012 04:17 PM		
Client ID:	Run ID: HG1_120619B				SeqNo: 2004244		Prep Date: 6/18/2012		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1445 0.016 0.1368 0.01881 91.8 75-125 0.1453 0.575 35

The following samples were analyzed in this batch:

1206468-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: HRL Compliance Solutions
Work Order: 1206468
Project: Antero Robinson A Produced Water Spill 6/7/12

QC BATCH REPORT

Batch ID: **41725** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK		Sample ID: MBLK-41725-41725				Units: mg/Kg		Analysis Date: 6/20/2012 11:18 AM		
Client ID:		Run ID: ICPMS1_120620A				SeqNo: 2005495		Prep Date: 6/19/2012		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.25								
Barium	ND	0.25								
Cadmium	ND	0.10								
Chromium	0.0136	0.25								J
Lead	ND	0.25								
Nickel	ND	0.25								
Selenium	ND	0.25								
Silver	ND	0.25								
Zinc	0.06005	0.50								J

MBLK		Sample ID: MBLK-41725-41725				Units: mg/Kg		Analysis Date: 6/20/2012 04:05 PM		
Client ID:		Run ID: ICPMS1_120620A				SeqNo: 2006633		Prep Date: 6/19/2012		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.25								
Barium	ND	0.25								
Cadmium	0.002316	0.10								J
Chromium	0.0208	0.25								J
Lead	0.01182	0.25								J
Nickel	0.006565	0.25								J
Selenium	ND	0.25								
Silver	0.001724	0.25								J
Zinc	0.1167	0.50								J

MBLK		Sample ID: MBLK-41725-41725				Units: mg/Kg		Analysis Date: 6/21/2012 12:32 PM		
Client ID:		Run ID: ICPMS1_120621A				SeqNo: 2007466		Prep Date: 6/19/2012		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Copper	ND	0.25								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: HRL Compliance Solutions
Work Order: 1206468
Project: Antero Robinson A Produced Water Spill 6/7/12

QC BATCH REPORT

Batch ID: **41725** Instrument ID **ICPMS1** Method: **SW6020A**

LCS		Sample ID: LCS-41725-41725				Units: mg/Kg		Analysis Date: 6/20/2012 11:24 AM		
Client ID:		Run ID: ICPMS1_120620A				SeqNo: 2005497		Prep Date: 6/19/2012		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.251	0.25	5	0	85	80-120	0			
Barium	4.432	0.25	5	0	88.6	80-120	0			
Cadmium	4.654	0.10	5	0	93.1	80-120	0			
Chromium	4.778	0.25	5	0	95.6	80-120	0			
Lead	4.562	0.25	5	0	91.2	80-120	0			
Nickel	4.769	0.25	5	0	95.4	80-120	0			
Selenium	4.216	0.25	5	0	84.3	80-120	0			
Silver	4.528	0.25	5	0	90.6	80-120	0			
Zinc	4.419	0.50	5	0	88.4	80-120	0			

LCS		Sample ID: LCS-41725-41725				Units: mg/Kg		Analysis Date: 6/20/2012 04:12 PM		
Client ID:		Run ID: ICPMS1_120620A				SeqNo: 2006634		Prep Date: 6/19/2012		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.41	0.25	5	0	88.2	80-120	0			
Barium	4.552	0.25	5	0	91	80-120	0			
Cadmium	4.776	0.10	5	0	95.5	80-120	0			
Chromium	4.845	0.25	5	0	96.9	80-120	0			
Lead	4.661	0.25	5	0	93.2	80-120	0			
Nickel	4.73	0.25	5	0	94.6	80-120	0			
Selenium	4.338	0.25	5	0	86.8	80-120	0			
Silver	4.638	0.25	5	0	92.8	80-120	0			
Zinc	4.404	0.50	5	0	88.1	80-120	0			

LCS		Sample ID: LCS-41725-41725				Units: mg/Kg		Analysis Date: 6/21/2012 12:38 PM		
Client ID:		Run ID: ICPMS1_120621A				SeqNo: 2007467		Prep Date: 6/19/2012		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Copper	4.406	0.25	5	0	88.1	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: HRL Compliance Solutions
Work Order: 1206468
Project: Antero Robinson A Produced Water Spill 6/7/12

QC BATCH REPORT

Batch ID: **41725** Instrument ID **ICPMS1** Method: **SW6020A**

MS				Sample ID: 1206523-01BMS			Units: mg/Kg		Analysis Date: 6/20/2012 11:43 AM	
Client ID:				Run ID: ICPMS1_120620A			SeqNo: 2005527		Prep Date: 6/19/2012	
							DF: 2			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	11.3	0.71	7.133	7.627	51.5	80-120	0			S
Barium	172.2	0.71	7.133	182.3	-141	80-120	0			SO
Cadmium	6.381	0.29	7.133	0.1113	87.9	80-120	0			
Chromium	71.93	0.71	7.133	68.62	46.3	80-120	0			SO
Lead	16.63	0.71	7.133	10.92	80.2	80-120	0			
Nickel	30.2	0.71	7.133	25.11	71.4	80-120	0			S
Selenium	6.231	0.71	7.133	0.7854	76.3	80-120	0			S
Silver	5.563	0.71	7.133	0.03328	77.5	80-120	0			S
Zinc	40.24	1.4	7.133	35.52	66.2	80-120	0			SO

MS				Sample ID: 1206523-01BMS			Units: mg/Kg		Analysis Date: 6/21/2012 12:56 PM	
Client ID:				Run ID: ICPMS1_120621A			SeqNo: 2007470		Prep Date: 6/19/2012	
							DF: 10			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Copper	11.53	3.6	7.133	5.877	79.3	80-120	0			S

MSD				Sample ID: 1206523-01BMSD			Units: mg/Kg		Analysis Date: 6/20/2012 11:49 AM	
Client ID:				Run ID: ICPMS1_120620A			SeqNo: 2005529		Prep Date: 6/19/2012	
							DF: 2			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	13.67	0.78	7.8	7.627	77.4	80-120	11.3	19	25	S
Barium	180.7	0.78	7.8	182.3	-20.7	80-120	172.2	4.8	25	SO
Cadmium	7.037	0.31	7.8	0.1113	88.8	80-120	6.381	9.79	25	
Chromium	76.57	0.78	7.8	68.62	102	80-120	71.93	6.25	25	O
Lead	17.94	0.78	7.8	10.92	90.1	80-120	16.63	7.56	25	
Nickel	31.4	0.78	7.8	25.11	80.7	80-120	30.2	3.91	25	
Selenium	6.749	0.78	7.8	0.7854	76.5	80-120	6.231	7.98	25	S
Silver	6.025	0.78	7.8	0.03328	76.8	80-120	5.563	7.96	25	S
Zinc	41.58	1.6	7.8	35.52	77.7	80-120	40.24	3.26	25	SO

MSD				Sample ID: 1206523-01BMSD			Units: mg/Kg		Analysis Date: 6/21/2012 01:02 PM	
Client ID:				Run ID: ICPMS1_120621A			SeqNo: 2007471		Prep Date: 6/19/2012	
							DF: 10			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Copper	11.79	3.9	7.8	5.877	75.8	80-120	11.53	2.17	25	S

The following samples were analyzed in this batch:

1206468-01B	1206468-02A	1206468-03A
1206468-04A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: HRL Compliance Solutions
Work Order: 1206468
Project: Antero Robinson A Produced Water Spill 6/7/12

QC BATCH REPORT

Batch ID: **41748** Instrument ID **SVMS6** Method: **SW8270**

MBLK		Sample ID: SBLKS1-41748-41748				Units: µg/Kg		Analysis Date: 6/20/2012 04:57 PM		
Client ID:		Run ID: SVMS6_120620A				SeqNo: 2007465		Prep Date: 6/19/2012		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	ND	30								
Anthracene	ND	30								
Benzo(a)anthracene	ND	30								
Benzo(a)pyrene	ND	30								
Benzo(b)fluoranthene	ND	30								
Benzo(g,h,i)perylene	ND	30								
Benzo(k)fluoranthene	ND	30								
Chrysene	ND	30								
Dibenzo(a,h)anthracene	ND	30								
Fluoranthene	ND	30								
Fluorene	ND	30								
Indeno(1,2,3-cd)pyrene	ND	30								
Naphthalene	ND	30								
Pyrene	ND	30								
<i>Surr: 2-Fluorobiphenyl</i>	1237	0	1667	0	74.2	12-100	0			
<i>Surr: 4-Terphenyl-d14</i>	1863	0	1667	0	112	25-137	0			
<i>Surr: Nitrobenzene-d5</i>	1253	0	1667	0	75.2	37-107	0			

MBLK		Sample ID: SBLKS1-41748-41748				Units: µg/Kg		Analysis Date: 6/20/2012 04:57 PM		
Client ID:		Run ID: SVMS4_120620A				SeqNo: 2007484		Prep Date: 6/19/2012		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	ND	30								
Anthracene	ND	30								
Benzo(a)anthracene	ND	30								
Benzo(a)pyrene	ND	30								
Benzo(b)fluoranthene	ND	30								
Benzo(g,h,i)perylene	ND	30								
Benzo(k)fluoranthene	ND	30								
Chrysene	ND	30								
Dibenzo(a,h)anthracene	ND	30								
Fluoranthene	ND	30								
Fluorene	ND	30								
Indeno(1,2,3-cd)pyrene	ND	30								
Naphthalene	ND	30								
Pyrene	ND	30								
<i>Surr: 2-Fluorobiphenyl</i>	1237	0	1667	0	74.2	12-100	0			
<i>Surr: 4-Terphenyl-d14</i>	1863	0	1667	0	112	25-137	0			
<i>Surr: Nitrobenzene-d5</i>	1253	0	1667	0	75.2	37-107	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: HRL Compliance Solutions
Work Order: 1206468
Project: Antero Robinson A Produced Water Spill 6/7/12

QC BATCH REPORT

Batch ID: **41748** Instrument ID **SVMS6** Method: **SW8270**

LCS Sample ID: SLCSS1-41748-41748				Units: µg/Kg			Analysis Date: 6/20/2012 02:41 PM			
Client ID:		Run ID: SVMS6_120620A		SeqNo: 2007458		Prep Date: 6/19/2012		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	595	30	666.7	0	89.2	45-110	0			
Anthracene	636.7	30	666.7	0	95.5	55-105	0			
Benzo(a)anthracene	624.3	30	666.7	0	93.6	50-110	0			
Benzo(a)pyrene	656.7	30	666.7	0	98.5	50-110	0			
Benzo(b)fluoranthene	640.3	30	666.7	0	96	45-115	0			
Benzo(g,h,i)perylene	743.7	30	666.7	0	112	40-125	0			
Benzo(k)fluoranthene	648	30	666.7	0	97.2	45-115	0			
Chrysene	685.3	30	666.7	0	103	55-110	0			
Dibenzo(a,h)anthracene	704.7	30	666.7	0	106	40-125	0			
Fluoranthene	669	30	666.7	0	100	55-115	0			
Fluorene	607	30	666.7	0	91	50-110	0			
Indeno(1,2,3-cd)pyrene	717.7	30	666.7	0	108	40-120	0			
Naphthalene	578.7	30	666.7	0	86.8	40-105	0			
Pyrene	686.7	30	666.7	0	103	45-125	0			
Surr: 2-Fluorobiphenyl	1280	0	1667	0	76.8	12-100	0			
Surr: 4-Terphenyl-d14	1835	0	1667	0	110	25-137	0			
Surr: Nitrobenzene-d5	1294	0	1667	0	77.6	37-107	0			

LCS Sample ID: SLCSS1-41748-41748				Units: µg/Kg			Analysis Date: 6/20/2012 02:41 PM			
Client ID:		Run ID: SVMS4_120620A		SeqNo: 2007480		Prep Date: 6/19/2012		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	595	30	666.7	0	89.2	45-110	0			
Anthracene	636.7	30	666.7	0	95.5	55-105	0			
Benzo(a)anthracene	624.3	30	666.7	0	93.6	50-110	0			
Benzo(a)pyrene	656.7	30	666.7	0	98.5	50-110	0			
Benzo(b)fluoranthene	640.3	30	666.7	0	96	45-115	0			
Benzo(g,h,i)perylene	743.7	30	666.7	0	112	40-125	0			
Benzo(k)fluoranthene	648	30	666.7	0	97.2	45-115	0			
Chrysene	685.3	30	666.7	0	103	55-110	0			
Dibenzo(a,h)anthracene	704.7	30	666.7	0	106	40-125	0			
Fluoranthene	669	30	666.7	0	100	55-115	0			
Fluorene	607	30	666.7	0	91	50-110	0			
Indeno(1,2,3-cd)pyrene	717.7	30	666.7	0	108	40-120	0			
Naphthalene	578.7	30	666.7	0	86.8	40-105	0			
Pyrene	686.7	30	666.7	0	103	45-125	0			
Surr: 2-Fluorobiphenyl	1280	0	1667	0	76.8	12-100	0			
Surr: 4-Terphenyl-d14	1835	0	1667	0	110	25-137	0			
Surr: Nitrobenzene-d5	1294	0	1667	0	77.6	37-107	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: HRL Compliance Solutions
Work Order: 1206468
Project: Antero Robinson A Produced Water Spill 6/7/12

QC BATCH REPORT

Batch ID: **41748** Instrument ID **SVMS6** Method: **SW8270**

MS Sample ID: 1206417-13A MS				Units: µg/Kg			Analysis Date: 6/20/2012 03:15 PM			
Client ID:		Run ID: SVMS6_120620A		SeqNo: 2007459		Prep Date: 6/19/2012		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1642	85	1888	0	86.9	45-110	0			
Anthracene	1801	85	1888	0	95.4	55-105	0			
Benzo(a)anthracene	1830	85	1888	79.3	92.7	50-110	0			
Benzo(a)pyrene	1921	85	1888	115.1	95.7	50-110	0			
Benzo(b)fluoranthene	1965	85	1888	151.8	96	45-115	0			
Benzo(g,h,i)perylene	1781	85	1888	87.03	89.7	40-125	0			
Benzo(k)fluoranthene	1824	85	1888	55.12	93.7	45-115	0			
Chrysene	1892	85	1888	115.1	94.1	55-110	0			
Dibenzo(a,h)anthracene	1695	85	1888	0	89.7	40-125	0			
Fluoranthene	1920	85	1888	105.4	96.1	55-115	0			
Fluorene	1737	85	1888	0	92	50-110	0			
Indeno(1,2,3-cd)pyrene	1797	85	1888	61.89	91.9	40-120	0			
Naphthalene	1414	85	1888	0	74.9	40-105	0			
Pyrene	1920	85	1888	126.7	95	45-125	0			
Surr: 2-Fluorobiphenyl	3448	0	4720	0	73	12-100	0			
Surr: 4-Terphenyl-d14	4775	0	4720	0	101	25-137	0			
Surr: Nitrobenzene-d5	3086	0	4720	0	65.4	37-107	0			

MS Sample ID: 1206417-13A MS				Units: µg/Kg			Analysis Date: 6/20/2012 03:15 PM			
Client ID:		Run ID: SVMS4_120620A		SeqNo: 2007481		Prep Date: 6/19/2012		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1642	85	1888	0	86.9	45-110	0			
Anthracene	1801	85	1888	0	95.4	55-105	0			
Benzo(a)anthracene	1830	85	1888	79.3	92.7	50-110	0			
Benzo(a)pyrene	1921	85	1888	115.1	95.7	50-110	0			
Benzo(b)fluoranthene	1965	85	1888	151.8	96	45-115	0			
Benzo(g,h,i)perylene	1781	85	1888	87.03	89.7	40-125	0			
Benzo(k)fluoranthene	1824	85	1888	55.12	93.7	45-115	0			
Chrysene	1892	85	1888	115.1	94.1	55-110	0			
Dibenzo(a,h)anthracene	1695	85	1888	0	89.7	40-125	0			
Fluoranthene	1920	85	1888	105.4	96.1	55-115	0			
Fluorene	1737	85	1888	0	92	50-110	0			
Indeno(1,2,3-cd)pyrene	1797	85	1888	61.89	91.9	40-120	0			
Naphthalene	1414	85	1888	0	74.9	40-105	0			
Pyrene	1920	85	1888	126.7	95	45-125	0			
Surr: 2-Fluorobiphenyl	3448	0	4720	0	73	12-100	0			
Surr: 4-Terphenyl-d14	4775	0	4720	0	101	25-137	0			
Surr: Nitrobenzene-d5	3086	0	4720	0	65.4	37-107	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: HRL Compliance Solutions
Work Order: 1206468
Project: Antero Robinson A Produced Water Spill 6/7/12

QC BATCH REPORT

Batch ID: **41748** Instrument ID **SVMS6** Method: **SW8270**

MSD				Sample ID: 1206417-13A MSD			Units: µg/Kg		Analysis Date: 6/20/2012 03:49 PM		
Client ID:			Run ID: SVMS6_120620A			SeqNo: 2007461		Prep Date: 6/19/2012		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1741	88	1952	0	89.2	45-110	1642	5.89	30		
Anthracene	1908	88	1952	0	97.7	55-105	1801	5.77	30		
Benzo(a)anthracene	1899	88	1952	79.3	93.2	50-110	1830	3.75	30		
Benzo(a)pyrene	2035	88	1952	115.1	98.4	50-110	1921	5.77	30		
Benzo(b)fluoranthene	2250	88	1952	151.8	107	45-115	1965	13.5	30		
Benzo(g,h,i)perylene	1644	88	1952	87.03	79.7	40-125	1781	8.04	30		
Benzo(k)fluoranthene	2174	88	1952	55.12	109	45-115	1824	17.5	30		
Chrysene	2020	88	1952	115.1	97.6	55-110	1892	6.53	30		
Dibenzo(a,h)anthracene	1645	88	1952	0	84.2	40-125	1695	2.98	30		
Fluoranthene	2061	88	1952	105.4	100	55-115	1920	7.05	30		
Fluorene	1805	88	1952	0	92.4	50-110	1737	3.83	30		
Indeno(1,2,3-cd)pyrene	1706	88	1952	61.89	84.2	40-120	1797	5.21	30		
Naphthalene	1536	88	1952	0	78.7	40-105	1414	8.28	30		
Pyrene	2020	88	1952	126.7	97	45-125	1920	5.09	30		
Surr: 2-Fluorobiphenyl	3667	0	4881	0	75.1	12-100	3448	6.17	40		
Surr: 4-Terphenyl-d14	5029	0	4881	0	103	25-137	4775	5.18	40		
Surr: Nitrobenzene-d5	3350	0	4881	0	68.6	37-107	3086	8.2	40		

