R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW 🛦 Suite F-142 🛦 Albuquerque, NM 87104 🛦 505.266.5004 🛦 Fax: 505.266-0745

Septem	ber 6, 2013	HOBBS OCD
	offrey Leking District 1	SEP 0 6 2013
	rench Drive New Mexico 88240 nail	RECEIVED
RE:	Murchison Jackson Unit 18H, In-place Burial Noti	ce

RE: Murchison Jackson Unit 18H, In-place Burial Notice Unit M, Section 21, T24S, R33E, API # 30-025-40974

Dear Mr. Leking:

On behalf of Murchison Oil and Gas, R. T. Hicks Consultants is providing this notice to NMOCD with a copy to the State Land Office (certified, return receipt request). The above- referenced pit will begin closure operations on Thursday, September 12. The closure process should require about a week.

The "In-place Burial" closure plan for the above-referenced pit was approved on March 26, 2013 by the NMOCD, prior to the establishment of the June 2013 pit rule. Construction and operation of the temporary pit has been conducted to satisfy the rule under which it was approved as well as the June 2013 rule. In conformance with the 2013 Pit Rule, a five-point composite sample that is fully representative of the solids in the pit was recovered and stabilized with the available mixing soil at a 3:1 ratio¹.

Laboratory analyses demonstrate that the concentrations of the parameters listed in Table II of 19.15.17.13 NMAC (June 2013 pit rule) are below the limits that allow in-place burial. The summary table below shows results from two un-stabilized composite samples taken from the pit's outer horseshoe cell (brine and cut brine drilling fluids) and inner horseshoe cell (fresh water drilling fluid) and three samples for chloride that were stabilized by mixing one part pit solids with 3 parts of the soil to be used for stabilization. While the un-stabilized inner horseshoe composite sample exceeded the TPH limit, the stabilized 3:1 complete pit composite (inner horseshoe, outer horseshoe, mixing soil) yields TPH below the Table II limit.

Table II Limita	Cample Data	Chloride	Benzene	BTEX	GRO+DROext	TPH
Table II Limits (mg/kg)	Sample Date	80,000	10	50	1000	2500 561 6390
Outer Horseshoe Composite (unstabilized)	8/8/2013	81600	0.319	7.7	124.4	561
Inner Horseshoe Composite (unstabilized)	8/8/2013	2040	ND	0.576	620.8	6390
Stabilized 3:1 Inner Composite	8/8/2013	528				
Stabilized 3:1 Outer Composite	8/8/2013	26000				
Stabilized 3:1 Complete Pit Composite	8/8/2013	13000				443

¹ (5) The operator shall collect, at a minimum, a five point composite of the contents of the temporary pit or drying pad/tank associated with a closed-loop system to demonstrate that, after the waste is solidified or stabilized with soil or other non-waste material at a ratio of no more than 3:1 soil or other non-waste material to waste, the concentration of any contaminant in the stabilized waste is not higher than the parameters in Table II of 19.15.17.13 NMAC.

9/6

September 6, 2013 Page 2

R.T. Hicks Consultants is concerned that TPH by 418.1 method may not be an accurate representation of petroleum hydrocarbons in the pit solids because several drilling mud additives and/or lost circulation materials, such as cotton seed hulls and cedar fiber, become part of the result when using EPA method 418.1. We do not believe that the Rule intends to measure the concentration of non-petroleum organic material. Therefore, we asked the laboratory to analyze the samples by EPA method 8015B extended to included carbon numbers up to C35 (GRO+DRO+DROext). This analysis should include a complete range of purge-able and extractable hydrocarbons without also including the non-petroleum hydrocarbons that are measured by method 418.1. The order of magnitude difference between petroleum hydrocarbons analyzed by 8015B and 418.1 is not surprising, based upon some limited research we have done and the nature of non-petroleum organic material in drilling fluids, such as biopolymer drilling fluid additives and cellulose.

We will proceed with closure pursuant to the current Rule. Because there are no meaningful differences, we believe it best to comply with the closure protocols approved under the new Rule. As always, we appreciate your work to keep us on schedule.

