

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

NAME: Ritchie Exploration Inc
ADDRESS: 8100 E 22 St N Ste 700
Wichita, KS 67226-2328
FACILITY: ANN ALLISON #1
LOCATION: NEAR TOWN
LONDON, CO 00000
ATTN: John Niernberger, Prod Mgr

COG840016	001-A
PERMIT NUMBER	DISCHARGE NUMBER
MONITORING PERIOD	
MM/DD/YYYY	MM/DD/YYYY
07/01/2014	07/31/2014

DMR Mailing ZIP CODE: 67226-2328
MINOR

Unnamed tributary to Vega Creek tributary to South Plat
External Outfall

No Discharge ☐

REVISED

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
pH	SAMPLE MEASUREMENT	*****	*****	*****	* 7.89	*****	* 7.98	SU			
00400 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	6.5 MINIMUM	*****	9 MAXIMUM	SU		Twice Per Month	GRAB
Solids, total suspended	SAMPLE MEASUREMENT	*****	*****	*****	*****	14	19	mg/L			
00530 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	30 30DA AVG	45 MX 7D AV	mg/L		Twice Per Month	GRAB
Nitrogen, nitrite total [as N]	SAMPLE MEASUREMENT	*****	*****	*****	*****	*****	<0.020	mg/L			
00615 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	*****	Req. Mon. DAILY MX	mg/L		Twice Per Month	GRAB
Nitrogen, nitrate total [as N]	SAMPLE MEASUREMENT	*****	*****	*****	*****	*****	.19	mg/L			
00620 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	*****	Req. Mon. DAILY MX	mg/L		Twice Per Month	GRAB
Cyanide, weak acid, dissociable	SAMPLE MEASUREMENT	*****	*****	*****	*****	*****	<5	ug/L			
00718 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	*****	Req. Mon. DAILY MX	ug/L		Twice Per Month	GRAB
Arsenic, total recoverable	SAMPLE MEASUREMENT	*****	*****	*****	*****	<25	*****	ug/L			
00978 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 30DA AVG	*****	ug/L		Twice Per Month	GRAB
Selenium, total recoverable	SAMPLE MEASUREMENT	*****	*****	*****	*****	<50	<50	ug/L			
00981 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 30DA AVG	Req. Mon. DAILY MX	ug/L		Twice Per Month	GRAB

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER John Niernberger Production Manager TYPED OR PRINTED	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT		TELEPHONE 316-691-9500	DATE 9-15-14
		AREA Code NUMBER MM/DD/YYYY			

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

Oil and grease - see D.24, pg 14. Beginning 9-1-16 report "ANALYSIS NOT REQUIRED" for monitoring period and report on 001AA.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

NAME: Ritchie Exploration Inc
ADDRESS: 8100 E 22 St N Ste 700
Wichita, KS 67226-2328
FACILITY: ANN ALLISON #1
LOCATION: NEAR TOWN
LINDON, CO 00000
ATTN: John Niernberger, Prod Mgr

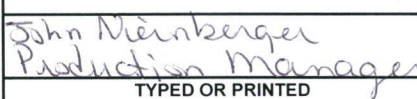
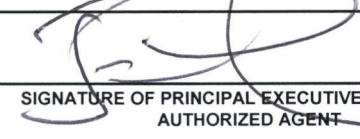
COG840016	001-A
PERMIT NUMBER	DISCHARGE NUMBER
MONITORING PERIOD	
MM/DD/YYYY	MM/DD/YYYY
07/01/2014	07/31/2014

DMR Mailing ZIP CODE: 67226-2328
MINOR

Unnamed tributary to Vega Creek tributary to South Plat
External Outfall

No Discharge ☐

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
Beryllium, total recoverable [as Be]	SAMPLE MEASUREMENT	*****	*****	*****	*****	<10	<10	ug/L			
00998 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 30DA AVG	Req. Mon. DAILY MX	ug/L		Twice Per Month	GRAB
Nickel, total recoverable	SAMPLE MEASUREMENT	*****	*****	*****	*****	<30	<30	ug/L			
01074 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 30DA AVG	Req. Mon. DAILY MX	ug/L		Twice Per Month	GRAB
Zinc, total recoverable	SAMPLE MEASUREMENT	*****	*****	*****	*****	24.2	48.4	ug/L			
01094 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 30DA AVG	Req. Mon. DAILY MX	ug/L		Twice Per Month	GRAB
Cadmium, total recoverable	SAMPLE MEASUREMENT	*****	*****	*****	*****	<10	<10	ug/L			
01113 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 30DA AVG	Req. Mon. DAILY MX	ug/L		Twice Per Month	GRAB
Lead, total recoverable	SAMPLE MEASUREMENT	*****	*****	*****	*****	<50	<50	ug/L			
01114 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 30DA AVG	Req. Mon. DAILY MX	ug/L		Twice Per Month	GRAB
Copper, total recoverable	SAMPLE MEASUREMENT	*****	*****	*****	*****	<10	<10	ug/L			
01119 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 30DA AVG	Req. Mon. DAILY MX	ug/L		Twice Per Month	GRAB
Antimony, total recoverable	SAMPLE MEASUREMENT	*****	*****	*****	*****	<30	<30	ug/L			
01268 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 30DA AVG	Req. Mon. DAILY MX	ug/L		Twice Per Month	GRAB

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER  TYPED OR PRINTED	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	TELEPHONE 316-691-9520		DATE 9-15-14
		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT 		AREA Code NUMBER

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

Oil and grease - see D.24, pg 14. Beginning 9-1-16 report "ANALYSIS NOT REQUIRED" for monitoring period and report on 001AA.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

NAME: Ritchie Exploration Inc
ADDRESS: 8100 E 22 St N Ste 700
Wichita, KS 67226-2328FACILITY: ANN ALLISON #1
LOCATION: NEAR TOWN
LONDON, CO 00000

ATTN: John Niernberger, Prod Mgr

COG840016	001-A
PERMIT NUMBER	DISCHARGE NUMBER
MONITORING PERIOD	
MM/DD/YYYY	MM/DD/YYYY
07/01/2014	07/31/2014

DMR Mailing ZIP CODE: 67226-2328
MINORUnnamed tributary to Vega Creek tributary to South Plat
External OutfallNo Discharge ☐

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
Oil and grease	SAMPLE MEASUREMENT	*****	*****	*****	*****	*****	11.6	mg/L			
03582 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	*****	35 INST MAX	mg/L		Twice Per Month	GRAB
Chromium, trivalent total recoverable	SAMPLE MEASUREMENT	*****	*****	*****	*****	<20	<20	ug/L			
04262 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 30DA AVG	Req. Mon. DAILY MX	ug/L		Twice Per Month	GRAB
Radium 226 + radium 228, total	SAMPLE MEASUREMENT	*****	*****	*****	*****	.425	1.3	pCi/L			
11503 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 30DA AVG	Req. Mon. DAILY MX	pCi/L		Twice Per Month	GRAB
1,2-Dichloroethane	SAMPLE MEASUREMENT	*****	*****	*****	*****	ND	ND	ug/L			
32103 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 30DA AVG	Req. Mon. DAILY MX	ug/L		Twice Per Month	GRAB
Toluene	SAMPLE MEASUREMENT	*****	*****	*****	*****	*****	2.9	ug/L			
34010 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	*****	17500 DAILY MX	ug/L		Twice Per Month	GRAB
Benzene	SAMPLE MEASUREMENT	*****	*****	*****	*****	*****	3.2	ug/L			
34030 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	*****	5300 DAILY MX	ug/L		Twice Per Month	GRAB
Naphthalene, dry weight	SAMPLE MEASUREMENT	*****	*****	*****	*****	3.3	3.3	ug/L			
34445 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 30DA AVG	Req. Mon. DAILY MX	ug/L		Twice Per Month	GRAB

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER <i>John Niernberger</i> <i>Production Manager</i> TYPED OR PRINTED	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	TELEPHONE		DATE
		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT <i>[Signature]</i>		316-691-9500 9-15-14
		AREA Code	NUMBER	MM/DD/YYYY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

Oil and grease - see D.24, pg 14. Beginning 9-1-16 report "ANALYSIS NOT REQUIRED" for monitoring period and report on 001AA.

ND = Not Detected

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

NAME: Ritchie Exploration Inc
ADDRESS: 8100 E 22 St N Ste 700
Wichita, KS 67226-2328
FACILITY: ANN ALLISON #1
LOCATION: NEAR TOWN
LINDON, CO 00000
ATTN: John Niernberger, Prod Mgr

COG840016	001-A
PERMIT NUMBER	DISCHARGE NUMBER
MONITORING PERIOD	
MM/DD/YYYY	MM/DD/YYYY
07/01/2014	07/31/2014

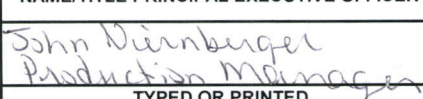
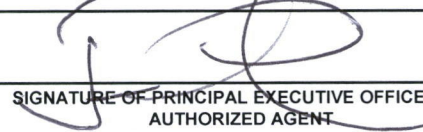
DMR Mailing ZIP CODE: 67226-2328
MINOR

Unnamed tributary to Vega Creek tributary to South Plat
External Outfall

No Discharge ☐

REVISED

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
2,4-Dimethylphenol	SAMPLE MEASUREMENT	*****	*****	*****	*****	*****	ND	ug/L			
34606 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	*****	Req. Mon. DAILY MX	ug/L		Twice Per Month	GRAB
Phenol	SAMPLE MEASUREMENT	*****	*****	*****	*****	ND	ND	ug/L			
34694 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 30DA AVG	Req. Mon. DAILY MX	ug/L		Twice Per Month	GRAB
Ethylbenzene	SAMPLE MEASUREMENT	*****	*****	*****	*****	*****	3.1	ug/L			
37371 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	*****	32000 DAILY MX	ug/L		Twice Per Month	GRAB
Flow, in conduit or thru treatment plant	SAMPLE MEASUREMENT	* .005	* .010	MGD	*****	*****	*****	*****			
50050 1 0 Effluent Gross	PERMIT REQUIREMENT	.0076 30DA AVG	Req. Mon. DAILY MX	MGD	*****	*****	*****	*****		Continuous	RCORDR
Solids, total dissolved	SAMPLE MEASUREMENT	*****	*****	*****	*****	*****	2995	mg/L			
70295 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	*****	Req. Mon. 30DA AVG	mg/L		Twice Per Month	GRAB
Chromium, hexavalent tot recoverable	SAMPLE MEASUREMENT	*****	*****	*****	*****	*****	<10	ug/L			
78247 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	*****	Req. Mon. 30DA AVG	ug/L		Twice Per Month	GRAB
Xylene [mix of m+o+p]	SAMPLE MEASUREMENT	*****	*****	*****	*****	*****	15.8	ug/L			
81551 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	*****	Req. Mon. DAILY MX	ug/L		Twice Per Month	GRAB

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER  TYPED OR PRINTED	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT 		TELEPHONE 316-691-9500	DATE 9-15-14
		AREA Code	NUMBER	MM/DD/YYYY	

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

Oil and grease - see D.24, pg 14. Beginning 9-1-16 report "ANALYSIS NOT REQUIRED" for monitoring period and report on 001AA.

