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				
MONITO	RING PERIOD				
MONITO MM/DD/YYYY	RING PERIOD MM/DD/YYYY				

DMR Mailing ZIP CODE:

67226-2328

MINOR

Unnamed tributary to Vega Creek tributary to South Plat

External Outfall

No Discharge

		QUAN	ITITY OR LOADIN	1G	C	UALITY OR CONC	ENTRATION		NO.	SAMPLE	
PARAMETER		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS	EX	OF ANALYSIS	TYPE
РН	SAMPLE MEASUREMENT	*****	*****	*****	7.78	*****	7.86	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 EXECUTIV	supervision in a	ccordance with a system d	ment and all attachments we esigned to assure that qualifi	ed personnel properly g	ather and		>	T	TEL	EPHONE	DATE
John Wienberger Production Mana TYPED OR PRINTED	system, or those to the best of m	e persons directly responsil y knowledge and belief, tru Ities for submitting false inf	on my inquiry of the person of ble for gathering the informat e, accurate, and complete. I ormation, including the possi	ion, the information sub am aware that there are	mitted is,	URE OF PRINCIPAL AUTHORIZE			SIG-6		8-27-20 MM/DD/YYY

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				
MONITO	ORING 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

		QUAN	ITITY OR LOADIN	NG	(QUALITY OR CONC	CENTRATION		NO. FREQUENCY		SAMPLE
PARAMETER		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS	EX	OF ANALYSIS	TYPE
eryllium, total recoverable [as Be]	SAMPLE MEASUREMENT	*****	*****	****	*****	<10	<10	ug/L			
0998 1 0 Effluent Gross	PERMIT REQUIREMENT	****	*****	*****	*****	Req. Mon. 30DA AVG	Req. Mon. DAILY MX	ug/L		Twice Per Month	GRAB
lickel, total recoverable	SAMPLE MEASUREMENT	*****	****	*****	*****	<30	<30	ug/L			
11074 1 0 Effluent Gross	PERMIT REQUIREMENT	*****	*****	*****	*****	Req. Mon. 30DA AVG	Req. Mon. DAILY MX	ug/L		Twice Per Month	GRAB
inc, 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
ead, 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	supervision in a	ccordance with a system d	ment and all attachments we esigned to assure that qualifi on my inquiry of the person	ed personnel properly ga	ther and)		TEL	EPHONE	DATE
John Newberger	system, or thos to the best of m significant pena	e persons directly responsi y knowledge and belief, tru Ities for submitting false inf	on my inquiry of the person of ble for gathering the informat ie, accurate, and complete. I formation, including the possi	ion, the information subram aware that there are	nitted is,	URE OF PRINCIPAL	EXECUTIVE OFFIC	ER OR	316-6	91-9500	8-27-20
TYPED OR PRINTED	knowing violation	ons.				AUTHORIZE	D AGENT		AREA Code	NUMBER	MM/DD/YYY

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
MONITO	ORING 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

		QUAN	ITITY OR LOADIN	1G		QUALITY OR CON	CENTRATION		NO.	FREQUENCY	SAMPLE
PARAMETER		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS	EX	OF ANALYSIS	TYPE
Dil 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	supervision in a	ccordance with a system de	nent and all attachments wer esigned to assure that qualifi	ed personnel properly ga	ather and)	T	TEL	EPHONE	DATE
John Niewburger Production Manac TYPED OR PRINTED	system, or those to the best of my	e persons directly responsit y knowledge and belief, true ties for submitting false infe	on my inquiry of the person of ple for gathering the informat e, accurate, and complete. I ormation, including the possil	ion, the information sub- am aware that there are	mitted is,	TURE OF PRINCIPAL AUTHORIZE			16-6	91-950 -	8-27-20 MM/DD/YYY

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				
MONITO	RING PERIOD				
MONTO	KING FERIOD				
MM/DD/YYYY	MM/DD/YYYY				

DMR Mailing ZIP CODE:

67226-2328

MINOR

Unnamed tributary to Vega Creek tributary to South Plat

External Outfall

No Discharge

		QUAN	ITITY OR LOADIN	G		QUALITY OR CONC	ENTRATION		NO. FREQUENCY		SAMPLE
PARAMETER		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS	EX	OF ANALYSIS	TYPE
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 pla	nt SAMPLE MEASUREMENT	.015	.020	MGD	****	*****	*****	*****			
50050 1 0 Effluent Gross	PERMIT REQUIREMENT	.0076 30DA AVG	Req. Mon. DAILY MX	MGD	*****	*****	*****	*****		Continuous	RCORDF
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 recoverab	e SAMPLE MEASUREMENT	*****	****	*****	*****	<10	<10	ug/L			
78247 1 0 Effluent Gross	PERMIT REQUIREMENT	****	*****	*****	*****	Req. Mon. 30DA AVG	Req. Mon. DAILY MX	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	supervision in	accordance with a system d	ment and all attachments were esigned to assure that qualifie on my inquiry of the person o	ed personnel properly ga	ather and				TEL	EPHONE	DATE
John Wünberger Production Mana TYPED OR PRINTED	system, or tho	ise persons directly responsi my knowledge and belief, tru nalties for submitting false inf	ole for gathering the informati e, accurate, and complete. I a ormation, including the possib	on, the information subr	mitted is,	TURE OF PRINCIPAL AUTHORIZE		_	S16-6	91-9500 NUMBER	8-27-2016 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

Received 89/83/2814

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					
Ī	MONITO	ING PERIO	OD				
	MM/DD/YYYY	N	M/DD/YYYY				
г	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

		QUANTITY OR LOADING			C	UALITY OR CON	CENTRATION		NO.		
PARAMETER		VALUE	VALUE	UNITS	VALUE	VALUE	VALUE	UNITS	EX	OF ANALYSIS	TYPE
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

TO AN Winderger

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 known or including the possibility of fine and imprisonment for known or including the possibility of fine and imprisonment for known or including the possibility of fine and imprisonment for known or including the possibility of fine and imprisonment for known or including the possibility of fine and imprisonment for known or including the possibility of fine and imprisonment for known or including the possibility of fine and imprisonment for known or including the possibility of fine and imprisonment for known or including the possibility of fine and imprisonment for known or including the possibility of fine and imprisonment for known or including the possibility of fine and imprisonment for known or including the possibility of fine and imprisonment for known or including the possibility of fine and imprisonment for known or including the possibility of fine and imprisonment for known or including the possibility of fine and imprisonment for known or including the possibility of fine and imprisonment for known or including the possibility of fine and imprisonment for known or including the possibility of fine and imprisonment for known or including the possibility of fine and the pos

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE DATE

316-691-9500 8-27-2014

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.

