Form 3160-5 (June 2015)

### **UNITED STATES** DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

FORM APPROVED OMB NO. 1004-0137

	Expires:	January	31
Lease Se			

			The state of the s
SUNDRY N	OTICES AND	REPORTS	ON WELLS
Do not use this	form for prope	osals to drill o	or to re-enter an
abandoned well.	Use form 316	0-3 (APD) for	such proposals.

abandoned wel	I. Use form 3160-3 (APD) for such	proposals.		5. If Indian, Allottee or	Tribe Name
SUBMIT IN 1	RIPLICATE - Other instructions o			7. If Unit or CA/Agreer	nent, Name and/or No.
1 T CW II		JAN 1 6 2018			
<ol> <li>Type of Well</li> <li>☐ Gas Well</li> <li>☑ Oth</li> </ol>	er: INJECTION	Or the East	,	<ol><li>Well Name and No. RED HILLS AGI 1</li></ol>	
Name of Operator     LUCID ENERGY DELAWARE	Contact: JARED R S	RECEIVE	<b>D</b> 9	9. API Well No. 30-025-40448	
3a. Address 3100 MCKINNON STREET SI DALLAS, TX 75201		No. (include area code) 842-8000	1	10. Field and Pool or ExPLORATORY	cploratory Area CHERRY CANYON
4. Location of Well (Footage, Sec., T.	, R., M., or Survey Description)		1	11. County or Parish, S	tate
Sec 13 T24S R33E Mer NMP 32.214695 N Lat, 103.518009				LEA COUNTY, N	M
12. CHECK THE AF	PPROPRIATE BOX(ES) TO INDIC	ATE NATURE OF	F NOTICE, R	EPORT, OR OTH	ER DATA
TYPE OF SUBMISSION		TYPE OF	ACTION		
= National States	☐ Acidize ☐ D	eepen	☐ Production	n (Start/Resume)	☐ Water Shut-Off
☐ Notice of Intent	☐ Alter Casing ☐ H	ydraulic Fracturing	☐ Reclamati	ion	■ Well Integrity
Subsequent Report	☐ Casing Repair ☐ N	ew Construction	□ Recomple	ete	Other
☐ Final Abandonment Notice	☐ Change Plans ☐ Pl	ug and Abandon	□ Temporar	ily Abandon	
	☐ Convert to Injection ☐ P	ug Back	☐ Water Dis	sposal	
following completion of the involved testing has been completed. Final At determined that the site is ready for functional testing being the Lucid Energy Delaware, LLC in AGI #1. The recoverable hydromaphas been comprehensively every of the well logs, including a full samples, and formation fluid sanalysis, which are summarized proposed injection zone does	rk will be performed or provide the Bond No. loperations. If the operation results in a multi- bandonment Notices must be filed only after a linal inspection.  Is submitting the No Recoverable Hy locarbon potential of the approved in laluated. To accomplish this, Lucid h ll suite of geophysical logs, mud logs lamples (Attachments A, B and C). T led in this form and its three attachment locarbon to contain any recoverable hydrocal lindicate that the minor indications of lection zone are not recoverable and	iple completion or reconstituted in requirements, including drocarbons Sundry lection zone (Cherry as conducted an expansion of sideways analysis of sideways arbons.	mpletion in a nering reclamation,  for the Red I y Canyon Me ktensive analy all core etailed strate that the  cons detected with residual	w interval, a Form 3160 have been completed an Hills mber) /sis	OR RECORD
14. I hereby certify that the foregoing is  Name (Printed/Typed) JARED R	Electronic Submission #399901 veri For LUCID ENERGY DELA Committed to AFMSS for process	WARÉ, LLC, sent to ing by PAUL SWART	the Hobbs TZ on 01/09/20		
Signature (Electronic S	Submission)	Date 01/08/20	018		
	THIS SPACE FOR FEDER	RAL OR STATE	OFFICE US	E	
Approved By Mawas	1 _ 01/09/17	Title	PET	•	Date
Conditions of approval, if any, are attache certify that the applicant holds legal or eqwhich would entitle the applicant to conduct the applicant the applicant to conduct the applicant the appli	d. Approval of this notice does not warrant of uitable title to those rights in the subject lease act operations thereon.	Office		AU OF LAND MAN ARLSBAD FIELD O	
	U.S.C. Section 1212, make it a crime for any		willfully to mak	e to any department or a	gency of the United

#### Additional data for EC transaction #399901 that would not fit on the form

#### 32. Additional remarks, continued

Based on the analyses detailed in the attachments to this form, Lucid respectfully requests BLM approval that there are no recoverable hydrocarbons in the injection zone.