ND = Not Detected

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004

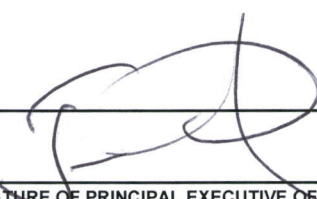
PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

NAME: Ritchie Exploration Inc
ADDRESS: 8100 E 22 St N Ste 700
Wichita, KS 67226-2328
FACILITY: ANN ALLISON #1
LOCATION: NEAR TOWN
LONDON, CO 00000
ATTN: John Niernberger, Prod Mgr

COG840016	001-A
PERMIT NUMBER	DISCHARGE NUMBER
MONITORING PERIOD	
MM/DD/YYYY	MM/DD/YYYY
07/01/2014	07/31/2014

DMR Mailing ZIP CODE: 67226-2328
MINORUnnamed tributary to Vega Creek tributary to South Plat
External OutfallNo Discharge ☐

PARAMETER		QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS			
Boron, total	SAMPLE MEASUREMENT	*****	*****	*****	*****	3165	*****	ug/L			
82057 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 30DA AVG	*****	ug/L		Twice Per Month	GRAB
Oil and grease visual	SAMPLE MEASUREMENT	*****	N	0	*****	*****	*****	*****			
84066 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	Req. Mon. INST MAX	Y=1;N=0	*****	*****	*****	*****		Twice Per Month	VISUAL

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER	I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.		TELEPHONE	DATE
<i>John Niernberger</i> Production Manager TYPED OR PRINTED			316-691-9500	9-15-14
		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA Code	NUMBER
				MM/DD/YYYY

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

Oil and grease - see D.24, pg 14. Beginning 9-1-16 report "ANALYSIS NOT REQUIRED" for monitoring period and report on 001AA.



08/01/14

Technical Report for

Ritchie Exploration, Inc.

Ann Allison Lease

Accutest Job Number: D59594X

Sampling Date: 07/10/14

Report to:

Ritchie Exploration, Inc.
PO Box 783188
Wichita, KS 67278-3188
john@ritchie-exp.com; palisadestech@gmail.com
ATTN: John Niernberger

Total number of pages in report: **10**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read "Scott Heideman".

Scott Heideman
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), TX (T104704511)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

Handwritten initials in black ink, possibly "JCN".

Table of Contents

-1-

Sections:

1

2

3

Section 1: Sample Summary	3
Section 2: Subcontract Lab Data	4
Section 3: Misc. Forms	9
3.1: Chain of Custody	10



Accutest Laboratories

Sample Summary

Ritchie Exploration, Inc.

Job No: D59594X

Ann Allison Lease

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
D59594-1X	07/10/14	08:00 ET	07/10/14	AQ Water	ANN ALLISON LSE WASH CO. COLO.



Subcontract Lab Data

Report of Analysis

**Hazen Research, Inc.**

4601 Indiana Street
Golden, CO 80403 USA
Tel: (303) 279-4501
Fax: (303) 278-1528

DATE July 31, 2014
HRI PROJECT 009-93
HRI SERIES NO G262/14
DATE REC'D. 7/11/2014
CUST. P.O.# None Rec'd

2

Accutest Mountain States
Kaila Gaither
4036 Youngfield St
Wheat Ridge, CO 80033

REPORT OF ANALYSIS

SAMPLE NO. G262/14-1


SAMPLE IDENTIFICATION: D59594X-1 - Sampled 07/10/2014 @ 0800

PARAMETER	RESULT	DETECTION LIMIT	METHOD	ANALYSIS DATE	ANALYST
Radium-226 (+-Precision*), pCi/l (T)	0.4(+0.4)	0.2	SM 7500-Ra B	7/18/2014 @ 0903	LD
Radium-228 (+-Precision*), pCi/l (T)	0.0(+1.2)	1.3	EPA Ra-05	7/21/2014 @ 0807	FW/BS

*Variability of the radioactive decay process (counting error) at the 95% confidence level, 1.96 sigma.
Certification ID's: CO/EPA CO00008; CT PH-0152; KS E-10265; NYELAP 11417;
RI LAO00284; TX T104704256-11-2; WI 998376610

Results reported herein relate only to discrete samples submitted by the client. Hazen Research, Inc. does not warrant that the results are representative of anything other than the samples that were received in the laboratory.

CODES: (T) = Total (D) = Dissolved (S) = Suspended (R) = Total Recoverable
(PD) = Potentially Dissolved < = Less Than

By: 
Robert Rostad
Technical Director, Analytical Services

Page 1 of 1

An Employee-Owned Company

HAZEN RESEARCH, INC.
RADIOCHEMISTRY LABORATORYDate: 07/22/2014

2

Batch QC Evaluation FormAnalyte: Ra-226Control Standard: ID: NBL 6A pCi/ml: 23.0 (use 2 ml diluted)Spike Solution: ID: NBL 6A pCi/ml: 23.0 (use 2 ml)Spike Recovery Calculation: Sample: TAP

$$\text{Calculation: } \frac{(49.1)(1.0) - (0.3)(1.0)}{46.0} \times 100 = \underline{106} \%$$

Batch QC Evaluation:

Parameter	Criteria	Pass	Fail	N/A
Control Std.	+/- 20 %	<u>/</u>		
Spike Recovery	80 - 120 %	<u>/</u>		
Blank	< or = 2 x MDL	<u>/</u>		
Duplicate 1	95% confidence interval overlap	<u>/</u>		
Duplicate 2 *	95% confidence interval overlap	<u>/</u>		

* Required for batch size greater than 10 samples.

Conclusions:

- ☒ Batch Passes
☐ Batch Fails
☐ Batch Passes, with exceptions:

Reruns Required: _____

Narrative: _____

Batch Listing by Lab Control Number:

<u>G297/14</u>	<u>G328/14</u>
<u>G318/14</u>	<u>G326/14</u>
<u>G321/14</u>	<u>G347/14</u>
<u>G322/14</u>	<u>G343/14</u>
<u>G323/14</u>	<u>G344/14</u>
<u>G325/14</u>	<u>G262/14</u>

Evaluator: PLSDate: 07/24/2014

HAZEN RESEARCH, INC.
RADIOCHEMISTRY LABORATORYDate: 07/23/2014

2

Batch QC Evaluation FormAnalyte: Ra-228Control Standard: ID: NBL 7A pCi/ml: 11.8 (use 2 ml diluted)Spike Solution: ID: NBL 7A pCi/ml: 11.8 (use 2 ml)Spike Recovery Calculation: Sample: TAP

$$\text{Calculation: } \frac{(21.3)(1.0) - (0.0)(1.0)}{23.6} \times 100 = \underline{90} \%$$

Batch QC Evaluation:

Parameter	Criteria	Pass	Fail	N/A
Control Std.	+/- 20 %	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spike Recovery	80 - 120 %	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blank	< or = 2 x MDL	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Duplicate 1	95% confidence interval overlap	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Duplicate 2 *	95% confidence interval overlap	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

* Required for batch size greater than 10 samples.

Conclusions:

- ☒ Batch Passes
☐ Batch Fails
☐ Batch Passes, with exceptions:

Reruns Required: _____

Narrative: _____

Batch Listing by Lab Control Number:

G324/14	_____
G262/14	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Evaluator: RLS JB07/29/2014

Date

CHAIN OF CUSTODY



ACCUTEST

4036 Youngfield St., Wheat Ridge, CO 80033
303-425-6021 FAX: 303-425-6854

Accutest Job #: D59594X

Accutest Quote #: 0

AMS P.O. #:

Project No.:

[illegible]



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

Accutest Laboratories Mountain States
4036 Youngfield Street Wheat Ridge, Co 80033
TEL. 303-425-6021 877-737-4521
FAX 303-425-6021

PAGE ____ OF ____

Client / Reporting Information				Project Information				Requested Analysis (see TEST CODE sheet)				Matrix Codes			
Company Name Street Address City State Zip Project Contact E-mail Phone # Fax # Sampler(s) Name(s) Phone #				Project Name Street: City: Company Name Billing Information (if different from Report to) Project # Street Address Client PO # City State Zip Project Manager Attendee PO #				Matrix Codes DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OT - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank							
Accutest Sample # Field ID / Point of Collection MECH/ID Viol #				Collection Date Time Sampled by Matrix # of bottles				Number of preserved bottles HQ N01 N03 H2SO4 NONE DN White MECH ENCORE Bioshield				LAB USE ONLY 01 10-02 1/7/01 3/7/01			
Turnaround Time (Business days) <input type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> Std. 5 Business Days (By Contract only) <input type="checkbox"/> 5 Day FR SH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY				Approved By (Accutest PM) / Date: <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> Commercial "B" - Narrative <input type="checkbox"/> FULLT1 (Level 3+4) Commercial "A" = Results Only Commercial "B" = Results + QC Summary				Comments / Special Instructions List No3, No2 SP. add AR to Mat. 1 List							
Emergency & Rush T/A data available VIA LabLink				Sample Custody must be documented below each time samples change possession, including courier delivery.				Relinquished by: Date Time: Received By: Date Time:							
Relinquished by: Date Time: Received By: Date Time:				Relinquished by: Date Time: Received By: Date Time:				Relinquished by: Date Time: Received By: Date Time:							
Relinquished by: Date Time: Received By: Date Time:				Relinquished by: Date Time: Received By: Date Time:				Relinquished by: Date Time: Received By: Date Time:							
Relinquished by: Date Time: Received By: Date Time:				Relinquished by: Date Time: Received By: Date Time:				Relinquished by: Date Time: Received By: Date Time:							

بی

D59594X: Chain of Custody

Page 1 of 1



08/06/14

Technical Report for

Ritchie Exploration, Inc.

Ann Allison Lease

Accutest Job Number: D60036

Sampling Date: 07/23/14

Report to:

Ritchie Exploration, Inc.
PO Box 783188
Wichita, KS 67278-3188
john@ritchie-exp.com; palisadestech@gmail.com
ATTN: John Niernberger

Total number of pages in report: 40



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read "Scott Heideman".

Scott Heideman
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), TX (T104704511)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

Table of Contents

-1-

Sections:

Section 1: Sample Summary	3
Section 2: Case Narrative/Conformance Summary	4
Section 3: Summary of Hits	7
Section 4: Sample Results	8
4.1: D60036-1: ANN ALLISON LSE. WASH CO COLO	9
4.2: D60036-1A: ANN ALLISON LSE. WASH CO COLO	12
Section 5: Misc. Forms	14
5.1: Chain of Custody	15
Section 6: GC/MS Volatiles - QC Data Summaries	16
6.1: Method Blank Summary	17
6.2: Blank Spike Summary	18
6.3: Matrix Spike/Matrix Spike Duplicate Summary	19
Section 7: GC/MS Semi-volatiles - QC Data Summaries	20
7.1: Method Blank Summary	21
7.2: Blank Spike Summary	22
7.3: Matrix Spike Summary	23
Section 8: Metals Analysis - QC Data Summaries	24
8.1: Prep QC MP13526: Sb,As,Be,B,Cd,Cr,Cu,Pb,Ni,Se,Zn	25
Section 9: General Chemistry - QC Data Summaries	35
9.1: Method Blank and Spike Results Summary	36
9.2: Blank Spike Duplicate Results Summary	37
9.3: Duplicate Results Summary	38
9.4: Matrix Spike Results Summary	39
9.5: Matrix Spike Duplicate Results Summary	40

1

2

3

4

5

6

7

8

9



Accutest Laboratories

Sample Summary

Ritchie Exploration, Inc.

Job No: D60036

Ann Allison Lease

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
D60036-1	07/23/14	08:00 ET	07/23/14	AQ Water	ANN ALLISON LSE. WASH CO COLO
D60036-1A	07/23/14	08:00 ET	07/23/14	AQ Water	ANN ALLISON LSE. WASH CO COLO



2

CASE NARRATIVE / CONFORMANCE SUMMARY**Client:** Ritchie Exploration, Inc.**Job No** D60036**Site:** Ann Allison Lease**Report Date** 8/6/2014 11:05:39 AM

On 07/23/2014, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 0.9 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D60036 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method EPA 624**Matrix** AQ**Batch ID:** V6V1481

- All samples were analyzed within the recommended method holding time.
- Sample(s) D60013-IMS, D60013-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- D60036-1: The pH of the sample aliquot for VOA analysis was >2 at time of analysis.