Sincerely,

R.T. Hicks Consultants

Knistin Pope

Kristin Pope

Enclosure: Laboratory report

Copy: Murchison Oil and Gas

Terry Warnell, State Land Office New Mexico State Land Office PO Box 1148 Santa Fe, NM 87504-1148 CERTIFIED MAIL – RETURN RECIEPT REQUEST



August 27, 2013

RANDALL HICKS R T HICKS CONSULTANTS 901 RIO GRANDE BLVD SUITE F-142 ALBUQUERQUE, NM 87104

RE: JACKSON UNIT 18 H

Enclosed are the results of analyses for samples received by the laboratory on 08/09/13 7:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/ga/lab accredited certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celeg D. Keine

Celey D. Keene Lab Director/Quality Manager



Analytical Results For:

R T HICKS CONSULTANTS 901 RIO GRANDE BLVD SUITE F-142 ALBUQUERQUE NM, 87104	Project: Project Number: Project Manager: Fax To:	RANDALL HICKS	Reported: 27-Aug-13 14:01
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Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	
OUTER PIT COMP	H301880-01	Soil	08-Aug-13 13:03	09-Aug-13 07:00	
INNER PIT COMP	H301880-02	Soil	08-Aug-13 13:54	09-Aug-13 07:00	
MIXING DIRT	H301880-03	Soil	08-Aug-13 14:15	09-Aug-13 07:00	
INNER PIT 1:3 COMP	H301880-04	Soil	08-Aug-13 00:00	09-Aug-13 07:00	
OUTER PIT 1:3 COMP	H301880-05	Soil	08-Aug-13 00:00	09-Aug-13 07:00	
COMPLETE PIT COMP	H301880-06	Soil	08-Aug-13 00:00	09-Aug-13 07:00	

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Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

R T HICKS CONSULTANTS 901 RIO GRANDE BLVD SUITE F-142 ALBUQUERQUE NM, 87104						Reported: ?7-Aug-13 14:	01	
		R PIT CO 880-01 (So						
Analyte Result	Reporting	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
	Cardina	l Laborat	ories					
Inorganic Compounds								
Chloride 81600	16.0	mg/kg	4	3081506	AP	15-Aug-13	4500-Cl-B	
Organic Compounds								
TPH 418.1 561	100	mg/kg	10	3081609	СК	16-Aug-13	418.1	
Petroleum Hydrocarbons by GC FID						0		
GRO C6-C10 11.7	10.0	mg/kg	1	3081211	DW	13-Aug-13	8015B	
DRO >C10-C28 98.1	10.0	mg/kg	1	3081211	DW	0	8015B	
EXT DRO >C28-C35 96.1	10.0	mg/kg	1	3081211	DW	13-Aug-13 13-Aug-13	8015B	
				3081211	DW		8015B	
Surrogate: 1-Chlorooctane Surrogate: 1-Chlorooctadecane	96.3 % 114 %		-140 -154	3081211	DW	13-Aug-13 13-Aug-13	8015B 8015B	
	11770	00.0				10.000		
Volatile Organic Compounds by EPA Method 8260B	0.055		60	2001405	2.40		00000	
Benzene* 0.319	0.050	mg/kg	50	3081407	MS	15-Aug-13	8260B	
Toluene* 2.56	0.050	mg/kg	50	3081407	MS	15-Aug-13	8260B	
Ethylbenzene* 0.832	0.050	mg/kg	50	3081407	MS	15-Aug-13	8260B	
Total Xylenes* 3.98 Total BTEX 7.70	0.150 0.300	mg/kg mg/kg	50 50	3081407 3081407	MS MS	15-Aug-13 15-Aug-13	8260B 8260B	
Surrogate: Dibromofluoromethane	95.0%	61.3		3081407	MS	15-Aug-13	8260B	
Surrogate: Toluene-d8	109 %		-129	3081407	MS	15-Aug-13	8260B	
Surrogate: 4-Bromofluorobenzene	136 %	65.7	-141	3081407	MS	15-Aug-13	8260B	

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Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager



Analytical Results For:

R T HICKS CONSULTANTS 901 RIO GRANDE BLVD SUITE F-142 ALBUQUERQUE NM, 87104		Project Num Project Mana	ber: NO	DALL HICK			2	Reported: ?7-Aug-13 14:01	
			PIT CO						
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
		Cardina	l Laborat	tories					
Inorganic Compounds									
Chloride	2040	16.0	mg/kg	4	3081506	AP	15-Aug-13	4500-C1-B	
Organic Compounds									
TPH 418.1	6390	100	mg/kg	10	3081609	СК	16-Aug-13	418.1	
			0.0						
Petroleum Hydrocarbons by GC FID	110	10.0		1	2001011	DW		00150	
GRO C6-C10	14.8	10.0	mg/kg	1	3081211	DW	13-Aug-13	8015B	
DRO >C10-C28	487	10.0	mg/kg	1	3081211	DW	13-Aug-13	8015B	
EXT DRO >C28-C35	119	10.0	mg/kg	1	3081211	DW	13-Aug-13	8015B	
Surrogate: 1-Chlorooctane		94.8 %		-140	3081211	DW	13-Aug-13	8015B	
Surrogate: 1-Chlorooctadecane		119 %	63.6	-154	3081211	DW	13-Aug-13	8015B	
Volatile Organic Compounds by EPA Metho	od 8260B			1.4					
Benzene*	ND	0.050	mg/kg	50	3081407	MS	15-Aug-13	8260B	
Toluene*	0.056	0.050	mg/kg	50	3081407	MS	15-Aug-13	8260B	
Ethylbenzene*	ND	0.050	mg/kg	50	3081407	MS	15-Aug-13	8260B	
Total Xylenes*	0.520	0.150	mg/kg	50	3081407	MS	15-Aug-13	8260B	
Total BTEX	0.576	0.300	mg/kg	50	3081407	MS	15-Aug-13	8260B	
Surrogate: Dibromofluoromethane		%	61.3	-142	3081407	MS	15-Aug-13	8260B	
Surrogate: Toluene-d8		172 %	71.3	-129	3081407	MS	15-Aug-13	8260B	
Surrogate: 4-Bromofluorobenzene		104 %	65.7	-141	3081407	MS	15-Aug-13	8260B	

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Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

R T HICKS CONSULTANTS 901 RIO GRANDE BLVD SUITE F-142 ALBUQUERQUE NM, 87104		Project: Project Number: Project Manager: Fax To:	RANDALL HIC			2	Reported: 7-Aug-13 14	4:01
		MIXING H301880-0						
Analyte	Result	Reporting Limit Ur	iits Dilution	Batch	Analyst	Analyzed	Method	Notes
		Cardinal La	boratories					
norganic Compounds								
Chloride	16.0	16.0 mg	/kg 4	3081506	AP	15-Aug-13	4500-Cl-B	

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Analytical Results For:

R T HICKS CONSULTANTS 901 RIO GRANDE BLVD SUITE F-142 ALBUQUERQUE NM, 87104		Project: Project Number: Project Manager: Fax To:	RANDALL HI			2	Reported: 7-Aug-13 14:	01
		INNER PIT H301880-						
Analyte	Result	Reporting Limit U	nits Dilution	Batch	Analyst	Analyzed	Method	Notes
		Cardinal La	boratories					
Inorganic Compounds								
Chloride	528	16.0 mg	y/kg 4	3082204	AP	22-Aug-13	4500-Cl-B	

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R T HICKS CONSULTANTS 901 RIO GRANDE BLVD SUITE F-142 ALBUQUERQUE NM, 87104		Project Number Project Manager	NON	DALL HICK			2	Reported: 7-Aug-13 14:	01
		OUTER PIT H301880							
inalyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
		Cardinal L	aborat	ories					
organic Compounds	26000	16.0 m	ng/kg	4	3082204	AP	22-Aug-13	4500-Cl-B	

Analytical Results For:

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R T HICKS CONSULTANTS 901 RIO GRANDE BLVD SUITE F-142 ALBUQUERQUE NM, 87104		Project Numbe Project Manage	er: NO	NDALL HICK		Reported: 27-Aug-13 14:01					
	COMPLETE PIT COMP H301880-06 (Soil)										
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes		
		Cardinal 1	Labora	tories							
Inorganic Compounds											
Chloride	13000	16.0	mg/kg	4	3082204	AP	22-Aug-13	4500-Cl-B			
Organic Compounds											
TPH 418.1	443	100	mg/kg	10	3082404	СК	27-Aug-13	418.1			