WATER SAMPLING FOR ANN ALLISON AND ANDERSON Lse. In Washington County, Colorado -JULY-2014

Ann Allison Lse

Date	7/2	7/10*	7/16	7/23*	7/29
Cal. Time	6:00am	6:00am	6:00am	6:00am	6:00am
Calibration	4.62/4.00 7.58/7.01	4.75/4.01 9.68/10.00	7.66/7.00 9.70/10.01	4.73/4.00 7.49/7.01	4.69/4.00 9.72/10.0 1
Grab Sample Time	8:00am	8:00am	8:00am	8:00am	n/d
Ph Reading Time Ph Reading	9:00am 7.98	9:00am 7.89	9:00am 7.95	9:00am 7.92	n/d n/d
Visual Observation of Oil					
Discharge Rage/gpm	1.32	5.89	6.66	0.50	n/d

samples due second and fourth week of every month

Anderson Lse

7/2	7/10	7/16	7/23*	7/29
6:00am	6:00am	6:00am	6:00am	6:00am
4.62/4.00 7.58/7.01	4.75/4.01 9.68/10.00	7.66/7.00 9.70/10.01	4.73/4.00 7.49/7.01	4.69/4.00 9.72/10.01
8:00am	8:00am	8:00am	8:00am	8:00am
9:00am	9:00am	9:00am	9:00am	9:00am
7.8	7.86	7.82	7.78	7.82
9.08	13.99	11.41	8.78	9.85

Samples due fourth week of each month.

^{*} indicates date of sample process and delivered to lab.

^{*} indicates date of sample process and delivered to lab.



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.

Scott Heideman Laboratory Director

Sept wall

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.

Mountain States • 4036 Youngfield St. • Wheat Ridge, CO 80033-3862 • tel: 303-425-6021 • fax: 303-425-6854 • http://www.accutest.com



Table of Contents

Sections:

-1-

Section 1: Sample Summary	3
Section 2: Subcontract Lab Data	4
Section 3: Misc. Forms	9
	1



Sample Summary

Ritchie Exploration, Inc.

Ann Allison Lease

Job No:

D59594X

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





Subcontract Lab Date	a	
Report of Analysis		



Hazen Research, Inc.

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

DATE HRI PROJECT HRI SERIES NO

DATE REC'D.

CUST. P.O.#

July 31, 2014

009-93 G262/14

> 7/11/2014 None Rec'd

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

Robert Rostad

Ву:

Technical Director, Analytical Services

Page 1 of 1

Batch QC Evaluation Form

Analyte:	Ra-226
ruidiy to.	

Control Standard:

ID: NB L 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

Calculation: $(49.1)(1.0) - (0.3)(1.0) \times 100 = 106$ %

Batch QC Evaluation:

Parameter	Criteria	Pass	Fail	N/A
Control Std.	+/ 20 %	-		
Spike Recovery	80 - 120 %			
Blank	< or = 2 x MDL		٠.	
Duplicate 1	95% confidence interval overlap	1		
Duplicate 2 *	95% confidence interval overlap			

^{*} Required for batch size greater than 10 samples.

Conclusions:

Bate	ch Passes	
	ch Fails	
Bate	ch Passes, with exceptions:	
	Reruns Required:	
	Narrative:	

Batch Listing by Lab Control Number:

G297 14	Q328 14
G318 14	G326 14
G321 14	G347 14
G322/14	G343 14
G323 14	G344 14
G325 14	G 262 14

Evaluator:

07/24/2014

Date



HAZEN RESEARC RADIOCHEMISTR		Date:			
Batch QC Evaluat	ion Form				
Analyte: Ro	1-228				
Control Standard:	ID: NBL 7A pCi/ml: 11.8	(use 2 m	l diluted)		
Spike Solution:	ID: NBL 7A pCi/ml: 11.8	_(use_ 2_m	1)		
Spike Recovery Cal	culation: Sample: TAP	***			
Calculati	on: (21.3)(1.0)-(0.0)(<u>/. 0)</u> X 1	00 =	90	_%
Batch QC Evaluation	<u>1:</u>				
Parameter	Criteria	Pass	Fail	N/A	1
Control Std.	+/ 20 %			-	-
Spike Recovery	80 - 120 %	=		+	-
Blank				-	1
Duplicate 1				-	
Duplicate 2 *			-		
Duplicate 2	195% confidence interval overlap				
Conclusions: Batch Batch	Passes Fails Passes, with exceptions:				
	Narrative:				
			* .		
Batch Listing by Lab Co	ontrol Number:				
damlu					
G324 14					
-	adoption and to addition in principles related				
G262 14					
1					
	stimulation and the state of th				
-	and the second second second second	8			
*** Annihilation of the Company of t		valuator	1	1	
		valuator:	1-1	/	
	allocation control and a state of the state	7) (7 8	\cup	
described to the second	-	V	. ,	_	
	-	- 7	129/2	1116	
		0/	12910	UIT	



Received 89/83/2014

CHAIN OF CUSTOD CHAIN OF CUSTODY

Accutest Job #:	D59594X	
Accutest Quote #:	0 *	
AMS P.O. #:	A 4	
Desired No.		

The state of the s		****	Car is a frame in	303	-425-00	21. 1	1/1.	303	745	003		12	11101.0.7	•		
													Project No.	:		
Client	Information		S	ubcontract L	aborato	ry Info	rma	tion	2			Anal	ytical Info	rmation		100
Accutest Mounta	in States (Al	MS)	Name	Hazen (R	adiolog	ical)	in the Area	. 1	150			1"		* 1 gen		
Address			Address										10 0 and 20 0			
		City	State Zip Golden CO 80403						proportion in		6.8	-64				
		deman	Contact:							/228						
	25-6021; (30		Phone:	(303) 279-		Herit				-	526					
none/Fax #: (303) 44	23-6021, (30	3/425-0054	Collection	(303) 213	T T		P	229	rvati	on	£					
Field ID / Deint of	O-llastica	-				# of bottles	-		H2So4	The state of the state of	Radium 226/228					Comments
Field ID / Point of	Collection	Date	Time		Matrix	bottles	Ĭ	ž j	표 포	ž		-				Comments
D59594X -1		7/10/14	8:00 AM		AQ	4					Х					
									\top	П						
		_			-		H	+	+	\vdash		-				
									_							
									\top							
			-		-		Н	-	+	\vdash		-				
									+	T						
					-		H	+	+	-					-	
												1				
Turnarou	und Information	34 12			Data	a Deliver	rable	Infor	matio	n					/ Remarks	
X 10 Business Day Stan	dard	Approved	By:	Comme	rcial "A"			PDF						Please	use Co	lorado
Other	(Days)							Dist	Deliverable		regulat	tions an	id RLs.			
	(Du)0)	***************************************														
				Comme			Ш	Elec	troni	c De	livery:			1		
				Reduced	d Tier 1			Stat	e For	ms				-		
10 Day Turnaround Harde	copy, RUSH is I	FAX Data unles	ss previously	Full Tier	1			Othe	er (Sp	ecif						
Sample Custody mu	st be docume	nted below-e	ach time sam	ples change	posses	sion, i	nclu	dina	-cou	rier	delivery.	900	For	Subcontr	act Labor	artory Use Only
Relinquished by:	r.s.b.s.	Date & /ime/		Received By:	//	11		3			ime: /			Wegel and the	Headspace	E
1// //		1/1/1/	/1230	1/1/1	1900	12			1	7-1	11-14/12	30			Yes	No 🔲 NA 🔲
Relinquished by:		Date & Time:	3.0	Received By:	-		PARISI	***		te &				where app	licable:	7004
2			14.	2			- 10		2							
Relinquished by:		Date & Time:		1	1			-		te &	ime:					On Ice
3	2	1 1 1 1 1 1 1 1 1	19 14 13 T	3		\$15	1.50	Will "	13	-		1	Temperatu	ire "C		