MSD				Sample ID: 1206417-13A MSD			Units: µg/Kg		Analysis Date: 6/20/2012 03:49 PM		
Client ID:			Run ID: SVMS4_120620A			SeqNo: 2007482		Prep Date: 6/19/2012		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1741	88	1952	0	89.2	45-110	1642	5.89	30		
Anthracene	1908	88	1952	0	97.7	55-105	1801	5.77	30		
Benzo(a)anthracene	1899	88	1952	79.3	93.2	50-110	1830	3.75	30		
Benzo(a)pyrene	2035	88	1952	115.1	98.4	50-110	1921	5.77	30		
Benzo(b)fluoranthene	2250	88	1952	151.8	107	45-115	1965	13.5	30		
Benzo(g,h,i)perylene	1644	88	1952	87.03	79.7	40-125	1781	8.04	30		
Benzo(k)fluoranthene	2174	88	1952	55.12	109	45-115	1824	17.5	30		
Chrysene	2020	88	1952	115.1	97.6	55-110	1892	6.53	30		
Dibenzo(a,h)anthracene	1645	88	1952	0	84.2	40-125	1695	2.98	30		
Fluoranthene	2061	88	1952	105.4	100	55-115	1920	7.05	30		
Fluorene	1805	88	1952	0	92.4	50-110	1737	3.83	30		
Indeno(1,2,3-cd)pyrene	1706	88	1952	61.89	84.2	40-120	1797	5.21	30		
Naphthalene	1536	88	1952	0	78.7	40-105	1414	8.28	30		
Pyrene	2020	88	1952	126.7	97	45-125	1920	5.09	30		
Surr: 2-Fluorobiphenyl	3667	0	4881	0	75.1	12-100	3448	6.17	40		
Surr: 4-Terphenyl-d14	5029	0	4881	0	103	25-137	4775	5.18	40		
Surr: Nitrobenzene-d5	3350	0	4881	0	68.6	37-107	3086	8.2	40		

The following samples were analyzed in this batch: 1206468-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: HRL Compliance Solutions
Work Order: 1206468
Project: Antero Robinson A Produced Water Spill 6/7/12

QC BATCH REPORT

Batch ID: **41683** Instrument ID **VMS7** Method: **SW8260**

MBLK		Sample ID: MBLK-41683-41683				Units: µg/Kg		Analysis Date: 6/15/2012 10:24 AM		
Client ID:		Run ID: VMS7_120615A				SeqNo: 2001538		Prep Date: 6/15/2012		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	30								
Ethylbenzene	ND	30								
m,p-Xylene	ND	60								
o-Xylene	ND	30								
Toluene	ND	30								
Xylenes, Total	ND	90								
<i>Surr: 1,2-Dichloroethane-d4</i>	998.5	0	1000	0	99.8	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	1016	0	1000	0	102	70-130	0			
<i>Surr: Dibromofluoromethane</i>	990.5	0	1000	0	99	70-130	0			
<i>Surr: Toluene-d8</i>	1026	0	1000	0	103	70-130	0			

MBLK		Sample ID: MBLK-41683-41683				Units: µg/Kg		Analysis Date: 6/15/2012 06:39 PM		
Client ID:		Run ID: VMS8_120615A				SeqNo: 2001688		Prep Date: 6/15/2012		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	30								
Ethylbenzene	ND	30								
m,p-Xylene	ND	60								
o-Xylene	ND	30								
Toluene	ND	30								
Xylenes, Total	ND	90								
<i>Surr: 1,2-Dichloroethane-d4</i>	1136	0	1000	0	114	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	966.5	0	1000	0	96.6	70-130	0			
<i>Surr: Dibromofluoromethane</i>	1016	0	1000	0	102	70-130	0			
<i>Surr: Toluene-d8</i>	988	0	1000	0	98.8	70-130	0			

MBLK		Sample ID: MBLK-41683-41683				Units: µg/Kg		Analysis Date: 6/18/2012 02:38 PM		
Client ID:		Run ID: VMS9_120618A				SeqNo: 2003185		Prep Date: 6/15/2012		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	30								
Ethylbenzene	ND	30								
m,p-Xylene	ND	60								
o-Xylene	ND	30								
Toluene	ND	30								
Xylenes, Total	ND	90								
<i>Surr: 1,2-Dichloroethane-d4</i>	945.5	0	1000	0	94.6	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	908.5	0	1000	0	90.8	70-130	0			
<i>Surr: Dibromofluoromethane</i>	964.5	0	1000	0	96.4	70-130	0			
<i>Surr: Toluene-d8</i>	990.5	0	1000	0	99	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: HRL Compliance Solutions
Work Order: 1206468
Project: Antero Robinson A Produced Water Spill 6/7/12

QC BATCH REPORT

Batch ID: **41683** Instrument ID **VMS7** Method: **SW8260**

LCS Sample ID: LCS-41683-41683				Units: µg/Kg		Analysis Date: 6/15/2012 09:09 AM				
Client ID:		Run ID: VMS7_120615A		SeqNo: 2001535		Prep Date: 6/15/2012		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	946	30	1000	0	94.6	75-125	0			
Ethylbenzene	959	30	1000	0	95.9	75-125	0			
m,p-Xylene	1892	60	2000	0	94.6	80-125	0			
o-Xylene	966.5	30	1000	0	96.6	75-125	0			
Toluene	974	30	1000	0	97.4	70-125	0			
Xylenes, Total	2858	90	3000	0	95.3	75-125	0			
Surr: 1,2-Dichloroethane-d4	964	0	1000	0	96.4	70-130	0			
Surr: 4-Bromofluorobenzene	1020	0	1000	0	102	70-130	0			
Surr: Dibromofluoromethane	1038	0	1000	0	104	70-130	0			
Surr: Toluene-d8	1015	0	1000	0	102	70-130	0			

LCS Sample ID: LCS-41683-41683				Units: µg/Kg		Analysis Date: 6/15/2012 05:11 PM				
Client ID:		Run ID: VMS8_120615A		SeqNo: 2001687		Prep Date: 6/15/2012		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	894	30	1000	0	89.4	75-125	0			
Ethylbenzene	1001	30	1000	0	100	75-125	0			
m,p-Xylene	1984	60	2000	0	99.2	80-125	0			
o-Xylene	983	30	1000	0	98.3	75-125	0			
Toluene	943.5	30	1000	0	94.4	70-125	0			
Xylenes, Total	2968	90	3000	0	98.9	75-125	0			
Surr: 1,2-Dichloroethane-d4	1146	0	1000	0	115	70-130	0			
Surr: 4-Bromofluorobenzene	994.5	0	1000	0	99.4	70-130	0			
Surr: Dibromofluoromethane	1036	0	1000	0	104	70-130	0			
Surr: Toluene-d8	1007	0	1000	0	101	70-130	0			

LCS Sample ID: LCS-41683-41683				Units: µg/Kg		Analysis Date: 6/18/2012 01:08 PM				
Client ID:		Run ID: VMS9_120618A		SeqNo: 2003182		Prep Date: 6/15/2012		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	960.5	30	1000	0	96	75-125	0			
Ethylbenzene	1035	30	1000	0	104	75-125	0			
m,p-Xylene	1868	60	2000	0	93.4	80-125	0			
o-Xylene	903.5	30	1000	0	90.4	75-125	0			
Toluene	985.5	30	1000	0	98.6	70-125	0			
Xylenes, Total	2772	90	3000	0	92.4	75-125	0			
Surr: 1,2-Dichloroethane-d4	926	0	1000	0	92.6	70-130	0			
Surr: 4-Bromofluorobenzene	975	0	1000	0	97.5	70-130	0			
Surr: Dibromofluoromethane	968.5	0	1000	0	96.8	70-130	0			
Surr: Toluene-d8	969	0	1000	0	96.9	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: HRL Compliance Solutions
Work Order: 1206468
Project: Antero Robinson A Produced Water Spill 6/7/12

QC BATCH REPORT

Batch ID: **41683** Instrument ID **VMS7** Method: **SW8260**

MS				Sample ID: 1206508-15B MS				Units: µg/Kg		Analysis Date: 6/16/2012 03:26 AM	
Client ID:			Run ID: VMS8_120615A			SeqNo: 2001697		Prep Date: 6/15/2012		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1111	6.3	1266	0	87.8	75-125	0				
Ethylbenzene	1204	6.3	1266	0	95.1	75-125	0				
m,p-Xylene	2409	3.2	2532	0	95.2	80-125	0				
o-Xylene	1173	3.2	1266	0	92.6	75-125	0				
Toluene	1141	6.3	1266	0	90.1	70-125	0				
Xylenes, Total	3582	6.3	3797	0	94.3	75-125	0				
Surr: 1,2-Dichloroethane-d4	1473	0	1266	0	116	70-120	0				
Surr: 4-Bromofluorobenzene	1249	0	1266	0	98.6	75-120	0				
Surr: Dibromofluoromethane	1320	0	1266	0	104	85-115	0				
Surr: Toluene-d8	1282	0	1266	0	101	85-120	0				

MSD				Sample ID: 1206508-15B MSD				Units: µg/Kg		Analysis Date: 6/16/2012 03:51 AM			
Client ID:				Run ID: VMS8_120615A				SeqNo: 2001698		Prep Date: 6/15/2012		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Benzene	1085	6.3	1266	0	85.8	75-125	1111	2.36	30				
Ethylbenzene	1176	6.3	1266	0	92.9	75-125	1204	2.34	30				
m,p-Xylene	2359	3.2	2532	0	93.2	80-125	2409	2.1	30				
o-Xylene	1175	3.2	1266	0	92.8	75-125	1173	0.216	30				
Toluene	1129	6.3	1266	0	89.2	70-125	1141	1	30				
Xylenes, Total	3535	6.3	3797	0	93.1	75-125	3582	1.33	30				
Surr: 1,2-Dichloroethane-d4	1491	0	1266	0	118	70-120	1473	1.24	30				
Surr: 4-Bromofluorobenzene	1211	0	1266	0	95.7	75-120	1249	3.04	30				
Surr: Dibromofluoromethane	1323	0	1266	0	104	85-115	1320	0.192	30				
Surr: Toluene-d8	1259	0	1266	0	99.4	85-120	1282	1.79	30				

The following samples were analyzed in this batch:

1206468-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: HRL Compliance Solutions
Work Order: 1206468
Project: Antero Robinson A Produced Water Spill 6/7/12

QC BATCH REPORT

Batch ID: **41768** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK		Sample ID: MBLK-41768-41768				Units: mg/Kg		Analysis Date: 6/19/2012 02:30 PM		
Client ID:		Run ID: WETCHEM_120619C				SeqNo: 2004183		Prep Date: 6/18/2012		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent ND 0.50

LCS		Sample ID: LCS-41768-41768				Units: mg/Kg		Analysis Date: 6/19/2012 02:30 PM		
Client ID:		Run ID: WETCHEM_120619C				SeqNo: 2004182		Prep Date: 6/18/2012		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1.96 0.50 1.992 0 98.4 75-110 0

MS		Sample ID: 1206468-01B MS				Units: mg/Kg		Analysis Date: 6/19/2012 02:30 PM		
Client ID: Robinson A		Run ID: WETCHEM_120619C				SeqNo: 2004177		Prep Date: 6/18/2012		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1.184 0.49 1.961 0 60.4 60-130 0

MSD		Sample ID: 1206468-01B MSD				Units: mg/Kg		Analysis Date: 6/19/2012 02:30 PM		
Client ID: Robinson A		Run ID: WETCHEM_120619C				SeqNo: 2004178		Prep Date: 6/18/2012		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1.147 0.50 1.984 0 57.8 60-130 1.184 3.22 30 S

The following samples were analyzed in this batch:

1206468-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: HRL Compliance Solutions
Work Order: 1206468
Project: Antero Robinson A Produced Water Spill 6/7/12

QC BATCH REPORT

Batch ID: **R106010** Instrument ID **WETCHEM** Method: **SW9045D**

LCS				Sample ID: LCS-R106010-R106010				Units: s.u.			Analysis Date: 6/14/2012 11:20 AM			
Client ID:				Run ID: WETCHEM_120614N				SeqNo: 1999663			Prep Date:		DF: 1	
Analyte				Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH				4.01		0	4.4	0	91.1	90-110		0		

DUP					Sample ID: 1206468-01B DUP					Units: s.u.			Analysis Date: 6/14/2012 11:20 AM			
Client ID: Robinson A					Run ID: WETCHEM_120614N					SeqNo: 1999665		Prep Date:			DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual					
pH		8.42	0	0	0	0	0-0	8.42	0	20	H					

The following samples were analyzed in this batch:

1206468-01B 1206468-04A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: HRL Compliance Solutions
Work Order: 1206468
Project: Antero Robinson A Produced Water Spill 6/7/12

QC BATCH REPORT

Batch ID: **R106099** Instrument ID **MOIST** Method: **A2540 G**

MBLK		Sample ID: WBLKS1-R106099				Units: % of sample			Analysis Date: 6/15/2012 02:43 PM		
Client ID:		Run ID: MOIST_120615B				SeqNo: 2002010		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture ND 0.050

LCS		Sample ID: LCS-R106099				Units: % of sample			Analysis Date: 6/15/2012 02:43 PM		
Client ID:		Run ID: MOIST_120615B				SeqNo: 2002009		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 100 0.050 100 0 100 99.5-100.5 0

DUP		Sample ID: 1206468-04ADUP				Units: % of sample			Analysis Date: 6/15/2012 02:43 PM		
Client ID: Robinson A BKGD 3		Run ID: MOIST_120615B				SeqNo: 2001996		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 18.7 0.050 0 0 0 0-0 19.42 3.78 20 H

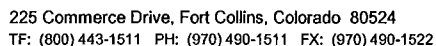
DUP		Sample ID: 1206485-21ADUP				Units: % of sample			Analysis Date: 6/15/2012 02:43 PM		
Client ID:		Run ID: MOIST_120615B				SeqNo: 2002059		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 28.72 0.050 0 0 0 0-0 28.2 1.83 20



The following samples were analyzed in this batch:

1206468-01B	1206468-02A	1206468-03A
1206468-04A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Form 202r8

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY		Rodolfo	6/13/12	5:00
RECEIVED BY		KEITH WIERENGA	6/14/12	1430
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				



Environmental

Subcontractor:

A & L Great Lakes Agricultural La
3505 Conestoga Dr

TEL: (260) 483-4759

FAX: (260) 483-5274

Ft. Wayne, IN 46808

Acct #: 91000

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Date: **15-Jun-12**

COC ID: **3707**

Due D **20-Jun-12**

Salesperson **Bruce Schlatter**

Customer Information		Project Information		Parameter/Method Request for Analysis												
Purchase Order		Project Name	1206468	A Subcontracted Analyses (SUBCONTRACT) SAR-EC												
Work Order		Project Number		B												
Company Name	ALS Group USA, Corp	Bill To Company	ALS Group USA, Corp	C												
Send Report To	Ann Preston	Inv Attn	Accounts Payable	D												
Address	3352 128th Avenue	Address	3352 128th Avenue	E												
				F												
City/State/Zip	Holland, Michigan 49424-9263	City/State/Zip	Holland, Michigan 49424-9263	G												
Phone	(616) 399-6070	Phone	(616) 399-6070	H												
Fax	(616) 399-6185	Fax	(616) 399-6185	I												
eMail Address	ann.preston@alsglobal.com	eMail CC		J												
ALS Sample ID	Client Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J		
1206468-01C	Robinson A	Soil	7/Jun/2012 11:20	(1) MISC	X											
1206468-04B	Robinson A BKGD 3	Soil	7/Jun/2012 11:40	(1) MISC	X											

Comments:

Please analyze for SAR-EC. Email results to Ann Preston.

Relinquished by:

[Signature]

Date/Time

6/15/12

Received by:

[Signature]

Date/Time

Cooler IDs

Report/QC Level

Std

Relinquished by:

Date/Time

Received by:

Date/Time

Sample Receipt Checklist

Client Name: HRL

Date/Time Received: 14-Jun-12 14:30

Work Order: 1206468

Received by: KRW

Checklist completed by Keith Wurenga 14-Jun-12
eSignature Date

Reviewed by: Ann Preston 15-Jun-12
eSignature Date

Matrices: Soil

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>5.2 C</u>		
Cooler(s)/Kit(s):			
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:			
Login Notes:			

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:

FedEx NEW Package
Express US Airbill

FedEx
Tracking
Number

8008 9259 9243

0200

Form
10 No.

FedEx Retrieval Copy

1 From

Date 6/13/12

Sender's
Name

Reed WLP

Phone 970 243 3271

Company

HCST

Address

744 Harrison St Ste 140

City

Mountain Junction

State

CO

ZIP

81506

Dept./Floor/Suite/Room

2 Your Internal Billing Reference

3 To

Recipient's
Name

Sample Receiving

Phone

616 399 6470

Company

WDS Group

Address
We cannot

800-955-9950 • 800-266-0080 • 800-266-3000

Address
Use this to

Quality Enviro Mental Containers



8008 9259 9243

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

To most locations.

Packages up to 150 lbs.
For packages over 150 lbs, use the new
FedEx Express Freight US Airbill.