Extractables by GCMS By Method EPA 625**Matrix** AQ**Batch ID:** OP10303

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D59888-13MS were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Metals By Method SW846 6010C**Matrix** AQ**Batch ID:** MP13526

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D60036-1AMS, D60036-1AMSD, D60036-1ASDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Antimony, Cadmium, Chromium, Copper, Nickel, Zinc are outside control limits for sample MP13526-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Wet Chemistry By Method EPA 1664A**Matrix** AQ**Batch ID:** GP13188

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D60036-IMS were used as the QC samples for the HEM Oil and Grease analysis.

Wednesday, August 06, 2014

Page 1 of 3

Wet Chemistry By Method EPA 300.0/SW846 9056**Matrix** AQ**Batch ID:** GP13115

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D59997-1MS, D59997-1MSD were used as the QC samples for the Nitrogen, Nitrate, Nitrogen, Nitrite, Nitrogen, Nitrate analysis.
- D60036-1 for Nitrogen, Nitrite: Elevated detection limit due to matrix interference.

Wet Chemistry By Method SM 2540C-2011**Matrix** AQ**Batch ID:** GN25761

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D59997-IDUP were used as the QC samples for the Solids, Total Dissolved analysis.

Wet Chemistry By Method SM 2540D-2011**Matrix** AQ**Batch ID:** GN25762

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D60069-IDUP were used as the QC samples for the Solids, Total Suspended analysis.

Wet Chemistry By Method SM 3500CR B-2011**Matrix** AQ**Batch ID:** GN25711

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D59882-1FDUP, D59994-1AMS, D59994-1AMSD were used as the QC samples for the Chromium, Hexavalent analysis.
- D60036-1A for Chromium, Hexavalent: Sample preserved within 24hrs. to extend the hold time.

Wet Chemistry By Method SM 4500CN N-2011**Matrix** AQ**Batch ID:** GP13206

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D60062-2MS were used as the QC samples for the Weak Acid Dissociable Cn analysis.

Wet Chemistry By Method SW846 6010C/7196A M**Matrix** AQ**Batch ID:** R22848

- The data for SW846 6010C/7196A M meets quality control requirements.
- D60036-1A for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

Summary of Hits

Page 1 of 1

Job Number: D60036
Account: Ritchie Exploration, Inc.
Project: Ann Allison Lease
Collected: 07/23/14



Lab Sample ID	Client Sample ID	Result/ Analyte	Qual	RL	MDL	Units	Method
---------------	------------------	--------------------	------	----	-----	-------	--------

D60036-1 ANN ALLISON LSE. WASH CO COLO

Benzene ^a	0.0032	0.0010	0.00025	mg/l	EPA 624
Toluene ^a	0.0029	0.0020	0.0010	mg/l	EPA 624
Ethylbenzene ^a	0.0031	0.0020	0.00031	mg/l	EPA 624
Xylene (total) ^a	0.0158	0.0030	0.0015	mg/l	EPA 624
Naphthalene ^a	0.0033 J	0.0050	0.0020	mg/l	EPA 624
HEM Oil and Grease	11.6	4.8		mg/l	EPA 1664A
Nitrogen, Nitrate	0.16	0.050		mg/l	EPA 300.0/SW846 9056
Solids, Total Dissolved	2610	10		mg/l	SM 2540C-2011
Solids, Total Suspended	9.0	5.0		mg/l	SM 2540D-2011

D60036-1A ANN ALLISON LSE. WASH CO COLO

Boron	2680	50		ug/l	SW846 6010C
-------	------	----	--	------	-------------

(a) The pH of the sample aliquot for VOA analysis was > 2 at time of analysis.



Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	ANN ALLISON LSE. WASH CO COLO			Date Sampled:	07/23/14
Lab Sample ID:	D60036-1			Date Received:	07/23/14
Matrix:	AQ - Water			Percent Solids:	n/a
Method:	EPA 624				
Project:	Ann Allison Lease				

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	6V26228.D	1	07/25/14	BR	n/a	n/a	V6V1481
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.0032	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.0029	0.0020	0.0010	mg/l	
100-41-4	Ethylbenzene	0.0031	0.0020	0.00031	mg/l	
1330-20-7	Xylene (total)	0.0158	0.0030	0.0015	mg/l	
91-20-3	Naphthalene	0.0033	0.0050	0.0020	mg/l	J
107-06-2	1,2-Dichloroethane	ND	0.0020	0.00025	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	120%		70-130%
17060-07-0	1,2-Dichloroethane-D4	111%		70-130%
2037-26-5	Toluene-D8	95%		70-130%
460-00-4	4-Bromofluorobenzene	98%		70-130%

(a) The pH of the sample aliquot for VOA analysis was >2 at time of analysis.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	ANN ALLISON LSE. WASH CO COLO			Date Sampled:	07/23/14
Lab Sample ID:	D60036-1			Date Received:	07/23/14
Matrix:	AQ - Water			Percent Solids:	n/a
Method:	EPA 625 EPA 625				
Project:	Ann Allison Lease				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G120622.D	1	07/24/14	DC	07/24/14	OP10303	E1G1376
Run #2							

	Initial Volume	Final Volume
Run #1	1060 ml	1.0 ml
Run #2		

625 Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	0.0047	0.00050	mg/l	
108-95-2	Phenol	ND	0.0047	0.00071	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	60%		10-120%
4165-62-2	Phenol-d5	41%		9-120%
118-79-6	2,4,6-Tribromophenol	94%		19-125%
4165-60-0	Nitrobenzene-d5	74%		35-120%
321-60-8	2-Fluorobiphenyl	84%		35-120%
1718-51-0	Terphenyl-d14	90%		32-122%

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	ANN ALLISON LSE. WASH CO COLO	Date Sampled:	07/23/14
Lab Sample ID:	D60036-1	Date Received:	07/23/14
Matrix:	AQ - Water	Percent Solids:	n/a
Project:	Ann Allison Lease		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
HEM Oil and Grease	11.6	4.8	mg/l	1	08/05/14	SWT	EPA 1664A
Nitrogen, Nitrate	0.16	0.050	mg/l	5	07/23/14 16:46	JB	EPA 300.0/SW846 9056
Nitrogen, Nitrite ^a	< 0.020	0.020	mg/l	5	07/23/14 16:46	JB	EPA 300.0/SW846 9056
Solids, Total Dissolved	2610	10	mg/l	1	07/29/14	JD	SM 2540C-2011
Solids, Total Suspended	9.0	5.0	mg/l	1	07/29/14	BF	SM 2540D-2011
Weak Acid Dissociable Cn	< 0.0050	0.0050	mg/l	1	08/05/14 14:50	GH	SM 4500CN N-2011

(a) Elevated detection limit due to matrix interference.

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	ANN ALLISON LSE. WASH CO COLO	Date Sampled:	07/23/14
Lab Sample ID:	D60036-1A	Date Received:	07/23/14
Matrix:	AQ - Water	Percent Solids:	n/a
Project:	Ann Allison Lease		

Total Recoverable Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony	< 30	30	ug/l	1	07/25/14	07/28/14 KV	SW846 6010C ¹	SW846 3010A ³
Arsenic	< 25	25	ug/l	1	07/25/14	07/28/14 KV	SW846 6010C ¹	SW846 3010A ³
Beryllium	< 10	10	ug/l	1	07/25/14	07/28/14 KV	SW846 6010C ¹	SW846 3010A ³
Boron	2680	50	ug/l	1	07/25/14	07/28/14 KV	SW846 6010C ¹	SW846 3010A ³
Cadmium	< 10	10	ug/l	1	07/25/14	07/28/14 KV	SW846 6010C ¹	SW846 3010A ³
Chromium	< 10	10	ug/l	1	07/25/14	07/28/14 KV	SW846 6010C ¹	SW846 3010A ³
Copper	< 10	10	ug/l	1	07/25/14	07/29/14 KV	SW846 6010C ²	SW846 3010A ³
Lead	< 50	50	ug/l	1	07/25/14	07/28/14 KV	SW846 6010C ¹	SW846 3010A ³
Nickel	< 30	30	ug/l	1	07/25/14	07/28/14 KV	SW846 6010C ¹	SW846 3010A ³
Selenium	< 50	50	ug/l	1	07/25/14	07/28/14 KV	SW846 6010C ¹	SW846 3010A ³
Zinc	< 30	30	ug/l	1	07/25/14	07/28/14 KV	SW846 6010C ¹	SW846 3010A ³

(1) Instrument QC Batch: MA5029

(2) Instrument QC Batch: MA5039

(3) Prep QC Batch: MP13526

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID: ANN ALLISON LSE. WASH CO COLO

Lab Sample ID: D60036-1A

Matrix: AQ - Water

Date Sampled: 07/23/14

Date Received: 07/23/14

Percent Solids: n/a

Project: Ann Allison Lease

4.2
4

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent ^a	< 0.010	0.010	mg/l	1	07/24/14 08:40	JD	SM 3500CR B-2011
Chromium, Trivalent ^b	< 0.020	0.020	mg/l	1	07/28/14 12:02	KV	SW846 6010C/7196A M

(a) Sample preserved within 24hrs. to extend the hold time.

(b) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit



Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



GC/MS Volatiles



QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: D60036
Account: RITEKSW Ritchie Exploration, Inc.
Project: Ann Allison Lease

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6V1481-MB	6V26201A.D	1	07/24/14	BR	n/a	n/a	V6V1481

The QC reported here applies to the following samples:

Method: EPA 624

D60036-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.25	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.31	ug/l	
91-20-3	Naphthalene	ND	5.0	2.0	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.5	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	113%	70-130%
17060-07-0	1,2-Dichloroethane-D4	117%	70-130%
2037-26-5	Toluene-D8	99%	70-130%
460-00-4	4-Bromofluorobenzene	96%	70-130%

6.1.1

6

Blank Spike Summary

Job Number: D60036
Account: RITEKSW Ritchie Exploration, Inc.
Project: Ann Allison Lease

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6V1481-BS	6V26216.D	1	07/24/14	BR	n/a	n/a	V6V1481

The QC reported here applies to the following samples:

Method: EPA 624

D60036-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	17.9	90	70-130
107-06-2	1,2-Dichloroethane	20	19.4	97	70-130
100-41-4	Ethylbenzene	20	17.8	89	70-130
91-20-3	Naphthalene	20	14.4	72	70-130
108-88-3	Toluene	20	18.3	92	70-130
1330-20-7	Xylene (total)	60	53.6	89	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	109%	70-130%
17060-07-0	1,2-Dichloroethane-D4	103%	70-130%
2037-26-5	Toluene-D8	101%	70-130%
460-00-4	4-Bromofluorobenzene	105%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D60036

Account: RITEKSW Ritchie Exploration, Inc.