## **ATTACHMENT A**

## DEMONSTRATION OF NO RECOVERABLE HYDROCARBONS IN THE CHERRY CANYON MEMBER

## EVALUATION OF GEOPHYSICAL LOGS, SIDEWALL CORE, AND FORMATION FLUID

Sec. 13- Twp. 24S-33E Lea County, New Mexico

Prepared For: Lucid Energy Delaware, LLC

Prepared By:
Geolex, Inc.
500 Marquette, NW Suite 1350
Albuquerque, NM 87102

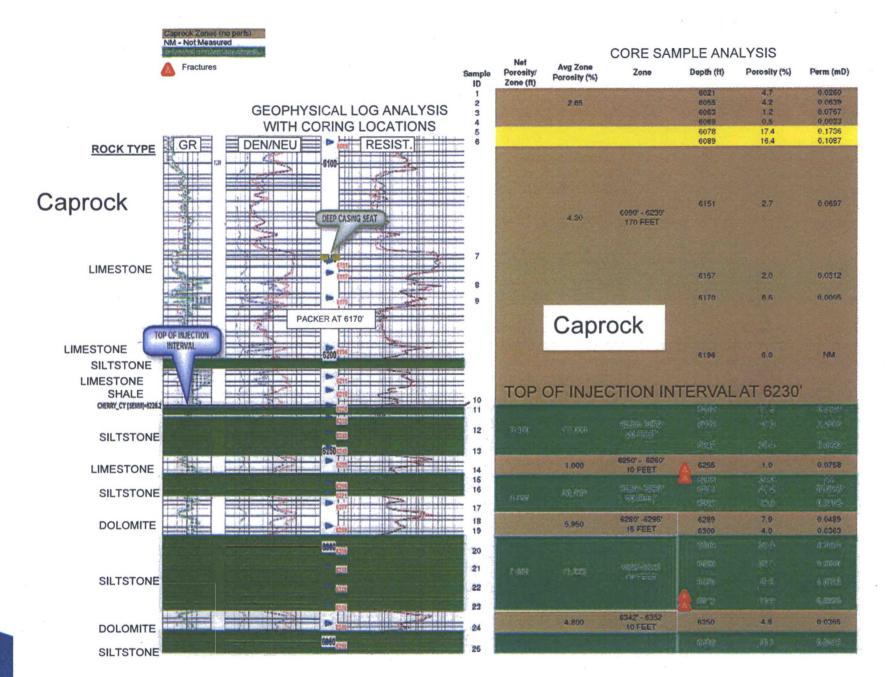
January 5, 2017

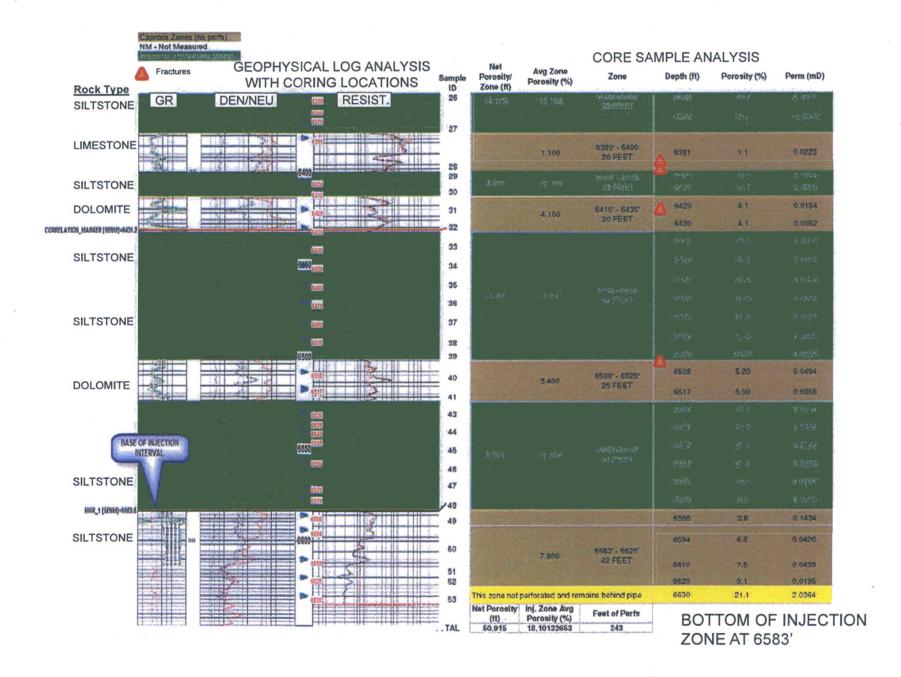


## SUMMARY OF FACTORS CONSIDERED IN RESERVOIR EVALUATION FOR RECOVERABLE HYDROCARBONS AND INJECTION SUITABILITY

- The successful evaluation of recoverable hydrocarbon potential and reservoir properties using sidewall cores requires the careful considerations of the limitations of the samples obtained since each actual sidewall is only representative of a small portion of the sampled formation at each sample location.
- The overall evaluation of the reservoir requires the simultaneous consideration of various data types and sources in order to arrive at a reasonable conceptual model of predicted injection performance. These additional data types are evaluated and considered in this analysis and include the complete geophysical log suite for the well including the triple combo, porosity, and resistivity logs, mudlogs, drilling condition reports, and on-site observations. The overall evaluation and recommendations included herein for completion are the result of the analyses and evaluation of these multiple data types.
- In addition, the well appears to be accepting fluids as observed by a 60 psi drop in formation pressure and a 1,223 psi drop in surface pressure after 15 minutes of being shut-in at the end of the step rate test (see BLM and NMOCD Sundries)
- In the following pages, we have divided the injection interval into 2 log composite segments to integrate the results of the sidewall core analyses, the lithologic architecture of the interval, and the injection perforations. These consolidated log composites along with the supporting data form the basis for the determination of no recoverable hydrocarbons in the proposed injection zone.
- Attachment B includes the detailed evaluation of the mudlog and sidewall cores across the injection interval; which are also discussed in conjunction with the geophysical logs on the following pages.
- In addition to the geophysical logs and mudlogs, formation fluid samples that came from the injection zone (i.e. swabbing) provide further evidence for the lack of recoverable hydrocarbons (Attachment C).







## Red Hills AGI #1 – Sidewall Core Analysis 6,021' - 6,370'

	SAMPLE	DEPTH	GRAIN	POR	PERM	SATUR	ATIONS			RESCENC	
s «	NO.	ft	DENSITY	%	mD	Sw	So	UNITS	%	and an annual research in the last of the	LITHOLOGY
VERY HIGH	1	6021.0	2.68	4.7	0.026	83.4	0.0	0	0	Mf	Ss gy-tn-opaq vf-fgr sbang-sbmd vcalc sc slty intrbd lam
> 15% POR	2	6055.0	2.69	4.2	0.064	82.5	0.0	0	0	Mf	Ss gy-tn-opaq vf-fgr sbang-sbmd vcalc tr slty intrbd
> 10 mD PERM	3	6063.0	2.70	1.2	0.077	91.1	0.0	0	0	DI mf	Ls dk gy-gy-tn ssity sc sity intrbd
	4	6068.0	2.71	0.5	0.003	60.5	0.0	0	0	DI mf	Ls gy-tn sslty sc slty intrbd tr hl frac
HIGH	5	6078.0	2.72		0.174	84.9	0.0	0	0	DI yl mf	Ls tn-crm sucro sslty sc slty intrbd abd sc sml vug ool
10 - 14.9% POR	6	6089.0	2.71	492,	0.109	87.9	0.0	0	0	DI yl mf	Ls tn-crm sucro ssity sc sity intrbd abd sc sml vug ool
1-9 mD PERM	7	6151.0	2.70	2.7	0.070	74.0	0.0	0	0	DI yl mf	Ls gy-tn sslty sc slty intrbd abd sc calc fd vug ool
uraneamunua ante 15	8	6157.0	2.71	2.0	0.031	67.6	0.0	0	0	DI yl mf	Ls gy-tn ssity so sity intrbd so cale fd vug frac
MODERATE	9	6170.0	2.71	6.5	<.001	52.5	0.0	0	0	DI yl mf	Ls tn-crm salty ac alty intrbd ac calc fd vug ool foss
5.0 – 9.9% POR	10	6196.0	2.69	6.0	tbfa	81.4	0.0	5	20	DI brn	Sh blk-dk gy-gy ssity sc sity intrbd sc bent intrbd sc pyr
0.1 – 0.9 mD PERM	- 11	6232.0	2.68		0.312	82.3	0.0	0	0		Ss gy-tn-opaq vf-fgr sbang-sbmd veale se sity introd
0.1 0.5 110 1 21111	12	6239.0	2.68		Special	88.5	0.0	1	0		Ss gy-tn-opaq vf-fgr sbang-sbrnd scale sc sity introd tr hal
LOW	13	6247.0	2.66	2.4	A MORE	92.3	0.0	0	0		Ss gy-tn-opac vf-fgr sbang-sbmd mealc sc slty intrbd sc hal
1.0 - 4.9% POR	14	6255.0	2.71	1.0	0.076	69.2	0.0	0	0	DI mf	Ls gy-tn ssity so sity intrbd so calc fd vug ool
0.01 - 0.09 mD PERM	15	6266.0	2.77		tbfa	65.6	0.0	0	0	DI mf	Ss gy-tn-opaq vf-fgr sbang-sbmd voale se sity introd
	16	6270.5	2.66			88.9	0.0	0	0	DI mf	Ss gy-tn-opaq vf-fgr sbang-sbmd vcalc sc slty intrbd tr hal
VERY LOW	17	6277.0	2.68	A Section	0.841	90.1	0.0	0	0	DI mf	Ss gy-tn-opag vf-fgr sbang-sbmd scale sc sity intrbd tr hal
< 1.0% POR	18	6289.0	2.69	7.9	0.049	86.2	0.0	0	0	DI mf	Ss gy-tn-opaq vf-fgr sbang-sbmd vcalc sc slty intrbd sc half
< 0.01 mD PERM	19	6300.0	2.71	4.0	0.036	85.7	0.0	0	0	DI mf	Ss gy-tn-opaq vf-fgr sbang-sbmd vcalc sc slty intrbd sc hal
Detection Occupation	20	6309.5	2.67			93.5	0.0	0	0		Ss tn-gy-opaq vf-fgr sbang-sbrnd meale se sity intrbd se hal
Potential Open Zones	21	6320.0	2.68			93.7	0.0	0	0		Ss tn-gy-opaq vt-fgr sbang-sbmd meale se sity introd sc hall
Potential Tight Zones	22	6330.0	2.68			93.0	0.0	0	0		Ss tn-gy-opaq vf-fgr sbang-sbrnd scale tr sity introd sc hal
	23	6340.0	2.68		0.894	93.0	0.0	0	0		Ss tn-gy-opaq vf-fgr sbang-sbmd scale tr sity introd se hal
	24	6350.0	2.71	4.0	0.037	76.9	0.0	0	0		Ss tn-gy-opaq vi-fgr sbang-sbmd voalc sc sity intrbd sc hal
	25	6358.0	2.67		0.925	93.5	0.0	0	0		Ss tn-gy-opaq vf-fgr sbang-sbmd scalc sc sity intrbd sc hal
	26	6365.0	2.69		52人作84年	91.2	0.0	1	0		Ss tn-gy-opaq vf-fgr sbang-sbmd scalc sc sity introd lam sc hal