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R T HICKS CONSULTANTS 901 RIO GRANDE BLVD SUITE F-142 ALBUQUERQUE NM, 87104	Project: Project Number: Project Manager: Fax To:	RANDALL HICKS	Reported: 27-Aug-13 14:01
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Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Analyte	Result	Linin	Units	Level	Result	70REC	Linns	KFD	Linin	Notes
Batch 3081506 - 1:4 DI Water										
Blank (3081506-BLK1)			1	Prepared &	Analyzed:	15-Aug-13				
Chloride	ND	16.0	mg/kg							
LCS (3081506-BS1)				Prepared &	Analyzed:	15-Aug-13				
Chloride	400	16.0	mg/kg	400		100	80-120			
LCS Dup (3081506-BSD1)				Prepared &	Analyzed:	15-Aug-13				
Chloride	432	16.0	mg/kg	400		108	80-120	7.69	20	
Batch 3082204 - 1:4 DI Water										
Blank (3082204-BLK1)				Prepared &	Analyzed:	22-Aug-13				
Chloride	ND	16.0	mg/kg							
LCS (3082204-BS1)				Prepared &	Analyzed:	22-Aug-13				
Chloride	416	16.0	mg/kg	400		104	80-120			
LCS Dup (3082204-BSD1)				Prepared &	Analyzed:	22-Aug-13				
Chloride	416	16.0	mg/kg	400		104	80-120	0,00	20	

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R T HICKS CONSULTANTS 901 RIO GRANDE BLVD SUITE F-142 ALBUQUERQUE NM, 87104		Project Nu Project Ma	umber:	Jackson u None give Randall H None	N				Reported: Aug-13 14	4:01
	Or	ganic Comp Cardir		- Quality C oratories	Control					
		Reporting	141 1.241	Spike	Source		%REC		RPD	
nalyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
atch 3081609 - Solvent Extraction										
lank (3081609-BLK1)				Prepared &	Analyzed:	16-Aug-13				
PH 418.1	ND	100	mg/kg							
CS (3081609-BS1)				Prepared &	Analyzed:	16-Aug-13				
PH 418.1	5200	100	mg/kg	5000		104	80-120			
CS Dup (3081609-BSD1)				Prepared &	Analyzed:	16-Aug-13				
PH 418.1	5700	100	mg/kg	5000		114	80-120	9.17	20	
atch 3082404 - Solvent Extraction										
lank (3082404-BLK1)				Prepared &	Analyzed:	27-Aug-13				
PH 418.1	ND	100	mg/kg							
CS (3082404-BS1)				Prepared &	Analyzed:	27-Aug-13				
PH 418.1	5390	100	mg/kg	5000		108	80-120			
CS Dup (3082404-BSD1)				Prepared &	Analyzed:	27-Aug-13				
PH 418.1	5520	100	mg/kg	5000		110	80-120	2.46	20	

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901 RIO GRANDE BLVD SUITE F-142 Project Nu ALBUQUERQUE NM, 87104 Project Ma	Project: JACKSON UNIT 18 H umber: NONE GIVEN anager: RANDALL HICKS Fax To: NONE	Reported: 27-Aug-13 14:01
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Petroleum Hydrocarbons by GC FID - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3081211 - General Prep - Organics				1						
Blank (3081211-BLK1)				Prepared:	12-Aug-13	Analyzed:	3-Aug-13			
GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C35	ND	10.0	mg/kg							
Total TPH C6-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	47.4		mg/kg	50.0		94.8	65.2-140			
Surrogate: 1-Chlorooctadecane	53.4		mg/kg	50.0		107	63.6-154			
LCS (3081211-BS1)				Prepared: 1	12-Aug-13	Analyzed: 1	13-Aug-13			
GRO C6-C10	176	10.0	mg/kg	200		88.0	66.4-124			
DRO >C10-C28	186	10.0	mg/kg	200		93.0	61.6-132			
Total TPH C6-C28	362	10.0	mg/kg	400		90.5	69.7-122			
Surrogate: 1-Chlorooctane	48.2		mg/kg	50.0		96.5	65.2-140			
Surrogate: 1-Chlorooctadecane	52.6		mg/kg	50.0		105	63.6-154			
LCS Dup (3081211-BSD1)				Prepared: 1	12-Aug-13	Analyzed: 1	3-Aug-13			
GRO C6-C10	183	10.0	mg/kg	200		91.3	66.4-124	3.63	23.4	
DRO >C10-C28	192	10.0	mg/kg	200		95.8	61.6-132	2.90	23.1	
Total TPH C6-C28	374	10.0	mg/kg	400		93.5	69.7-122	3.26	20.6	
Surrogate: 1-Chlorooctane	50.5		mg/kg	50.0		101	65.2-140			
Surrogate: 1-Chlorooctadecane	55.1		mg/kg	50.0		110	63.6-154			