Project: Ann Allison Lease

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D60013-1MS	6V26222.D	10	07/25/14	BR	n/a	n/a	V6V1481
D60013-1MSD	6V26223.D	10	07/25/14	BR	n/a	n/a	V6V1481
D60013-1	6V26220.D	1	07/24/14	BR	n/a	n/a	V6V1481
D60013-1	6V26221.D	10	07/24/14	BR	n/a	n/a	V6V1481

The QC reported here applies to the following samples:

Method: EPA 624

D60036-1

CAS No.	Compound	D60013-1 ug/l	Spike Q	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	200	183	92	200	200	100	9	70-130/30
107-06-2	1,2-Dichloroethane	ND	200	222	111	200	235	118	6	70-130/30
100-41-4	Ethylbenzene	ND	200	186	93	200	198	99	6	70-130/30
91-20-3	Naphthalene	ND	200	137	69	200	150	75	9	57-130/30
108-88-3	Toluene	ND	200	186	93	200	203	102	9	70-130/30
1330-20-7	Xylene (total)	ND	600	562	94	600	607	101	8	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D60013-1	D60013-1	Limits
1868-53-7	Dibromofluoromethane	119%	117%	120%	123%	70-130%
17060-07-0	1,2-Dichloroethane-D4	110%	108%	117%	116%	70-130%
2037-26-5	Toluene-D8	99%	103%	95%	96%	70-130%
460-00-4	4-Bromofluorobenzene	107%	106%	89%	91%	70-130%

* = Outside of Control Limits.



GC/MS Semi-volatiles

QC Data Summaries

7

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D60036
Account: RITEKSW Ritchie Exploration, Inc.
Project: Ann Allison Lease

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP10303-MB	1G120616.D	1	07/24/14	DC	07/24/14	OP10303	E1G1376

The QC reported here applies to the following samples: Method: EPA 625

D60036-1

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	5.0	0.53	ug/l	
108-95-2	Phenol	ND	5.0	0.75	ug/l	

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	51% 10-120%
4165-62-2	Phenol-d5	36% 9-120%
118-79-6	2,4,6-Tribromophenol	76% 19-125%
4165-60-0	Nitrobenzene-d5	61% 35-120%
321-60-8	2-Fluorobiphenyl	79% 35-120%
1718-51-0	Terphenyl-d14	91% 32-122%

7.1.1
7

Blank Spike Summary

Page 1 of 1

Job Number: D60036

Account: RITEKSW Ritchie Exploration, Inc.

Project: Ann Allison Lease

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP10303-BS	1G120617.D	1	07/24/14	DC	07/24/14	OP10303	E1G1376

The QC reported here applies to the following samples:

Method: EPA 625

D60036-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
105-67-9	2,4-Dimethylphenol	50	36.4	73	61-120
108-95-2	Phenol	50	18.5	37	24-120

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	51%	10-120%
4165-62-2	Phenol-d5	30%	9-120%
118-79-6	2,4,6-Tribromophenol	87%	19-125%
4165-60-0	Nitrobenzene-d5	73%	35-120%
321-60-8	2-Fluorobiphenyl	80%	35-120%
1718-51-0	Terphenyl-d14	77%	32-122%

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: D60036

Account: RITEKSW Ritchie Exploration, Inc.

Project: Ann Allison Lease

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP10303-MS	1G120619.D	1	07/24/14	DC	07/24/14	OP10303	E1G1376
D59888-13	1G120618.D	1	07/24/14	DC	07/24/14	OP10303	E1G1376

The QC reported here applies to the following samples:

Method: EPA 625

D60036-1

CAS No.	Compound	D59888-13 ug/l	Spike Q	MS ug/l	MS %	Limits
105-67-9	2,4-Dimethylphenol	ND	50	32.9	66	10-120
108-95-2	Phenol	ND	50	20.8	42	16-120

CAS No.	Surrogate Recoveries	MS	D59888-13	Limits
367-12-4	2-Fluorophenol	41%	38%	10-120%
4165-62-2	Phenol-d5	34%	31%	9-120%
118-79-6	2,4,6-Tribromophenol	68%	53%	19-125%
4165-60-0	Nitrobenzene-d5	91%	70%	35-120%
321-60-8	2-Fluorobiphenyl	99%	85%	35-120%
1718-51-0	Terphenyl-d14	85%	98%	32-122%

* = Outside of Control Limits.



Metals Analysis

QC Data Summaries

8

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method BlanksLogin Number: D60036
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison LeaseQC Batch ID: MP13526
Matrix Type: AQUEOUSMethods: SW846 6010C
Units: ug/l

Prep Date: 07/25/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	11	41		
Antimony	30	2.1	19	0.50	<30
Arsenic	25	3.8	5.6	-1.1	<25
Barium	10	.2	1.4		
Beryllium	10	.9	1.2	0.10	<10
Boron	50	.8	6.6	-5.7	<50
Cadmium	10	.2	.36	0.20	<10
Calcium	400	2.4	41		
Chromium	10	.3	.4	-0.10	<10
Cobalt	5.0	.5	.57		
Copper	10	.8	1.9	-0.50	<10
Iron	70	1.5	9.5		
Lead	50	2.1	21	0.30	<50
Lithium	5.0	.4	2.7		
Magnesium	200	6.8	19		
Manganese	5.0	.5	.46		
Molybdenum	10	.4	.84		
Nickel	30	.5	.87	0.30	<30
Phosphorus	100	15	20		
Potassium	1000	99	270		
Selenium	50	7.1	11	-0.10	<50
Silicon	50	4.7	5.2		
Silver	30	.3	.6		
Sodium	400	7.3	170		
Strontium	5.0	.01	.12		
Thallium	10	1.8	4		
Tin	50	12	16		
Titanium	10	.1	2.1		
Uranium	50	2.9	5.5		
Vanadium	10	.4	.4		
Zinc	30	.4	3.2	1.4	<30

Associated samples MP13526: D60036-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D60036
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

QC Batch ID: MP13526
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/25/14

				MB	
Metal	RL	IDL	MDL	raw	final

(anr) Analyte not requested

8.1.1

8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D60036
 Account: RITEKSW - Ritchie Exploration, Inc.
 Project: Ann Allison Lease

QC Batch ID: MP13526
 Matrix Type: AQUEOUS

Methods: SW846 6010C
 Units: ug/l

Prep Date: 07/25/14

Metal	D60036-1A		Spikelot		QC	
	Original MS		ICPALL2	% Rec	Limits	
Aluminum	anr					
Antimony	2.7	474	500	94.2	75-125	
Arsenic	0.0	1120	1000	112.0	75-125	
Barium	anr					
Beryllium	0.0	484	500	96.8	75-125	
Boron	2680	3750	1000	107.0	75-125	
Cadmium	0.30	528	500	105.5	75-125	
Calcium	anr					
Chromium	0.50	503	500	100.5	75-125	
Cobalt	anr					
Copper	4.1	571	500	113.4	75-125	
Iron	anr					
Lead	0.0	1000	1000	100.0	75-125	
Lithium						
Magnesium	anr					
Manganese	anr					
Molybdenum						
Nickel	0.80	478	500	95.4	75-125	
Phosphorus						
Potassium	anr					
Selenium	0.0	1130	1000	113.0	75-125	
Silicon						
Silver	anr					
Sodium	anr					
Strontium						
Thallium	anr					
Tin						
Titanium						
Uranium						
Vanadium	anr					
Zinc	3.6	547	500	108.7	75-125	

Associated samples MP13526: D60036-1A

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

8.1.2
8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D60036
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

QC Batch ID: MP13526
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/25/14

	D60036-1A	Spikelot	QC
Metal	Original MS	ICPALL2 % Rec	Limits

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

8.1.2
8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D60036
 Account: RITEKSW - Ritchie Exploration, Inc.
 Project: Ann Allison Lease

QC Batch ID: MP13526
 Matrix Type: AQUEOUS

Methods: SW846 6010C
 Units: ug/l

Prep Date: 07/25/14

Metal	D60036-1A		SpikeLot		MSD	QC
	Original	MSD	ICPALL2	% Rec	RPD	Limit
Aluminum	anr					
Antimony	2.7	478	500	95.0	0.8	20
Arsenic	0.0	1140	1000	114.0	1.8	20
Barium	anr					
Beryllium	0.0	491	500	98.2	1.4	20
Boron	2680	3700	1000	102.0	1.3	20
Cadmium	0.30	530	500	105.9	0.4	20
Calcium	anr					
Chromium	0.50	508	500	101.5	1.0	20
Cobalt	anr					
Copper	4.1	575	500	114.2	0.7	20
Iron	anr					
Lead	0.0	1010	1000	101.0	1.0	20
Lithium						
Magnesium	anr					
Manganese	anr					
Molybdenum						
Nickel	0.80	484	500	96.6	1.2	20
Phosphorus						
Potassium	anr					
Selenium	0.0	1140	1000	114.0	0.9	20
Silicon						
Silver	anr					
Sodium	anr					
Strontium						
Thallium	anr					
Tin						
Titanium						
Uranium						
Vanadium	anr					
Zinc	3.6	554	500	110.1	1.3	20

Associated samples MP13526: D60036-1A

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

8.1.2
8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D60036
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

QC Batch ID: MP13526
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/25/14

	D60036-1A	Spikelot	MSD	QC
Metal	Original MSD	ICPALL2 % Rec	RPD	Limit

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

8.1.2

8

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D60036
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

QC Batch ID: MP13526
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/25/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	anr			
Antimony	493	1000	98.6	80-120
Arsenic	1100	1000	110.0	80-120
Barium	anr			
Beryllium	501	500	100.2	80-120
Boron	1020	1000	102.0	80-120
Cadmium	518	500	103.6	80-120
Calcium	anr			
Chromium	518	500	103.6	80-120
Cobalt	anr			
Copper	484	500	96.8	80-120
Iron	anr			
Lead	1040	1000	104.0	80-120
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	493	500	98.6	80-120
Phosphorus				
Potassium	anr			
Selenium	1130	1000	113.0	80-120
Silicon				
Silver	anr			
Sodium	anr			
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium	anr			
Zinc	526	500	105.2	80-120

Associated samples MP13526: D60036-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

8.1.3

8

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D60036
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

QC Batch ID: MP13526
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/25/14

	BSP	Spikelot	QC
Metal	Result	ICPALL2	% Rec Limits

(anr) Analyte not requested

8.1.3

8

SERIAL DILUTION RESULTS SUMMARY

Login Number: D60036
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

QC Batch ID: MP13526
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/25/14

D60036-1A		QC		
Metal	Original	SDL 1:5	%DIF	Limits
Aluminum	anr			
Antimony	2.70	0.00	100.0(a)	0-10
Arsenic	0.00	0.00	NC	0-10
Barium	anr			
Beryllium	0.00	0.00	NC	0-10
Boron	2680	2630	1.8	0-10
Cadmium	0.300	0.00	100.0(a)	0-10
Calcium	anr			
Chromium	0.500	0.00	100.0(a)	0-10
Cobalt	anr			
Copper	4.10	0.00	100.0(a)	0-10
Iron	anr			
Lead	0.00	13.5	NC	0-10
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	0.800	4.50	462.5(a)	0-10
Phosphorus				
Potassium	anr			
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	anr			
Sodium	anr			
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium	anr			
Zinc	3.60	3.00	16.7 (a)	0-10

Associated samples MP13526: D60036-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