## Red Hills AGI #1 – Sidewall Core Analysis 6,381' – 6,630'

VERY HIGH > 15% POR > 10 mD PERM

HIGH 10 - 14.9% POR 1 - 9 mD PERM

MODERATE 5.0 – 9.9% POR 0.1 – 0.9 mD PERM

LOW 1.0 – 4.9% POR 0.01 – 0.09 mD PERM

> VERY LOW < 1.0% POR < 0.01 mD PERM

> > Potential Open Zones

Potential Tight Zones

AMPLE	DEPTH	GRAIN	POR	PERM	SATURA	ATIONS	GAS	FLUO	RESCENC	
NO.	ft	DENSITY	%	mD	Sw	So	UNITS		J.	LITHOLOGY
-28	6381.0	2.72	4.1	0.022	75.2	0.0	0	0	DI mf	Ls gy-tn ssity sc sity intrbd tr calc fd frac
29	6404.0	2.67			89.7	0.0	0	0		Ss tn-gy-opaq vf-fgr sbang-sbmd scale tr slty intrbd sc hal
30	6410.0	2.68			90.8	0.0	0	0_		Ss tn-gy-opaq vf-fgr sbang-sbmd scale tr slty intrbd sc hal
31	6420.0	2.77	4.1	0.015	91.5	0.0	0	0	DI mf	Dol gy-tn sslty sc slty intrbd tr sml vug
32	6430.0	2.81	4.1	0.005	84.7	0.0	9	0	DI mf	Dol gy-tn ssity sc sity intrbd tr sml vug sc A/I
33	6440.0	2.66			91.0	0.0	0	0		Ss gy-tn-opaq vf-fgr sbang-sbmd scale tr slty intrbd tr hal
34	6450.0	2.66			92.1	0.0	0	0		Ss gy-tn-opaq vf-fgr sbang-sbrnd mealc tr sity intrbd sc hal
35	6460.0	2.66		, Plantin	93.3	0.0	0	0		Ss gy-tn-opaq vf-fgr sbang-sbrnd meale tr sity intrbd se hal
36	6469.0	2.66			92.2	0.0	0	0		Ss gy-tn-opaq vi-fgr sbang-sbrnd scale tr sity intrbd sc hal
37	6470.0	2.67		0.489	93.1	0.0	0	0		Ss gy-tn-opaq vf-fgr sbang-sbrnd scale tr slty intrbd tr hal
38	6480.0	2.67		0,657	89.5	0.0	0	0		Ss gy-tn-opaq vf-fgr sbang-sbrnd meale tr sity intrbd sc hal
39	6490.0	2,67	21.5	0.892	92.3	0.0	0	0		Ss gy-tn-opaq vf-fgr sbang-sbrnd scale tr slty intrbd tr hal
40	6508.0	2.84	52	0.049	81.7	0.0	0	0	DI yl mf	Dol gy-tn ssity sc sity introd sc A/I nod
41	6517.0	2.78	50	0.036	90.4	0.0	0	0	Di yi mi	Dol tn-crm sslty sc slty intrbd abd sc A/I
42	6518.0	2.82	5.3	2,001	82.5	0.0	0	0	DI yl mf	Dol tn-gy ssity sc sity intrbd tr A/I
43	6530.5	2.65		0.711	87.1	0.0	0	0	DI mf	Ss gy-tn-opaq vf-fgr sbang-sbmd meale tr sity intrbd tr sml vug
44	6540.0	2.67		0.174	88.3	0.0	0	0	DI mf	Ss gy-tn-opaq vf-fgr sbang-sbrnd scale tr slty intrbd sc hal
45	6545.0	2.67			90.7	0.0	0	.0	DI mf	Ss gy-tn-opaq vf-fgr sbang-sbrnd seale tr sity introd tr hal
46	6556.0	2.66			92.4	0.0	0	0	DI mf	Ss gy-tn-opaq vf-fgr sbang-sbmd meale tr sity introd se half
47	6570:0	2.67		0.598	90.5	0.0	0	0	DI mf	Ss tn-gy-opaq vf-fgr sbang-sbrnd meale tr sity intrbd tr half
48	6576.0	2.69	11.05	0.137	88.5	0.0	0	0	DI mf	Ss gy-tn-opaq vf-fgr sbang-sbmd scale sc slty introd sc hal
49	6586.0	2.74	38	0,143	86.5	0.0	0	0	Dt mf	Ss gy-tn-opaq vf-fgr sbang-sbmd scale se sity lam intrbd tr hal
50	6594.0	2.70	6.8	0.043	86.3	0.0	0	0		Ss gy-tn-opaq vf-fgr sbang-sbmd scale se slty intrbd sc hal
51	6610.0	2.70	7.5	0.044	90.5	0.0	0	0		Ss gy-tn-opaq vf-fgr sbang-sbmd scalc sc slty intrbd sc hal
52	6620.0	2.69	91	0,019	87.9	0.0	0	0		Ss gy-tn-opaq vf-fgr sbang-sbmd scale se sity intrbd tr hal
- 53	6630.0	2.66		2 9 76	90.0	0.0	0	0		Ss gy-tn-opag vf-fgr sbang-sbrnd scale tr sity intrbd se hal



## SUMMARY OF RESERVOIR CHARACTERISTICS OF THE PROPOSED INJECTION INTERVAL DEMONSTRATES NO RECOVERABLE HYDROCARBONS

- Injection is proposed into porous sandstones of the Cherry Canyon Member in the Red Hills AGI #1 well. This interval is composed of fine-medium grained sandstones that contain primary porosity, with interbedded intervals of low porosity and permeability limestone. Secondary porosity (i.e. fractures) may be present in the Cherry Canyon Member.
- Based on nearby wells in the area, this interval is not productive of hydrocarbons.
- Mudlog sample shows throughout the injection interval are very weak (Attachment B). Sample cuts, in the few places found, were likewise weak and very localized, with either no or minor hydrocarbon shows at these locations. Sample cuts indicate wet formation conditions over the entire injection interval. These factors clearly indicate a lack of any movable (recoverable) hydrocarbons.
- Sidewall core results indicate mineral fluorescence, with no shows of hydrocarbon fluorescence across the injection zone. Furthermore, core analysis shows no residual or ambient oil saturation throughout the injection interval, and moderate to high water saturations.
- Formation fluids collected during swabbing show very small concentrations of TPH (Attachment C).
- The sidewall cores, when combined with the lack and quality of mudlog shows and very low TPH in the formation fluid samples, this interval clearly lacks any recoverable hydrocarbons.