06

FedEx First Overnight

Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

01

FedEx Priority Overnight

Next business morning. * Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

05

FedEx Standard Overnight

Next business afternoon. * Saturday Delivery NOT available.

03

NEW FedEx 2Day A.M.

Second business morning. * Saturday Delivery NOT available.

03

FedEx 2Day

Second business afternoon. * Thursday shipments will be delivered on Friday unless SATURDAY Delivery is selected.

20

FedEx Express Saver

Third business day. * Saturday Delivery NOT available.

5 Packaging

* Declared value limit \$500.

01

FedEx Envelope*

02

FedEx Pak*

03

FedEx Box

04

FedEx Tube

05

Other

6 Special Handling and Delivery Signature Options

03 SATURDAY DELIVERY

No Signature Required
This may be full release
* requiring a signature for delivery.

10

Direct Signature
Someone at recipient's address
may sign for delivery. For supplies.

30

Indirect Signature
If no one is available at recipient's address, someone at a nearby address may sign for delivery. For supplies.
* Valid for delivery only. For supplies.

SIGNATURE

DATE

TIME

ADDRESS

craft Only

Obtain recip.
Acct. No.

Cash/Check

Total Packages

Total Weight

This liability is limited to \$100 unless you have declared a higher value. You then must attach a declaration label.

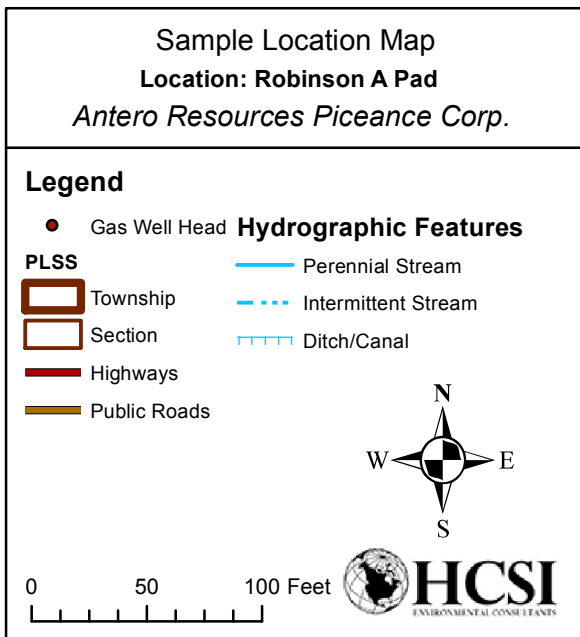
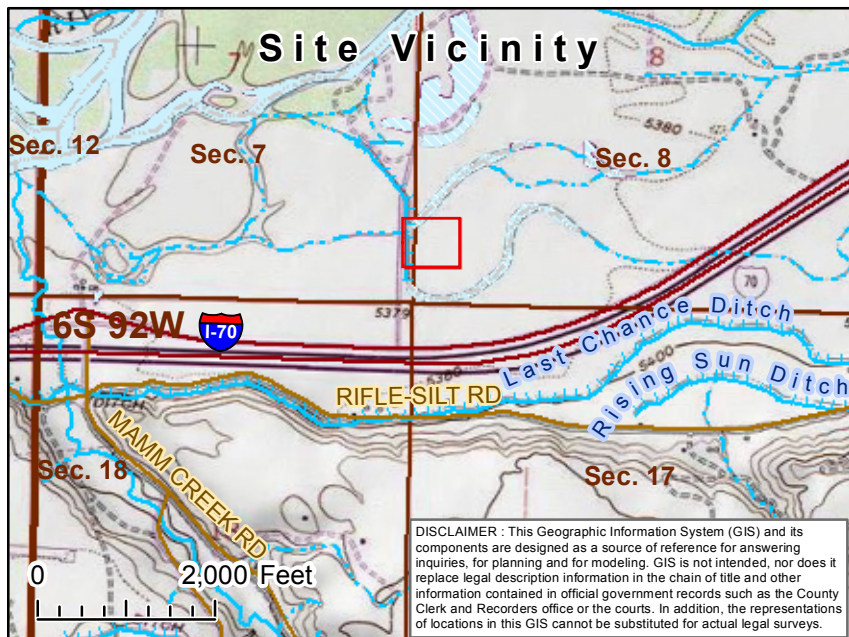
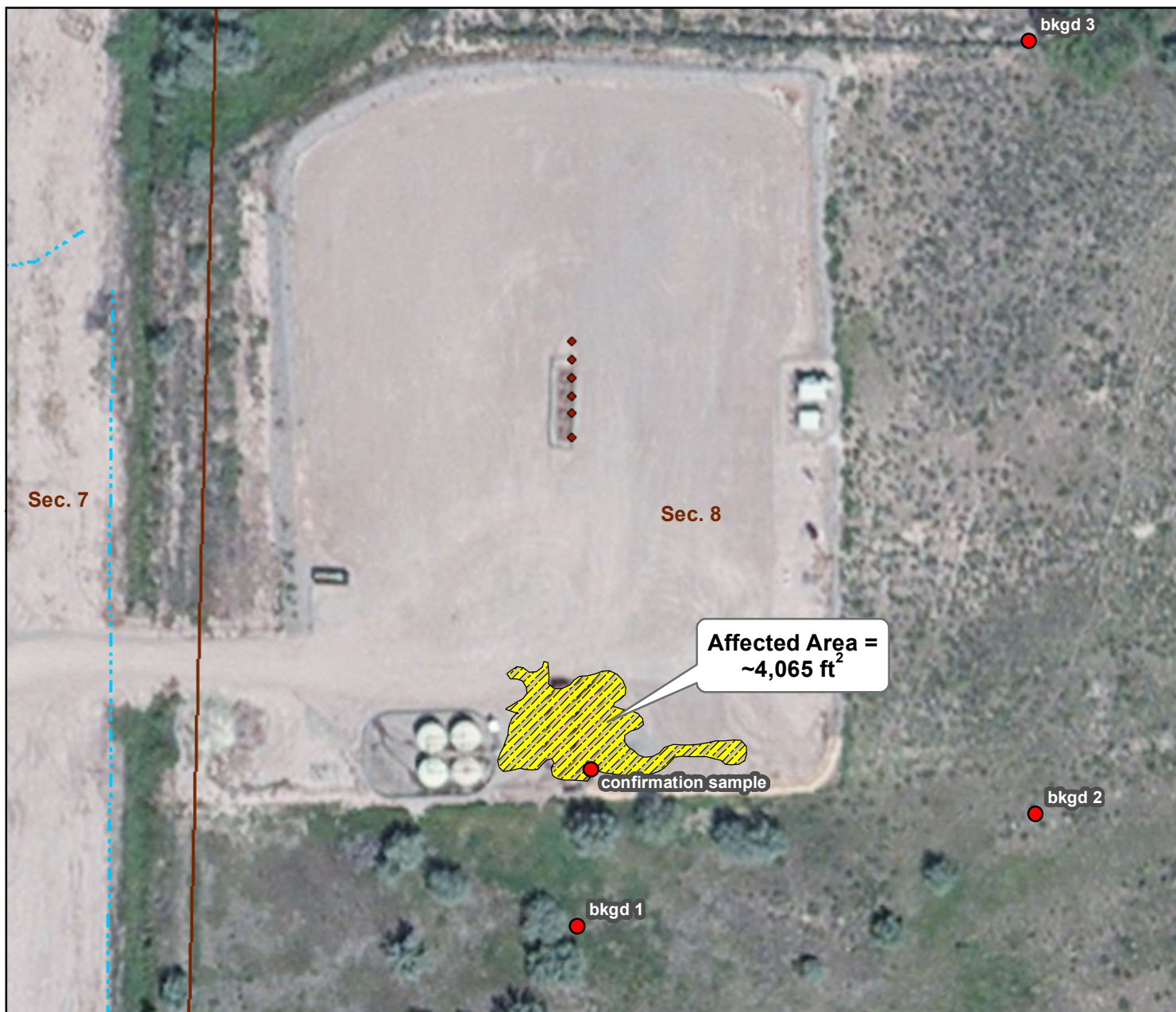
612

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fedex.com 1800.GoFedEx 1800.463.3339

fedex.com 1800.GoFedEx 1800.463.3339

ATTACHMENT 1A



ATTACHMENT 2

ELDER TRUCKING, INC.

1156 County Road 352

Rifle, CO 81650

Phone 970-625-4189

Fax 970-625-4889

[illegible]

Approval

X

ELDER TRUCKING, INC.

1156 County Road 352

Rifle, CO 81650

Phone 970-625-4189

Fax 970-625-4889

[illegible]

ELDER TRUCKING, INC.

1156 County Road 352

Rifle, CO 81650

Phone 970-625-4189

Fax 970-625-4889

NAME <u>Antero</u>		DATE <u>7-18-13</u>	
ADDRESS			
PHONE <u>Kip</u>		PROJECT <u>Robinson A Pad Spill</u>	
PAD <u>Robinson A Pad</u>		WELL	TRUCK # <u>E-6</u>
			DRIVER <u>M. Ho</u>
HOURS	DESCRIPTION		AMOUNT
	4 1/2 Hours truck time @ 75.00		
			8337.50
	Hauled 2 Loads Drill Cuttings from Robinson A Pad to South Canyon Landfill.		
	Tons,		
	12.89		
	14.51		
	TOTAL		8337.50
Approval _____			

ELDER TRUCKING, INC.

1156 County Road 352

Rifle, CO 81650

Phone 970-625-4189

Fax 970-625-4889

[illegible]

Approval



NON HAZARDOUS WASTE MANIFEST

Generator's Name and Mailing Address	
ANTERO RESOURCES PCEANCE CORPORATION 732 BUCKHORN DRIVE WILE, COLORADO 80550	
Separator's Phone	[970] 625-5922
LOGCC Operator No.	16079

Transporter Company Name		US EPA ID Number	Transporter's Phone
Elder Trucking Inc.			(970) 625-4189
Facility Name / Location - ORIGIN OF MATERIAL			
ROBINSON PA Spill			

Waste Description		Truck Type	Truck License No.	No. Loads	Weight (lb)
1.	CUTTING / Spill	TAN/WH	E17	1	8.25
2.					
3.					
4.					

Special Handling Instructions and Additional Information

GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for requiring proper disposal of hazardous waste.			
Printed / Typed Name	Signature	Month	Day

TRANSPORTER'S ACKNOWLEDGEMENT OF RECEIPT OF MATERIAL			
Printed / Typed Name	Signature	Month	Day
DL V/M	DL V/M	1	16

DISPOSAL FACILITY'S NAME		ADDRESS	
DISPOSAL FACILITY'S ACKNOWLEDGEMENT OF RECEIPT OF MATERIAL			
Printed / Typed Name	Signature	Month	Day
F.S	Frank	01	18

ORIGINAL RETURN TO GENERATOR

CITY OF GLENWOOD SPRINGS LANDFILL

NON-HAZARDOUS WASTE MANIFEST

GENERATOR

Generator: Antero Resources Piceance CorporationAddress: 1625 17th Street, Suite 300Denver, CO 80202Phone: 303-337-7310

Load #: _____

Site Location: Robinson H

Site Address: _____

Site Phone: 970-625-9922

Description of Waste Materials	Special Waste ID#	Shipped Quantity	Unit of Measure	Container Type
Drill Cuttings (clnt, rock debris, mud, and drilling chemicals)		8.25	TONS	DRUM
<u>Spill</u>				

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR Part 261 or by any applicable state law. I further certify that these wastes have been fully and accurately described, classified, and packaged, and are in proper condition for transportation according to applicable local, state, and federal regulations.

Cole Kilgus

Generator Authorized Agent Name (Print)

Signature

9/30/11
Scheduled Delivery Date

TRANSPORTER

Transporter Name: Elder TruckingAddress: Airport Rd Riflephone 625-4489Driver Name: DAVID VAN KIRKTruck Number: E17Truck Type: TANDAM

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.

Driver Signature

1-18-13
Shipment Date

I hereby acknowledge that the above-described materials were received from the generator site and were transported without incident to the destination listed below.

Driver Signature

1-18-13
Delivery Date

DESTINATION

Site Name: South Canyon LandfillAddress: 1205 Cb Rd 134 GWSPhone Number: 945 5375Disposal Location: South Canyon

I hereby acknowledge receipt of the above-described materials.

FS

Name of Authorized Agent (Print)

Signature

Manifest Form (5/94)

1-18-13
Receipt Date

City of Glenwood Springs
101 West 8th St.
Glenwood Springs, CO 81601

001076 Antero Resources Piceance Corp
1625 17th St
Denver CO 80202

02	377474			LANDFILL	
DATE IN	DATE OUT	TIME IN	TIME OUT	WEIGHT	REMARKS
01/18/13	01/18/13	10:29	10:45		
E17					

Scale 1 Gross Wt. 42980 LB
Scale 1 Tare Wt. 26480 LB
Net Weight 16500 LB

Inbound - Charge ticket

QTY	UNIT	DESCRIPTION	DATE	EXTENSION	FEE	TOTAL
8.25	TON	Contaminated Soil	50.00	412.50	1.73	414.23

Landfill Hours are Monday 6:00 - 4:00 TUES - FRI 8:30 - 4:00
SAT 9:00 - 4:00. CLOSED ON SUNDAY.
Certified weight.

414.23

SIGNATURE



NON HAZARDOUS WASTE MANIFEST

Generator's Name and Mailing Address			
ANTERO RESOURCES PCEANCE CORPORATION 792 BUCKHORN DRIVE RIFLE, COLORADO 81650			
Generator's Phone	(970) 625-9922	LOGCC Operator No.	10079

Transporter Company Name	US EPA ID Number	Transporter's Phone
Elder Trucking Inc.		(970) 625-4189

Facility Name/ Location - ORIGIN OF MATERIAL
ROBINSON A " PAD

Waste Description	Truck Type	Truck License No.	No. Loads	Weight (lbs)
1. DRILL CUTTINGS / Spill	DUMP	542 X 00	1	7.77
2.				
3.				
4.				

Special Handling Instructions and Additional Information

GENERATOR'S CERTIFICATION: I certify the material described above on this manifest was not subject to Federal regulations for reporting proper disposal of Hazardous Waste.				
Printed / Typed Name	Signature	Month	Day	Year
COLE KILSTROM		1	18	13

TRANSPORTER'S ACKNOWLEDGEMENT OF RECEIPT OF MATERIAL				
Printed / Typed Name	Signature	Month	Day	Year
KIM OLIERR	Kim M. Olier	1	18	13

DISPOSAL FACILITY'S NAME	ADDRESS

DISPOSAL FACILITY'S ACKNOWLEDGEMENT OF RECEIPT OF MATERIAL				
Printed / Typed Name	Signature	Month	Day	Year
FS	Fran Suits	1	18	13

ORIGINAL RETURN TO GENERATOR

CITY OF GLENWOOD SPRINGS LANDFILL

NON-HAZARDOUS WASTE MANIFEST

GENERATOR

Generator: Antero Resources Piceance CorporationAddress: 1625 17th Street, Suite 300Denver, CO 80202Phone: 303-357-7310

Load #: _____

Site Location: ROBINSON "A" PAD

Site Address: _____

Site Phone: 970-625-9922

Description of Waste Materials	Special Waste ID#	Shipped Quantity	Unit of Measure	Container Type
Drill Cuttings (mud, rock debris, mud, and drilling chemicals)		7.77	TON	DUMP
Spill				

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR Part 261 or by any applicable state law. I further certify that these wastes have been fully and accurately described, classified, and packaged, and are in proper condition for transportation according to applicable local, state, and federal regulations.

Cale Kilgus

Generator Authorized Agent Name (Print)

Signature

Scheduled Delivery Date

TRANSPORTER

Transporter Name: Elder TruckingAddress: Airport Rd Riflephone 675-4189Driver Name: Kim DUERRTruck Number: E25Truck Type: DUMP

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.

Kim M. Duerr 1-18-13
Driver Signature Date

I hereby acknowledge that the above-described materials were received from the generator site and were transported without incident to the destination listed below.

Kim M. Duerr 1-18-13
Driver Signature Delivery Date

DESTINATION

Site Name: South Canyon LandfillPhone Number: 945 5375Address: 1205 City Rd 134 GWSDisposal Location: South Canyon

I hereby acknowledge receipt of the above-described materials.

F.S.
Name of Authorized Agent (Print)

Frank Just
Signature

Manifest Form (524)

1-18-13
Receipt Date

City of Glenwood Springs
 101 West 8th St.
 Glenwood Springs, CO 81601

001076 Antero Resources Piceance Corp
 1625 17th St
 Denver CO 80202

SITE	TRAIL	VEHICLE		EQUIPMENT	
02	377473	LANDFILL			
DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	EQUIPMENT
01/18/13	01/18/13	10:21	10:38		
E25					

Scale 1 Gross Wt. 40700 LB
 Scale 1 Tare Wt. 25160 LB
 Net Weight 15540 LB

Inbound - Charge ticket

QTY	UNIT	DESCRIPTION	DATE	ENTERED	FILE	TOTAL
7.77	TON	Contaminated Soil	50.00	388.50	1.63	390.13

Landfill Hours are Monday 6:00 - 4:00 TUES - FRI 8:30 - 4:00
 SAT 9:00 - 4:00. CLOSED ON SUNDAY.
 Certified weight.