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody

Date Time:

ACCUTEST		CHAIN OF CUSTODY														PAGE							
LABORATORIES			4036 Young	field Sur	et Wheat		8003	3				FED-E	FED-EX Tracking #						Bottle Order Control #				
LAGGRATURIES			TEL. 3		21 03-425-6	877-737-4 6021	521					Accut	rst Guole	ø			1	Accutest Job # D 5 9 5 9 4				74	
Client / Reporting Information			Proj	ect Info	ormatic	on		1.5			4,500		Requested Analysis (see					(EST CODE sheet) Matrix (Matrix Codes	
Ritchie EXP INC	Project Name	Allison	Se.	46	chie	exty	7	6	4	n na said	Abreme Such									B		D/s	W - Drinking Water W - Ground Water
PO Day 783188	City:			Billing Information (If different from Report to)													CO		SI	WW - Water W - Surface Water SO - Soil			
Dichita KS. 6728-3188	Project#	1 Also	10,1		Address							4								M			SL- Sludge SED-Sediment OI - Oil
The Diensherger Johnerit	Client PO#	ow/bal	scolst	Chy	Sw	icistic	or	idte		7	Žip	_			330					Z			LIQ - Other Liquid AIR - Air SOL - Other Solid
316-(91-9500 316-691-9550 Sampler(s) Nome(s)	Project Manager			Aitent	ion:				PO#			1	10		3		9	120	S	H	18	EB	WP - Wipe FB-Field Blank 3- Equipment Blank RB- Rinse Blank
CP Thomas 200 8419550			Collection			T		Number	r of pres	erved E	Oottles	- 6	9 2	2	3	179	33	2	V	A.	9		TB-Trip Blank
Accutest Sample # Field ID / Point of Collection	MEOH/DI Vial #	Date	Time	Sampled by	Matrix	# of bottle:	HC	HN03	H2SO4	Di Woter	MECH	Bisultate C	2	18	2	OG	2	2	E	16	X	L	AB USE ONLY
Aug Allison Lee		7-10-H	Ma:R	Fin	RA								1	4,000	Con Con								01
12-d. Co. Colo.				1																			
							П																741.0
																							70-07
							П																4
										П													167/01
																						'av	17/10/19
							П	П															
					,,,,		\top	П					1										
							\forall	П		\sqcap													
			100000	1,000	Signation	The state of the s	a Deliv		e Info					1000		no C	omme	nts / S	Specie	d Instru	uctions	910	
Turnaround Time (Business days)	Approved By (Acc	utest PM); / Date:				cial "A" (i				-	te Form			11	11 5	201	No	2	S.P.				
Std. 10 Business Days Std. 5 Business Days (By Contract only)						clai "B" +l				_				0	10	10	1 81	1	1	1			
5 Day RI SH					FULLTI	(Level 3+	4 }							C	8.8	11/2	Joh	TET	4	25			
3 Day EMERGENG 2 Day EMERGENG						Commer	clai "A"	= Res	ults On	ly													
1 Day EMERGENG		Commercial *B' = Results + QC Summary							,														
Emergency & Rush T/A data available VIA Lablink	/ Sa	mple Çustody mı	ist be docun	nented b	elow ea	ch tlme s	ample	s cho	inge p	0558	ssion,	includir	g cour	er deliv	ery.			Simus.					The State of the S
Reproducted by Complet:	0115	Receiped By:	1 -	1c	7/10	114	Relino	palshed	By:						Date Tim	10:	- 1	Received 2	d By:	0.00			٠

D59594X: Chain of Custody

Page 1 of 1





08/06/14





Received

SEP 0 3 2014

Technical Report for

Water Quality Control

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.

Scott Heideman Laboratory Director

Seed attle

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.

 $Mountain \ States \bullet \ 4036 \ Young field \ St. \bullet \ Wheat \ Ridge, \ CO \ 80033-3862 \bullet \ tel: \ 303-425-6021 \bullet \ fax: \ 303-425-6854 \bullet \ http://www.accutest.com$

Table of Contents

.

Section 1: Sample Summary	3
Section 2: Case Narrative/Conformance Summary	
Section 3: Summary of Hits	
Section 4: Sample Results	
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	
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



N



4

C









_

Accutest Laboratories

Sample Summary

Ritchie Exploration, Inc.

Ann Allison Lease

Job No:

D60036

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



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 AO

Batch ID: V6V1481

- All samples were analyzed within the recommended method holding time.
- Sample(s) D60013-1MS, 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 AO

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).</p>

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) D60036-1MS 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: 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) D59997-1DUP were used as the QC samples for the Solids, Total Dissolved analysis,

Wet Chemistry By Method SM 2540D-2011

Matrix AO

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) D60069-1DUP 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

Batch ID: R22848

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

2

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 Job Number: D60036

Account:

Ritchie Exploration, Inc.

Project:

Ann Allison Lease

Collected:

07/23/14

Page 1 of 1

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
D60036-1 ANN ALLISON L	SE. WASH CO	COLO			
Benzene ^a Toluene ^a Ethylbenzene ^a Xylene (total) ^a Naphthalene ^a HEM Oil and Grease Nitrogen, Nitrate Solids, Total Dissolved Solids, Total Suspended	0.0032 0.0029 0.0031 0.0158 0.0033 J 11.6 0.16 2610 9.0	0.0010 0.0020 0.0020 0.0030 0.0050 4.8 0.050 10	0.00025 0.0010 0.00031 0.0015 0.0020	mg/l mg/l mg/l mg/l mg/l mg/l mg/l mg/l	EPA 624 EPA 624 EPA 624 EPA 624 EPA 1664A EPA 300.0/SW846 9056 SM 2540C-2011 SM 2540D-2011
D60036-1A ANN ALLISON L Boron				ug/l	SW846 6010C

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



4

Sample Results	
Report of Analysis	

Report of Analysis

By

BR

Page 1 of 1

ANN ALLISON LSE. WASH CO COLO Client Sample ID:

Lab Sample ID:

D60036-1

Date Sampled: 07/23/14

Prep Date

n/a

Matrix:

AQ - Water

Date Received: 07/23/14

Method:

EPA 624

Percent Solids: n/a

Project:

Ann Allison Lease

DF

1

Analytical Batch Prep Batch V6V1481 n/a

Run #1 a Run #2

Purge Volume

6V26228.D

5.0 ml

File ID

Run #1 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	Limit	ts	
1868-53-7	Dibromofluoromethane	120%		70-13	80%	
17060-07-0	1,2-Dichloroethane-D4	111%		70-13	80%	
2037-26-5	Toluene-D8	95%		70-13	80%	
460-00-4	4-Bromofluorobenzene	98%		70-13	80%	

Analyzed

07/25/14

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





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



Report of Analysis

By

DC

Page 1 of 1

Client Sample ID: ANN ALLISON LSE. WASH CO COLO

Lab Sample ID:

D60036-1

Date Sampled: 07/23/14

Matrix:

AQ - Water

Method:

EPA 625 EPA 625

Date Received: 07/23/14

Project:

Ann Allison Lease

DF

1

Percent Solids: n/a

Run #1

File ID 1G120622.D

Analyzed 07/24/14

Prep Date 07/24/14

Prep Batch OP10303

Analytical Batch E1G1376

Run #2

Initial Volume

Final Volume

Run #1

1060 ml

1.0 ml

Run #2

118-79-6

625 Special List

CAS No. Compound Result

RL

MDL

Units

Q

105-67-9 2,4-Dimethylphenol 108-95-2 Phenol

ND ND

0.00050 mg/l 0.0047 0.00071 mg/l0.0047

CAS No. Surrogate Recoveries Run#1

Run# 2 Limits

367-12-4 2-Fluorophenol 4165-62-2 Phenol-d5

60% 41% 2,4,6-Tribromophenol 94% 10-120% 9-120% 19-125%

4165-60-0 Nitrobenzene-d5 321-60-8 2-Fluorobiphenyl 1718-51-0 Terphenyl-d14

74% 84% 90%

35-120% 35-120% 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





Report of Analysis

Page 1 of 1

Client Sample ID: ANN ALLISON LSE. WASH CO COLO

Lab Sample ID: Matrix:

D60036-1

AQ - Water

Date Sampled: 07/23/14

Date Received: 07/23/14

Project:

Ann Allison Lease

Percent Solids: n/a

General Chemistry

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

(a) Elevated detection limit due to matrix interference.



Report of Analysis

Page 1 of 1

Client Sample ID: ANN ALLISON LSE. WASH CO COLO

Lab Sample ID:

D60036-1A

Date Sampled: 07/23/14

Matrix:

AQ - Water

Date Received: 07/23/14

Project:

Ann Allison Lease

Percent Solids: n/a

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		07/28/14 KV	SW846 6010C ¹	SW846 3010A ³
Beryllium	< 10	10	ug/l	1		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

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

Project:

Ann Allison Lease

Percent Solids: n/a

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	3-	SM 3500CR B-2011
Chromium, Trivalent ^b	< 0.020	0.020	mg/l	1	07/28/14 12:02		SW846 6010C/7196A M

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

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





Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody

ACCUTEST		C	HAIN	OF				ľ									c					OF	-
LABORATORIES			4036 Youn		ei Wheat	Ridge, Co	80033						Tracking	•				Bottle Order Control #					
Client / Reporting Information				FAX 3	303-425-6	021)21			012001203		Requested Analysis (see					20000000	1 100036					
Company Name	Project Name								Requ	10Stec	f Anul	ysis (see T	EST C	ODE			Matrix	Codes				
Proper Address Transfer And	Street:	lison Lec	4/24	1 Pos	5/ 1/	ONNE	<i></i>													X		DW - Drink GW - Grou	und Water
City State Zip	City:			5	Billing Inf	ormatio	n (If di	fferen	t from	Repo	ort to)									0		SW - Surfo	ace Water
WHIL KS (2) 28 -3188		- Marie	4																	BTXN VMGIDDER	1	SL- SI SED-Se	sludge ediment
Challendor or Thomas L	Project#	1/420	to Co	. \	Address	1/	0 W													5		LIQ - Oth	- Oil ner Liquid
316-691-9500 316-691-850	Client PO	1 then	عاد المراجعة	City-	2	***	St	ate		Zip	0									2	1	SOL - Oti	ther Solid Wipe
Sampler(s) Name(s) Phone #	Project Manager	2		Altent	ion:	-		P	O#			V	9		8	3	- 5	DX.	N	5	3	FB-Field EB- Equipm RB- Rins	ment Blank
05×448:05 30000 Q3		Ι	Collection				Τ	iumber (100	ut.	35	4	7	. 2	9	26	200	1		4	TB-Trip	
Accusest			Conection	Sampled	1		T.	TT.		- Item	ш.	0	2	10	9	ول	0	N	DA	TY S	3		
Sample Field ID / Point of Collection	MEOH/DI Vial #	Date	Time	by	-	# of bottles	DH ON	HNO3	NONE	DI Wate	ENC	0	U	2	2	0	06	04	1-	>	1	LAB US	
HODINGON LSC.		7-23-14	80W	ET.	433		+	H	+	\vdash	+	X	X	X	Y	X	X	Y	X	X	X	0	
144.00-010			1				\vdash	\forall			+					-						C	7. TB
				1				$\dagger \dagger$	T			<u> </u>										_	
																							1
								1	\perp													1	72217
							\vdash	\vdash	+	4	-	_									_	-	
							+	+	+	+	+	-										-	
					ļ		+	+	+	+	+	-			_				-1		-		
				1			T	T	†		T												
						110000000000000000000000000000000000000																	
Turnaround Time (Business days)	Approved By (Acc	ulost PM): / Dale:		alben soot 5	Commerc		Delivi	erable			Forms				1 .		-	-	-		actions	1000	
Std. 10 Business Days Std. 5 Business Days (By Contract only)					Commerc					EDD	Format	-				100	N	20	Sel	7	-		
5 Day RI SH 3 Day EMERGENCI					FULLT1				-	2,500				AR	40	12	cof 2	m	eta	L'	24		
2 Day EMERGENG						Commerc																	
1 Day EMERGENO Emergency & Rush T/A data available VIA Lablink						Commerc																1	
Rethaulting by Sampler: Date Time:	J. 13.4	nple Custody ma	ust be docum	nented b	elow eac	h time s	Reling			55855	slon, inc	luding	courie		ery. Date Tin	ne:		Receive	d By:			//	, j
304:01		1																					

D60036: Chain of Custody Page 1 of 1



GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

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



Page 1 of 1

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:

4-Bromofluorobenzene

Method: EPA 624

D60036-1

460-00-4

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	%		

96%

70-130%

Page 1 of 1

Job Number:

D60036

Account:

RITEKSW Ritchie Exploration, Inc.

Project:

Ann Allison Lease

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

The QC reported here applies to the following samples:

Method: EPA 624

D60036-1

		Spike	BSP	BSP	
CAS No.	Compound	ug/l	ug/l	%	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%	

103%

101%

105%

70-130%

70-130%

70-130%

17060-07-0 1,2-Dichloroethane-D4

4-Bromofluorobenzene

2037-26-5 Toluene-D8

460-00-4

^{* =} Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary Job Number: D60036

Account:

RITEKSW Ritchie Exploration, Inc.

Project:

Ann Allison Lease

The QC reported here applies to the following samples:

Method: EPA 624

D60036-1

CAS No.	Compound	D60013-1 ug/l Q	Spike ug/l	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	D60	0013-1	D60013	-1 Lin	nits		
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%	ó	96%	70-	130%		
460-00-4	4-Bromofluorobenzene	107%	106%	89%	ó	91%	70-	130%		

Page 1 of 1

^{* =} Outside of Control Limits.



GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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



Page 1 of 1

Method Blank Summary Job Number: D60036 Account: RITEKSW Ritchie Exploration, Inc.