**END OF ATTACHMENT A** 



## Attachment B Mud Log with Sidewall Core Images

## **ATTACHMENT B**

# MUDLOG EVALUATION FROM 6,230' TO 6,650' (TD)



### Selman Mudlog Header

- The contents of the mudlog, including all symbols and readings, are described here.
- Fluorescence from sidewall cores collected across the injection interval were analyzed by Weatherford Laboratories.
- Sidewall core results show mineral fluorescence and no significant shows across the entire injection interval. The cores shown on the following slides were taken under UV light. Sidewall core locations are discussed below.











#### Accessories - ARGILLACEOUS F FOSSIL

Fossils OF ALGAE

- BELEMNITE A BIOCLASTIC & BRACHOIPOD

T BRYOZOA CEPHALOPOD A CORAL O CRINOID to ECHINDIE

ex PISH

PISOLITE PLANT REMAINS S PLANT SPORES SCAPHOPOD I STROMATOPOROID @ FORMINIFFRA

Minerals # ANHYDRITIC

A GASTROPPO

O OSTRACOD

PRIECYPOD

• DOUTE

& PELLET

✓ ARGILLITE GRAIN # BENTONITE SHTUMENOUS SUBSTANCE M BRECCIA FRAGMENTS # CALCAREOUS ■ CARBONACEOUS FLAKES

- CHTDK A CHTLT COAL - THIN BEDS ∠ DOLOMITIC + FELDSPAR

. FERRUGINOUS PELLET ► FERRUGINOUS

A GLAUCONITE S GYPSIFEROUS

T HEAVY MINERAL K KAOLIN MARLSTONE NODULES

- PHOSPHATE PELLETS P PYRITE # SALT CAST A SILICEOUS

- SILTY V TUFFACEOUS Stringer

ANHYDRITE STRINGER SPARES BENTONITE STRINGER COAL STRINGER DOLOMITE STRINGER
GYPSUM STRINGER LIMESTONE STRINGER MARI STONE (CALC) STRG MARLSTONE (DOL) STRG SANDSTONE STRINGER SHALE STRINGER

SILTSTONE STRINGER

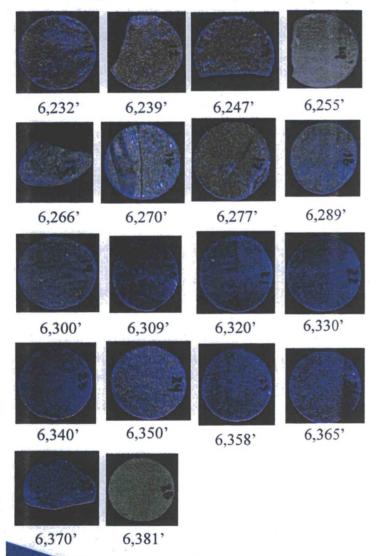
Other Symbols FORMATION TOP O ORGANIC L LITHOGRAPHIC Oil Show Rounding P PINPOINT # GAS SHOW MX MICROXLN V VUGGY MN DEPTH MN DEPTH A ANGULAR MS MUDSTONE EVEN % NORMAL FAULT ₽ ROUNDED PS PACKSTONE Engineering O QUESTIONABLE A OIL SHOW P SHANG WS WACKESTONE O SPOTTED STAINING OVERTURNED STRATA F SUBRND Sorting 2 REVERSE FAULT CASING **Porosity Textures** SIDEWALL CORE (LEFT) ■ CONNECTION (LEFT) M MODERATE SIDEWALL CORE (RIGHT) E EARTHY CONNECTION (RIGHT) BS BOUNDSTONE P POOR FENESTRAL CONNECTION GAS C CHALKY W WELL CX CRYPTOXLN F FRACTURE (DS SURVEY 4 CORE LOST CORE - RECOVERED TRIP GAS E EARTHY X INTERCRYSTALLINE : DST INTERVAL WIRELINE TESTED - LEFT & INTERCOLITIC EX FINELYXLN 1 FAULT S MOLDIC MRELINE TESTED - RT 55 GRAINSTONE

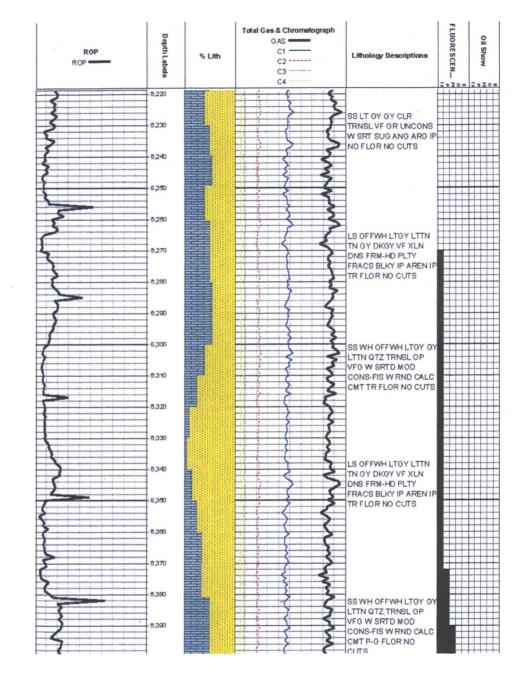
ROP School Schoo	C1 ————————————————————————————————————	Lithology Descriptions	FLUORESCEN FF	Oil Show FR	
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## Interval from 6,230' to 6,400'

 The top of the injection interval is primarily composed of Sandstone and Limestone

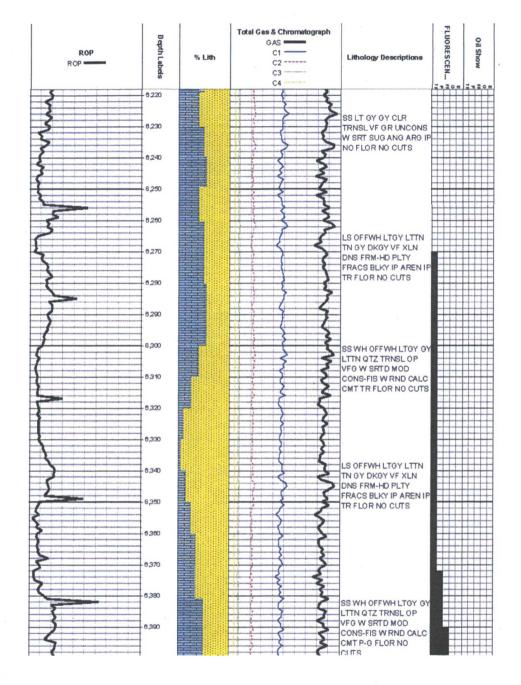






### Interval from 6,230' to 6,400' Continued

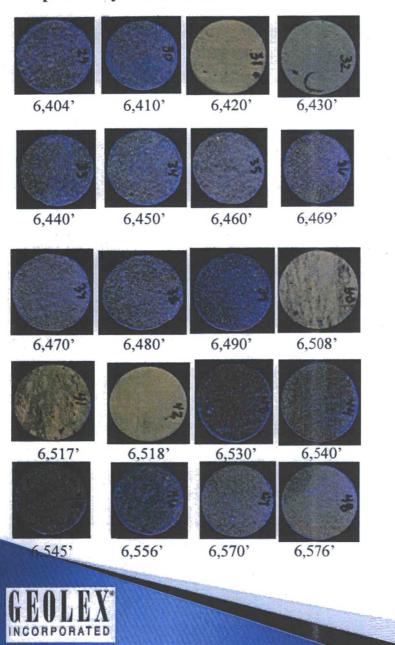
- Trace gas (mainly methane) detections are shown on the mudlog near the top of the injection zone that do not exceed 55u/5.5 kppm.
- Sidewall cores collected at 6232', 6239', 6247', 6255', 6266', 6270', 6277', 6289', 6300', 6309', 6320', 6330', 6340', 6350', 6358', 6365', 6370', and 6381' have mineral fluorescence with no significant shows.
- The average porosity and permeability from sidewall cores collected between 6190' and 6400' are 14.9% and 3.9 mD, respectively

