MITCHELL ANALYTICAL LABORATORY

2638 Faudree
Odessa, Texas 79765-8538
561-5579

Company: ***Legacy Reserves***

Well Number:	Section 34	Sample Temp:	65
Lease:	Water Well	Date Sampled:	11/10/2014
Location:		Sampled by:	Isaac Huskey
Date Run:	11/12/2014	Employee #:	
Lab Ref #:	14-nov-n77995	Analyzed by:	GR

Dissolved Gases

			Mg/L	Eq. Wt.	MEq/L
Hydrogen Sulfide	(H2S)		.00	16.00	.00
Carbon Dioxide	(CO2)		146.00	22.00	6.64
Dissolved Oxygen	(O2)	**NOT ANALYZED**			

Cations

Calcium	(Ca++)	105.81	20.10	5.26
Magnesium	(Mg++)	27.28	12.20	2.24
Sodium	(Na+)	204.30	23.00	8.88
Barium	(Ba++)	2.63	68.70	.04
Manganese	(Mn+)	.01	27.50	.00
Strontium	(Sr++)	.97	47.80	.02

Anions

Hydroxyl	(OH-)	.00	17.00	.00
Carbonate	(CO3=)	.00	30.00	.00
BiCarbonate	(HCO3-)	146.64	61.10	2.40
Sulfate	(SO4=)	90.00	48.80	1.84
Chloride	(Cl-)	198.22	35.50	5.58

Total Iron	(Fe)	0.42	18.60	.02
Total Dissolved Solids		922.28		
Total Hardness as CaCO3		376.37		
Conductivity MICROMHOS/CM		997		

pH 7.500 Specific Gravity 60/60 F. 1.001

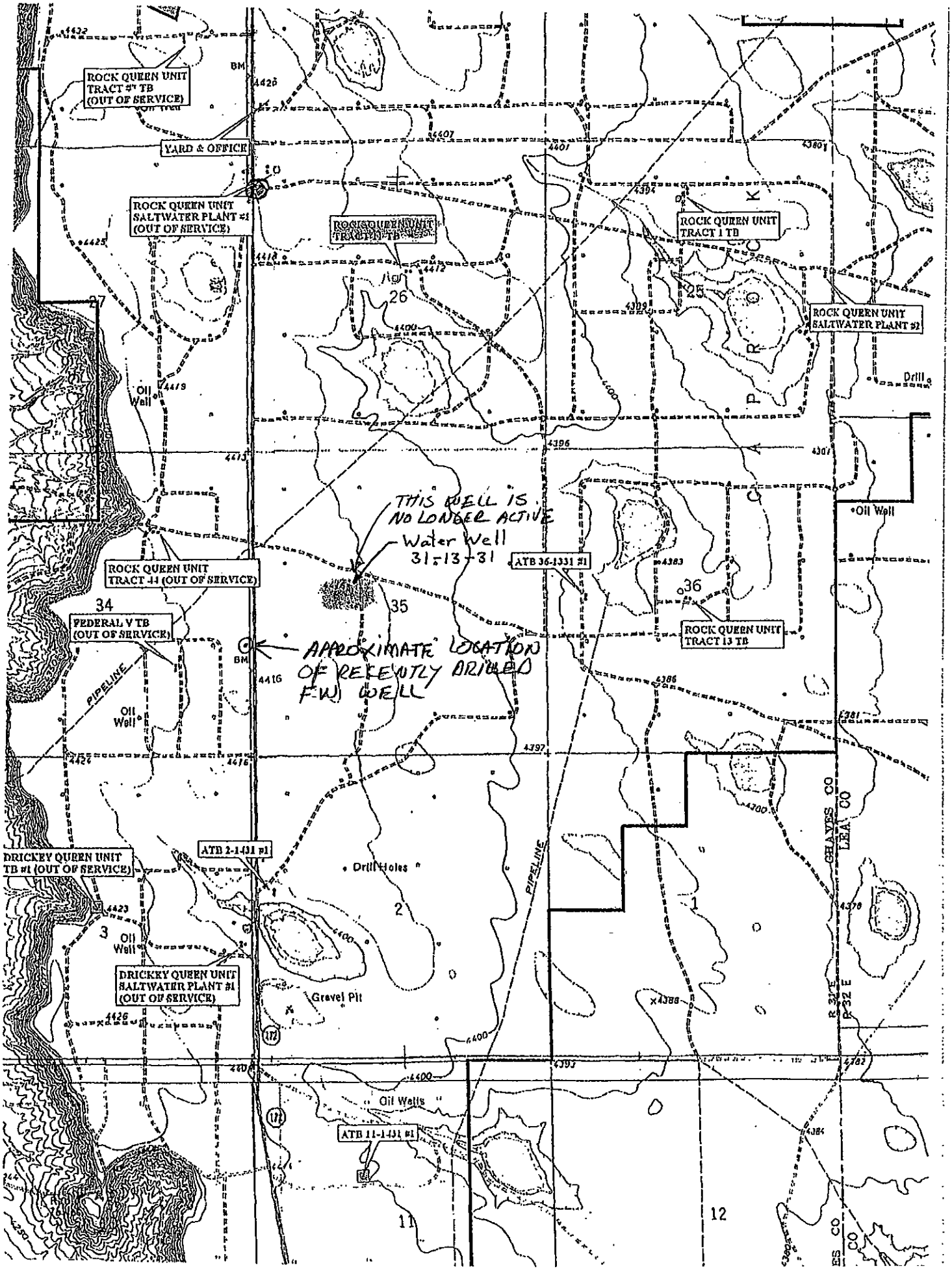
CaSO4 Solubility @ 80 F. 18.36MEq/L, CaSO4 scale is unlikely