390.13

[Handwritten Signature]



NON HAZARDOUS WASTE MANIFEST

Generator's Name and Mailing Address	
ANTERO RESOURCES PCEANCE CORPORATION 792 BUCKHORN DRIVE RIFLE, COLORADO 81550	
Generator's Phone	[970] 625-5522 DGLCC Operator No. 16079

Transporter Company Name		US EPA ID Number	Transporter's Phone
Elder Trucking Inc.			(970) 625-4189
Facility Name / Location - ORIGIN OF MATERIAL			
Robinson A Pad Spill			

Waste Description				
1	Truck Type	Truck License No.	No. Loads	Weight (lbs)
Drill cuttings / Spill	Landfill		1	12.89
			2	14.51

Special Handling Instructions and Additional Information

GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of hazardous waste.			
Printed / Typed Name	Signature	Month	Day

TRANSPORTER'S ACKNOWLEDGEMENT OF RECEIPT OF MATERIAL			
Printed / Typed Name	Signature	Month	Day
Milton Allmon	Milton Allmon	1	18

DISPOSAL FACILITY'S NAME			
ADDRESS			
DISPOSAL FACILITY'S ACKNOWLEDGEMENT OF RECEIPT OF MATERIAL			
Printed / Typed Name	Signature	Month	Day
ES	Frank Jents	1	18

ORIGINAL RETURN TO GENERATOR

CITY OF GLENWOOD SPRINGS LANDFILL

NONHAZARDOUS WASTE MANIFEST

GENERATOR

Generator: Antero Resources Picesance CorporationAddress: 1625 17th Street, Suite 300Denver, CO 80202Phone: 303-337-7310

Load #: _____

Site Location: Robinson H PondSite Address: SpillSite Phone: 970-625-9922

Description of Waste Materials	Special Waste ID#	Shipped Quantity	Unit of Measure	Container Type
Drill Cuttings (cut, rock debris, mud, and drilling chemicals)		12.84	TONS	Landfill
Spill		14.51	1	11

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR Part 261 or by any applicable state law. I further certify that these wastes have been fully and accurately described, classified, and packaged, and are in proper condition for transportation according to applicable local, state, and federal regulations.

Cale Kington

Generator Authorized Agent Name (Print)

Signature

Scheduled Delivery Date

TRANSPORTER

Transporter Name: Elder TruckingAddress: Airport Rd RiflePhone: 625-4489Driver Name: Milton AllmonTruck Number: E-6Truck Type: Landfill

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.

Milton Allmon 1-18-13
Driver Signature Date

I hereby acknowledge that the above-described materials were received from the generator site and were transported without incident to the destination listed below.

Milton Allmon 1-18-13
Driver Signature Date

DESTINATION

Site Name: South Canyon LandfillAddress: 1205 Gly Rd 134 GWSPhone Number: 945 5375Disposal Location: South Canyon

I hereby acknowledge receipt of the above-described materials.

F.S.
Name of Authorized Agent (Print)

Signature

Manifest Form (5794)

Receipt Date

City of Glenwood Springs
 101 West 8th St.
 Glenwood Springs, CO 81601

001076 Antero Resources Piceance Corp
 1625 17th St
 Denver CO 80202

02	377486	LANDEILL	
DATE	DATE OUT	TIME IN	TIME OUT
01/18/13	01/18/13	11:43	11:57
E6			

Scale 1 Gross Wt. 51260 LB
 Scale 1 Tare Wt. 25580 LB
 Net Weight 25680 LB

Inbound - Charge ticket

QTY	UNIT	DESCRIPTION	WGT	RTS WGT	TOL	TOTAL
12.84	TON	Contaminated Soil	50.00	642.00	2.70	644.70

Landfill Hours are Monday 6:00 - 4:00 TUES - FRI 8:30 - 4:00
 SAT 9:00 - 4:00. CLOSED ON SUNDAY.
 Certified weight.

644.70

FOR BULKY ITEMS CONTACT CAROLINA SCOTT (303) 441-1111 SIGNATURE _____

City of Glenwood Springs
101 West 8th St.
Glenwood Springs, CO 81601

001076 Antero Resources Piceance Corp
1625 17th St
Denver CO 80202

02	377498	LANDFILL	
DATE IN	DATE OUT	TIME IN	TIME OUT
01/18/13	01/18/13	12:56	13:11
E6			

Scale 1 Gross Wt. 54460 LB
Scale 1 Tare Wt. 25440 LB
Net Weight 29020 LB

Inbound - Charge ticket

QTY	UNIT	DESCRIPTION	PRICE	AMOUNT	TAX	TOTAL
14.51	TON	Contaminated Soil	50.00	725.50	3.05	728.55

Landfill Hours are Monday 6:00 - 4:00 TUES - FRI 8:30 - 4:00
SAT 9:00 - 4:00. CLOSED ON SUNDAY.
Certified weight.

TOTAL AMOUNT
728.55

WEIGHT TO BE RECORDED CONTACT HAROLD A. JOHNSON (303) 224-4477 SIGNATURE _____



NON HAZARDOUS WASTE MANIFEST

Generator's Name and Mailing Address	
ANTERO RESOURCES PISCANCE CORPORATION 752 BUCKHORN DRIVE HIPLE, COLORADO 81650	
Generator's Phone	LOGCC Operator No.
(970) 625-5922	16079

Transporter Company Name	USEPA ID Number	Transporter's Phone
Elder Trucking Inc.		(970) 625-4189
Facility Name / Location - ORIGIN OF MATERIAL		

Robinson "A"

Waste Description	Truck Type	Truck License No.	No. Loads	Weight (lbs)
1. Cuttings / Spill	Tandem	E-29	1	11.34
2.			2	12.25
3.				
4.				

Special Handling Instructions and Additional Information

GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of hazardous waste.			
Printed / Typed Name	Signature	Month	Day

TRANSPORTER'S ACKNOWLEDGEMENT OF RECEIPT OF MATERIAL			
Printed / Typed Name	Signature	Month	Day
Alan Zeinstia	Alan Zeinstia	01	18

DISPOSAL FACILITY'S NAME			
ADDRESS			
DISPOSAL FACILITY'S ACKNOWLEDGEMENT OF RECEIPT OF MATERIAL			
Printed / Typed Name	Signature	Month	Day
F.S.	John Seels	01	18

ORIGINAL RETURN TO GENERATOR

CITY OF GLENWOOD SPRINGS LANDFILL

NON-HAZARDOUS WASTE MANIFEST

GENERATOR

Generator: Antero Resources Piceance CorporationAddress: 1625 17th Street, Suite 300Denver, CO 80202Phone: 303-337-7310

Load #: _____

Site Location: Robinson HSite Address: (Spill)Site Phone: 970-625-9922

Description of Waste Materials	Special Waste ID#	Shipped Quantity	Unit of Measure	Container Type
Drill Cuttings (dirt, rock debris, mud, and drilling chemicals)		11.34	TON	Tandem
Spill		12.75	U	U

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR Part 261 or by any applicable state law. I further certify that these wastes have been fully and accurately described, classified, and packaged, and are in proper condition for transportation according to applicable local, state, and federal regulations.

Cole Kilstein

Generator Authorized Agent Name (Print)

TRANSPORTER

Transporter Name: Elder TrackingAddress: Airport Rd Riflephone 625-4184

Signature

Scheduled Delivery Date

Driver Name: Allen ZenstiaTruck Number: E-29Truck Type: Tandem

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.

Driver Signature

Shipment Date

I hereby acknowledge that the above-described materials were received from the generator site and were transported without incident to the destination listed below.

Driver Signature

Delivery Date

DESTINATION

Site Name: South Canyon LandfillAddress: 1205 City Rd 134 GWSPhone Number: 945 5375Disposal Location: South Canyon

I hereby acknowledge receipt of the above-described materials.

Name of Authorized Agent (Print)

Signature

Manifest Form (5/96)

Receipt Date

City of Glenwood Springs
 101 West 8th St.
 Glenwood Springs, CO 81601

001076 Antero Resources Piceance Corp
 1625 17th St
 Denver CO 80202

02	377482	LANDFILL	
DATE IN	DATE OUT	TIME IN	TIME OUT
01/18/13	01/18/13	11:29	11:44
E29			

Scale 1 Gross Wt. 45520 LB
 Scale 1 Tare Wt. 22840 LB
 Net Weight 22680 LB

Inbound - Charge ticket

WT	UNIT	DESCRIPTION	PRICE	EXTENSION	TAX	TOTAL
11.34	TON	Contaminated Soil	50.00	567.00	2.38	569.38

Landfill Hours are Monday 6:00 - 4:00 TUES - FRI 8:30 - 4:00
 SAT 9:00 - 4:00. CLOSED ON SUNDAY.
 Certified weight.

569.38

NOTE: TO REORDER CONTACT COLUMBIA SOFTWARE (800) 441-6811 SIGNATURE _____

City of Glenwood Springs
 101 West 8th St.
 Glenwood Springs, CO 81601

001076 Antero Resources Piceance Corp
 1625 17th St
 Denver CO 80202

02		377492		LANDFILL	
DATE IN	DATE OUT	TIME IN	TIME OUT	E29	
01/18/13	01/18/13	12:39	12:54		

Scale 1 Gross Wt. 48240 LB
 Scale 1 Tare Wt. 22740 LB
 Net Weight 25500 LB

Inbound - Charge ticket

WT	UNIT	DESCRIPTION	YR	ENTALS	FE	TOTAL
12.75	TON	Contaminated Soil	50.00	637.50	2.68	640.18

Landfill Hours are Monday 6:00 - 4:00 TUES - FRI 8:30 - 4:00
 SAT 9:00 - 4:00. CLOSED ON SUNDAY.
 Certified weight.

640.18

WASTE TO BE RECYCLED OR RECYCLED IN A SOFTLAND 10-19-13 SIGNATURE



NON HAZARDOUS WASTE MANIFEST

Generator's Name and Mailing Address			
ANTERO RESOURCES PCEANCE CORPORATION			
792 BUCKHORN DRIVE			
RIELE, COLORADO 81550			
Generator's Phone	(970) 625-9922	LDGCC Operator No.	10079

Transporter Company Name	US EPA ID Number	Transporter's Phone
Elder Trucking Inc.		(970) 625-4189
Facility Name / Location - ORIGIN OF MATERIAL		
Robinson A PAJ spill		

Waste Description	Truck Type	Truck License No.	No. Loads	Weight (lb)
1. HAZARDOUS / Spill	TANDEM	ELI	1	7.79
2.			2	12.26
3.				
4.				

Special Handling Instructions and Additional Information

GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to Federal regulations for reporting proper disposal of hazardous waste.			
Printed / Typed Name	Signature	Month	Day
			Year

TRANSPORTER'S ACKNOWLEDGEMENT OF RECEIPT OF MATERIAL			
Printed / Typed Name	Signature	Month	Day
DAN SCHIRER	Dan Schirer	1	18
			Year
			13

DISPOSAL FACILITY'S NAME		ADDRESS	
DISPOSAL FACILITY'S ACKNOWLEDGEMENT OF RECEIPT OF MATERIAL			
Printed / Typed Name	Signature	Month	Day
F. S.	F. S.	1	18
			Year
			13

ORIGINAL RETURN TO GENERATOR

CITY OF GLENWOOD SPRINGS LANDFILL

NONHAZARDOUS WASTE MANIFEST

GENERATOR

Generator: Anders Resources Pinnacle CorporationAddress: 1625 17th Street, Suite 300Denver, CO 80202Phone: 303-357-7310

Load #: _____

Site Location: Robinson A Pad Spill

Site Address: _____

Site Phone: 970-625-9922

Description of Waste Materials	Special Waste ID#	Shipped Quantity	Unit of Measure	Container Type
Drill Cuttings (silt, rock debris, mud, and drilling chemicals)		7.26	TONS	DUMP
Spill		12.26		

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR Part 261 or by any applicable state law. I further certify that these wastes have been fully and accurately described, classified, and packaged, and are in proper condition for transportation according to applicable local, state, and federal regulations.

Cale Kilston

Generator Authorized Agent Name (Print)

Signature

Scheduled Delivery Date

TRANSPORTER

Transporter Name: Elder TruckingAddress: Airport Rd Riflephone 625-4189Driver Name: DAN SCHIRERTruck Number: ELITruck Type: TANDERS

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.

I hereby acknowledge that the above-described materials were received from the generator site and were transported without incident to the destination listed below.

Driver Signature

Signature Date

Driver Signature

Delivery Date

DESTINATION

Site Name: South Canyon LandfillPhone Number: 945 5375Address: 1205 City Rd 134 GWSDisposal Location: South Canyon

I hereby acknowledge receipt of the above-described materials.

F.S.

Name of Authorized Agent (Print)

Signature

Manifest Form (594)

Receipt Date

City of Glenwood Springs
 101 West 8th St.
 Glenwood Springs, CO 81601

001076 Antero Resources Piceance Corp
 1625 17th St
 Denver CO 80202

02	377475	LANDFILL	
DATE IN	DATE OUT	TIME IN	TIME OUT
01/18/13	01/18/13	10:31	10:43
E4			

Scale 1 Gross Wt. 42120 LB
 Scale 1 Tare Wt. 26600 LB
 Net Weight 15520 LB

Inbound - Charge ticket

CTA	Net Weight	DATE	EXTENSION	TARE	TOTAL
7.76	TON	Contaminated Soil	50.00	388.00	1.63
					389.63

Landfill Hours are Monday 6:00 - 4:00 TUES - FRI 8:30 - 4:00
 SAT 9:00 - 4:00. CLOSED ON SUNDAY.
 Certified weight.

389.63

City of Glenwood Springs
 101 West 8th St.
 Glenwood Springs, CO 81601

001076 Antero Resources Piceance Corp
 1625 17th St
 Denver CO 80202

02	377484	LANDEILL	
DATE IN	DATE OUT	TIME IN	TIME OUT
01/18/13	01/18/13	11:37	11:53
E4			

Scale 1 Gross Wt. 51260 LB
 Scale 1 Tare Wt. 26740 LB
 Net Weight 24520 LB

Inbound - Charge ticket

WT	UNIT	DESCRIPTION	WE	EXTENS	TOT	WT
12.26	TON	Contaminated Soil	50.00	613.00	2.57	615.57

Landfill Hours are Monday 6:00 - 4:00 TUES - FRI 8:30 - 4:00
 SAT 9:00 - 4:00. CLOSED ON SUNDAY.
 Certified weight.

615.57

NOTE: TO RECORD CONTACT CAPTIONED ABOVE WITH AGENCY SIGNATURE _____

PRIOR HISTORY



02231317

Form 19

Page 1

FORM
4
Rev 12/05

State of Colorado

Oil and Gas Conservation Commission

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



SUNDRY NOTICE

Submit original plus one copy. This form is to be used for general, technical and environmental sundry information. For proposed or completed operations, describe in full on Technical Information Page (Page 2 of this form). Identify well or other facility by API Number or by OGCC Facility ID. Operator shall send an informational copy of all sundry notices for wells located in High Density Areas to the Local Government Designee (Rule 603b).

RECEIVED

DEC 3 - 2012

COGCC

1. OGCC Operator Number: 10079	4. Contact Name: Cole Kilstrom	Complete the Attachment Checklist
2. Name of Operator: Antero Resources Piceance Corporation	4. Phone: 303-357-6709	
3. Address: 1625 17th St STE 300 ATTN: Cole Kilstrom	4. Fax: 303-357-7315	OGCC
City: Denver State: CO Zip: 80202		
5. API Number 05-045-13935	OGCC Facility ID Number 2899563	Survey Plat
6. Well/Facility Name: Robinson A Pad	7. Well/Facility Number: A3	Directional Survey
8. Location (Ctr/Tr, Sec, Twp, Rng, Meridian): SWSW 8 6S 92W 6		Surface Eqpt Diagram
9. County: Garfield	10. Field Name: Mamm Creek	Technical Info Page
11. Federal, Indian or State Lease Number:		Other

General Notice

<input type="checkbox"/> CHANGE OF LOCATION: Attach New Survey Plat (a change of surface qtr/qtr is substantive and requires a new permit)	
Change of Surface Footage from Exterior Section Lines:	Change of Surface Footage to Exterior Section Lines:
Change of Bottomhole Footage from Exterior Section Lines:	Change of Bottomhole Footage to Exterior Section Lines:
Bottomhole location Ctr/Tr, Sec, Twp, Rng, Mer	Latitude
Longitude	Distance to nearest property line
Ground Elevation	Distance to nearest bldg, public rd, utility or RR
	Distance to nearest lease line
	Is location in a High Density Area (rule 603b)? Yes/No
	Distance to nearest well same formation
	Surface owner consultation date:
GPS DATA:	
Date of Measurement	PDOP Reading
	Instrument Operator's Name
<input type="checkbox"/> CHANGE SPACING UNIT	<input type="checkbox"/> Remove from surface bond
Formation	Formation Code
Spacing order number	Unit acreage
Unit configuration	Signed surface use agreement attached
<input type="checkbox"/> CHANGE OF OPERATOR (prior to drilling):	<input type="checkbox"/> CHANGE WELL NAME
Effective Date:	From:
Plugging Bond: <input type="checkbox"/> Blanket <input type="checkbox"/> Individual	To:
	Effective Date:
<input type="checkbox"/> ABANDONED LOCATION:	<input type="checkbox"/> NOTICE OF CONTINUED SHUT IN STATUS
Was location ever built? <input type="checkbox"/> Yes <input type="checkbox"/> No	Date well shut in or temporarily abandoned:
Is site ready for inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No	Has Production Equipment been removed from site? <input type="checkbox"/> Yes <input type="checkbox"/> No
Date Ready for inspection:	MIT required if shut in longer than two years. Date of last MIT
<input type="checkbox"/> SPUD DATE:	<input type="checkbox"/> REQUEST FOR CONFIDENTIAL STATUS (6 mos from date casing set)
<input type="checkbox"/> SUBSEQUENT REPORT OF STAGE, SQUEEZE OR REMEDIAL CEMENT WORK	
Method used	Cementing tool setting/perf depth
Cement volume	Cement top
Cement bottom	Date
<input type="checkbox"/> RECLAMATION: Attach technical page describing final reclamation procedures per Rule 1004.	
Final reclamation will commence on approximately	
<input type="checkbox"/> Final reclamation is completed and site is ready for inspection.	