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Celey D. Keene, Lab Director/Quality Manager

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R T HICKS CONSULTANTS 901 RIO GRANDE BLVD SUITE F-142 ALBUQUERQUE NM, 87104	Project: J Project Number: N Project Manager: R Fax To: N	ANDALL HICKS	Reported: 27-Aug-13 14:01
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Volatile Organic Compounds by EPA Method 8260B - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
	Result	Dinit	Onito	Level	result	/urcl.c	Limito	NI D	1. mill	110103
Batch 3081407 - Volatiles										
Blank (3081407-BLK1)				Prepared: 1	4-Aug-13	Analyzed:	15-Aug-13			
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: Dibromofluoromethane	0.471		mg/kg	0.500		94.3	61.3-142			
Surrogate: Toluene-d8	0.499		mg/kg	0.500		99.8	71.3-129			
Surrogate: 4-Bromofluorobenzene	0.511		mg/kg	0.500		102	65.7-141			
LCS (3081407-BS1)				Prepared: 1	4-Aug-13	Analyzed:	15-Aug-13			
Benzene	2.15	0.050	mg/kg	2.00		108	76.8-122			
Foluene	2.16	0.050	mg/kg	2.00		108	73.1-129			
Ethylbenzene	2.10	0.050	mg/kg	2.00		105	72.8-128			
n+p - Xylene	4.16	0.100	mg/kg				69.4-129			
Total Xylenes	6.24	0.150	mg/kg	6.00		104	72-127			
o-Xylene	2.08	0.050	mg/kg	2.00		104	70.3-126			
Surrogate: Dibromofluoromethane	0.476		mg/kg	0.500		95.3	61.3-142			
Surrogate: Toluene-d8	0.504		mg/kg	0.500		101	71.3-129			
Surrogate: 4-Bromofluorobenzene	0.504		mg/kg	0.500		101	65.7-141			
LCS Dup (3081407-BSD1)				Prepared: 1	4-Aug-13	Analyzed:	15-Aug-13			
Benzene	2.23	0.050	mg/kg	2.00		112	76.8-122	3.67	18.7	
Toluene	2.27	0.050	mg/kg	2.00		113	73.1-129	4.83	19.4	
Ethylbenzene	2.20	0.050	mg/kg	2.00		110	72.8-128	4.57	21.8	
m+p - Xylene	4.38	0.100	mg/kg				69.4-129	5.01	25.3	
o-Xylene	2.17	0.050	mg/kg	2.00		109	70.3-126	4.41	23.6	
Total Xylenes	6.55	0.150	mg/kg	6.00		109	72-127	4.81	23.2	
Surrogate: Dibromofluoromethane	0.472		mg/kg	0.500		94.5	61.3-142			
Surrogate: Toluene-d8	0.508		mg/kg	0.500		102	71.3-129			
Surrogate: 4-Bromofluorobenzene	0.518		mg/kg	0.500		104	65.7-141			

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Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager



Analytical Results For:

R T HICKS CONSULTANTS 901 RIO GRANDE BLVD SUITE F-142 ALBUQUERQUE NM, 87104	Project: Project Number: Project Manager: Fax To:	RANDALL HICKS	Reported: 27-Aug-13 14:01
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Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500CI-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

(575) 393-2326 FAX (575) 393-2476 101 East Marland, Hobbs, NM 88240

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+ Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326 +54

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