8.1.4
8

SERIAL DILUTION RESULTS SUMMARY

Login Number: D60036
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

QC Batch ID: MP13526
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/25/14

	D60036-1A		QC
Metal	Original SDL 1:5	%DIF	Limits

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

8.1.4
8



General Chemistry

QC Data Summaries

6

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRYLogin Number: D60036
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Bromide	GP13115/GN25708	0.050	0.0	mg/l	0.5	0.522	104.4	90-110%
Chloride	GP13115/GN25708	0.50	0.0	mg/l	5	4.99	99.8	90-110%
Chromium, Hexavalent	GN25711	0.010	0.0	mg/l	0.1	0.10	102.0	90-110%
Fluoride	GP13115/GN25708	0.10	0.0	mg/l	1	0.998	99.8	90-110%
HEM Oil and Grease	GP13188/GN25826	5.0	0.0	mg/l	40	33.1	82.8	78-114%
Nitrogen, Nitrate	GP13115/GN25708	0.010	0.0	mg/l	0.1	0.103	103.0	90-110%
Nitrogen, Nitrite	GP13115/GN25708	0.0040	0.0	mg/l	0.05	0.0503	100.6	90-110%
Phosphate, Ortho	GP13115/GN25708	0.050	0.0	mg/l	0.5	0.512	102.4	90-110%
Solids, Total Dissolved	GN25761	10	0.0	mg/l	400	399	99.8	90-110%
Solids, Total Suspended	GN25762	5.0	0.0	mg/l	300	288	96.0	90-110%
Sulfate	GP13115/GN25708	0.50	0.0	mg/l	5	4.96	99.2	90-110%
Weak Acid Dissociable Cn	GP13206/GN25862	0.0050	0.0	mg/l	0.1	0.103	103.0	90-110%

Associated Samples:

Batch GN25711: D60036-1A

Batch GN25761: D60036-1

Batch GN25762: D60036-1

Batch GP13115: D60036-1

Batch GP13188: D60036-1

Batch GP13206: D60036-1

(*) Outside of QC limits

9.1

9

BLANK SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRYLogin Number: D60036
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

Analyte	Batch ID	Units	Spike Amount	BSD Result	RPD	QC Limit
HEM Oil and Grease	GP13188/GN25826	mg/l	40	34.6	4.4	20%

Associated Samples:
Batch GP13188: D60036-1
(*) Outside of QC limits9.2
9

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRYLogin Number: D60036
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GN25711	D59882-1F	mg/l	0.028	0.028	0.0	0-20%
Solids, Total Dissolved	GN25761	D59997-1	mg/l	568	584	2.8	0-20%
Solids, Total Suspended	GN25762	D60069-1	mg/l	56.7	60.0	5.7	0-20%

Associated Samples:

Batch GN25711: D60036-1A

Batch GN25761: D60036-1

Batch GN25762: D60036-1

(*) Outside of QC limits

9.3

6

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D60036
 Account: RITEKSW - Ritchie Exploration, Inc.
 Project: Ann Allison Lease

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Bromide	GP13115/GN25708	D59997-1	mg/l	0.0	2.5	2.7	108.0	80-120%
Bromide	GP13115/GN25708	D59997-1	mg/l	0.0	2.5	2.7	108.0	80-120%
Chloride	GP13115/GN25708	D59997-1	mg/l	108	250	364	102.4	80-120%
Chloride	GP13115/GN25708	D59997-1	mg/l	106	250	364	102.4	80-120%
Chromium, Hexavalent	GN25711	D59994-1A	mg/l	0.0	0.1	0.098	97.0	85-115%
Fluoride	GP13115/GN25708	D59997-1	mg/l	0.0	5	5.6	101.0	80-120%
Fluoride	GP13115/GN25708	D59997-1	mg/l	0.55	5	5.6	101.0	80-120%
HEM Oil and Grease	GP13188/GN25826	D60036-1	mg/l	11.6	40	47.2	89.0	78-114%
Nitrogen, Nitrate	GP13115/GN25708	D59997-1	mg/l	15.3	5	20.2	114.0	80-120%
Nitrogen, Nitrate	GP13115/GN25708	D59997-1	mg/l	14.5	5	20.2	114.0	80-120%
Nitrogen, Nitrite	GP13115/GN25708	D59997-1	mg/l	0.85	0.25	1.1	100.0	80-120%
Nitrogen, Nitrite	GP13115/GN25708	D59997-1	mg/l	0.71	0.25	1.1	100.0	80-120%
Phosphate, Ortho	GP13115/GN25708	D59997-1	mg/l	5.0	2.5	7.8	112.0	80-120%
Sulfate	GP13115/GN25708	D59997-1	mg/l	94.3	25	118	103.6	80-120%
Sulfate	GP13115/GN25708	D59997-1	mg/l	92.1	25	118	103.6	80-120%
Weak Acid Dissociable Cn	GP13206/GN25862	D60062-2	mg/l	0.0	0.1	0.098	98.0	80-120%

Associated Samples:

Batch GN25711: D60036-1A

Batch GP13115: D60036-1

Batch GP13188: D60036-1

Batch GP13206: D60036-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

9.4

9

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRYLogin Number: D60036
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Bromide	GP13115/GN25708	D59997-1	mg/l	0.0	2.5	2.7	0.0	20%
Bromide	GP13115/GN25708	D59997-1	mg/l	0.0	2.5	2.7	0.0	20%
Chloride	GP13115/GN25708	D59997-1	mg/l	108	250	368	1.1	20%
Chloride	GP13115/GN25708	D59997-1	mg/l	106	250	368	1.1	20%
Chromium, Hexavalent	GN25711	D59994-1A	mg/l	0.0	0.1	0.091	7.4	20%
Fluoride	GP13115/GN25708	D59997-1	mg/l	0.0	5	5.5	1.8	20%
Fluoride	GP13115/GN25708	D59997-1	mg/l	0.55	5	5.5	1.8	20%
Nitrogen, Nitrate	GP13115/GN25708	D59997-1	mg/l	14.5	5	19.5	3.5	20%
Nitrogen, Nitrate	GP13115/GN25708	D59997-1	mg/l	15.3	5	19.5	3.5	20%
Nitrogen, Nitrite	GP13115/GN25708	D59997-1	mg/l	0.85	0.25	1.1	0.0	20%
Nitrogen, Nitrite	GP13115/GN25708	D59997-1	mg/l	0.71	0.25	1.1	0.0	20%
Phosphate, Ortho	GP13115/GN25708	D59997-1	mg/l	5.0	2.5	7.6	6.4	20%
Sulfate	GP13115/GN25708	D59997-1	mg/l	92.1	25	118	0.0	20%
Sulfate	GP13115/GN25708	D59997-1	mg/l	94.3	25	118	0.0	20%

Associated Samples:

Batch GN25711: D60036-1A

Batch GP13115: D60036-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

9.5
9



07/24/14

Technical Report for

Ritchie Exploration, Inc.

Ann Allison Lease

Accutest Job Number: D59594

Sampling Date: 07/10/14

Report to:

Ritchie Exploration, Inc.
PO Box 783188
Wichita, KS 67278-3188
john@ritchie-exp.com; palisadestech@gmail.com

ATTN: John Niernberger

Total number of pages in report: 40



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read "Scott Heideman".

Scott Heideman
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), TX (T104704511)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

Table of Contents

-1-

Sections:

1

2

3

4

5

6

7

8

9

Section 1: Sample Summary	3
Section 2: Case Narrative/Conformance Summary	4
Section 3: Summary of Hits	6
Section 4: Sample Results	7
4.1: D59594-1: ANN ALLISON LSE WASH CO. COLO.	8
4.2: D59594-1A: ANN ALLISON LSE WASH CO. COLO.	11
Section 5: Misc. Forms	13
5.1: Chain of Custody	14
Section 6: GC/MS Volatiles - QC Data Summaries	15
6.1: Method Blank Summary	16
6.2: Blank Spike Summary	17
6.3: Matrix Spike Summary	18
6.4: Duplicate Summary	19
Section 7: GC/MS Semi-volatiles - QC Data Summaries	20
7.1: Method Blank Summary	21
7.2: Blank Spike Summary	22
7.3: Matrix Spike Summary	23
Section 8: Metals Analysis - QC Data Summaries	24
8.1: Prep QC MP13401: Sb,As,Be,B,Cd,Cr,Cu,Pb,Ni,Se,Zn	25
Section 9: General Chemistry - QC Data Summaries	35
9.1: Method Blank and Spike Results Summary	36
9.2: Blank Spike Duplicate Results Summary	37
9.3: Duplicate Results Summary	38
9.4: Matrix Spike Results Summary	39
9.5: Matrix Spike Duplicate Results Summary	40



Accutest Laboratories

Sample Summary

Ritchie Exploration, Inc.

Job No: D59594

Ann Allison Lease

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
D59594-1	07/10/14	08:00 ET	07/10/14	AQ Water	ANN ALLISON LSE WASH CO. COLO.
D59594-1A	07/10/14	08:00 ET	07/10/14	AQ Water	ANN ALLISON LSE WASH CO. COLO.



2

CASE NARRATIVE / CONFORMANCE SUMMARY**Client:** Ritchie Exploration, Inc.**Job No** D59594**Site:** Ann Allison Lease**Report Date** 7/24/2014 4:27:05 PM

On 07/10/2014, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 1 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D59594 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method EPA 624

Matrix AQ	Batch ID: V6V1468
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D59639-1MS, D59655-1DUP were used as the QC samples indicated.
- The blank spike (BS) recovery(s) of Naphthalene are outside control limits.
- D59594-1: The pH of the sample aliquot for VOA analysis was >2 at time of analysis.

Extractables by GCMS By Method EPA 625

Matrix AQ	Batch ID: OP10221
------------------	--------------------------

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D59273-31MS were used as the QC samples indicated.

Metals By Method SW846 6010C

Matrix AQ	Batch ID: MP13401
------------------	--------------------------

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D59594-1AMS, D59594-1AMSD, D59594-1ASDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Antimony, Arsenic, Chromium, Lead, Nickel are outside control limits for sample MP13401-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Wet Chemistry By Method EPA 1664A

Matrix AQ	Batch ID: GP13120
------------------	--------------------------

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D59594-1MS were used as the QC samples for the HEM Oil and Grease analysis.

Wet Chemistry By Method EPA 300.0/SW846 9056

Matrix AQ	Batch ID: GP13015
------------------	--------------------------

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D59610-6MS, D59610-6MSD were used as the QC samples for the Nitrogen, Nitrate, Nitrogen, Nitrite, Nitrogen, Nitrate analysis.
- D59594-1 for Nitrogen, Nitrite: Elevated detection limit due to matrix interference.

Wet Chemistry By Method SM 2540C-2011

Matrix AQ	Batch ID: GN25531
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D59594-1DUP were used as the QC samples for the Solids, Total Dissolved analysis.

Wet Chemistry By Method SM 2540D-2011

Matrix AQ	Batch ID: GN25608
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D59697-2DUP were used as the QC samples for the Solids, Total Suspended analysis.

Wet Chemistry By Method SM 3500CR B-2011

Matrix AQ	Batch ID: GN25625
------------------	--------------------------

- All method blanks for this batch meet method specific criteria.
- Sample(s) D59639-1FDUP, D59639-1FMS, GN25625-S3MSD were used as the QC samples for the Chromium, Hexavalent analysis.
- The following samples were preserved within 24hrs. to extend the hold time for method SM 3500CR B-2011: D59594-1A

Wet Chemistry By Method SM 4500CN N-2011

Matrix AQ	Batch ID: GP13088
------------------	--------------------------

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D59596-1MS were used as the QC samples for the Weak Acid Dissociable Cn analysis.

Wet Chemistry By Method SW846 6010C/7196A M

Matrix AQ	Batch ID: R22711
------------------	-------------------------

- The data for SW846 6010C/7196A M meets quality control requirements.
- D59594-1A for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

Thursday, July 24, 2014

Page 2 of 2

Summary of Hits

Page 1 of 1

Job Number: D59594
Account: Ritchie Exploration, Inc.
Project: Ann Allison Lease
Collected: 07/10/14



Lab Sample ID	Client Sample ID	Result/ Analyte	Qual	RL	MDL	Units	Method
---------------	------------------	--------------------	------	----	-----	-------	--------

D59594-1 ANN ALLISON LSE WASH CO. COLO.