CaCO3 Scale Index

70.0	-.486	100.0	-.136	130.0	.374
80.0	-.356	110.0	.104	140.0	.374
90.0	-.136	120.0	.104	150.0	.604

Oil Conservation Division
Case No. 15255
Exhibit No. 15-C

Nalco Company


ROCK QUEEN UNIT TRACT 9 TB (OUT OF SERVICE)
YARD & OFFICE
ROCK QUEEN UNIT SALTWATER PLANT #1 (OUT OF SERVICE)
ROCK QUEEN UNIT TRACT 11 TB
ROCK QUEEN UNIT TRACT 1 TB
ROCK QUEEN UNIT SALTWATER PLANT #2
Oil Well
Drill
THIS WELL IS NO LONGER ACTIVE
Water Well
31-13-31
ROCK QUEEN UNIT TRACT 44 (OUT OF SERVICE)
ATB 36-1331 #1
FEDERAL V TB (OUT OF SERVICE)
APPROXIMATE LOCATION OF RECENTLY DRILLED F-W WELL
ROCK QUEEN UNIT TRACT 13 TB
PIPELINE
DRICKEY QUEEN UNIT TB #1 (OUT OF SERVICE)
ATB 2-1431 #1
Drill Holes
Gravel Pit
DRICKEY QUEEN UNIT SALTWATER PLANT #1 (OUT OF SERVICE)
Oil Wells
ATB 11-1431 #1
CHAVES CO
LEA CO
R 31 E
R 32 E
ROCK QUEEN
BM

NALCO Champion Water Analysis Report

An Ecolab Company

Attention: **Anthony.baeza@champ-tech.com**

Customer: **Legacy Resources LP (1505590)**

Location Code: **155251**
Sample ID: **AC76838**
Login Batch: **141015_MFA_SW_CR_SI_**
Collection Date: **10/01/2014**
Receive Date: **10/10/2014**
Report Date: **10/23/2014**

Region: **Caprock Area**
Location: **Drickey Queen Sand Lease**
System: **Production System**
Equipment: **Well 28**
Lab ID: **ABU-1031**
Sample Point: **Well Head Valve Upstream of Choke**

Analyses	Result	Unit
Dissolved CO2	710	mg/L
Dissolved H2S	11.97	mg/L
pH	7	
Pressure	110	psi
Temperature	76	° F

Analyses	Result	Unit
Bicarbonate	48.8	mg/L
Conductivity	463987	µS - cm3
Ionic Strength	5.10	
Resistivity	0.022	ohms - m
Specfic Gravity	1.208	
Total Dissolved Solids	296981.4	mg/L

Cations	Result	Unit
Iron	25.29	mg/L
Manganese	4.499	mg/L
Barium	0.128	mg/L
Strontium	142.2	mg/L
Calcium	2184	mg/L
Magnesium	5919	mg/L
Sodium	105081.25	mg/L

Anions	Result	Unit
CHLORIDE	182958.75	mg/L
SULFATE	617.5	mg/L

Scale Type	Result
Anhydrite CaSO4 SI	-0.63
Barite BaSO4 SI	-0.16
Calcite CaCO3 SI	-0.65
Celestite SrSO4 PTB	27.7
Celestite SrSO4 SI	0.17
Gypsum CaSO4 SI	-0.86
Hemihydrate CaSO4 SI	-0.86