Technical Engineering/Environmental Notice

<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Report of Work Done
Approximate Start Date:	Date Work Completed:
Details of work must be described in full on Technical Information Page (Page 2 must be submitted.)	
<input type="checkbox"/> Intent to Recomplete (submit form 2)	<input type="checkbox"/> Request to Vent or Flame
<input type="checkbox"/> Change Drilling Plans	<input type="checkbox"/> Repair Well
<input type="checkbox"/> Gross Interval Changed?	<input type="checkbox"/> Rule 502 variance requested
<input type="checkbox"/> Casing/Cementing Program Change	<input type="checkbox"/> Other:
<input type="checkbox"/> E&P Waste Disposal	<input type="checkbox"/> Beneficial Reuse of E&P Waste
<input checked="" type="checkbox"/> Status Update/Change of Remediation Plans for Spills and Releases	

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

Signed: Cole Kilstrom Date: 11/21/12 Email: ckilstrom@anteroresources.com
 Print Name: Cole Kilstrom Title: ENV Specialist

COGCC Approved: [Signature] Title: Env. Sup Date: 12/18/12

CONDITIONS OF APPROVAL IF ANY:

See Attached Condition of Approval

- Provide number and locations of pot holes, depth of pot holes, etc and quantities of confirmation samples.
- Provide volume impacted material and haul tickets for the material being disposed of at the South Arizona land fill.

• Provide information on how the 4000 +/- ft² aerial extent and vertical extent of impacted area was characterized.

• Provide location of background samples collected.

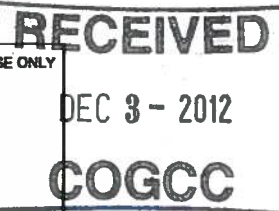


Page 2

TECHNICAL INFORMATION PAGE



FOR OGCC USE ONLY



1. OGCC Operator Number: 10079 API Number: 05-045-13935
2. Name of Operator: Antero Resources Piceance Corp. OGCC Facility ID # 289983
3. Well/Facility Name: Robinson A Pad Well/Facility Number: A3
4. Location (QtrQtr, Sec, Twp, Rng, Meridian): SWSW 8 6S 92W 6

This form is to be completed whenever a Sundry Notice is submitted requiring detailed report of work to be performed or completed. This form shall be transmitted within 30 days of work completed as a "subsequent" report and must accompany Form 4, page 1.

5. DESCRIBE PROPOSED OR COMPLETED OPERATIONSSummary of Corrective Action and Request for Spill Report Closure:

On May 26, 2012 approximately 87 bbls of water overflowed from temporary water tanks at Antero's Robinson A3 well in Garfield County. In the hours following the incident, Antero contained all spilled water on the site and dispatched a vacuum truck to remove the 87 bbls of water and the saturated soil. Antero added additional tanks to the site to prevent a similar occurrence in the future.

COGCC Form 19 Spill Report # 2224964 stated that Antero would apply microblaze to any excavated soil, to be followed by confirmation sampling prior to replacement of the soil.

Following initial fluid recovery, Antero dug potholes to collect additional fluid that had seeped into the soil. On June 19, 2012 Antero submitted a Waste Management Plan for the site at the request of the COGCC, explaining that the contaminated soils would be sent to South Canyon Landfill in Glenwood Springs. The disposal of the contaminated soils occurred in July, 2012.

Confirmation sampling results analyzed by ALS Group USA, Corp. demonstrated that the soil from the site was in compliance with COGCC Table 910-1 standards for organic compounds.

Because Antero has remediated the site and demonstrated site compliance with COGCC standards, Antero respectfully requests final COGCC closure of Spill Report # 2224964 in accordance with COGCC Rule 909(e).

See Attached cancellation of approval.

This Spill has not been closed.

DOF 12/18/12

CONDITIONS OF APPROVAL

Antero Resources Piceance Corporation

Facility ID 336015; Spill Tracking No. 2224964

Robinson A Pad; API 05-045-13935

SWSW SEC ^{8 6}~~8~~, T¹~~5~~, R92W

Garfield County, Colorado

port 12/15/12

Provide the number and locations of pot holes, depth of potholes, depth(s) and quantity of confirmation samples.

Provide information on how the 4000 +/- square foot aerial extent and vertical extent of impacted area was characterized and delineated.

Provide location of background samples that were collected.

Provide volume of impacted material and haul tickets for the material being disposed of at the South Canyon Landfill.

THIS SPILL HAS NOT BEEN CLOSED

State of Colorado
Oil and Gas Conservation Commission

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



SUNDRY NOTICE

Submit original plus one copy. This form is to be used for general, technical and environmental sundry information. For proposed or completed operations, describe in full on Technical Information Page (Page 2 of this form.) Identify well or other facility by API Number or by OGCC Facility ID. Operator shall send an informational copy of all sundry notices for wells located in High Density Areas to the Local Government Designee (Rule 603b.)

1. OGCC Operator Number: 10079	4. Contact Name: Gerard G. Alberts	Complete the Attachment Checklist OP OGCC
2. Name of Operator: Antero Resources Piceance Corporation	Gerard G. Alberts	
3. Address: 1625 17th Street City: Denver State: CO Zip: 80202	Phone: 303-357-7341 Fax: 303-357-7315	
5. API Number: 05-045-13935	OGCC Facility ID Number: 336015	Survey Plat
6. Well/Facility Name: Robinson A Pad	7. Well/Facility Number: Robinson #A3	Directional Survey
8. Location (Qtr/Sec, Twp, Rng, Meridian): SWSW 8 6S 92W 6th		Surface Eqpm't Diagram
9. County: Garfield	10. Field Name:	Technical Info Page <input checked="" type="checkbox"/>
11. Federal, Indian or State Lease Number:		Other

General Notice

<input type="checkbox"/> CHANGE OF LOCATION: Attach New Survey Plat (a change of surface qtr/qtr is substantive and requires a new permit)	
Change of Surface Footage from Exterior Section Lines:	<input type="checkbox"/> FNL/FSL <input type="checkbox"/> FEL/FWL
Change of Surface Footage to Exterior Section Lines:	<input type="checkbox"/>
Change of Bottomhole Footage from Exterior Section Lines:	<input type="checkbox"/>
Change of Bottomhole Footage to Exterior Section Lines:	<input type="checkbox"/> attach directional survey
Bottomhole location Qtr/Sec, Twp, Rng, Mer	
Latitude	Distance to nearest property line
Longitude	Distance to nearest bldg, public rd, utility or RR
Ground Elevation	Distance to nearest lease line
	Is location in a High Density Area (rule 603b)? Yes/No <input type="checkbox"/>
	Distance to nearest well same formation
	Surface owner consultation date:
GPS DATA:	
Date of Measurement	PDOP Reading
	Instrument Operator's Name
<input type="checkbox"/> CHANGE SPACING UNIT	
Formation	Formation Code
Spacing order number	Unit Acreage
Unit configuration	
<input type="checkbox"/> Remove from surface bond	
Signed surface use agreement attached	
<input type="checkbox"/> CHANGE OF OPERATOR (prior to drilling):	
Effective Date:	
Plugging Bond: <input type="checkbox"/> Blanket <input type="checkbox"/> Individual	
<input type="checkbox"/> CHANGE WELL NAME	
From:	NUMBER
To:	
Effective Date:	
<input type="checkbox"/> ABANDONED LOCATION:	
Was location ever built? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Is site ready for inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Date Ready for inspection:	
<input type="checkbox"/> NOTICE OF CONTINUED SHUT IN STATUS	
Date well shut in or temporarily abandoned:	
Has Production Equipment been removed from site? <input type="checkbox"/> Yes <input type="checkbox"/> No	
MIT required if shut in longer than two years. Date of last MIT	
<input type="checkbox"/> SPUD DATE:	
<input type="checkbox"/> REQUEST FOR CONFIDENTIAL STATUS (6 mos from date casing set)	
<input type="checkbox"/> SUBSEQUENT REPORT OF STAGE, SQUEEZE OR REMEDIAL CEMENT WORK	
*submit cbl and cement job summaries	
Method used	Cementing tool setting/perf depth
Cement volume	Cement top
Cement bottom	Date
<input type="checkbox"/> RECLAMATION: Attach technical page describing final reclamation procedures per Rule 1004.	
Final reclamation will commence on approximately	
<input type="checkbox"/> Final reclamation is completed and site is ready for inspection.	

Technical Engineering/Environmental Notice

<input type="checkbox"/> Notice of Intent		<input type="checkbox"/> Report of Work Done
Approximate Start Date:		Date Work Completed:
Details of work must be described in full on Technical Information Page (Page 2 must be submitted.)		
<input type="checkbox"/> Intent to Recomplete (submit form 2)	<input type="checkbox"/> Request to Vent or Flare	<input type="checkbox"/> E&P Waste Disposal
<input type="checkbox"/> Change Drilling Plans	<input type="checkbox"/> Repair Well	<input type="checkbox"/> Beneficial Reuse of E&P Waste
<input type="checkbox"/> Gross Interval Changed?	<input type="checkbox"/> Rule 502 variance requested	<input checked="" type="checkbox"/> Status Update/Change of Remediation Plans
<input type="checkbox"/> Casing/Cementing Program Change	<input type="checkbox"/> Other	for Spills and Releases

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

Signed: G. Alberts Date: 6-19-2017 Email: jalberts@anteroresources.com
Print Name: Gerald G. Alberts Title: Manager, Environmental and Regulatory

COGCC Approved: _____ Title: _____ Date: _____

CONDITIONS OF APPROVAL, IF ANY:

TECHNICAL INFORMATION PAGE



FOR OGCC USE ONLY

1. OGCC Operator Number: 10079 API Number: 05-045-13935
2. Name of Operator: Antero Resources Piceance Corpora OGCC Facility ID # 336015
3. Well/Facility Name: Robinson A Pad Well/Facility Number: #A3
4. Location (QtrQtr, Sec, Twp, Rng, Meridian): SWSW 8 6S 92W 6th

This form is to be completed whenever a Sundry Notice is submitted requiring detailed report of work to be performed or completed. This form shall be transmitted within 30 days of work completed as a "subsequent" report and must accompany Form 4, page 1.

5. **DESCRIBE PROPOSED OR COMPLETED OPERATIONS**

Please see attached Waste Management Plan with regards to Spill # 2224964.

**Antero Resources Piceance Corporation
Waste Management Plan
Robinson A Pad Spill # 2224964**

As requested by Linda Spry O'Rourke with the Colorado Oil and Gas Conservation Commission (COGCC) on June 6, 2012, Antero Resources Piceance Corporation (Antero) is submitting the below waste management plan for the contaminated soils at the Robinson A Pad.

On May 26, 2012, approximately 87 barrels of produced and fresh water overflowed onto the pad. The water was approximately 80% freshwater and 20% produced water. All water was contained on site and immediately removed by vacuum truck. Approximately 40 cubic yards of saturated soil was removed and placed on lined containment with berms on site.

The disposal of contaminated soil will be conducted in accordance with Antero's field wide Waste Management Plan for Spills—Contaminated Soils & Media. See attached Waste Management Plan for further details. A waste profile will be completed on a composite sample of the impacted soils. The contaminated soils will be sent to South Canyon Landfill—Glenwood Springs. Antero will keep a record of the following information:

- Facility location/pad name;
- Type of waste (notes if combined with other waste);
- Quantity of waste;
- Date of transport;
- Identify of transporter;
- Location of waste pickup;
- Name and location of treatment or disposal site;
- Obtain transporter signatures for records.

This information will be recorded on a Non-Hazardous Waste Manifest (See Attachment B of Waste Management Plan) and returned to Antero's EHS Department.

Antero Resources Piceance Corporation

Waste Management Plan Colorado Oil & Natural Gas Production Facilities

January 2011



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ATTACHMENTS

Attachment A – COGCC Table 910-1

Attachment B – Non-Hazardous Waste Manifest

Attachment C – List of Antero Approved Laboratories

Attachment D – List of Antero Approved Disposal Facilities

1.0 WASTE MANAGEMENT PLAN OVERVIEW

The information presented in Waste Management Plan is intended to provide procedures and information to facilitate Antero Resources Piceance Corporation's (Antero) ongoing management of Exploration and Production (E&P) and other solid wastes generated from its Colorado operations.

The information presented in this Plan will provide an overview of the wastes generated and managed at Antero facilities and will describe how each of the waste streams will be handled, transported, treated, recycled and/or disposed. The Waste Management Plan has been developed to provide Antero personnel with instructions on how specific waste streams should be managed from characterization through final treatment or disposal. The plan has been implemented to ensure that wastes are being properly managed and regulatory requirements are satisfied. Overall, the objectives of this Waste Management Plan are to:

- Ensure proper management of E&P and other solid wastes generated at Antero's Colorado locations;
- Provide procedures that facilitate proper waste storage, handling, transportation, recycling and disposal;
- Comply with applicable Colorado Oil and Gas Conservation Commission (COGCC) requirements;
- Comply with applicable Colorado Department of Public Health and Environment solid waste, air, and water requirements.
- Comply with the general intent of the Resource Conservation and Recovery Act (RCRA) "Cradle to Grave" program as applicable to E & P and other solid wastes generated in Colorado;
- Provide information and guidance to Antero personnel to facilitate proper waste management;
- Identify Antero approved disposal facilities;

The following sections provide a description of Antero's wastes, recommended disposal options, waste characterization requirements, waste management procedures, and required documentation.

2.0 WASTE STREAM DESCRIPTIONS AND MANAGEMENT PROCEDURES

Each of Antero's wastes streams has been identified in the following sections. These sections include a description of the waste, waste characterization procedures (if necessary), waste management procedures, and recommended disposal/treatment options. Applicable regulatory citations have been included after each waste description in the event that the requirements need to be further evaluated. Each of the waste stream sections also identifies record keeping requirements where applicable.

2.1 Drill Cuttings

Description

The drill cuttings generated during drilling activities to construct wells are considered an E&P exempt waste. Cuttings usually include subsurface soils and the material is dependent on area geological conditions and the depth of the well. Usually drill cuttings include soils, sands, and rock. Drill cuttings may be used to improve material handling characteristics of sludges and spent drilling muds generated during drilling activities and as materials for well pad perimeter berms. Approximately 300-500 cubic yards of material are generated per well. (COGCC Series 907a, b, f, Table 910-1, Sundry Form 4).

Waste Management Procedures

The waste management procedures for drill cuttings are as follows:

- Store on site within pad perimeter berms minimizing storm water contact;
- Characterize for landfill acceptance as determined by the landfill waste acceptance criteria. Dispose of waste at an "appropriate" facility or apply as beneficial use such as to build pad perimeter berms.
- Document the quantity of waste hauled by the transporter and quantity of waste received for final disposition.

Waste Characterization

To characterize the drill cuttings, a representative sample(s) of the drill cuttings should be collected and sent to an Antero approved laboratory for analyses. Drill cuttings should be analyzed for the following parameters. Additional parameters may be necessary depending on the disposal facility's waste acceptance criteria and the final disposition of the waste.

Table 2-1 – Drill Cuttings Waste Management Analyses

Parameters	Method
Volatile TPH (GRO)	SW846 8015B
Semi-Volatile TPH (DRO)	SW846 8015
Benzene (Volatile Organics)	SW846 8260B
Paint Filter Test	SW9095A
Ignitability	SW1030

If cuttings are to be used beneficially or spread on site they should be analyzed for ALL of the analytes listed in COGCC Table 910-1 (Attachment A) to ensure that the soils meet the requirements. If background inorganic compounds including metals are anticipated to be of concern, a background soil sample(s) should also be collected for comparison to the drill cuttings. Background samples should be analyzed consistent with the Table 910-1 requirements for the applicable parameters. Specifically:

- If metals are anticipated to be of concern, an adequate number of samples should be collected to demonstrate to the COGCC's satisfaction that the Table 910-1 level is exceeded by the background level in the native soils. Upon demonstration the background level that was present in the native soils will become the required standard.
- If barium is of concern, analyses for barium will be evaluated using standard EPA SW846 methods (i.e., 3050/6010) rather than the Louisiana Department of Natural Resources (LDNR) "True total Barium" method referenced in Table 910-1.
- If boron is of concern, the analysis will include the Hot Water Soluble Boron only where a crop or plant receptor sensitive to boron is known to be present at the site.

Recommended Disposal/Treatment

The drill cuttings should be disposed in the following manner based on analytical results:

- Beneficially use/spread onsite if the drill cuttings meet ALL applicable Table 910-1 requirements as verified by the above Waste Characterization procedures and approved by the COGCC in advance via Sundry Form 4. If the drill cuttings are to be used beneficially or spread on site, the following requirements should be satisfied:
 1. The soils must meet the concentration levels of COGCC's Table 910-1.
 2. Beneficial use or spreading of drill cuttings shall be performed in a manner so as not to result in the formation of an impermeable barrier.
 3. Only *de minimis* amounts of drill cuttings may be incorporated into the surface materials.
- Dispose in approved County landfill as long as contaminant concentrations are acceptable.
- Dispose at ECDC Landfill if contaminant concentrations exceed acceptable County landfill requirements.

Recordkeeping and Other Requirements

Antero maintains a data base of all waste generated at their facilities. To ensure the appropriate information is tracked, the following information will be documented by the appropriate Antero representative or contractor for each volume of drill cuttings generated.

- Facility location/pad name;
- Type of waste (note if it was combined with other waste);
- Quantity of waste;
- Date of transport;
- Identify of transporter;
- Location of waste pickup;
- Name and location of treatment or disposal site;
- If being used beneficially document use and location; and
- Obtain transporter signatures for records.

This information is recorded on the Non-Hazardous Waste Manifest (Attachment B) or approved Sundry Notice Form 4 and returned to Antero's EHS Department.

2.2 Drilling Rubble

Description

Drilling rubble is generated during well construction activities and in most cases is not an E&P exempt waste. Rubble usually includes rocky material and soil spoils generated during pad construction for drilling activities. Drilling rubble can usually be re-incorporated during site reclamation or for onsite landscaping or similar purposes. Approximately 20-100 cubic yards of material are generated per well pad. (COGCC Series 907a, b, f, Table 910-1, Sundry Form 4).