Nitrogen, Nitrate	0.19	0.10	mg/l	EPA 300.0/SW846 9056
Solids, Total Dissolved	3380	10	mg/l	SM 2540C-2011
Solids, Total Suspended	19.0	5.0	mg/l	SM 2540D-2011

D59594-1A ANN ALLISON LSE WASH CO. COLO.

Boron	3650	50	ug/l	SW846 6010C
Zinc	48.4	30	ug/l	SW846 6010C



Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	ANN ALLISON LSE WASH CO. COLO.		Date Sampled:	07/10/14
Lab Sample ID:	D59594-1		Date Received:	07/10/14
Matrix:	AQ - Water		Percent Solids:	n/a
Method:	EPA 624			
Project:	Ann Allison Lease			

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	6V25967.D	1	07/15/14	BR	n/a	n/a	V6V1468
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, Naphthalene

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.0010	0.00025	mg/l	
108-88-3	Toluene	ND	0.0020	0.0010	mg/l	
100-41-4	Ethylbenzene	ND	0.0020	0.00031	mg/l	
1330-20-7	Xylene (total)	ND	0.0030	0.0015	mg/l	
91-20-3	Naphthalene	ND	0.0050	0.0020	mg/l	
107-06-2	1,2-Dichloroethane	ND	0.0020	0.00025	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	127%		70-130%
17060-07-0	1,2-Dichloroethane-D4	123%		70-130%
2037-26-5	Toluene-D8	95%		70-130%
460-00-4	4-Bromofluorobenzene	90%		70-130%

(a) The pH of the sample aliquot for VOA analysis was >2 at time of analysis.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	ANN ALLISON LSE WASH CO. COLO.			Date Sampled:	07/10/14
Lab Sample ID:	D59594-1			Date Received:	07/10/14
Matrix:	AQ - Water			Percent Solids:	n/a
Method:	EPA 625 SW846 3510C				
Project:	Ann Allison Lease				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G120454.D	1	07/11/14	DC	07/10/14	OP10221	E1G1366
Run #2							

	Initial Volume	Final Volume
Run #1	1060 ml	1.0 ml
Run #2		

625 Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	0.0047	0.00050	mg/l	
108-95-2	Phenol	ND	0.0047	0.00071	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	49%		10-120%
4165-62-2	Phenol-d5	36%		9-120%
118-79-6	2,4,6-Tribromophenol	91%		19-125%
4165-60-0	Nitrobenzene-d5	64%		35-120%
321-60-8	2-Fluorobiphenyl	77%		35-120%
1718-51-0	Terphenyl-d14	76%		32-122%

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID: ANN ALLISON LSE WASH CO. COLO.

Lab Sample ID: D59594-1

Matrix: AQ - Water

Date Sampled: 07/10/14

Date Received: 07/10/14

Percent Solids: n/a

Project: Ann Allison Lease

4.1

4

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
HEM Oil and Grease	< 4.8	4.8	mg/l	1	07/24/14	SWT	EPA 1664A
Nitrogen, Nitrate	0.19	0.10	mg/l	10	07/10/14 11:20	JB	EPA 300.0/SW846 9056
Nitrogen, Nitrite ^a	< 0.040	0.040	mg/l	10	07/10/14 11:20	JB	EPA 300.0/SW846 9056
Solids, Total Dissolved	3380	10	mg/l	1	07/14/14	AK	SM 2540C-2011
Solids, Total Suspended	19.0	5.0	mg/l	1	07/17/14	AK	SM 2540D-2011
Weak Acid Dissociable Cn	< 0.0050	0.0050	mg/l	1	07/21/14 14:18	GH	SM 4500CN N-2011

(a) Elevated detection limit due to matrix interference.

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID: ANN ALLISON LSE WASH CO. COLO.

Lab Sample ID: D59594-1A

Matrix: AQ - Water

Date Sampled: 07/10/14

Date Received: 07/10/14

Percent Solids: n/a

Project: Ann Allison Lease

4.2
4

Total Recoverable Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony	< 30	30	ug/l	1	07/11/14	07/11/14 KV	SW846 6010C ¹	SW846 3010A ³
Arsenic	< 25	25	ug/l	1	07/11/14	07/14/14 KV	SW846 6010C ²	SW846 3010A ³
Beryllium	< 10	10	ug/l	1	07/11/14	07/11/14 KV	SW846 6010C ¹	SW846 3010A ³
Boron	3650	50	ug/l	1	07/11/14	07/11/14 KV	SW846 6010C ¹	SW846 3010A ³
Cadmium	< 10	10	ug/l	1	07/11/14	07/11/14 KV	SW846 6010C ¹	SW846 3010A ³
Chromium	< 10	10	ug/l	1	07/11/14	07/11/14 KV	SW846 6010C ¹	SW846 3010A ³
Copper	< 10	10	ug/l	1	07/11/14	07/14/14 KV	SW846 6010C ²	SW846 3010A ³
Lead	< 50	50	ug/l	1	07/11/14	07/11/14 KV	SW846 6010C ¹	SW846 3010A ³
Nickel	< 30	30	ug/l	1	07/11/14	07/11/14 KV	SW846 6010C ¹	SW846 3010A ³
Selenium	< 50	50	ug/l	1	07/11/14	07/11/14 KV	SW846 6010C ¹	SW846 3010A ³
Zinc	48.4	30	ug/l	1	07/11/14	07/11/14 KV	SW846 6010C ¹	SW846 3010A ³

(1) Instrument QC Batch: MA4983

(2) Instrument QC Batch: MA4985

(3) Prep QC Batch: MP13401

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	ANN ALLISON LSE WASH CO. COLO.	Date Sampled:	07/10/14
Lab Sample ID:	D59594-1A	Date Received:	07/10/14
Matrix:	AQ - Water	Percent Solids:	n/a
Project:	Ann Allison Lease		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent ^a	<0.010	0.010	mg/l	1	07/17/14 09:00	BF	SM 3500CR B-2011
Chromium, Trivalent ^b	<0.020	0.020	mg/l	1	07/17/14 09:00	BF	SW846 6010C/7196A M

(a) Sample preserved within 24hrs. to extend the hold time.
(b) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit



Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



CHAIN OF CUSTODY

Accutest Laboratories Mountain States
4036 Youngfield Street Wheat Ridge, Co 80033
TEL 303-425-6021 877-737-4521
FAX 303-425-6021

PAGE ____ OF ____

ACCUTEST! LABORATORIES				Accutest Laboratories Mountain States 4036 Youngfield Street Wheat Ridge, Co 80033 TEL 303-425-6021 877-737-4521 FAX 303-425-6021				FED-EX Tracking # _____ Accutest Quote # _____		Bottle Order Control # _____ Accutest Job # D59594	
Client / Reporting Information Company Name: Ritch's Exp. Inc. Street Address: PO Box 783188 City: Wichita KS State: 67278 Zip: 3188 Project Contact: John Nienberger E-mail: john-nienberger@exp-on.com Phone #: 316-691-9500 Fax #: 316-691-9550 Supplier(s) Name(s): Ed Thomas Phone #: 720-841-9550				Project Information Project Name: Anna Allison Loe. H.R. Baby July Street: _____ City: _____ Billing Information (if different from Report to): Company Name: _____ Project # _____ Street Address: _____ Client PO # _____ City: _____ State: _____ Zip: _____ Project Manager: _____ Attention: _____ PO# _____				Requested Analysis (see TEST CODE sheet) <div style="display: flex; justify-content: space-between;"> <div> AR 255L CN 2AD Metals NO2, NO3O OC 164 RA 226 RA 208 TDS TSS UL 2 RTN XMS + 12 DA XCR (TOL) </div> <div> Matrix Codes DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank </div> </div>			
Accutest Sample # _____ Field ID / Point of Collection: Anna Allison Loe. H.R. Co. Colo.				MECH/DI # _____ Date: 7-10-08 Time: 8:00 AM Sampled by: ET Matrix: EA		Number of preserved Bottles: HG _____ NH4H _____ HNO3 _____ H2SO4 _____ NONE _____ DI Water _____ MICH _____ ENCORE _____ Residual _____		LAB USE ONLY 01 75-02 1/7/08 in 7/10/08			
Turnaround Time (Business days) <input type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> Std. 5 Business Days (By Contract only) <input type="checkbox"/> 5 Day R/SH <input type="checkbox"/> 3 Day EMERGENT <input type="checkbox"/> 2 Day EMERGENT <input type="checkbox"/> 1 Day EMERGENT				Approved By (Accutest PM) / Date: _____ _____ _____ _____		<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> Commercial "B" + Narrative <input type="checkbox"/> FULLT1 (Level 3+4) <input type="checkbox"/> State Forms <input type="checkbox"/> EDD Format <input type="checkbox"/> PDF Commercial "A" = Results Only Commercial "B" = Results + QC Summary		Comments / Special Instructions Lid No 3, No 2 SP. add AR to Mat. List			
Emergency & Rush T/A data available VIA LabLink											
Sample Custody must be documented below each time samples change possession, including courier delivery.											
Relinquished By: John Nienberger Date Time: 7/10/08 7:42 AM		Received By: John Nienberger Date Time: 7/10/08 10:15		Relinquished By: _____ Date Time: _____		Received By: _____ Date Time: _____		Relinquished By: _____ Date Time: _____		Received By: _____ Date Time: _____	
Relinquished By: _____ Date Time: _____		Received By: _____ Date Time: _____		Relinquished By: _____ Date Time: _____		Received By: _____ Date Time: _____		Relinquished By: _____ Date Time: _____		Received By: _____ Date Time: _____	
Relinquished By: _____ Date Time: _____		Received By: _____ Date Time: _____		Relinquished By: _____ Date Time: _____		Received By: _____ Date Time: _____		Relinquished By: _____ Date Time: _____		Received By: _____ Date Time: _____	

5.1

D59594: Chain of Custody

Page 1 of 1



GC/MS Volatiles

9

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: D59594
Account: RITEKSW Ritchie Exploration, Inc.
Project: Ann Allison Lease

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6V1468-MB	6V25955.D	1	07/14/14	BR	n/a	n/a	V6V1468

The QC reported here applies to the following samples:

Method: EPA 624

D59594-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	0.25	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.31	ug/l	
91-20-3	Naphthalene	ND	5.0	2.0	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.5	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	114% 70-130%
17060-07-0	1,2-Dichloroethane-D4	115% 70-130%
2037-26-5	Toluene-D8	99% 70-130%
460-00-4	4-Bromofluorobenzene	96% 70-130%

6.1.1

6

Blank Spike Summary

Page 1 of 1

Job Number: D59594
Account: RITEKSW Ritchie Exploration, Inc.
Project: Ann Allison Lease

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V6V1468-BS	6V25954.D	1	07/14/14	BR	n/a	n/a	V6V1468

The QC reported here applies to the following samples:

Method: EPA 624

D59594-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	18.6	93	70-130
107-06-2	1,2-Dichloroethane	20	20.3	102	70-130
100-41-4	Ethylbenzene	20	17.7	89	70-130
91-20-3	Naphthalene	20	13.8	69* a	70-130
108-88-3	Toluene	20	18.3	92	70-130
1330-20-7	Xylene (total)	60	53.6	89	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	111%	70-130%
17060-07-0	1,2-Dichloroethane-D4	109%	70-130%
2037-26-5	Toluene-D8	101%	70-130%
460-00-4	4-Bromofluorobenzene	106%	70-130%

(a) Outside control limits on the BS; within control limits in the MS. No further action is required.

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: D59594

Account: RITEKSW Ritchie Exploration, Inc.