Project:

Ann Allison Lease

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

The QC reported here applies to the following samples:

Method: EPA 625

D60036-1

CAS No.	Compound	Result	RL	MDL	Units Q
105-67-9 108-95-2	2,4-Dimethylphenol Phenol	ND ND	5.0 5.0	0.53 0.75	ug/l ug/l
CAS No.	Surrogate Recoveries		Limi	ts	
367-12-4	2-Fluorophenol	51%	10-12	20%	
4165-62-2	Phenol-d5	36%	9-120)%	
118-79-6	2,4,6-Tribromophenol	76%	19-12	25%	
4165-60-0	Nitrobenzene-d5	61%	35-12	20%	
321-60-8	2-Fluorobiphenyl	79%	35-12	20%	
1718-51-0	Terphenyl-d14	91%	32-12	22%	

Page 1 of 1

Blank Spike Summary Job Number: D60036

Account:

RITEKSW Ritchie Exploration, Inc.

Project:

Ann Allison Lease

Sample	File ID	DF	Analyzed	By	Prep Date 07/24/14	Prep Batch	Analytical Batch
OP10303-BS	1G120617.D	1	07/24/14	DC		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
105-67-9 108-95-2	2,4-Dimethylphenol Phenol	50 50	36.4 18.5	73 37	61-120 24-120
CAS No.	Surrogate Recoveries	BSP	Lim	its	
367-12-4 4165-62-2 118-79-6 4165-60-0 321-60-8 1718-51-0	2-Fluorophenol Phenol-d5 2,4,6-Tribromophenol Nitrobenzene-d5 2-Fluorobiphenyl Terphenyl-d14	51% 30% 87% 73% 80% 77%	9-12 19-1 35-1 35-1	20% 20% 25% 20% 20% 22%	

^{* =} Outside of Control Limits.

Page 1 of 1

Matrix Spike Summary Job Number: D60036

Account:

RITEKSW Ritchie Exploration, Inc.

Project:

Ann Allison Lease

Sample File ID DF Analyzed By Prep Date Prep Date OP10303-MS 1G120619.D 1 07/24/14 DC 07/24/14 OP10 D59888-13 1G120618.D 1 07/24/14 DC 07/24/14 OP10	
--	--

The QC reported here applies to the following samples:

Method: EPA 625

D60036-1

CAS No.	Compound	D59888-13 ug/l Q	Spike ug/l	MS ug/l	MS %	Limits
105-67-9 108-95-2	2,4-Dimethylphenol Phenol	ND ND	50 50	32.9 20.8	66 42	10-120 16-120
CAS No.	Surrogate Recoveries	MS	D59888-	13 Lim	its	
367-12-4 4165-62-2 118-79-6 4165-60-0 321-60-8 1718-51-0	2-Fluorophenol Phenol-d5 2,4,6-Tribromophenol Nitrobenzene-d5 2-Fluorobiphenyl Terphenyl-d14	41% 34% 68% 91% 99% 85%	38% 31% 53% 70% 85% 98%	9-12 19-1 35-1 35-1	20% 20% 25% 20% 20% 22%	



^{* =} Outside of Control Limits.



Metals Analysis

QC Data Summaries

00

Includes the following where applicable:

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

α

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

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



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

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

Prep Date:				07/25/1	*
Metal	D60036 Origin		Spikelot ICPALL2		QC 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



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 $\,$

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

Prep Date:					0//25/	14				
Metal	D60036- Origina		Spikelot ICPALL2		MSD RPD	QC Limit				
Aluminum	anr			8				_		
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

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



QC Batch ID: MP13526 Matrix Type: AQUEOUS

Methods: SW846 6010C Units: ug/l

Prep Date:

07/25/14

Prep Date:			07/25/1	. 4				
Metal	BSP Result	Spikelot ICPALL2		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

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

|--|--|--|

(anr) Analyte not requested

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

Prep Date:			07/25/14					
Metal	D60036-1 Original	.A . SDL 1:5	%DIF	QC Limits		8		
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 $\hfill\Box$

SERIAL DILUTION RESULTS SUMMARY

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

QC Batch ID: MP13526

Methods: SW846 6010C

Units: ug/l

Matrix Type: AQUEOUS

07/25/14

Metal

Prep Date:

D60036-1A Original SDL 1:5 %DIF

Limits

(anr) Analyte not requested

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



General Chemistry

QC Data Summaries

Includes the following where applicable:

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

6

METHOD BLANK AND SPIKE RESULTS SUMMARY GENERAL CHEMISTRY

Login 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

700	0	-	ai	-	4-	00	Sam	ml	00	
45	0	\circ	CI	a	L	eu	Salli	DT	25	

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



Page 1

BLANK SPIKE DUPLICATE RESULTS SUMMARY GENERAL CHEMISTRY

Login 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 limits

DUPLICATE RESULTS SUMMARY GENERAL CHEMISTRY

Login 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

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	mq/l	0.55	5	5.6	101.0	80-120%
HEM Oil and Grease	GP13188/GN25826	D60036-1	mq/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	mq/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	mq/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



MATRIX SPIKE DUPLICATE 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	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	mq/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



07/24/14





Received

Technical Report for

SEP 0 3 2014

Water Quality Control

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.

Scott Heideman Laboratory Director

Seed a sel

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-

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	
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.

Ann Allison Lease

Job No:

D59594

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.





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 AO

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 AO

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:

- 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.

Summary of Hits
Job Number: D59594
Account: Ritchie Exploration, Inc.
Project: Ann Allison Lease

Collected:

07/10/14

Page 1 of 1

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D59594-1	ANN ALLISON L	SE WASH CO	O. COLO.			
Nitrogen, Nitrate		0.19	0.10		mg/l	EPA 300.0/SW846 9056
Solids, Total Dis	solved	3380	10		mg/l	SM 2540C-2011
Solids, Total Sus	pended	19.0	5.0		mg/l	SM 2540D-2011
D59594-1A	ANN ALLISON L	SE WASH CO	O. COLO.			
Boron		3650	50		ug/l	SW846 6010C
Zinc		48.4	30		ug/l	SW846 6010C



4

Sample Results	
Report of Analysis	

Report of Analysis

Page 1 of 1

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

Lab Sample ID:

D59594-1

Date Sampled: 07/10/14

Matrix:

AQ - Water

Date Received: 07/10/14

Method: Project:

EPA 624

Percent Solids: n/a

Ann Allison Lease

File ID 6V25967.D Run #1 a

DF Analyzed 07/15/14 1

By BR n/a

Prep Date Prep Batch

n/a

Analytical Batch V6V1468

Run #2

Purge Volume

Run #1 Run #2

5.0 ml

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	Limi	ts	
1868-53-7	Dibromofluoromethane	127%		70-13	80%	
17060-07-0	1,2-Dichloroethane-D4	123%		70-13	80%	
2037-26-5	Toluene-D8	95%		70-13	80%	
460-00-4	4-Bromofluorobenzene	90%		70-13	80%	

(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



Report of Analysis

Page 1 of 1

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

Lab Sample ID:

D59594-1

AQ - Water

Date Sampled: 07/10/14

Matrix: Method:

EPA 625 SW846 3510C

Date Received: 07/10/14

Project:

Ann Allison Lease

Percent Solids: n/a

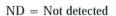
File ID DF Prep Date Prep Batch Analytical Batch Analyzed By 07/10/14 OP10221 E1G1366 Run #1 1G120454.D 1 07/11/14 DC Run #2

Initial Volume Final Volume Run #1 1060 ml 1.0 ml

Run #2

625 Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9 108-95-2	2,4-Dimethylphenol Phenol	ND ND	$0.0047 \\ 0.0047$	$0.00050 \\ 0.00071$		
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limit	ts	
367-12-4 4165-62-2	2-Fluorophenol Phenol-d5	49% 36%		10-12 9-120		
118-79-6	2,4,6-Tribromophenol	91%		19-12	25%	
4165-60-0	Nitrobenzene-d5	64%		35-12	20%	
321-60-8	2-Fluorobiphenyl	77%		35-12	20%	
1718-51-0	Terphenyl-d14	76%	i	32-12	22%	



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



Report of Analysis

Page 1 of 1

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

Ann Allison Lease

Lab Sample ID: Matrix:

Project:

D59594-1

AQ - Water

Date Sampled: 07/10/14

Date Received: 07/10/14

Percent Solids: n/a

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	Ву	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.