Waste Management Procedures

The waste management procedures for drilling rubble are as follows:

- Store on site within pad perimeter berms minimizing storm water contact and erosion.
- Characterize for final disposition (as necessary and depending on whether off-site disposal is anticipated).
- Dispose of rubble at an appropriate facility or incorporated/re-use material under the conditions described below.
- Document the quantity of waste and final disposition.

Waste Characterization

To characterize the rubble, a representative sample(s) of the material may be collected and sent to an Antero approved laboratory for analyses. If the rubble did not contact any material containing contaminants such as hydraulic oil, condensate, oil, or produced water, sample collection and analysis may not be necessary. If the rubble did not contact any contaminants the waste characterization should document this information. If the rubble did contact E&P wastes, fuel, hydraulic fluids, or other chemicals a representative sample should be collected and analyzed for the following parameters. Additional parameters may be necessary depending on the disposal facility's waste acceptance criteria and the final disposition of the waste.

Table 2-2 - Drilling Rubble Waste Management Analyses

Parameters	Method
Volatile TPH (GRO)	SW846 8015B
Semi-Volatile TPH (DRO)	SW846 8015
Benzene (Volatile Organics)	SW846 8260B

If rubble contacted E&P wastes and are to be incorporated on site they should be analyzed for ALL of the analytes listed in COGCC Table 910-1 (Attachment A) to ensure that the soils meet the requirements. If background inorganic compounds including metals are anticipated to be of concern, a background soil sample(s) should also be collected for comparison to the rubble. Background samples should be analyzed consistent with the Table 910-1 requirements for the applicable parameters. Specifically:

- If metals are anticipated to be of concern, an adequate number of samples should be collected to demonstrate to the COGCC's satisfaction that the Table 910-1 level is exceeded by the background level in the native soils. Upon demonstration the background level that was present in the native soils will become the required standard.
- If barium is of concern, analyses for barium will be evaluated using standard EPA SW846 methods (i.e., 3050/6010) rather than the Louisiana Department of Natural Resources (LDNR) "True total Barium" method referenced in Table 910-1.
- If boron is of concern, the analysis will include the Hot Water Soluble Boron only where a crop or plant receptor sensitive to boron is known to be present at the site.

Recommended Disposal/Treatment

The drilling rubble should be disposed in the following manner based on analytical results:

- Incorporate onsite if the rubble did not contact E&P wastes or any other chemical or if the rubble meets ALL applicable Table 910-1 requirements and approved by COGCC via Sundry Form 4.
- Dispose in approved County landfill as long as contaminant concentrations are acceptable.
- Dispose at ECDC Landfill if contaminant concentrations exceed acceptable County landfill requirements.

Recordkeeping and Other Requirements (If Applicable)

Antero maintains a data base of all waste generated at their facilities. To ensure the appropriate information is tracked, the following information will be documented by the appropriate Antero representative or contractor for drilling rubble generated at each pad.

- Facility location/pad name;
- Type of waste (note if it was combined with other waste);
- Quantity of waste;
- Date of transport;
- Identify of transporter;
- Location of waste pickup;
- Name and location of treatment or disposal site;
- If being used beneficially document use and location; and
- Obtain transporter signatures for records.

This information is recorded on the Non-Hazardous Waste Manifest (Attachment B) or approved Sundry Notice Form 4 and returned to Antero's EHS Department.

2.3 Drilling Waste Concrete

Description

Drilling waste concrete is generated when concrete is pumped down hole and excess concrete returns to the surface during well construction activities. Drilling waste concrete that was used down hole is an E&P exempt waste. Waste concrete is typically placed in specially dug pits to contain excess concrete and other wastes generated from concrete pouring activities associated with well construction. Waste concrete can be buried on site with landowner and COGCC

approval as long as the material has not been contaminated. Approximately 5-20 cubic yards of material are generated per well pad. (COGCC Series 907a, b, d, f, Table 910-1, Sundry Form 4).

Waste Management Procedures

The waste management procedures for waste concrete are as follows:

- Store on site minimizing storm water contact.
- Characterize for final disposition (as necessary and depending on whether off-site disposal is anticipated).
- Dispose of waste on site (with landowner and COGCC approval) or at an appropriate facility based on the waste characterization.
- Document the quantity of waste and final disposition.

Waste Characterization

To characterize the concrete waste, a representative sample(s) of the material maybe collected and sent to an Antero approved laboratory for analyses. If the concrete waste did not contact any material containing contaminants such as hydraulic oil, condensate, oil, or produced water, sample collection and analysis may not be necessary. If the waste did not contact any contaminants the waste characterization should document this information. If the concrete waste did contact E&P wastes a representative sample should be collected and analyzed for the following parameters. Additional parameters may be necessary depending on the disposal facility's waste acceptance criteria and the final disposition of the waste.

Table 2-3 – Drilling Concrete Waste Management Analyses

Parameters	Method
Volatile TPH (GRO)	SW846 8015B
Semi-Volatile TPH (DRO)	SW846 8015
Benzene (Volatile Organics)	SW846 8260B

If concrete waste contacted contaminants and are to be incorporated on site they should be analyzed for ALL of the analytes listed in COGCC Table 910-1 (Attachment A) including metals, sodium adsorption ratio, pH, and electrical conductivity to ensure that the concrete waste meets the requirements.

Recommended Disposal/Treatment

The concrete waste should be disposed in the following manner based on analytical results:

- Bury onsite if the concrete waste did not contact contaminants or if the waste meets ALL applicable Table 910-1 requirements. If the drilling waste concrete is to be used or buried on site, the following requirements should be satisfied:
 1. The concrete must meet the concentration levels of COGCC's Table 910-1.
 2. Beneficial use or burial of the drilling waste concrete shall be performed in a manner so as not to result in the formation of an impermeable barrier.
- Dispose in approved County landfill as long as contaminant concentrations are acceptable.

- Dispose at ECDC Landfill if contaminant concentrations exceed acceptable County landfill requirements.

Recordkeeping and Other Requirements

Antero maintains a data base of all waste generated at their facilities. To ensure the appropriate information is tracked, the following information will be documented by the appropriate Antero representative or contractor for concrete waste generated at each pad.

- Facility location/pad name;
- Type of waste (note if it was combined with other waste);
- Quantity of waste;
- Date of transport;
- Identify of transporter;
- Location of waste pickup;
- Name and location of treatment or disposal site;
- If being used beneficially document use and location; and
- Obtain transporter signatures for records.

This information is recorded on the Non-Hazardous Waste Manifest (Attachment B) or approved Sundry Notice Form 4 and returned to Antero's EHS Department.

2.4 Cement Wash and Other Non-Exempt Concrete Wastes

Description

Cement wash and other concrete wastes are generated during construction activities and, unless the concrete was used down hole, is not an E&P exempt waste. Cement wash and other concrete wastes are typically temporarily stored on site pending completion of the construction activities and then managed as solid waste. (COGCC Series 907A.a, b, c).

Waste Management Procedures

The waste management procedures for cement wash and other concrete wastes are as follows:

- Temporarily store on site minimizing storm water contact.
- Characterize for final disposition as a solid waste (as necessary).
- Dispose of waste at an appropriate facility based on the waste characterization.
- Document the quantity of waste and final disposition.

Waste Characterization

To characterize the cement wash and other concrete, a representative sample(s) of the material maybe collected and sent to an Antero approved laboratory for analyses. If the concrete waste did not contact any material containing contaminants such as hydraulic oil, condensate, oil, or produced water, sample collection and analysis may not be necessary. If the waste did not contact any contaminants the waste characterization should document this information. If the concrete waste did contact E&P wastes a representative sample should be collected and analyzed for the following parameters. Additional parameters may be necessary depending on the disposal facility's waste acceptance criteria and the final disposition of the waste.

Table 2-4 – Cement Wash and Other Concrete Waste Management Analyses

Parameters	Method
Volatile TPH (GRO)	SW846 8015B
Semi-Volatile TPH (DRO)	SW846 8015
Benzene (Volatile Organics)	SW846 8260B

Recommended Disposal/Treatment

The cement wash and other concrete wastes should be disposed in the following manner based on analytical results:

- Dispose in an approved County landfill as long as contaminant concentrations are acceptable.
- Dispose in an approved industrial waste landfill as long as contaminant concentrations are acceptable.
- Dispose in an approved hazardous waste landfill.

Recordkeeping and Other Requirements

Antero maintains a data base of all waste generated at their facilities. To ensure the appropriate information is tracked, the following information will be documented by the appropriate Antero representative or contractor for cement wash and other concrete waste generated at each pad.

- Facility location/pad name;
- Type of waste (note if it was combined with other waste);
- Quantity of waste;
- Date of transport;
- Identify of transporter;
- Location of waste pickup;
- Name and location of treatment or disposal site;
- If being used beneficially document use and location; and
- Obtain transporter signatures for records.

This information is recorded on the Non-Hazardous or Hazardous Waste Manifest (Attachment B) and returned to Antero's EHS Department.

2.5 Drill Site Rubbish & Trash

Description

Drill site rubbish and trash is generated during well construction activities and includes the waste materials generated and placed in the trash bins and steel bins located on the site. These wastes are non E&P wastes and may include trash, garbage, broken equipment, paper, used empty containers, and other discarded solid waste. The waste collected in trash bins and steel bins should not include used or discarded chemicals, hazardous waste, or universal wastes such as batteries. Drill site rubbish and trash are managed and regulated as solid waste. (COGCC Series 907A, 1203A).

Waste Management Procedures

The waste management procedures for drill site rubbish and trash are as follows:

- Collect in bear-proof dumpsters as required by COGCC in black bear habitat.

- Dispose of by waste contractor.

Waste Characterization

Not applicable.

Recommended Disposal/Treatment

Non-E&P solid waste should be disposed in the following manner:

- Dispose in approved County landfill.

Recordkeeping and Other Requirements

Not applicable.

2.6 Drilling Mud

Description

Drilling muds are used during drilling activities and are reused to the maximum extent possible until the material no longer exhibits the required performance characteristics. Muds are stored in tanks and are pumped down well holes to facilitate maintaining well structure during drilling activities. Drilling muds that cannot be reused for other drill activities are E&P exempt wastes. Drilling mud wastes usually include mud matrix with a number of additives that can include proprietary additives, oils, diesel, and other chemicals. Occasionally drilling muds are mixed with drill cuttings to improve material handling characteristics. Approximately 600 bbls of drilling mud is used per well and re-used on other wells pending the required characteristics. Mud that cannot be re-used is disposed. (COGCC Series 907a, b, e, Table 910-1, Sundry Form 4).

Waste Management Procedures

The waste management procedures for drilling muds are as follows:

- Store on site in tanks minimizing storm water contact.
- Characterize for landfill acceptance (as necessary). If applicable muds have already been characterized this step may not be necessary.
- Dispose of waste at an "appropriate" facility based on the analytical results.
- Document the quantity of waste hauled by the transporter and quantity of waste received for final disposition.

Waste Characterization

To characterize the drilling muds, a representative sample(s) of the mud should be collected and sent to an Antero approved laboratory for analyses. Drilling muds should be analyzed for the following parameters. Additional parameters may be necessary depending on the disposal facility's waste acceptance criteria and the final disposition of the waste.

Table 2-6 – Drilling Mud Waste Management Analyses

Parameters	Method
Volatile TPH (GRO)	SW846 8015B
Semi-Volatile TPH (DRO)	SW846 8015
Benzene (Volatile Organics)	SW846 8260B
Metals (TCLP)	SW846 1311
Ignitability	SW1030
Paint Filter Test	SW90935A

If drilling muds are to be used beneficially or spread on site they should be analyzed for ALL of the analytes listed in COGCC Table 910-1 (Attachment A) to ensure that the soils meet the requirements. If background inorganic compounds including metals are anticipated to be of concern, a background soil sample(s) should also be collected for comparison to the drilling mud. Background samples should be analyzed consistent with the Table 910-1 requirements for the applicable parameters. Specifically:

- If metals are anticipated to be of concern, an adequate number of samples should be collected to demonstrate to the COGCC's satisfaction that the Table 910-1 level is exceeded by the background level in the native soils. Upon demonstration the background level that was present in the native soils will become the required standard.
- If barium is of concern, analyses for barium will be evaluated using standard EPA SW846 methods (i.e., 3050/6010) rather than the Louisiana Department of Natural Resources (LDNR) "True total Barium" method referenced in Table 910-1.
- If boron is of concern, the analysis will include the Hot Water Soluble Boron only where a crop or plant receptor sensitive to boron is known to be present at the site.

Recommended Disposal/Treatment

The drill cuttings should be disposed in the following manner based on analytical results:

- Beneficially use/spread onsite if the drilling muds meet ALL applicable Table 910-1 requirements. If the drill cuttings are to be used beneficially or spread on site, the following requirements should be satisfied:
 1. The soils must meet the concentration levels of COGCC's Table 910-1.
 2. Beneficial use or spreading of drill cuttings shall be performed in a manner so as not to result in the formation of an impermeable barrier.
 3. Only *de minimis* amounts of drill cuttings may be incorporated into the surface materials.
- Dispose in approved County landfill as long as contaminant concentrations are acceptable.
- Dispose at ECDC Landfill if contaminant concentrations exceed acceptable County landfill requirements.

Recordkeeping and Other Requirements

Antero maintains a data base of all waste generated at their facilities. To ensure the appropriate information is tracked, the following information should be documented by the contractor for drilling muds that can no longer be recycled.

- Facility location/pad name;
- Type of waste (note if it was combined with other waste);
- Quantity of waste;
- Date of transport;
- Identify of transporter;
- Location of waste pickup;
- Name and location of treatment or disposal site;
- If being used beneficially document use and location; and
- Obtain transporter signatures for records.

This information is recorded on the Non-Hazardous Waste Manifest (Attachment B) or approved Sundry Notice Form 4 and returned to the Antero's EHS Department.

2.7 Bentonitic Drilling Fluids

Description

Water based bentonitic drilling fluids are used during drilling activities and are reused to the maximum extent possible until the material no longer has the required characteristics. Bentonitic drilling fluids are stored in tanks and are pumped down well holes to facilitate maintaining well structure during drilling activities. Drilling fluids that cannot be reused for other drill activities are E&P exempt wastes. (COGCC Series 907d, Table 910-1).

Waste Management Procedures

The waste management procedures for bentonitic drilling fluids are as follows:

- Store in frac tanks on site within pad perimeter berms minimizing spills and storm water contact;
- Drying and burial in pits on non-crop land (COGCC Series 907d(3)a);
- Characterize for landfill acceptance (as necessary). If a well at the same pad has already been characterized this step may not be necessary.
- Dispose of waste at an "appropriate" facility based on the analytical results.
- Document the quantity of waste and final disposition.

If the bentonitic drilling fluids are to be applied/spread on site for land application, the following requirements should be satisfied:

1. The average thickness of water-based bentonitic drilling fluid waste applied must not be more than three (3) inches prior to incorporation.
2. Application of the waste shall be done in a manner to prevent ponding or erosion.
1. The waste must be incorporated as a beneficial amendment into the native soils within ten (10) days of application.
2. The resulting soil concentrations must not exceed the COGCC's Table 910-1 levels.
3. Written authorization must be obtained from the surface owner prior to land application.
4. A record of waste generator information should be maintained that includes source, volume, location where land application occurred.
5. Antero will retain responsibility for the land application.
6. Prior approval from COGCC Director is not required for reuse of water-based bentonitic drilling fluids for land application as a soil amendment.

Waste Characterization

To characterize the bentonitic drilling fluids, a representative sample(s) of the material should be collected and sent to an Antero approved laboratory for analyses. Bentonitic drilling fluids should be analyzed for the following parameters. Additional parameters may be necessary depending on the disposal facility's waste acceptance criteria and the final disposition of the waste.

Table 2-7 – Bentonitic Drilling Fluid Waste Management Analyses

Parameters	Method
Volatile TPH (GRO)	SW846 8015B
Semi-Volatile TPH (DRO)	SW846 8015
Benzene (Volatile Organics)	SW846 8260B
Paint Filter Test	SW9095A
Ignitability	SW1030

If bentonitic drilling fluids are to be used beneficially or spread on site as a soil amendment they should be analyzed for ALL of the analytes listed in COGCC Table 910-1 (Attachment A) to ensure that the soils meet the requirements. If background inorganic compounds including metals are anticipated to be of concern, a background soil sample(s) should also be collected for comparison to the amended soil. Background samples should be analyzed consistent with the Table 910-1 requirements for the applicable parameters. Specifically:

- If metals are anticipated to be of concern, an adequate number of samples should be collected to demonstrate to the COGCC's satisfaction that the Table 910-1 level is exceeded by the background level in the native soils. Upon demonstration the background level that was present in the native soils will become the required standard.
- If barium is of concern, analyses for barium will be evaluated using standard EPA SW846 methods (i.e., 3050/6010) rather than the Louisiana Department of Natural Resources (LDNR) "True total Barium" method referenced in Table 910-1.
- If boron is of concern, the analysis will include the Hot Water Soluble Boron only where a crop or plant receptor sensitive to boron is known to be present at the site.

Recommended Disposal/Treatment

The water-based bentonitic drilling fluids should be disposed in the following manner based on analytical results:

- Beneficially use/spread onsite if the application of the bentonitic drilling fluids/soil mixture meets ALL applicable Table 910-1 requirements.
- Dispose in an approved County landfill as long as contaminant concentrations are acceptable and the waste type is not prohibited.
- Dispose at ECDC Landfill if contaminant concentrations exceed acceptable County landfill requirements.

Recordkeeping and Other Requirements

Antero maintains a data base of all waste generated at their facilities. To ensure the appropriate information is tracked, the following information will be documented by the contractor for each volume of bentonitic drilling fluids generated.

- Facility location/pad name;
- Type of waste (note if it was combined with other waste);
- Quantity of waste;
- Date of transport;
- Identify of transporter;
- Location of waste pickup;
- Name and location of treatment or disposal site;
- If being used beneficially document use and location; and
- Obtain transporter signatures for records.