Project: Ann Allison Lease

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D59639-1MS	6V25960.D	1	07/14/14	BR	n/a	n/a	V6V1468
D59639-1	6V25959.D	1	07/14/14	BR	n/a	n/a	V6V1468

The QC reported here applies to the following samples:

Method: EPA 624

D59594-1

CAS No.	Compound	D59639-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
71-43-2	Benzene	ND		20	21.9	110	70-130
107-06-2	1,2-Dichloroethane	ND		20	24.1	121	70-130
100-41-4	Ethylbenzene	ND		20	21.1	106	70-130
91-20-3	Naphthalene	ND		20	14.7	74	57-130
108-88-3	Toluene	ND		20	21.8	109	70-130
1330-20-7	Xylene (total)	ND		60	63.7	106	70-130

CAS No.	Surrogate Recoveries	MS	D59639-1	Limits
1868-53-7	Dibromofluoromethane	114%	112%	70-130%
17060-07-0	1,2-Dichloroethane-D4	111%	107%	70-130%
2037-26-5	Toluene-D8	104%	97%	70-130%
460-00-4	4-Bromofluorobenzene	106%	89%	70-130%

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 1

Job Number: D59594
 Account: RITEKSW Ritchie Exploration, Inc.
 Project: Ann Allison Lease

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D59655-1DUP	6V25969.D	1	07/15/14	BR	n/a	n/a	V6V1468
D59655-1	6V25968.D	1	07/15/14	BR	n/a	n/a	V6V1468

The QC reported here applies to the following samples:

Method: EPA 624

D59594-1

CAS No.	Compound	D59655-1		DUP		RPD	Limits
		ug/l	Q	ug/l	Q		
71-43-2	Benzene	ND		ND		nc	30
107-06-2	1,2-Dichloroethane	ND		ND		nc	30
100-41-4	Ethylbenzene	ND		ND		nc	30
91-20-3	Naphthalene	ND		ND		nc	30
108-88-3	Toluene	ND		ND		nc	30
1330-20-7	Xylene (total)	ND		ND		nc	30

CAS No.	Surrogate Recoveries	DUP	D59655-1	Limits
1868-53-7	Dibromofluoromethane	128%	126%	70-130%
17060-07-0	1,2-Dichloroethane-D4	122%	121%	70-130%
2037-26-5	Toluene-D8	98%	96%	70-130%
460-00-4	4-Bromofluorobenzene	88%	89%	70-130%

* = Outside of Control Limits.



GC/MS Semi-volatiles

QC Data Summaries

7

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: D59594
Account: RITEKSW Ritchie Exploration, Inc.
Project: Ann Allison Lease

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP10221-MB	1G120449.D	1	07/11/14	DC	07/10/14	OP10221	E1G1366

The QC reported here applies to the following samples:

Method: EPA 625

D59594-1

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	5.0	0.53	ug/l	
108-95-2	Phenol	ND	5.0	0.75	ug/l	

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	52% 10-120%
4165-62-2	Phenol-d5	40% 9-120%
118-79-6	2,4,6-Tribromophenol	90% 19-125%
4165-60-0	Nitrobenzene-d5	77% 35-120%
321-60-8	2-Fluorobiphenyl	80% 35-120%
1718-51-0	Terphenyl-d14	104% 32-122%

7.1.1

7

Blank Spike Summary

Page 1 of 1

Job Number: D59594
Account: RITEKSW Ritchie Exploration, Inc.
Project: Ann Allison Lease

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP10221-BS	1G120450.D	1	07/11/14	DC	07/10/14	OP10221	E1G1366

The QC reported here applies to the following samples:

Method: EPA 625

D59594-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
105-67-9	2,4-Dimethylphenol	50	38.8	78	61-120
108-95-2	Phenol	50	15.8	32	24-120

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	58%	10-120%
4165-62-2	Phenol-d5	40%	9-120%
118-79-6	2,4,6-Tribromophenol	94%	19-125%
4165-60-0	Nitrobenzene-d5	83%	35-120%
321-60-8	2-Fluorobiphenyl	83%	35-120%
1718-51-0	Terphenyl-d14	91%	32-122%

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: D59594
 Account: RITEKSW Ritchie Exploration, Inc.
 Project: Ann Allison Lease

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP10221-MS	1G120452.D	1	07/11/14	DC	07/10/14	OP10221	E1G1366
D59273-31	1G120451.D	1	07/11/14	DC	07/10/14	OP10221	E1G1366

The QC reported here applies to the following samples:

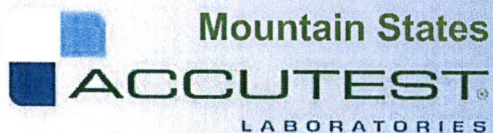
Method: EPA 625

D59594-1

CAS No.	Compound	D59273-31 ug/l	Spike Q	MS ug/l	MS %	Limits
105-67-9	2,4-Dimethylphenol	ND	50	22.0	44	10-120
108-95-2	Phenol	ND	50	15.8	32	16-120

CAS No.	Surrogate Recoveries	MS	D59273-31	Limits
367-12-4	2-Fluorophenol	34%	35%	10-120%
4165-62-2	Phenol-d5	36%	30%	9-120%
118-79-6	2,4,6-Tribromophenol	62%	50%	19-125%
4165-60-0	Nitrobenzene-d5	93%	67%	35-120%
321-60-8	2-Fluorobiphenyl	90%	71%	35-120%
1718-51-0	Terphenyl-d14	101%	98%	32-122%

* = Outside of Control Limits.



Metals Analysis

QC Data Summaries

8

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method BlanksLogin Number: D59594
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison LeaseQC Batch ID: MP13401
Matrix Type: AQUEOUSMethods: SW846 6010C
Units: ug/l

Prep Date: 07/11/14

Metal	RL	IDL	MDL	MB	
				raw	final
Aluminum	100	11	41		
Antimony	30	2.1	19	1.4	<30
Arsenic	25	3.8	5.6	0.90	<25
Barium	10	.2	1.4		
Beryllium	10	.9	1.2	0.30	<10
Boron	50	.8	6.6	1.5	<50
Cadmium	10	.2	.36	0.0	<10
Calcium	400	2.4	41		
Chromium	10	.3	.4	-0.10	<10
Cobalt	5.0	.5	.57		
Copper	10	.8	1.9	-0.60	<10
Iron	70	1.5	9.5		
Lead	50	2.1	21	1.5	<50
Lithium	5.0	.4	2.7		
Magnesium	200	6.8	19		
Manganese	5.0	.5	.46		
Molybdenum	10	.4	.84		
Nickel	30	.5	.87	0.20	<30
Phosphorus	100	15	20		
Potassium	1000	99	270		
Selenium	50	7.1	11	-1.1	<50
Silicon	50	4.7	5.2		
Silver	30	.3	.6		
Sodium	400	7.3	170		
Strontium	5.0	.01	.12		
Thallium	10	1.8	4		
Tin	50	12	16		
Titanium	10	.1	2.1		
Uranium	50	2.9	5.5		
Vanadium	10	.4	.4		
Zinc	30	.4	3.2	1.7	<30

Associated samples MP13401: D59594-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method BlanksLogin Number: D59594
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison LeaseQC Batch ID: MP13401
Matrix Type: AQUEOUSMethods: SW846 6010C
Units: ug/l

Prep Date: 07/11/14

					MB
Metal	RL	IDL	MDL	raw	final

(anr) Analyte not requested

8.1.1

8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D59594
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

QC Batch ID: MP13401
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/11/14

Metal	D59594-1A		Spikelot		QC
	Original	MS	ICPALL2	% Rec	Limits
Aluminum					
Antimony	2.3	490	1000	97.6	75-125
Arsenic	13.2	1200	1000	115.4	75-125
Barium	anr				
Beryllium	0.0	564	500	112.8	75-125
Boron	3650	4770	1000	112.0	75-125
Cadmium	0.0	555	500	111.0	75-125
Calcium	anr				
Chromium	1.9	517	500	103.0	75-125
Cobalt					
Copper	7.3	534	500	106.8	75-125
Iron					
Lead	2.5	1030	1000	102.8	75-125
Lithium					
Magnesium	anr				
Manganese					
Molybdenum	anr				
Nickel	3.6	507	500	100.7	75-125
Phosphorus					
Potassium					
Selenium	0.0	1220	1000	122.0	75-125
Silicon					
Silver	anr				
Sodium	anr				
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	48.4	624	500	115.1	75-125

Associated samples MP13401: D59594-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

8.1.2

8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D59594
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

QC Batch ID: MP13401
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/11/14

	D59594-1A	Spikelot	QC
Metal	Original MS	ICPALL2 % Rec	Limits

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

8.1.2

8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D59594
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

QC Batch ID: MP13401
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/11/14

	D59594-1A		Spikelot		MSD	QC
Metal	Original	MSD	ICPALL2	% Rec	RPD	Limit
Aluminum						
Antimony	2.3	483	1000	96.2	1.4	20
Arsenic	13.2	1190	1000	114.4	3.3	20
Barium	anr					
Beryllium	0.0	557	500	111.4	1.2	20
Boron	3650	4660	1000	101.0	2.3	20
Cadmium	0.0	547	500	109.4	1.5	20
Calcium	anr					
Chromium	1.9	506	500	100.8	2.2	20
Cobalt						
Copper	7.3	530	500	106.0	6.0	20
Iron						
Lead	2.5	1020	1000	101.8	1.0	20
Lithium						
Magnesium	anr					
Manganese						
Molybdenum	anr					
Nickel	3.6	498	500	98.9	1.8	20
Phosphorus						
Potassium						
Selenium	0.0	1200	1000	120.0	1.7	20
Silicon						
Silver	anr					
Sodium	anr					
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	48.4	611	500	112.5	2.1	20

Associated samples MP13401: D59594-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D59594
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

QC Batch ID: MP13401
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/11/14

	D59594-1A	Spikelot	MSD	QC
Metal	Original MSD	ICPALL2 % Rec	RPD	Limit

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

8.1.2

8

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D59594
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

QC Batch ID: MP13401
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/11/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony	486	1000	97.2	80-120
Arsenic	1110	1000	111.0	80-120
Barium	anr			
Beryllium	578	500	115.6	80-120
Boron	1100	1000	110.0	80-120
Cadmium	517	500	103.4	80-120
Calcium	anr			
Chromium	518	500	103.6	80-120
Cobalt				
Copper	481	500	96.2	80-120
Iron				
Lead	1050	1000	105.0	80-120
Lithium				
Magnesium	anr			
Manganese				
Molybdenum	anr			
Nickel	510	500	102.0	80-120
Phosphorus				
Potassium				
Selenium	1170	1000	117.0	80-120
Silicon				
Silver	anr			
Sodium	anr			
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	583	500	116.6	80-120

Associated samples MP13401: D59594-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

8.1.3

8

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D59594
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

QC Batch ID: MP13401
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/11/14

Metal	BSP	Spikelot	QC	
	Result	ICPALL2	% Rec	Limits

(anr) Analyte not requested

8.13

8

SERIAL DILUTION RESULTS SUMMARY

Login Number: D59594
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

QC Batch ID: MP13401
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/11/14

D59594-1A		QC	
Metal	Original	SDL 1:5	%DIF Limits
Aluminum			
Antimony	2.30	0.00	100.0(a) 0-10
Arsenic	13.2	34.0	26.1 (a) 0-10
Barium	anr		
Beryllium	0.00	0.00	NC 0-10
Boron	3650	3590	1.6 0-10
Cadmium	0.00	0.00	NC 0-10
Calcium	anr		
Chromium	1.90	0.00	100.0(a) 0-10
Cobalt			
Copper	7.30	10.0	NC 0-10
Iron			
Lead	2.50	16.5	560.0(a) 0-10
Lithium			
Magnesium	anr		
Manganese			
Molybdenum	anr		
Nickel	3.60	5.50	52.8 (a) 0-10
Phosphorus			
Potassium			
Selenium	0.00	0.00	NC 0-10
Silicon			
Silver	anr		
Sodium	anr		
Strontium			
Thallium			
Tin			
Titanium			
Uranium			
Vanadium			
Zinc	48.4	51.0	5.4 0-10