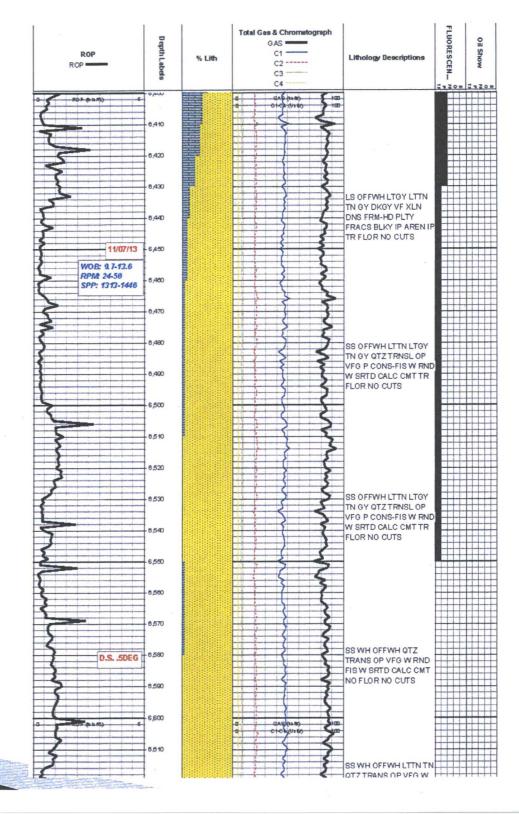




## Interval from 6,400' to 6,620'

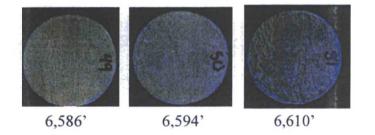
 The center of the injection interval is composed primarily of sandstone

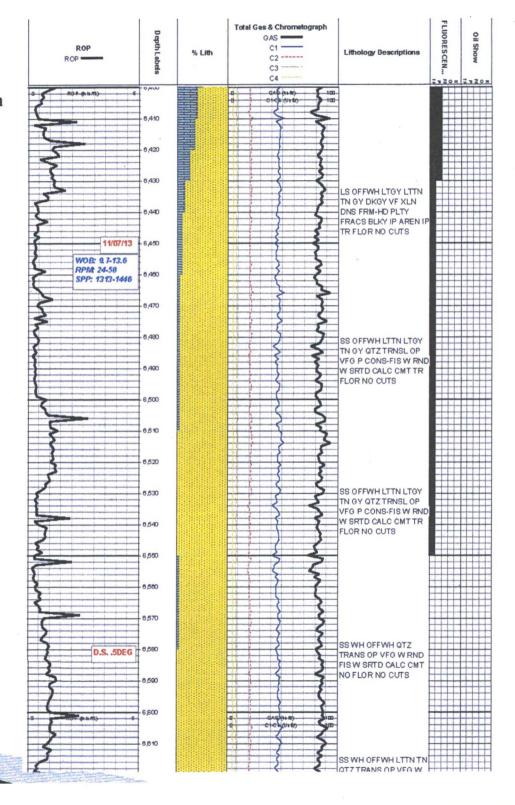




### Interval from 6,400' to 6,620' Continued

- Trace gas (mainly methane) detections are shown on the mudlog that do not exceed 55u/5.5 kppm.
- Sidewall cores collected at 6404', 6410', 6420', 6430', 6440', 6450', 6460', 6469', 6470', 6480', 6490', 6508', 6517', 6518', 6530', 6540', 6545', 6556', 6570', 6576', 6586', 6594', and 6610' have mineral fluorescence with no significant shows.
- The average porosity and permeability from sidewall cores collected between 6400' and 6620' are 13.5% and 1.6 mD, respectively

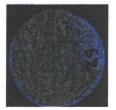




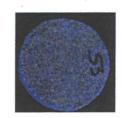


### Interval from 6,620' to 6,650'

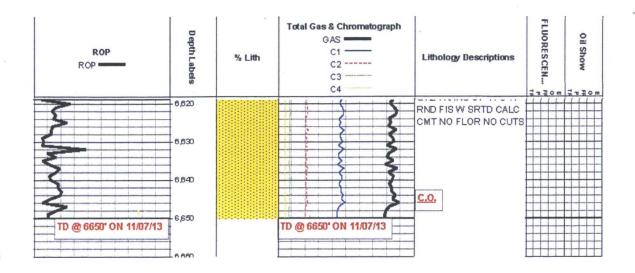
- The bottom of the injection zone is primarily composed sandstone
- Trace gas (mainly methane) detections are shown on the mudlog that do not exceed 55u/5.5 kppm.
- Sidewall cores collected at 6620' and 6630' have mineral fluorescence with no significant shows.
- The average porosity and permeability from sidewall cores collected between 6620' and 6650' are 15.1% and 1.0 mD, respectively







6,630





## **ATTACHMENT C**

# FORMATION FLUID EVALUATION ACROSS INJECTION INTERVAL



			RED HI	LLS AGI #	1 INJ	ECTIO	ON ZON	E FORM	IATION-	FLUID F	RESULT	S			
Sample ID	Alkalinity, Bicarbonate	Alkalinity, Carbonat e	CI	Conductivit y	рН	SO <sub>4</sub>	TDS	Alkalinity, Total	DRO >C10- C28	EXT DRO >C28- C36	ТРН	Ca	Mg	K	Na
485 bbls. Recov ered	1590	<1.0	17800 0	253000	5.87	897	24300 0	1300	5.87	2.46	8.33	2630 0	3790	1630	63900
522 bbls. Recov ered	1460	<1.0	17400 0	266000	5.84	640	27400 0	1200	10.6	5.39	15.99	2690 0	4060	1640	61700
560 bbls. Recov ered	1340	<1.0	17000 0	276000	5.85	580	24700 0	1100	8.75	5.16	13.91	2710 0	3970	1690	63800
580 bbls. Recov ered	1880	<1.0	18200 0	278000	5.40	477	29600 0	1540	6.25	3.41	9.66	2590 0	3820	1600	60500

- Total Petroleum hydrocarbons range from 8.33 ppm to 15.99 ppm.
   Laboratory Analytical results are on the following pages.
- This clearly demonstrates there are no commercially available hydrocarbons.





January 05, 2018

Alberto A. Gutierrez

GEOLEX INC.