This information is recorded on the Non-Hazardous Waste Manifest (Attachment B) and returned to Antero's EHS Department.

2.8 Flowback Water

Description

Flowback water is generated from well fracing and testing activities and is an E&P exempt waste. Flowback fluids include a mixture of sands, solids, water and condensate and are separated upon exiting the subject well. Flowback water is directed to large tanks for storage. Well site frac and flowback tanks are provided with secondary containment structures to prevent spills from leaving the well pads. Flowback waters are then directed to the water management system where the water is treated and then stored or disposed via injection wells. Contaminants are removed from the flowback water so the water may be reused as frac water. Useable water is stored for future frac operations in well site frac tanks and at the Wasatch Bench Water Management Pond. Flowback water that is not needed or not useable is disposed into Antero's injection wells. Approximately 10,000 to 60,000 bbl per well of flowback water are generated per fracing activity. (COGCC Series 325Series 907a, b, c, d, e).

Waste Management Procedures

The waste management procedures for flowback water are as follows:

- Store on site in frac tanks provided with secondary containment.
- Direct flowback water into the Water Management System for treatment, storage and reuse or disposal.
- Records are kept for flowback water sent to Antero's injection wells in accordance to the company's COGCC injection well permits.
- Document the quantity of flowback water generated for final offsite disposition (flowback water not reused or injected).

Waste Characterization

Not applicable although water characterization is routinely conducted to support operations.

Recommended Disposal/Treatment

The flowback water should be disposed in the following manner:

- Place into the Water Management System.
- Treat and store for reuse as frac water.
- Treat and/or direct to injection wells for disposal.

Recordkeeping for Offsite Disposal

Antero maintains a database for the flowback water sent offsite for final disposal at a licensed third party disposal facility. To ensure the appropriate information is tracked, the following information will be documented by the contractor for flowback wastewater generated from each fracing activity.

- Quantity of wastewater;
- Date of transport;
- Name of transporter;
- Location of wastewater pickup;
- Name and location of treatment or disposal site;
- Obtain transporter signatures for records.

This information is recorded on the Non-Hazardous Waste Manifest (Attachment B) and returned to the Antero's EHS Department.

2.9 Fracing and Flowback Sands & Solids

Description

Fracing and flowback sands and solids are generated from fracing activities and are E&P exempt waste except for those that contain radioactive tracer wastes. Flowback fluids include a mixture of sands, solids, water and condensate that are separated upon exiting the subject well. Fracing and flowback sands and solids are directed to large tanks for temporary storage. These tanks are provided with secondary containment structures to prevent spills from leaving the well pads. Fracing and flowback sands and solids include sands, recovered solids, and oil/condensate. (COGCC Series 907a, b, d, e, f).

Fracing and flowback sands and solids that contain radioactive tracer materials are not E&P exempt wastes. These wastes must be managed through the Colorado Department of Public Health and Environment (CDPHE) Hazardous Materials and Waste Management Division Radiation Program. Antero's EHS Department should be contacted prior to use of these materials and the generation of these types of wastes to ensure proper management and disposal.

Waste Management Procedures

The waste management procedures for frac sands and solids are as follows:

- Contact Antero's EHS Department prior to using radioactive tracer materials. Antero EHS Department will identify specific waste management and record keeping procedures based on the material used, manufacturer certifications, CDPHE recommendations.
- Store on site in tanks minimizing storm water contact and potential releases.
- Characterize for landfill acceptance (as necessary). If a well at the same pad has already been characterized this step may not be necessary.

- Dispose of waste at a licensed disposal facility based on the waste profile analytical results.
- Document the quantity of waste hauled by the transporter and quantity of waste received for final disposition.

Waste Characterization

To characterize the frac sands and solids, a representative sample(s) of waste should be collected and sent to an Antero approved laboratory for analyses. Frac sands and solids should be analyzed for the following parameters. Additional parameters may be necessary depending on the disposal facility's waste acceptance criteria and the final disposition of the waste.

Table 2-9 – Fracing and Flowback Sands and Solids Waste Management Analyses

Parameters	Method
Volatile TPH (GRO)	SW846 8015B
Semi-Volatile TPH (DRO)	SW846 8015
Volatile Organics	SW846 8260B
TCLP Metals	SW846 1311
Paint Filter Test	SW90956A
Ignitability	SW1030

Recommended Disposal/Treatment

The fracing and flowback sands and solids should be disposed in the following manner based on analytical results:

- Dispose at ECDC Landfill. Contaminant concentrations typically exceed acceptable County landfill requirements.

Recordkeeping and Other Requirements

Antero maintains a data base of all waste generated at their facilities. To ensure the appropriate information is tracked, the following information should be documented by the contractor for each batch of fracing and flowback sands generated.

- Facility location/pad name;
- Type of waste (note if it was combined with other waste);
- Quantity of waste;
- Date of transport;
- Identify of transporter;
- Location of waste pickup;
- Name and location of treatment or disposal site;
- If being used beneficially document use and location; and
- Obtain transporter signatures for records.

This information is recorded on the Non-Hazardous Waste Manifest (Attachment B) and returned to the Antero's EHS Department.

2.10 Flowback and Frac Tank Oil

Description

Flowback and frac tank oil is skimmed off of flowback and frac water generated from well fracing and testing activities and is an E&P exempt waste. . Flowback and frac tank oil should be separated from the frac fluids and skimmed off of flowback and frac water. Recovered oil should be placed in site condensate tanks for sales. (COGCC Series 907a, b, d, e).

Waste Management Procedures

The following are the waste management procedures for frac tank and flowback oil:

- Recover and separate oil from frac and flowback waters
- Store in site Condensate Sales tanks within lined corrugated steel containment and pad perimeter berms.

Waste Characterization

Not applicable.

Recommended Disposal/Treatment

Not applicable. Condensate sold.

Recordkeeping and Other Requirements

Not applicable. Condensate is sold and recorded as production.

2.11 Completion Rubbish & Trash

Description

Completion rubbish and trash is generated during well completion activities and includes the waste materials generated and placed in the trash bins and steel bins located on the site. These wastes are non E&P wastes and may include trash, garbage, broken equipment, paper, used empty containers, and other discarded solid waste. The waste collected in trash bins and steel bins should not include used or discarded chemicals, hazardous waste, or universal wastes such as batteries. Completion rubbish and trash are managed and regulated as solid waste. (COGCC Series 907A, 1203A).

Waste Management Procedures

The following are the waste management procedures for completion rubbish and trash:

- Collect in bear-proof dumpsters as required in COGCC in black bear habitat;
- Dispose of waste by contractor.

Waste Characterization

Not applicable.

Recommended Disposal/Treatment

Non-E&P solid waste should be disposed in the following manner:

- Dispose in approved County landfill.

Recordkeeping and Other Requirements

Not applicable.

2.12 Midstream/Gathering – Pipeline Construction Wastes (Pipes/Trimmings)

Description

Midstream/Gathering – Pipeline Construction Wastes such as scrape pipes and trimmings are generated during pipeline construction and installation activities. Construction wastes generated are placed in the trash bins and steel bins on the site. These wastes are non E&P wastes and may include scrap pipes, fittings, pipe trimmings and other misc construction debris. The waste collected in trash bins and steel bins should not include used or discarded chemicals, hazardous waste, or universal wastes such as batteries. Construction wastes are managed and regulated as solid waste. (COGCC Series 907A).

Waste Management Procedures

The following are the waste management procedures for construction wastes:

- Gather pipe material, fittings, and scrap for salvage.
- Store construction wastes in covered secure trash bins;
- Dispose and recycle wastes using a contractor.

Waste Characterization

Not applicable.

Recommended Disposal/Treatment

Non-E&P solid waste should be disposed in the following manner:

- Salvage recyclable materials.
- Dispose in approved County landfill.

Recordkeeping and Other Requirements

Not applicable.

2.13 Midstream/Gathering – Pipeline Pressure Testing Hydraulic Water

Description

Midstream/Gathering pipeline pressure testing hydraulic water is generated during gas and water pipeline hydraulic testing activities to identify leaks. These waste waters can be E&P wastes depending on the pipeline system being tested. (COGCC Series 907a, b, c, CDPHE General Permit COG 604000, Sundry Form 4).

Waste Management Procedures

The following are the waste management procedures for used hydraulic testing water:

- Obtain samples of the source water.
 - Obtain general discharge permit from CDPHE for discharge of test water.
 - Collect samples of discharged water.
- OR
- Direct test water to Water Management System for disposal in the injection wells.

- Document the volume of water and final disposition.

Waste Characterization

Table 2-13 – Pipeline Pressure Testing Hydraulic Water Management Analyses

Parameters	Method
Applicable Colorado Water Quality Stream Standards	To be determined based on applicable stream standards.

Recommended Disposal/Treatment

Hydraulic testing water should be:

- Discharged under the General Permit
- OR.
- Directed to the Water Management System for reuse or disposal in the injection well.

Recordkeeping and Other Requirements

Antero maintains a data base of all waste generated at their facilities. To ensure the appropriate information is tracked, the following information will be documented by the appropriate Antero representative or contractor for any hydraulic testing water generated.

- Facility location;
- Type of waste (note if it was combined with other waste);
- Quantity of waste;
- Date of transport;
- Identify of transporter;
- Location of waste generation;
- Name and location of treatment, disposal site, or discharge point;
- If being used beneficially document use and location; and
- Obtain transporter signatures for records.

This information is recorded on a discharge monitoring report specified under the General Permit or recorded on the Non-Hazardous Waste Manifest (Attachment B) and returned to the Antero's EHS Department.

2.14 Midstream/Gathering- Pigging Wastes

Description

Pigging wastes are generated from cleaning and removing liquids and solids that accumulate in the natural gas gathering pipelines. These wastes are E&P exempt waste and can include condensate, water, emulsified oils, paraffins, sludges, and other solids. Pigging wastes are separated and stored in tanks pending disposal, injection, or sales. (COGCC Series 907a, b, e, f).

Waste Management Procedures

The following are the waste management procedures for pigging wastes:

- Collect and separate pigging wastes.

- Store sludges, and water in tanks with secondary containment to minimize potential releases.
- Store condensate and oil in tanks with secondary containment pending sales.
- Direct wastewater from pigging operations to Water Management System.
- Characterization of pigging sludges and solids for landfill acceptance;
- Dispose of pigging waste at an “appropriate” facility based on the waste profile analytical results.
- Document the quantity of waste hauled by the transporter and quantity of waste received for final disposition

Waste Characterization

To characterize the pigging sludges and solids, a representative sample(s) of waste should be collected and sent to an Antero approved laboratory for analyses. Pigging sludges and solids should be analyzed for the following parameters. Additional parameters may be necessary depending on the disposal facility’s waste acceptance criteria and the final disposition of the waste.

Table 2-14 Pigging Sludges and Solids Waste Management Analyses

Parameters	Method
Volatile TPH (GRO)	SW846 8015B
Semi-Volatile TPH (DRO)	SW846 8015
Volatile Organics	SW846 8260B
TCLP Metals	SW846 1311
Ignitability	SW9095A

Recommended Disposal/Treatment

The pigging wastes should be disposed in the following manner based on the type of waste and analytical results:

- Direct pigging wastewater to the Water Management System for disposal in the injection wells.
- Sell condensate and oil.
- Dispose of pigging sludges and solids at ECDC Landfill. Contaminant concentrations typically exceed acceptable County landfill requirements.

Recordkeeping and Other Requirements

Antero maintains a data base of all waste generated at their facilities. To ensure the appropriate information is tracked, the following information will be documented by the appropriate Antero representative or contractor for pigging wastes generated during cleaning and maintenance activities.

- Facility location/pad name;
- Type of waste (note if it was combined with other waste);
- Quantity of waste;
- Date of transport;
- Identify of transporter;
- Location of waste pickup;

- Name and location of treatment or disposal site;
- If being used beneficially document use and location; and
- Obtain transporter signatures for records.

This information is recorded on the Non-Hazardous Waste Manifest (Attachment B) and returned to the Antero's EHS Department.

2.15 Produced Water

Description

Produced water is generated during natural gas and condensate production and is an E&P exempt waste. Produced water can contain small amounts of condensate and tends to have elevated concentrations of total dissolved solids due to salts. Produced water is directed to large tanks for storage and these tanks are contained within corrugated steel containment structures that provide secondary containment. Produced water is pumped or trucked into the Water Management System for treatment, storage, reuse and disposal. Once the produced water is in the system, it is directed to the Wasatch Bench Facility for treatment and storage. Produced water is stored in the Wasatch Pond for fracing operations. If the water is not needed or useable it is disposed in Antero's injection wells. (COGCC Series 907a, b, c).

Waste Management Procedures

The following are the waste management procedures for produced water:

- Store on site in water tanks provided with corrugated steel secondary containment.
- Direct produced water into the Water Management System (via trucking or pumping) for treatment, storage and reuse or disposal.
- Document the quantity of produced water generated and final disposition. The Water Management System meters water as it enters the system and as it is removed for fracing or injected.

Waste Characterization

Not applicable although water characterization is conducted to document air emissions from the Wasatch Water Management Pond.

Recommended Disposal/Treatment

The produced water should be disposed in the following manner:

- Place into the Water Management System.
- Treat and store for reuse as frac water.
- Treat and/or direct to injection wells for disposal.

Recordkeeping for Offsite Disposal

Antero maintains a data base of all waste generated at their facilities. To ensure the appropriate information is tracked, the following information will be documented by Antero personnel or the contractor for produced water generated from each pad site.

- Quantity of waste;
- Date of transport;
- Identify of transporter;

- Location of waste pickup;
- Name and location of treatment or disposal site;
- Obtain transporter signatures for records.

This information is recorded in the production reports. Water volumes generated from each pad and injected in the disposal wells are tracked in the Water Management System.

2.16 Production and Frac/Flowback Tank Sludges and Separator Sludges

Description

Production tank sludges from produced water and condensate tanks, frac/flowback tank sludges and well head separator sludges accumulate at the bottom of these vessels over time. These sludges can contain high concentrations of hydrocarbons and solids and are considered an E&P exempt waste (COGCC Series 907a, b, d, and f).

Waste Management Procedures

The following are the waste management procedures for production tank, frac/flowback tank and separator tank bottom sludges:

- Remove sludges from tanks;
- Store sludges in tanks/containers within secondary containment minimizing storm water contact and potential releases;
- Characterize per landfill waste acceptance criteria;
- Dispose of waste at an "appropriate" facility based on the waste profile analytical results.
- Document the quantity of waste hauled by the transporter and quantity of waste received for final disposition.

Waste Characterization

To characterize the tank bottom sludges, a representative sample(s) of waste should be collected and sent to an Antero approved laboratory for analyses. Tank bottom sludges should be analyzed for the following parameters. Additional parameters may be necessary depending on the disposal facility's waste acceptance criteria and the final disposition of the waste.

Table 2-16 – Tank Bottom Sludge Waste Management Analyses

Parameters	Method
Volatile TPH (GRO)	SW846 8015B
Semi-Volatile TPH (DRO)	SW846 8015
Volatile Organics	SW846 8260B
TCLP Metals	SW846 1311
Ignitability	SW1030

Recommended Disposal/Treatment

The tank bottom sludges should be disposed in the following manner based on analytical results:

- Dispose at ECDC contaminant concentrations typically exceed acceptable County landfill requirements.

Recordkeeping and Other Requirements

Antero maintains a data base of all waste generated at their facilities. To ensure the appropriate information is tracked, the following information will be documented by the appropriate Antero representative or contractor for tank bottom sludges as they are generated for shipment offsite.

- Facility location/pad name;
- Type of waste (note if it was combined with other waste);
- Quantity of waste;
- Date of transport;
- Identify of transporter;
- Location of waste pickup;
- Name and location of treatment or disposal site;
- If being used beneficially document use and location; and
- Obtain transporter signatures for records.

This information is recorded on the Non-Hazardous Waste Manifest (Attachment B) and returned to the Antero's EHS Department.

2.17 Wasatch Bench Pond Sludges & Solids

Description

Wasatch Bench Pond Sludges & Solids are generated occasionally from cleaning and maintenance activities. These sludges and solids are E&P exempt waste and can include condensate, water, emulsified oils, paraffins, sludges, and other solids. Wasatch Bench Pond sludges and solids may be separated and stored in tanks pending disposal, injection, or sales depending on the waste recovered. (COGCC Series 907a, b, e, f).

Waste Management Procedures

The following are the waste management procedures for Wasatch Bench pond sludges and solids:

- Collect/skim and separate the pond sludges and solids.
- Store sludges, and water in tanks with secondary containment to minimize potential releases.
- Store recovered condensate and oil in tanks with secondary containment pending sales.
- Direct separated water to Water Management System.
- Characterize the sludges and solids for landfill acceptance;
- Dispose of the sludges and solid waste at an "appropriate" facility based on the waste profile analytical results.
- Document the quantity of waste and final disposition.

Waste Characterization

To characterize the sludges and solids, a representative sample(s) of waste should be collected and sent to an Antero approved laboratory for analyses. Pond sludges and solids should be analyzed for the following parameters. Additional parameters may be necessary depending on the disposal facility's waste acceptance criteria and the final disposition of the waste.

Table 2-17 - Pigging Sludges and Solids Waste Management Analyses

Parameters	Method
Volatile TPH (GRO)	SW846 8015B
Semi-Volatile TPH (DRO)	SW846 8015
Volatile Organics	SW846 8260B
TCLP Metals	SW846 1311
Ignitability	SW1030

Recommended Disposal/Treatment

The pond sludges and solids should be disposed in the following manner based on the type of waste and analytical results:

- Direct water to the Water Management System for disposal in the injection wells.
- Sell condensate and oil.
- Dispose of pond sludges and solids at ECDC Landfill. Contaminant concentrations typically exceed acceptable County landfill requirements.

Recordkeeping and Other Requirements

Antero maintains a data base of all waste generated at their facilities. To ensure the appropriate information is tracked, the following information will be documented by Antero personnel or the contractor for pond sludges and solids generated during cleaning and maintenance activities.