Report of Analysis

Page 1 of 1

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

Ann Allison Lease

Lab Sample ID:

Project:

D59594-1A

Date Sampled: 07/10/14

Matrix:

AQ - Water

Date Received: 07/10/14

Percent Solids: n/a

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

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

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	Ву	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)





JTEST.		
BORATORIES		

Misc. Forms

U

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody

		C	HAIN	OF	CU	STO	D	V												PA	GE.	(OF_	
ACCUTEST			4036 Young	field Sue 3-425-60	et Wheat	77-737-45	80033	3					ED-EX T		,				Bottle Or Accutest	der Contre	ol.	51	59	714
Client / Reporting Information			Proi	ect Info	03-425-6 ormatic		161							Regul	netad	Analy		Ţ.	STE	ODE s	book)	<i>_</i> .	X899	Matrix Codes
Company Name Rithe Lyp Inc	Project Name	Allison	Se.)	d B	die	elle	7	w	1	W 440 140 1	100 PM			rengu	- Die	COMIN	20 (S	24.52	and the	a si in S	No.		DW	- Drinking Water
City State Zip	Street:				illing In	ormation	(Hd	liffere	nt from	n Reg	port to)									0			WW - Water - Surface Water SO - Soil
Dichita KS. 6028-3188	Project#	1 Also	to 1		Address																MS		5	SL- Sludge SED-Sediment OI - Oil
The Nieroberger Schoerit	Client PO#	Om/Pal	scolst	Chy	Sm	صك	OTA	tdte		- 2	Zip	-	0			330					X		so	Q - Other Liquid AIR - Air DL - Other Solid
\$16-(9)-9500 316-(9)-9550 Sampler(s) Name(s) Phone #	Praject Manager			Altent	ion:				PO#			-	255	9		2	J	9	20	3	H	100	EB-	WP - Wipe B-Field Blank Equipment Blank B- Rinse Blank
CD Thomas 200 8419550			Collection					Number	of presi	erved E	Bottles W		اک	3	tal s	0	316	3	0	, L	70	A A		TB-Trip Blank
Accuted 5 Field ID / Point of Collection	MEOH/DI Vial #	Date	Time	Sampled by	Matrix	# of bottles	HG HG	HNO3	H2SO4 NONE	DI Water	MEOH	Bisulfate	00	J	2	E A	Ö	2	2	F	3	X	L	AB USE ONLY
122 (0 CO)0		7-10-A	MA:8	Ela	M.J.		H	+	+	H			-	-		+						+	+	01
																						丰		
								+	+	\vdash	+	H		-		+	-					_	+	70-2
										Н													1	107/01
								+															Sin	7/10/12
								\perp	_				_			-	-					\perp	\perp	
								+																
	1000000	PHP REPRESENTATION FOR THE PROPERTY OF				Data Jal "A" (L			e Info		on ite Forr	(48)6 <u>)</u>	X STATE	and the same	•		C	omme	ents /)	specia	I Instri	uctions	in Bullian	
Turnaround Time (Business days) Std. 10 Business Days	Approved By (Acc	utest PM); Date:		-		ial "B" (L					D Fore			_	Lic	NE	63	No	2.	S.P.				
Std. 5 Business Days (By Contract only)						lal "B" +N				PD		77.535 8			0	1 1	0	1 1	1	1	1			
5 Day RI SH					FULLT1	(Level 3+4	4 }								0	1 K	11.	let	1st	11	351			
3 Day EMERGENG																				*				
2 Day EMERGENG						Commarc				-														
1 Day EMERGENC						Commerc	idi 'B'	= Resu	lits + Q	C Sur	nmary													

Sample Sustady must be documented below each time samples change passession, including courier delivery.

Total Time:

The courier delivery.

The courier delivery.

The courier delivery.

The courier delivery.

ceived By:

Custody Seal #

HDE Intect

D59594: Chain of Custody

1186 De

Page 1 of 1



GC/MS Volatiles

တ

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary Job Number: D59594

Account:

RITEKSW Ritchie Exploration, Inc.

Project:

Ann Allison Lease

Sample	File ID	DF	Analyzed 07/14/14	By	Prep Date	Prep Batch	Analytical Batch
V6V1468-MB	6V25955.D	1		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%	70-1309	%		
17060-07-0	1,2-Dichloroethane-D4	115%	70-1309	%		
2037-26-5	Toluene-D8	99%	70-1309	%		
460-00-4	4-Bromofluorobenzene	96%	70-1309	%		

Page 1 of 1

Page 1 of 1

Account:

RITEKSW Ritchie Exploration, Inc.

Project:

Ann Allison Lease

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

The QC reported here applies to the following samples:

Method: EPA 624

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	Liı	mits	
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 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

		D59639-1	Spike	MS	MS	
CAS No.	Compound	ug/l Q	ug/l	ug/l	%	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	l Li	mits	
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 Job Number: D59594

Account:

RITEKSW Ritchie Exploration, Inc.

Project:

Ann Allison Lease

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

The QC reported here applies to the following samples:

Method: EPA 624

D59594-1

CAS No.	Compound	D59655-1 ug/l Q	DUP ug/l Q	RPD Limits
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%

Page 1 of 1



^{* =} Outside of Control Limits.



GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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



Method Blank Summary Job Number: D59594

Account:

RITEKSW Ritchie Exploration, Inc.

Project:

Ann Allison Lease

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

The QC reported here applies to the following samples:

Method: EPA 625

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		Limi	ts	
367-12-4	2-Fluorophenol	52%	10-12	20%	
4165-62-2	Phenol-d5	40%	9-120		
118-79-6	2,4,6-Tribromophenol	90%	19-12	25%	
4165-60-0	Nitrobenzene-d5	77%	35-12	20%	
321-60-8	2-Fluorobiphenyl	80%	35-12	20%	
1718-51-0	Terphenyl-d14	104%	32-12	22%	

Page 1 of 1

Blank Spike Summary Job Number: D59594 Account: RITEKSW Ritchie Exploration, Inc.