500 MARQUETTE AVE, STE. 1350

ALBUQUERQUE, NM 87102

RE: LUCID ENERGY GROUP RED HILLS AGI #1

Enclosed are the results of analyses for samples received by the laboratory on 12/28/17 10:50.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. 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 <a href="https://www.tceq.texas.gov/field/ga/lab">www.tceq.texas.gov/field/ga/lab</a> accredited certif.html.

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

Method EPA 552.2

Total Haloacetic Acids (HAA-5)

Method EPA 524.2

Total Trihalomethanes (TTHM)

Method EPA 524.4

Regulated VOCs (V1, V2, V3)

Celeg D. Keine

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B

Total Coliform and E. coli (Colilert MMO-MUG)

Method EPA 524.2

Regulated VOCs and Total Trihalomethanes (TTHM)

Method EPA 552.2

Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

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,

Celey D. Keene

Lab Director/Quality Manager





GEOLEX INC.

500 MARQUETTE AVE, STE. 1350 ALBUQUERQUE NM, 87102

Project: LUCID ENERGY GROUP RED HILLS

Project Number: 17-026

Project Manager: Alberto A. Gutierrez

Fax To:

Reported: 05-Jan-18 11:18

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
485 BBLS RECOVERED	H703610-01	Water	23-Dec-17 00:00	28-Dec-17 10:50
522 BBLS RECOVERED	H703610-02	Water	23-Dec-17 03:00	28-Dec-17 10:50
560 BBLS RECOVERED	H703610-03	Water	23-Dec-17 06:00	28-Dec-17 10:50
580 BBLS RECOVERED	H703610-04	Water	23-Dec-17 08:00	28-Dec-17 10:50

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keine



GEOLEX INC.

500 MARQUETTE AVE, STE. 1350 ALBUQUERQUE NM, 87102

Project: LUCID ENERGY GROUP RED HILLS

Project Number: 17-026

Project Manager: Alberto A. Gutierrez

Fax To:

Reported:

05-Jan-18 11:18

#### 485 BBLS RECOVERED

#### H703610-01 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	al Laborato	ories					
Inorganic Compounds										
Alkalinity, Bicarbonate	1590		5.00	mg/L	1	7121901	AC	28-Dec-17	310.1	
Alkalinity, Carbonate	<1.00		1.00	mg/L	1	7121901	AC	28-Dec-17	310.1	
Chloride*	178000		4.00	mg/L	1	7122106	AC	28-Dec-17	4500-CI-B	
Conductivity*	253000		1.00	uS/cm	1	7122809	AC	28-Dec-17	120.1	
pH*	5.87		0.100	pH Units	1	7122809	AC	28-Dec-17	150.1	
Sulfate*	897		250	mg/L	25	7122811	AC	29-Dec-17	375.4	
ΓDS*	243000		5.00	mg/L	1	7122803	AC	02-Jan-18	160.1	
Alkalinity, Total*	1300		4.00	mg/L	1	7121901	AC	28-Dec-17	310.1	
Petroleum Hydrocarbons by (	GC FID									
DRO >C10-C28*	5.87		1.00	mg/L	0.1	7122808	MS	29-Dec-17	8015B	
EXT DRO >C28-C36	2.46		1.00	mg/L	0.1	7122808	MS	29-Dec-17	8015B	
Surrogate: 1-Chlorooctane			95.6 %	37.1-	138	7122808	MS	29-Dec-17	8015B	
Surrogate: 1-Chlorooctadecane			94.3 %	44.6-	151	7122808	MS	29-Dec-17	8015B	
			Green Anal	vtical I abo	oratories					
Total Recoverable Metals by 1	ICP (E200.7)		Green Anai	yticai Lab	ratorics		· ·			
Calcium*	26300		25.0	mg/L	250	B801010	JDA	04-Jan-18	EPA200.7	
Magnesium*	3790		25.0	mg/L	250	B801010	JDA	04-Jan-18	EPA200.7	
Potassium*	1630		250	mg/L	250	B801010	JDA	04-Jan-18	EPA200.7	
Sodium*	63900		250	mg/L	250	B801010	JDA	04-Jan-18	EPA200.7	

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\*=Accredited Analyte

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Celey D. Keine



GEOLEX INC.

500 MARQUETTE AVE, STE. 1350 ALBUQUERQUE NM, 87102 Project: LUCID ENERGY GROUP RED HILLS

Reported:

Project Number: 17-026

Project Manager: Alberto A. Gutierrez

05-Jan-18 11:18

Fax To:

#### **522 BBLS RECOVERED**

H703610-02 (Water)

		Reporting							
Analyte	Result	MDL Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Note
		Cardin	al Laborat	ories					
Inorganic Compounds									
Alkalinity, Bicarbonate	1460	5.00	mg/L	1	7121901	AC	28-Dec-17	310.1	
Alkalinity, Carbonate	<1.00	1.00	mg/L	1	7121901	AC	28-Dec-17	310.1	
Chloride*	174000	4.00	mg/L	1	7122106	AC	28-Dec-17	4500-CI-B	
Conductivity*	266000	1.00	uS/cm	1	7122809	AC	28-Dec-17	120.1	
oH*	5.84	0.100	pH Units	1	7122809	AC	28-Dec-17	150.1	
Sulfate*	640	83.3	mg/L	8.33	7122811	AC	29-Dec-17	375.4	
TDS*	274000	5.00	mg/L	1	7122803	AC	02-Jan-18	160.1	
Alkalinity, Total*	1200	4.00	mg/L	1	7121901	AC	28-Dec-17	310.1	
Petroleum Hydrocarbons by C	GC FID								
ORO >C10-C28*	10.6	1.00	mg/L	0.1	7122808	MS	29-Dec-17	8015B	
EXT DRO >C28-C36	5.39	1.00	mg/L	0.1	7122808	MS	29-Dec-17	8015B	
Surrogate: 1-Chlorooctane		101 %	37.1	-138	7122808	MS	29-Dec-17	8015B	
Surrogate: 1-Chlorooctadecane		101 %	44.6	-151	7122808	MS	29-Dec-17	8015B	
		Green Ana	lytical Lab	oratories					
Total Recoverable Metals by I	CP (E200.7)								
Calcium*	26900	25.0	mg/L	250	B801010	JDA	04-Jan-18	EPA200.7	
Magnesium*	4060	25.0	mg/L	250	B801010	JDA	04-Jan-18	EPA200.7	
Potassium*	1640	250	mg/L	250	B801010	JDA	04-Jan-18	EPA200.7	

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Sodium\*

\*=Accredited Analyte

EPA200.7

04-Jan-18

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mg/L

B801010

250

JDA

250

61700

Celeg D. Keine



GEOLEX INC.