- Quantity of waste;
- Date of transport;
- Identify of transporter;
- Location of waste pickup;
- Name and location of treatment or disposal site;
- Obtain transporter signatures for records.

This information is recorded on the Non-Hazardous Waste Manifest (Attachment B) and returned to the Antero's EHS Department.

2.18 Spills – Contaminated Soils & Media

Description

Produced water and condensate spills occasionally occur and are E&P exempt wastes. Soils and media impacted by these spills can contain elevated levels of hydrocarbons, metals and salts. (COGCC Series 906, 907a, b, f, 909,910, Table 910-1, Sundry Form 19, 27 and 4).

Waste Management Procedures

The following are the waste management procedures for contaminated soils and media:

- Notify SPCC Response Coordinator (See SPCC/Contingency Plan).
- Stop the leak if this can be achieved safely.
- Prevent migration of leak.
- Notify Federal, State, and local government agencies as required.

- Develop a remediation plan according to COGCC Series 909 and 910, submit Form 27 if necessary.
- Characterize site or remove impacted soils & media;
- Store impacted soils & media on site within pad perimeter berms minimizing storm water contact;
- Characterize waste for landfill acceptance (as necessary).
- Dispose of waste at an “appropriate” facility based on the analytical results.

OR

- Spread soil on site for treatment and beneficial use.
- Document the quantity of waste and final disposition.

Waste Characterization

To characterize the impacted soil and media, a representative sample(s) of the material should be collected and sent to an Antero approved laboratory for analyses. Impacted soils should be analyzed for the following parameters. Additional parameters may be necessary depending on the disposal facility’s waste acceptance criteria and the final disposition of the waste.

Table 2- 18 – Contaminated Soils & Media Waste Management Analyses

Parameters	Method
Volatile TPH (GRO)	SW846 8015B
Semi-Volatile TPH (DRO)	SW846 8015
Benzene (Volatile Organics)	SW846 8260B

If impacted soils are to be used beneficially or spread on site they should be analyzed for ALL of the analytes listed in COGCC Table 910-1 (Attachment A) to ensure that the soils meet the requirements. If background inorganic compounds including metals are anticipated to be of concern, a background soil sample(s) should also be collected for comparison to the contaminated soils and media wastes. Background samples should be analyzed consistent with the Table 910-1 requirements for the applicable parameters. Specifically:

- If metals are anticipated to be of concern, an adequate number of samples should be collected to demonstrate to the COGCC’s satisfaction that the Table 910-1 level is exceeded by the background level in the native soils. Upon demonstration the background level that was present in the native soils will become the required standard.
- If barium is of concern, analyses for barium will be evaluated using standard EPA SW846 methods (i.e., 3050/6010) rather than the Louisiana Department of Natural Resources (LDNR) “True total Barium” method referenced in Table 910-1.

If boron is of concern, the analysis will include the Hot Water Soluble Boron only where a crop or plant receptor sensitive to boron is known to be present at the site.

Recommended Disposal/Treatment

The impacted soils should be disposed in the following manner based on analytical results:

- Beneficially use/spread onsite if the soils meet ALL applicable Table 910-1 requirements and the activity is approved by COGCC via Sundry Form 4. . If the drill cuttings are to be used beneficially or spread on site, the following requirements should be satisfied:

1. The soils must meet the concentration levels of COGCC's Table 910-1.
 2. Beneficial use or spreading of drill cuttings shall be performed in a manner so as not to result in the formation of an impermeable barrier.
 3. Only *de minimis* amounts of drill cuttings may be incorporated into the surface materials.
- Dispose in approved County landfill as long as contaminant concentrations are acceptable.
 - Dispose at ECDC Landfill if contaminant concentrations exceed acceptable County landfill requirements.

Recordkeeping and Other Requirements

Antero maintains a data base of all waste generated at their facilities. To ensure the appropriate information is tracked, the following information will be documented for impacted soils generated from spill cleanup activities.

- Facility location/pad name;
- Type of waste (note if it was combined with other waste);
- Quantity of waste;
- Date of transport;
- Identify of transporter;
- Location of waste pickup;
- Name and location of treatment or disposal site;
- If being used beneficially document use and location;
- Obtain transporter signatures for records; and
- Sensitive area analysis.

This information is recorded on the Non-Hazardous Waste Manifest (Attachment B) or approved Sundry Notice Form 4 and returned to the Antero's EHS Department.

2.19 Miscellaneous Spill and Routine Operation Wastes

Description

Miscellaneous spill and routine operation wastes are generated on an ongoing basis and include oil rags, spill pads, oil skimming booms and oil diapers. These materials are collected at select sites (Wasatch Bench) in lined covered dumpsters and are managed by contractors specializing in waste management (COGCC Series 907a, b, e, and f).

Waste Management Procedures

The following are the waste management procedures for miscellaneous spill and routine operation oily wastes:

- Store in covered lined secure trash dumpsters;
- Waste is managed and disposed of by contractor.

Waste Characterization

Performed by Contractor.

Recommended Disposal/Treatment

Miscellaneous oily waste should be disposed in the following manner:

- Contractor manages disposal/final disposition of oily wastes in appropriate approved facility.

Recordkeeping and Other Requirements

Antero maintains a data base of all waste generated at their facilities. To ensure the appropriate information is tracked, the following information should be documented by the contractor for the miscellaneous spill and routine operational oil wastes generated.

- Facility location/pad name;
- Type of waste (note if it was combined with other waste);
- Quantity of waste;
- Date of transport;
- Identify of transporter;
- Location of waste pickup;
- Name and location of treatment or disposal site;
- If being used beneficially document use and location; and
- Obtain transporter signatures for records.

This information is recorded by the contractor and provided to the Antero's EHS Department.

2.20 Stormwater BMP Wastes

Description

Stormwater Best Management Practice (BMP) wastes are generated from ongoing stormwater management activities. These wastes include old straw wattles, damaged silt and storm fences, and hay bales. Many of Antero's well pads and access roads include stormwater BMP measures to minimize impacts to surface water and erosion. As the BMPs are damaged or become ineffective they are replaced. The storm water BMP wastes generated are non E&P wastes and must be managed as solid waste (COGCC Series 907A).

Waste Management Procedures

The following are the waste management procedures for stormwater BMP wastes:

- Store in covered secure trash bins and dumpsters.
- Dispose of waste by contractor.

Waste Characterization

Not applicable.

Recommended Disposal/Treatment

Non-E&P solid waste should be disposed in the following manner:

- Dispose in approved County landfill.

Recordkeeping and Other Requirements

Not applicable.

Attachment A
COGCC – Table 910-1

**Table 910-1
CONCENTRATION LEVELS¹**

Contaminant of Concern	Concentrations
Organic Compounds in Soil	
TPH (total volatile and extractable petroleum hydrocarbons)	500 mg/kg
Benzene	0.17 mg/kg ²
Toluene	85 mg/kg ²
Ethylbenzene	100 mg/kg ²
Xylenes (total)	175 mg/kg ²
Acenaphthene	1,000 mg/kg ²
Anthracene	1,000 mg/kg ²
Benzo(A)anthracene	0.22 mg/kg ²
Benzo(B)fluoranthene	0.22 mg/kg ²
Benzo(K)fluoranthene	2.2 mg/kg ²
Benzo(A)pyrene	0.022 mg/kg ²
Chrysene	22 mg/kg ²
Dibenzo(A,H)anthracene	0.022 mg/kg ²
Fluoranthene	1,000 mg/kg ²
Fluorene	1,000 mg/kg ²
Indeno(1,2,3,C,D)pyrene	0.22 mg/kg ²
Napthalene	23 mg/kg ²
Pyrene	1,000 mg/kg ²
Organic Compounds in Ground Water	
Benzene	5 µg/l ³
Toluene	560 to 1,000 µg/l ³
Ethylbenzene	700 µg/l ³
Xylenes (Total)	1,400 to 10,000 µg/l ^{3,4}
Inorganics In Soils	
Electrical Conductivity (EC)	<4 mmhos/cm or 2x background
Sodium Adsorption Ratio (SAR)	<12 ⁵
pH	6-9
Inorganics in Ground Water	
Total Dissolved Solids (TDS)	<1.25 x background ³
Chlorides	<1.25 x background ³
Sulfates	<1.25 x background ³
Metals in Soils	
Arsenic	0.39 mg/kg ²
Barium (LDNR True Total Barium)	15,000 mg/kg ²
Boron (Hot Water Soluble)	2 mg/l ³
Cadmium	70 mg/kg ^{2,8}
Chromium (III)	120,000 mg/kg ²
Chromium (VI)	23 mg/kg ^{2,8}
Copper	3,100 mg/kg ²
Lead (inorganic)	400 mg/kg ²
Mercury	23 mg/kg ²
Nickel (soluble salts)	1,600 mg/kg ^{2,8}
Selenium	390 mg/kg ^{2,8}
Silver	390 mg/kg ²
Zinc	23,000 mg/kg ^{2,8}
Liquid Hydrocarbons in Soils and Ground Water	
Liquid hydrocarbons including condensate and oil	Below detection level

COGCC recommends that the latest version of EPA SW 846 analytical methods be used where possible and that analyses of samples be performed by laboratories that maintain state or national accreditation programs.

¹ Consideration shall be given to background levels in native soils and ground water.

² Concentrations taken from CDPHE-HMWMD Table 1 Colorado Soil Evaluation Values (December 2007).

³ Concentrations taken from CDPHE-WQCC Regulation 41 - The Basic Standards for Ground Water.

⁴ For this range of standards, the first number in the range is a strictly health-based value, based on the WQCC's established methodology for human health-based standards. The second number in the range is a maximum contaminant level (MCL), established under the Federal Safe Drinking Water Act which has been

determined to be an acceptable level of this chemical in public water supplies, taking treatability and laboratory detection limits into account. The WQCC intends that control requirements for this chemical be implemented to attain a level of ambient water quality that is at least equal to the first number in the range except as follows: 1) where ground water quality exceeds the first number in the range due to a release of contaminants that occurred prior to September 14, 2004 (regardless of the date of discovery or subsequent migration of such contaminants) clean-up levels for the entire contaminant plume shall be no more restrictive than the second number in the range or the ground water quality resulting from such release, whichever is more protective, and 2) whenever the WQCC has adopted alternative, site-specific standards for the chemical, the site-specific standards shall apply instead of these statewide standards.

⁵ Analysis by USDA Agricultural Handbook 60 method (20B) with soluble cations determined by method (2). Method (20B) = estimation of exchangeable sodium percentage and exchangeable potassium percentage from soluble cations. Method (2) = saturated paste method (note: each analysis requires a unique sample of at least 500 grams). If soils are saturated, USDA Agricultural Handbook 60 with soluble cations determined by method (3A) saturation extraction method.

⁵ The table value for these inorganic constituents is taken from the CDPHE-HMWMD Table 1 Colorado Soil Evaluation Values (December 2007). However, because these values are high, it is possible that site-specific geochemical conditions may exist that could allow these constituents to migrate into ground water at levels exceeding ground water standards even though the concentrations are below the table values. Therefore, when these constituents are present as contaminants, a secondary evaluation of their leachability must be performed to ensure ground water protection.

Attachment B
Non-Hazardous Waste Manifest

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No.	Manifest Doc. No.	2. Page 1 of
3. Generator's Name and Mailing Address				
4. Generator's Phone ()				
5. Transporter 1 Company Name		6. US EPA ID Number		A. Transporter's Phone
7. Transporter 2 Company Name		8. US EPA ID Number		B. Transporter's Phone
9. Designated Facility Name and Site Address		10. US EPA ID Number		C. Facility's Phone
11. Waste Shipping Name and Description			12. Containers	
			No. Type	
			13. Total Quantity	
			14. Unit Wt/Vol	
a.				
b.				
c.				
d.				
D. Additional Descriptions for Materials Listed Above			E. Handling Codes for Wastes Listed Above	
15. Special Handling Instructions and Additional Information				
16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.				
Printed/Typed Name		Signature		Month Day Year
17. Transporter 1 Acknowledgement of Receipt of Materials				
Printed/Typed Name		Signature		Month Day Year
18. Transporter 2 Acknowledgement of Receipt of Materials				
Printed/Typed Name		Signature		Month Day Year
19. Discrepancy Indication Space				
20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.				
Printed/Typed Name		Signature		Month Day Year

Attachment C
Antero Approved Laboratories

Table C-1 – Antero Approved Laboratories

Laboratories	Phone Number
Accutest Laboratories 4036 Youngfield Street Wheat Ridge, CO 80033	303-425-6021
ALS Environmental 225 Commerce Drive Ft. Collins, Colorado 80524	970-490-1511
Summit Scientific 741 Corporate Circle Golden, CO	303-277-9310
Key Laboratories 2479 Riverside Parkway Grand Junction, CO	970-243-5311

Attachment D
Antero Approved Disposal Facilities

Table D-1 – Antero Approved Disposal Facilities

Disposal Facilities	Phone Number
CB Industries –Delta CO 1129 24 Road Grand Junction, CO 81505-9639	970-640-5028
South Canyon Landfill – Glenwood Springs, CO 1205 CR 134 Glenwood Springs, CO 81601	970-945-5375
Western Garfield County Landfill- Rulison, CO 0075 CR 246 Rifle, CO 81650	970-625-2516
ECDC Landfill – Utah 10500 S. 1300 West South Jordan, UT 84095-8509	801-253-1111
Eagle County Landfill – Wolcott, CO 815 Ute Creek road Colorado 81655	970-328-3470

State of Colorado
Oil and Gas Conservation Commission

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



FOR OGCC USE ONLY

Received
6/5/2012 Rifle
COGCC

SPILL/RELEASE REPORT

This form is to be submitted by the party responsible for the oil and gas spill or release. Any spill or release which may impact waters of the State must be reported as soon as practicable; any spill over 20 bbls must be reported within 24 hours and all spills over five bbls must be reported within ten days. Submit a Site Investigation and Remediation Workplan (Form 27) when requested by the Director.

Spill report taken by: _____

FACILITY ID: _____

OPERATOR INFORMATION

Name of Operator: _____ OGCC Operator No: _____	Phone Numbers No: _____ Fax: _____ E-Mail: _____
Address: _____	
City: _____ State: _____ Zip: _____	
Contact Person: _____	

DESCRIPTION OF SPILL OR RELEASE

Date of Incident: _____ Facility Name & No.: _____	County: _____
Type of Facility (well, tank battery, flow line, pit): _____	QtrQtr: _____ Section: _____
Well Name and Number: _____	Township: _____ Range: _____
API Number: _____	Meridian: _____
Specify volume spilled and recovered (in bbls) for the following materials: Oil spilled: _____ Oil recov'd: _____ Water spilled: _____ Water recov'd: _____ Other spilled: _____ Other recov'd: _____	
Ground Water impacted? Yes No	Surface Water impacted? Yes No
Contained within berm? Yes No	Area and vertical extent of spill: _____x_____
Current land use: _____	Weather conditions: _____
Soil/geology description: _____	
IF LESS THAN A MILE , report distance IN FEET to nearest.... Surface water: _____ wetlands: _____ buildings: _____	
Livestock: _____ water wells: _____ Depth to shallowest ground water: _____	
Cause of spill (e.g., equipment failure, human error, etc.): _____ Detailed description of the spill/release incident: _____	

CORRECTIVE ACTION

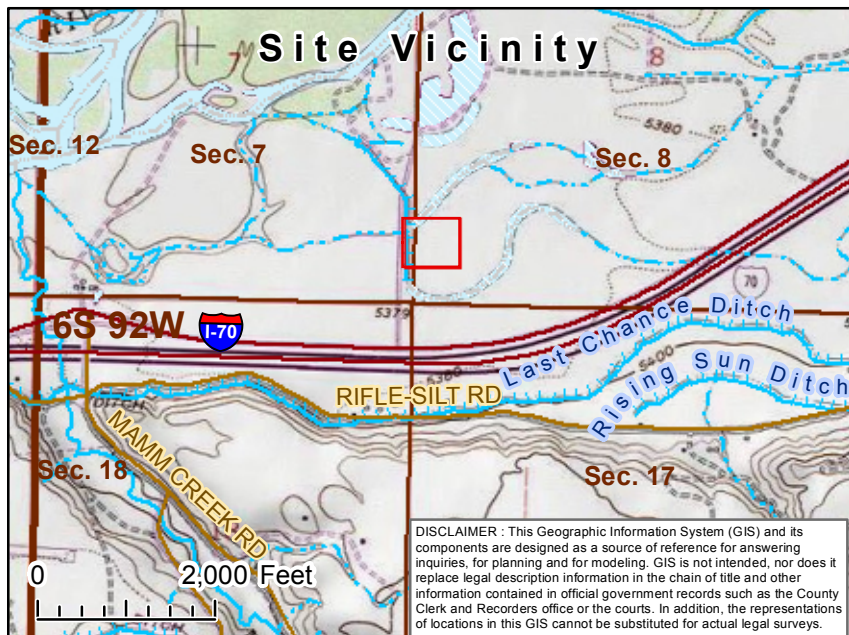
Describe immediate response (how stopped, contained and recovered): Describe any emergency pits constructed: How was the extent of contamination determined: Further remediation activities proposed (attach separate sheet if needed): Describe measures taken to prevent problem from reoccurring:
--

OTHER NOTIFICATIONS

List the parties and agencies notified (County, BLM, EPA, DOT, Local Emergency Planning Coordinator or other).

Date	Agency	Contact	Phone	Response

Spill/Release Tracking No: **2224964**



Attachment A--Spill Location Map
Location: Robinson A Pad
Antero Resources Piceance Corp.

Legend

- Gas Well Head
- PLSS**
 - ▭ Township
 - ▭ Section
 - ▬ Highways
 - ▬ Public Roads
- Hydrographic Features**
 - ▬ Perennial Stream
 - ▬ Intermittent Stream
 - ▬ Ditch/Canal