Project:

Ann Allison Lease

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

The QC reported here applies to the following samples:

Method: EPA 625

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
105-67-9 108-95-2	2,4-Dimethylphenol Phenol	50 50	38.8 15.8	78 32	61-120 24-120
CAS No.	Surrogate Recoveries	BSP	Lim	its	
367-12-4	2-Fluorophenol	58%	10-1	20%	
4165-62-2	Phenol-d5	40%	9-12	0%	
118-79-6	2,4,6-Tribromophenol	94%	19-1	25%	
4165-60-0	Nitrobenzene-d5	83%	35-1	20%	
321-60-8	2-Fluorobiphenyl	83%	35-1	20%	
1718-51-0	Terphenyl-d14	91%	32-1	22%	



^{* =} Outside of Control Limits.

Page 1 of 1

Matrix Spike Summary Job Number: D59594

Account:

RITEKSW Ritchie Exploration, Inc.

Project:

Ann Allison Lease

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			DF 1 1			0., 10, 11		
--	--	--	--------------	--	--	------------	--	--

The QC reported here applies to the following samples:

Method: EPA 625

CAS No.	Compound	D59273-31 ug/l Q	Spike ug/l	MS ug/l	MS %	Limits
105-67-9 108-95-2	2,4-Dimethylphenol Phenol	ND ND	50 50	22.0 15.8	44 32	10-120 16-120
CAS No.	Surrogate Recoveries	MS	D59273-	31 Lim	its	
367-12-4	2-Fluorophenol	34%	35%	10-1	20%	
4165-62-2	Phenol-d5	36%	30%	9-12	20%	
118-79-6	2,4,6-Tribromophenol	62%	50%	19-1	25%	
4165-60-0	Nitrobenzene-d5	93%	67%	35-1	20%	
321-60-8	2-Fluorobiphenyl	90%	71%	35-1	20%	
1718-51-0	Terphenyl-d14	101%	98%	32-1	22%	



^{* =} Outside of Control Limits.



Metals Analysis

QC Data Summaries

œ

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 Blanks

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

riep bace.					0//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

8.1.1

BLANK RESULTS SUMMARY Part 2 - Method Blanks

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

				MB		
Metal	RL	IDL	MDL	raw	final	

(anr) Analyte not requested

8.7.

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

Prep Date:				07/11/1	4			
Metal	D59594 Origin		Spikelot ICPALL2		QC 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



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

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

8.7.2

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

Prep Date:					07/11/	14			
Metal	D59594 Origin	-1A al MSD	Spikelot ICPALL2		MSD RPD	QC 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

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



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

Associated samples MP13401: D59594-1A

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

Methods: SW846 6010C Units: ug/l

Prep Date:

07/11/14

Prep Date:			07/11/1	14
Metal	BSP Result	Spikelot ICPALL2		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

8.7.3

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

	BSP	Spikelot	QC
Metal	Result	ICPALL2 % Rec	Limits

(anr) Analyte not requested

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

Prep Date:			07/11/14							
Metal	D59594-1 Original	1A 1 SDL 1:5	%DIF	QC 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

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

Metal

Original SDL 1:5 %DIF

Limits

(anr) Analyte not requested (a) Percent difference acceptable due to low initial sample $\,$ concentration (< 50 times IDL).



General	Chemistry
Concrui	

QC Data Summaries

Includes the following where applicable:

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



9.1

METHOD BLANK AND SPIKE RESULTS SUMMARY GENERAL CHEMISTRY

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

		Vascono	MB	575- 575N	Spike	BSP	BSP	QC
Analyte	Batch ID	RL	Result	Units	Amount	Result	%Recov	Limits
Bromide	GP13015/GN25507			mg/l	0.5	0.525	105.0	90-1109
Chloride	GP13015/GN25507	0.50	0.0	mg/l	5	4.96	99.2	90-1109
Chromium, Hexavalent	GN25625	0.010	0.0	mg/l				
Chromium, Hexavalent	GN25625	0.010	0.0	mg/l	0.1	0.10	101.4	90-1109
Chromium, Hexavalent	GN25625			mg/l	0.1	0.098	98.2	90-1109
HEM Oil and Grease	GP13120/GN25713	5.0	0.0	mg/l	40	35.2	88.0	78-1149
Nitrogen, Nitrate	GP13015/GN25507	0.010	0.0	mg/l	0.1	0.102	102.0	90-1109
Nitrogen, Nitrite	GP13015/GN25507	0.0040	0.0	mg/l	0.05	0.0510	102.0	90-1109
Solids, Total Dissolved	GN25531	10	0.0	mg/l	400	418	104.5	90-1109
Solids, Total Suspended	GN25608	5.0	0.0	mg/l	300	301	100.3	90-1109
Sulfate	GP13015/GN25507	0.50	0.0	mg/l	5	5.10	102.0	90-1109
Weak Acid Dissociable Cn	GP13088/GN25655	0.0050	0.0	mg/l	0.1	0.0976	97.6	90-1109

Associ	lated Sam	ples:
Batch	GN25531:	D59594-1
Batch	GN25608:	D59594-1
Batch	GN25625:	D59594-1A
Batch	GP13015:	D59594-1
Batch	GP13088:	D59594-1
Batch	GP13120:	D59594-1
(*) O1	itside of	OC limits



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

DUPLICATE RESULTS SUMMARY GENERAL CHEMISTRY

Login 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

MATRIX SPIKE RESULTS SUMMARY GENERAL CHEMISTRY

Login 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 GP13018: D59594-1 Batch GP13120: D59594-1 (*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY GENERAL CHEMISTRY

Login 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



O8/15/14

SEP 0 3 2014

Water Quality Control



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.

Scott Heideman Laboratory Director

Seed a He

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:



N

-		
-		

-4	

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

_

Accutest Laboratories

Sample Summary

Ritchie Exploration, Inc.

Ann Allison Lease

Job No:

D60036X

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





-				
C11	hean	tract	I ah	Data
ou	DCOII	uact	Lau	Data

Report of Analysis







Hazen Research, Inc.

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

DATE HRI PROJECT HRI SERIES NO August 14, 2014

009-93 G410/14

DATE REC'D. 7/24/2014 CUST. P.O.# D60036X

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 \sim = Less Than

Robert Rostad Technical Director, Analytical Services

Page 1 of 1

	H	Ø		R
	١	C	٩	b
	ы			d

HAZEN	RESEARCH, INC.	
RADIO	CHEMISTRY I ABORATOR	5,

07312014

Batch QC Evaluation Form

Analyte:	Ra-226

ID: NB L 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

Calculation: $(44.1)(1.0) - (0.2)(1.0) \times 100 = 95$ %

Batch QC Evaluation:

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

^{*} Required for batch size greater than 10 samples.

Conclusions:

/				
Age of the Party o	ch Passes			
Batc	ch Fails			
Batc	h Passes, with exceptions:			
100	Reruns Required:		 	-
	Narrative:			

Batch Listing by Lab Control Number:

G375 14	G425/14 G468/14
G376/14	G468/14 G471/14
G377/14	G48614
G409/14	5481/14
G410 14	
G426 14	

HAZEN	RESEARCH,	INC.
RADIO	HEMISTRY	LABORATOR

Date: 08/07/2014

Batch QC Evaluation Form

Analyte:	Ra-	228	
	1		

Control Standard: ID: No

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

Calculation:
$$(23.9)(1.0) - (0.0)(1.0) \times 100 = /0/2 \%$$

Batch QC Evaluation:

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

^{*} Required for batch size greater than 10 samples.