500 MARQUETTE AVE, STE. 1350 ALBUQUERQUE NM, 87102

Project: LUCID ENERGY GROUP RED HILLS

Project Number: 17-026

Project Manager: Alberto A. Gutierrez

Fax To:

Reported:

05-Jan-18 11:18

#### **560 BBLS RECOVERED**

H703610-03 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Note
			Cardin	al Laborato	ories					
Inorganic Compounds				¥						
Alkalinity, Bicarbonate	1340		5.00	mg/L	1	7121901	AC	28-Dec-17	310.1	
Alkalinity, Carbonate	<1.00		1.00	mg/L	1	7121901	AC	28-Dec-17	310.1	
Chloride*	170000		4.00	mg/L	1	7122106	AC	28-Dec-17	4500-CI-B	
Conductivity*	276000		1.00	uS/cm	1	7122809	AC	28-Dec-17	120.1	
pH*	5.85		0.100	pH Units	1	7122809	AC	28-Dec-17	150.1	
Sulfate*	580		125	mg/L	12.5	7122811	AC	29-Dec-17	375.4	
TDS*	247000		5.00	mg/L	- 1	7122803	AC	02-Jan-18	160.1	
Alkalinity, Total*	1100		4.00	mg/L	1	7121901	AC	28-Dec-17	310.1	
Petroleum Hydrocarbons by C	GC FID									
DRO >C10-C28*	8.75		1.00	mg/L	0.1	7122808	MS	29-Dec-17	8015B	
EXT DRO >C28-C36	5.16		1.00	mg/L	0.1	7122808	MS	29-Dec-17	8015B	
Surrogate: 1-Chlorooctane			101 %	37.1-	138	7122808	MS	29-Dec-17	8015B	
Surrogate: 1-Chlorooctadecane			98.3 %	44.6-	151	7122808	MS	29-Dec-17	8015B	
			Green Ana	lytical Lab	oratories					
Total Recoverable Metals by I	CP (E200.7)									
Calcium*	27100		25.0	mg/L	250	B801010	JDA	04-Jan-18	EPA200.7	
Magnesium*	3970		25.0	mg/L	250	B801010	JDA	04-Jan-18	EPA200.7	
Potassium*	1690		250	mg/L	250	B801010	JDA	04-Jan-18	EPA200.7	
Sodium*	63800		250	mg/L	250	B801010	JDA	04-Jan-18	EPA200.7	

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Celeg D. Keene



GEOLEX INC.

500 MARQUETTE AVE, STE. 1350 ALBUQUERQUE NM, 87102

Project: LUCID ENERGY GROUP RED HILLS

Reported: 05-Jan-18 11:18

Project Number: 17-026

Project Manager: Alberto A. Gutierrez

Fax To:

#### 580 BBLS RECOVERED H703610-04 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	l Laborate	ories					*
Inorganic Compounds								*		
Alkalinity, Bicarbonate	1880		5.00	mg/L	1	7121901	AC	28-Dec-17	310.1	
Alkalinity, Carbonate	<1.00		1.00	mg/L	. 1	7121901	AC	28-Dec-17	310.1	
Chloride*	182000		4.00	mg/L	1	7122106	AC	28-Dec-17	4500-CI-B	
Conductivity*	278000		1.00	uS/cm	1	7122809	AC	28-Dec-17	120.1	
pH*	5.40		0.100	pH Units	1	7122809	AC	28-Dec-17	150.1	
Sulfate*	477		125	mg/L	12.5	7122811	AC	29-Dec-17	375.4	
TDS*	296000		5.00	mg/L	1	7122803	AC	02-Jan-18	160.1	
Alkalinity, Total*	1540		4.00	mg/L	1	7121901	AC	28-Dec-17	310.1	
Petroleum Hydrocarbons by C	GC FID					e de la companya de l				
DRO >C10-C28*	6.25		1.00	mg/L	0.1	7122808	MS	29-Dec-17	8015B	
EXT DRO >C28-C36	3.41		1.00	mg/L	0.1	7122808	MS	29-Dec-17	8015B	
Surrogate: 1-Chlorooctane			91.2 %	37.1-	138	7122808	MS	29-Dec-17	8015B	
Surrogate: 1-Chlorooctadecane			91.8 %	44.6-	151	7122808	MS	29-Dec-17	8015B	
			Green Anal	ytical Lab	oratories					
Total Recoverable Metals by I	CP (E200.7)					8				
Calcium*	25900		25.0	mg/L	250	B801010	JDA	04-Jan-18	EPA200.7	
Magnesium*	3820		25.0	mg/L	250	B801010	JDA	04-Jan-18	EPA200.7	
Potassium*	1600		250	mg/L	250	B801010	JDA	04-Jan-18	EPA200.7	
Sodium*	60500		250	mg/L	250	B801010	JDA	04-Jan-18	EPA200.7	

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Celey & Keene



GEOLEX INC.

500 MARQUETTE AVE, STE. 1350 ALBUQUERQUE NM, 87102 Project: LUCID ENERGY GROUP RED HILLS

Project Number: 17-026

Project Manager: Alberto A. Gutierrez

Fax To:

Reported: 05-Jan-18 11:18

#### **Inorganic Compounds - Quality Control**

#### **Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7121901 - General Prep - Wet Chem										
Blank (7121901-BLK1)				Prepared &	: Analyzed:	19-Dec-17				
Alkalinity, Carbonate	ND	1.00	mg/L	2			a 24			
Alkalinity, Bicarbonate	10.0	5.00	mg/L							
Alkalinity, Total	8.00	4.00	mg/L							
LCS (7121901-BS1)				Prepared &	Analyzed:	19-Dec-17	8			7
Alkalinity, Carbonate	ND	2.50	mg/L				80-120			
Alkalinity, Bicarbonate	330	12.5	mg/L				80-120			
Alkalinity, Total	270	10.0	mg/L	250		108	80-120			
LCS Dup (7121901-BSD1)				Prepared &	Analyzed:	19-Dec-17				
Alkalinity, Carbonate	ND	2.50	mg/L				80-120		20	
Alkalinity, Bicarbonate	318	12.5	mg/L				80-120	3.86	20	
Alkalinity, Total	260	10.0	mg/L	250		104	80-120	3.77	20	
Batch 7122106 - General Prep - Wet Chem			14							
Blank (7122106-BLK1)				Prepared &	Analyzed	21-Dec-17				
Chloride	ND	4.00	mg/L		ă					
LCS (7122106-BS1)				Prepared &	Analyzed	21-Dec-17				
Chloride	104	4.00	mg/L	100		104	80-120			
LCS Dup (7122106-BSD1)				Prepared &	Analyzed	21-Dec-17				
Chloride	104	4.00	mg/L	100		104	80-120	0.00	20	
Batch 7122803 - Filtration	×		*							
Blank (7122803-BLK1)				Prepared: 2	28-Dec-17	Analyzed: 02	2-Jan-18			
TDS	ND	5.00	mg/L		8					

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Celey D. Keine



GEOLEX INC.

500 MARQUETTE AVE, STE. 1350 ALBUQUERQUE NM, 87102

Project: LUCID ENERGY GROUP RED HILLS

Reported:

Project Number: 17-026

17-026

Project Manager: Alberto A. Gutierrez

05-Jan-18 11:18

Fax To:

#### **Inorganic Compounds - Quality Control**

#### **Cardinal Laboratories**

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 7122803 - Filtration										
LCS (7122803-BS1)			9	Prepared: 2	28-Dec-17	Analyzed: 0	2-Jan-18			
TDS	218	5.00	mg/L	213		102	80-120	les.		
Duplicate (7122803-DUP1)	Sou	rce: H703604	-03	Prepared: 2	28-Dec-17 A	Analyzed: 0	2-Jan-18			
TDS	21800	5.00	mg/L		21400			1.73	20	
Batch 7122809 - General Prep - Wet Chem										
LCS (7122809-BS1)				Prepared &	Analyzed:	28-Dec-17				
pH	7.23		pH Units	7.00		103	90-110			9 E
Conductivity	101000		uS/cm	100000		101	80-120			
Duplicate (7122809-DUP1)	Sou	rce: H703610	-01	Prepared &	Analyzed:	28-Dec-17				
рН	5.88	0.100	pH Units		5.87			0.170	20	
Conductivity	279000	1.00	uS/cm		253000			9.93	20	
Batch 7122811 - General Prep - Wet Chem										
Blank (7122811-BLK1)				Prepared: 2	28-Dec-17	Analyzed: 2	9-Dec-17			
Sulfate	ND	10.0	mg/L							
LCS (7122811-BS1)				Prepared:	28-Dec-17	Analyzed: 2	9-Dec-17			
Sulfate	23.4	10.0	mg/L	20.0		117	80-120			
LCS Dup (7122811-BSD1)				Prepared:	28-Dec-17	Analyzed: 2	9-Dec-17			
Sulfate	24.0	10.0	mg/L	20.0		120	80-120	2.32	20	

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Celey D. Keene



GEOLEX INC.