Associated samples MP13401: D59594-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

8.1.4

8

SERIAL DILUTION RESULTS SUMMARY

Login Number: D59594
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

QC Batch ID: MP13401
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 07/11/14

	D59594-1A	QC
Metal	Original SDL 1:5 %DIF	Limits

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

8.1.4

8



General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRYLogin Number: D59594
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Bromide	GP13015/GN25507			mg/l	0.5	0.525	105.0	90-110%
Chloride	GP13015/GN25507	0.50	0.0	mg/l	5	4.96	99.2	90-110%
Chromium, Hexavalent	GN25625	0.010	0.0	mg/l				
Chromium, Hexavalent	GN25625	0.010	0.0	mg/l	0.1	0.10	101.4	90-110%
Chromium, Hexavalent	GN25625			mg/l	0.1	0.098	98.2	90-110%
HEM Oil and Grease	GP13120/GN25713	5.0	0.0	mg/l	40	35.2	88.0	78-114%
Nitrogen, Nitrate	GP13015/GN25507	0.010	0.0	mg/l	0.1	0.102	102.0	90-110%
Nitrogen, Nitrite	GP13015/GN25507	0.0040	0.0	mg/l	0.05	0.0510	102.0	90-110%
Solids, Total Dissolved	GN25531	10	0.0	mg/l	400	418	104.5	90-110%
Solids, Total Suspended	GN25608	5.0	0.0	mg/l	300	301	100.3	90-110%
Sulfate	GP13015/GN25507	0.50	0.0	mg/l	5	5.10	102.0	90-110%
Weak Acid Dissociable Cn	GP13088/GN25655	0.0050	0.0	mg/l	0.1	0.0976	97.6	90-110%

Associated Samples:

Batch GN25531: D59594-1
Batch GN25608: D59594-1
Batch GN25625: D59594-1A
Batch GP13015: D59594-1
Batch GP13088: D59594-1
Batch GP13120: D59594-1
(*) Outside of QC limits9.1
9

BLANK SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D59594
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

Analyte	Batch ID	Units	Spike Amount	BSD Result	RPD	QC Limit
HEM Oil and Grease	GP13120/GN25713	mg/l	40	33.8	4.1	20%

Associated Samples:
Batch GP13120: D59594-1
(*) Outside of QC limits

9.2
9

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRYLogin Number: D59594
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GN25625	D59639-1F	mg/l	0.013	0.012	8.0	0-20%
Solids, Total Dissolved	GN25531	D59594-1	mg/l	3380	3360	0.6	0-20%
Solids, Total Suspended	GN25608	D59697-2	mg/l	118	118	0.0	0-20%

Associated Samples:

Batch GN25531: D59594-1

Batch GN25608: D59594-1

Batch GN25625: D59594-1A

(*) Outside of QC limits

9.3
9

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRYLogin Number: D59594
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Bromide	GP13015/GN25507	D59610-6	mg/l	0.0	0.5	0.56	112.0	80-120%
Chloride	GP13015/GN25507	D59610-6	mg/l	1.6	5	6.5	98.0	80-120%
Chromium, Hexavalent	GN25625	D59639-1F	mg/l	0.013	0.1	0.11	94.0	85-115%
HEM Oil and Grease	GP13120/GN25713	D59594-1	mg/l	3.3	40	42.5	97.9	78-114%
Nitrogen, Nitrate	GP13015/GN25507	D59610-6	mg/l	0.23	0.1	0.33	100.0	80-120%
Nitrogen, Nitrite	GP13015/GN25507	D59610-6	mg/l	0.0	0.05	0.053	106.0	80-120%
Sulfate	GP13015/GN25507	D59610-6	mg/l	8.2	5	13.4	104.0	80-120%
Weak Acid Dissociable Cn	GP13088/GN25655	D59596-1	mg/l	0.0	0.1	0.10	100.0	80-120%

Associated Samples:

Batch GN25625: D59594-1A

Batch GP13015: D59594-1

Batch GP13088: D59594-1

Batch GP13120: D59594-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

9.4
9

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRYLogin Number: D59594
Account: RITEKSW - Ritchie Exploration, Inc.
Project: Ann Allison Lease

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Bromide	GP13015/GN25507	D59610-6	mg/l	0.0	0.5	0.55	1.8	20%
Chloride	GP13015/GN25507	D59610-6	mg/l	1.6	5	6.5	0.0	20%
Chromium, Hexavalent	GN25625	D59734-1	mg/l	0.0	0.1	0.097	-1.0	20%
Nitrogen, Nitrate	GP13015/GN25507	D59610-6	mg/l	0.23	0.1	0.33	0.0	20%
Nitrogen, Nitrite	GP13015/GN25507	D59610-6	mg/l	0.0	0.05	0.053	0.0	20%
Sulfate	GP13015/GN25507	D59610-6	mg/l	8.2	5	13.4	0.0	20%

Associated Samples:

Batch GN25625: D59594-1A

Batch GP13015: D59594-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

9.5
9



08/15/14

Technical Report for

Ritchie Exploration, Inc.

Ann Allison Lease

Accutest Job Number: D60036X

Sampling Date: 07/23/14

Report to:

Ritchie Exploration, Inc.
PO Box 783188
Wichita, KS 67278-3188
john@ritchie-exp.com; palisadestech@gmail.com
ATTN: John Niernberger

Total number of pages in report: 10



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read "Scott Heideman".

Scott Heideman
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), TX (T104704511)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

Table of Contents

Sections:

1

2

3

-1-

Section 1: Sample Summary	3
Section 2: Subcontract Lab Data	4
Section 3: Misc. Forms	9
3.1: Chain of Custody	10



Accutest Laboratories

Sample Summary

Ritchie Exploration, Inc.

Job No: D60036X

Ann Allison Lease

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
D60036-1X	07/23/14	08:00 ET	07/23/14	AQ Water	ANN ALLISON LSE. WASH CO COLO



Subcontract Lab Data

Report of Analysis

**Hazen Research, Inc.**

4601 Indiana Street
Golden, CO 80403 USA
Tel: (303) 279-4501
Fax: (303) 278-1528

DATE August 14, 2014
HRI PROJECT 009-93
HRI SERIES NO G410/14
DATE REC'D. 7/24/2014
CUST. P.O.# D60036X

2

Accutest Mountain States
Kaila Gaither
4036 Youngfield St
Wheat Ridge, CO 80033

REPORT OF ANALYSIS

SAMPLE NO. G410/14-1


SAMPLE IDENTIFICATION: D60036X-1 - Sampled 07/23/2014 @ 0800

PARAMETER	RESULT	DETECTION LIMIT	METHOD	ANALYSIS DATE	ANALYST
Radium-226 (+-Precision*), pCi/l (T)	0.7(+/-0.3)	0.1	SM 7500-Ra B	7/31/2014 @ 0920	LD
Radium-228 (+-Precision*), pCi/l (T)	0.6(+/-0.6)	0.5	EPA Ra-05	8/5/2014 @ 0905	BS

*Variability of the radioactive decay process (counting error) at the 95% confidence level, 1.96 sigma.
Certification ID's: CO/EPA CO00008; CT PH-0152; KS E-10265; NYELAP 11417;
RI LAO00284; TX T104704256-11-2; WI 998376610

Results reported herein relate only to discrete samples submitted by the client. Hazen Research, Inc. does not warrant that the results are representative of anything other than the samples that were received in the laboratory.

CODES: (T) = Total (D) = Dissolved (S) = Suspended (R) = Total Recoverable
(PD) = Potentially Dissolved < = Less Than

By: 
Robert Rostad
Technical Director, Analytical Services

Page 1 of 1

An Employee-Owned Company

HAZEN RESEARCH, INC.
RADIOCHEMISTRY LABORATORYDate: 07/31/2014

2

Batch QC Evaluation FormAnalyte: Rn-226Control Standard: ID: NBL 6A pCi/ml: 23.0 (use 2 ml diluted)Spike Solution: ID: NBL 6A pCi/ml: 23.0 (use 2 ml)Spike Recovery Calculation: Sample: TAP

$$\text{Calculation: } \frac{(44.1)(1.0) - (0.2)(1.0)}{46.0} \times 100 = \underline{95} \%$$

Batch QC Evaluation:

Parameter	Criteria	Pass	Fail	N/A
Control Std.	+/- 20 %	✓		
Spike Recovery	80 - 120 %	✓		
Blank	< or = 2 x MDL	✓		
Duplicate 1	95% confidence interval overlap	✓		
Duplicate 2 *	95% confidence interval overlap	✓		

* Required for batch size greater than 10 samples.

Conclusions:

- ☒ Batch Passes
☐ Batch Fails
☐ Batch Passes, with exceptions:

Reruns Required: _____

Narrative: _____

Batch Listing by Lab Control Number:

<u>G375/14</u>	<u>G425/14</u>
<u>G376/14</u>	<u>G468/14</u>
<u>G377/14</u>	<u>G471/14</u>
<u>G409/14</u>	<u>G474/14</u>
<u>G410/14</u>	<u>G486/14</u>
<u>G426/14</u>	<u>G487/14</u>

Evaluator:

Hazen Kuoppala8-6-14

Date

HAZEN RESEARCH, INC.
RADIOCHEMISTRY LABORATORYDate: 08/07/2014

2

Batch QC Evaluation FormAnalyte: Ra-228Control Standard: ID: NBL 7A pCi/ml: 11.8 (use 2 ml diluted)Spike Solution: ID: NBL 7A pCi/ml: 11.8 (use 2 ml)Spike Recovery Calculation: Sample: TAP

$$\text{Calculation: } \frac{(23.9)(1.0) - (0.0)(1.0)}{23.6} \times 100 = 101\%$$

Batch QC Evaluation:

Parameter	Criteria	Pass	Fail	N/A
Control Std.	+/- 20 %	✓		
Spike Recovery	80 - 120 %	✓		
Blank	< or = 2 x MDL	✓		
Duplicate 1	95% confidence interval overlap	✓		
Duplicate 2 *	95% confidence interval overlap			✓

* Required for batch size greater than 10 samples.

Conclusions:

- ☒ Batch Passes
☐ Batch Fails
☐ Batch Passes, with exceptions:

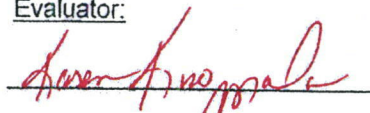
Reruns Required: _____

Narrative: _____

Batch Listing by Lab Control Number:

<u>G248/14</u>	_____
<u>G442/14</u>	_____
<u>G410/14</u>	_____
<u>G496/14</u>	_____
_____	_____
_____	_____
_____	_____
_____	_____

Evaluator: _____


Date: 8-12-14

ACCUTEST®

4036 Youngfield St., Wheat Ridge, CO 80033
303-425-6021 FAX: 303-425-6854

Accutest Job #: D60036X

Accutest Quote #: 0

AMS P.O. #:

Project No.:

[illegible]



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Mountain States
4036 Youngfield Street Wheat Ridge, Co 80033
TEL. 303-425-6021 877-737-4521
FAX 303-425-6021

[illegible]

D60036X: Chain of Custody

Page 1 of 1