Batch Passes

Conclusions:

	ch Fails ch Passes, with exception	ons:	
	Reruns Required:		
	Narrative:		
Batch Listing by Lab	Control Number:		
G248 14	_		
G442 1	4		_
G41014			
G496 14			
	•	Evaluator:	1
	-	forent) no	male
***	-	8-12-14	



2						
M	1	151		Y.H.	AIN	(
#	A	CC	U	TE	5	

Received 89/83/2014

CHAIN OF CUSTODYCHAIN OF CUSTODY

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.:		

Client Information		S	Subcontract Laboratory Information de An								Ana	lytical Info	rmation	$\mathcal{F}_{\mathcal{F}}(\mathcal{F}_{\mathcal{F}}) = \mathcal{F}_{\mathcal{F}}(\mathcal{F}_{\mathcal{F}})$		
Name Accutest Mountain States (AM	ns)	Name	Hazen (R	adiolog	gical)		Accepted to the second			To the same						
Address 4036 Youngfield St.		Address	4601 India	na Str	eet											
City State Wheat Ridge, CO	Zip 80033	City	Golden		State		Zip 80	403		1			1			
Send Report to: Scott Heid Any questions contact: Renea Jac		Contact:	Sample M	anagei	ment						Radium 226/228					
Phone/Fax #: (303) 425-6021; (303)425-6854	Phone:	(303) 279-	4501							52					
		Collection				P	res	4000000000	ation							
Field ID / Point of Collection	Date	Time		Matrix	# of bottles	HCL	NaOH	HNO3	H2So4	None	Radi				1	Comments
D60036X -1	7/23/14	8:00 AM		AQ	4				1	1	х			······································		
	-						H	+	+	+						
							Н	+	+	+						
ургания принятичний принятични										1						
	-		(*************************************					+	+	+					-	
							H	+	+	+				19/02-1000-1111111111111111111111111111111		
									I	İ						
Turnaround Information				Data	Deliver	able	Info	rma	tion						/ Remarks	
X 10 Business Day Standard	Approved	Ву:	Commer	cial "A"			PD	F							use Co	
Other(Days)			Commer								eliverable			regula	tions an	d RLs.
			Commer						nic D orms		ery:					
10 Day Turnaround Hardcopy, RUSH is Fapproved.	AX Data unles	s previously	Full Tier						Spec		-					
Sample Custody must be documen		och time sam	ples change	posses	sion, ir	ıclu	din					Usa C		Subcontr		rtory Use Only
Relinquished by 2-24-19	Date & Time:	b .	Received By:	ne T	12	C	1				7-24-14	0	Seal #:		The state of the s	No NA
Relinquished by:	Date & Time:		Received By:	OC. OF TAXABLE	10			- 1	Date 8				Preserved	where app	licable:	
Relinquished by:	Date & Time:	rature 6 3.	Received By:	Service 1.3	11000	ora	ture	-	Date &		ie: 5/11	1 40°	Temperatu	re °C		On Ice



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody

ACCUTEST		C	HAIN	utest Lab	oratories N	Monnein S	Status	_				FED-E)	(Trackir	g#				Bottle C	PA Order Con			OF		
LABORATORIE	3	4036 Youngfield Street Wheat Ridge, Co 80033 TEL. 303-425-6021 877-737-4521							Accutest Quote #															
Client / Reporting Information	4	FAX 303-425-6021 Project Information											Rec	Requested Analysis (see 7					LEST CODE Character 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
Rithe Exploition The	Project Name	lison be	22/4	the De	ak pr	1/20	1											300 M J S				c	Matrix Codes OW - Drinking Water	
10B0x 283188	Street:				Billing In		an (If o	differe	nt fro	m Re	port to)									DOG			GW - Ground Water WW - Water SW - Surface Water	
WHIT KS [2008 -3188	Project#	mb 1	100		any Name															步			SO - Soil SL- Sludge SED-Sediment	
Chingette markenshaker	E-EXPC	m/2/20	salesto	1	Address	11.0	OW	_												3			OI - Oil LIQ - Other Liquid AIR - Air	
316-691-9500 316-691-850	Project Manage	,,	•.	City-	.J			state			Zip	V			0	_				2	1		SOL - Other Solid WP - Wipe FB-Field Blank	
ED Vones 225841-850				Atten	fon:				PO#			X	4	7	800	436	2	00	10	8	10	E	B- Equipment Blank RB- Rinse Blank TB-Trip Blank	
Accutest			Collection	Ī			П	Number		T la	1 2 9	2	2	10	d	ال	4	A	N	7	04	-		
Sample Field ID / Point of Collection	MEOH/DI Viol #	Date	Time	Sumpled by	-	# of bottle:	s 모 :	HINOS	HZSO4	DI Wo	MEOH ENCO	6	C	2	2	0	d	04	1	>	×		LAB USE ONLY	
HANDAMION LSE.	-	7-23-14	8am	ET.	433		H	+	+	\mathbb{H}	+	X	X	Y	Y	X	2 ×	Y	X	X	X	+	0/ 07 Th	
7.341							$\dagger \dagger$	+	+		+	-									+	+	CZ TB	
							\vdash	11	+	\sqcup	11	-											1	
							H	++	-	+	++										\perp	+	17279	
				-			\forall	+	+	$\dagger\dagger$	+									-	+	+		
							\sqcap	\forall	T	11	\top											+		
		100		-			1	+	+	4	44													
2004-06			7000000000			Date	s Deliv	rorable	Into	rmetic	an .			011011200	fig. (a)	C	omme	ints /	Specia	Instri	uctions			
Turneround Time (Business days) Std. 10 Business Days	Approved By (Acc	ulost PM): / Dale:			Commerc	lo! "A" (L	evel t	}		Stat	te Forms			19	dA				Sel		DEPOSITION AND ADDRESS.	100000000000000000000000000000000000000		
Std. 5 Business Days (By Contract only) 5 Day #8 SH					Commerc	lal "B" +N	larrativ		-	PDF		Manage	_		40	10	, ,,		1 1	1,	1			
3 Day EMERGENG					FULLT1 (Level 3+4	4)							146	717	HK	1:5	_M	ela		71			
2 Day EMERGENCI						Commerc Commèrc					imary :													
Emergency & Rush T/A data available VIA Lablink	Sor	nple Custody mu	et ha dacum	antad h								alcodt no		. A. C.				90000000	(COLORES DE LOS			_/	7	
Bettaquistingd by Sampler: Date Time:	JULY SAL	Received By:	or be decum	ented b	olon cac	i unic si	Reling	uished !		03563	51011, 111	ciuding	Course		Date Tire	10:	-	Receive	d By:	А		7	/	
Relinquished by Sampler: Date Yime:	P)	Received By:	***************************************					pished I	Sy:						Date Tim	10:		Receive	g/By:	11.	1	\neq	12:40,	
Refinquished by: Date Time:		Received By:					4 Custo	dy Seal	11)	7	Intact		Preserva	d wbele	applical	ble	10	V	On log	ex c	7 ocler Te	3344	

D60036X: Chain of Custody

Page 1 of 1