500 MARQUETTE AVE, STE. 1350 ALBUQUERQUE NM, 87102 Project: LUCID ENERGY GROUP RED HILLS

Project Number: 17-026

Project Manager: Alberto A. Gutierrez

Fax To:

Reported:

05-Jan-18 11:18

#### Petroleum Hydrocarbons by GC FID - Quality Control

#### **Cardinal Laboratories**

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 7122808 - General Prep - Organics	5									
Blank (7122808-BLK1)				Prepared: 2	28-Dec-17 A	nalyzed: 2	9-Dec-17			
GRO C6-C10	ND	1.00	mg/L							
DRO >C10-C28	ND	1.00	mg/L							
EXT DRO >C28-C35	ND	1.00	mg/L							
EXT DRO >C28-C36	ND	1.00	mg/L	,						
Surrogate: 1-Chlorooctane	4.15		mg/L	5.00		82.9	37.1-138			
Surrogate: 1-Chlorooctadecane	4.63		mg/L	5.00		92.6	44.6-151			
LCS (7122808-BS1)				Prepared: 2	28-Dec-17 A	nalyzed: 2	9-Dec-17			
GRO C6-C10	46.2	1.00	mg/L	50.0		92.4	72.8-108			
DRO >C10-C28	48.5	1.00	mg/L	50.0		97.0	77.5-117			
EXT DRO >C28-C35	0.394	1.00	mg/L	0.00			0-0			
Surrogate: 1-Chlorooctane	4.31		mg/L	5.00		86.2	37.1-138			
Surrogate: 1-Chlorooctadecane	4.64		mg/L	5.00		92.7	44.6-151			
LCS Dup (7122808-BSD1)				Prepared:	28-Dec-17 A	Analyzed: 2	9-Dec-17			
GRO C6-C10	46.8	1.00	mg/L	50.0		93.6	72.8-108	1.35	12	
DRO >C10-C28	48.6	1.00	mg/L	50.0		97.3	77.5-117	0.305	12.1	
EXT DRO >C28-C35	ND	1.00	mg/L	0.00			0-0		20	
Surrogate: 1-Chlorooctane	4.49		mg/L	5.00		89.7	37.1-138			
Surrogate: 1-Chlorooctadecane	4.90		mg/L	5.00		98.0	44.6-151			

#### Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keine



GEOLEX INC.

500 MARQUETTE AVE, STE. 1350 ALBUQUERQUE NM, 87102

Project: LUCID ENERGY GROUP RED HILLS

Reported:

Project Number: 17-026

Project Manager: Alberto A. Gutierrez

05-Jan-18 11:18

Fax To:

#### Total Recoverable Metals by ICP (E200.7) - Quality Control

#### **Green Analytical Laboratories**

. *		Reporting		Spike	Source		%REC RPD			
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Blank (B801010-BLK1)				Prepared: 03-Jan	-18 Analyzed: 0	4-Jan-18		
Sodium	ND	1.00	mg/L					
Magnesium	ND	0.100	mg/L					
Potassium	ND	1.00	mg/L					
Calcium	ND	0.100	mg/L					
LCS (B801010-BS1)				Prepared: 03-Jan	1-18 Analyzed: 0	4-Jan-18		· · · · · · · · · · · · · · · · · · ·
Magnesium	19.8	0.100	mg/L	20.0	99.2	85-115		
Potassium	8.13	1.00	mg/L	8.00	102	85-115		
Calcium	3.92	0.100	mg/L	4.00	98.0	85-115		
Sodium	6.32	1.00	mg/L	6.48	97.6	85-115		
LCS Dup (B801010-BSD1)				Prepared: 03-Jan	1-18 Analyzed: 0	4-Jan-18		
Magnesium	19.9	0.100	mg/L ·	20.0	99.3	85-115	0.0902	20
Potassium	7.91	1.00	mg/L	8.00	98.9	85-115	2.68	20
Calcium	3.92	0.100	mg/L	4.00	98.0	85-115	0.0158	20
Sodium	6.31	1.00	mg/L	6.48	97.4	85-115	0.231	20

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Celeg D. Keine



ND

#### **Notes and Definitions**

RPD Relative Percent Difference

\*\* Samples not received at proper temperature of 6°C or below.

\*\*\* Insufficient time to reach temperature.

Chloride by SM4500Cl-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

Analyte NOT DETECTED at or above the reporting limit

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Celeny D. Keene



#### CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

	(010) 000-2020 TAX (010) 000-241	_	-				_					-		-			-	-			-	-	-	-
Company Name	: Geolex, Inc.								B	ILL 1	TO	ing the	ANALYSIS REQUEST											
Project Manage	r: Alberto A Gutierrez						F	2.0. #	t:															
Address:	500 Marquette Ave. NW #1350	-					C	omp	any:	Geole	x, Ind	o					Ro)							
City: Albuque	rque State: NM	Zip	: 8	7102	2		A	Attn: Liz Hill									DR							
Phone #: (505) 842-8000 Fax #: aag@geolex.com							A	Address: 500 Marquette 1350																
Project #: 17-026 Project Owner: Geolex							C	City: Albuquerque									ext							
Project Name: Lucid Energy Group Red Hills AGI #1						S	State: NM Zip: 87102									0								
Project Location	Project Location: Sec 13 (I), T24S, R33E, Lea Co., NM					P	Phone #: (505) 842-8000									DRO								
Sampler Name:	Dale Littlejohn						F	Fax #: liz@geolex.com								J	)							-
FOR LAB USE ONLY	4		П		MAT	RIX		PR	ESERV	/. SA	MPLI	NG	Amon			15	2							
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP	# CONTAINERS	GROUNDWATER	SOIL	OIL	SLUDGE	ACID/BASE:	ICE / COOL OTHER:	DA	TE	TIME	Cations/	TDS	H d	Conductivit	TPH 8015	_						-
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2	522 bbls Recovered	G				- Commercial Commercia	V	1	<b>V</b>	12/	23	03:00	V	r	~	~	V							
3	560 bbls Recovered	G	_			The second	V	1	<b>V</b>	12/	23	06:00	~	V	V	~	1							
4	580 bbls Recovered	G	5				V	4_	1	12/	23	08:00	Y	V	Y	V	V							
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PLEASE NOTE: Liability and Darmages. Cardinafe lebility and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount peak by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived untess made in waiting and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries,

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	Jul Smit	Time: 500	Luuara k	lacker			K	1184.	
J	Delivered By: (Circle One) /	22	Sample Condition	CHECKED BY:					
7	Sampler - UPS - Bus - Other:	rrected	/ SC Pres Pres	(Initials)		/		Y	