Saturation Index Calculation (Tomson-Oddo Model)

Comments:

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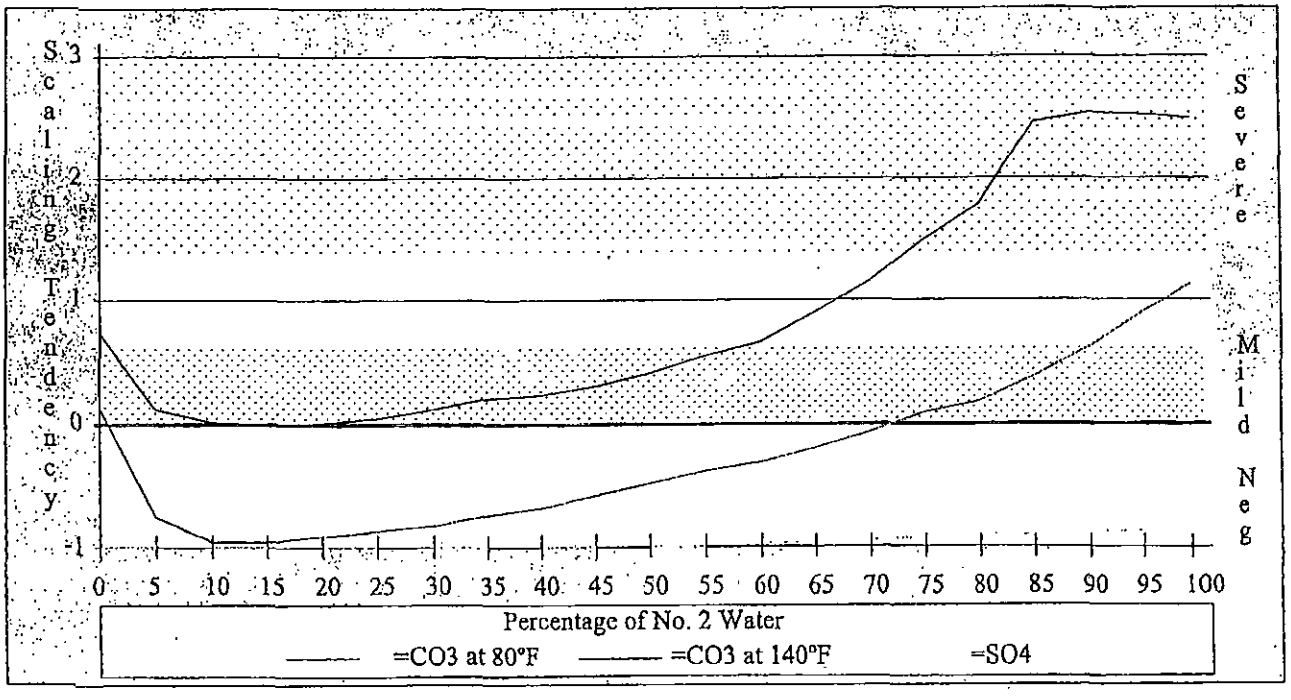
Comparison Between Two Waters

Requested by: Pro-Kem, Inc.

Sample No. 1
Celero Energy
Recovery Water

Sample No. 2
Celero Energy
Produced Water

Percent of #1 & #2	pH	TDS	SpGr	CaCO3 Saturation @80°F.	CaCO3 Saturation @140°F.	Calcium Sulfate Scaling Potential
100 - 00	7.100	468	1.009	0.133	0.733	Nil
95 - 05	7.070	15,378	1.019	-0.751	0.109	Nil
90 - 10	7.040	30,289	1.029	-0.960	0.010	Nil
85 - 15	7.010	45,199	1.038	-0.952	-0.012	Nil
80 - 20	6.980	60,109	1.048	-0.908	0.002	Nil
75 - 25	6.950	75,020	1.058	-0.873	0.047	Nil
70 - 30	6.920	89,930	1.068	-0.823	0.107	Nil
65 - 35	6.890	104,840	1.077	-0.742	0.193	Nil
60 - 40	6.860	119,751	1.087	-0.679	0.226	Nil
55 - 45	6.830	134,661	1.097	-0.592	0.298	Nil
50 - 50	6.800	149,572	1.107	-0.480	0.400	Nil
45 - 55	6.770	164,482	1.116	-0.382	0.538	Nil
40 - 60	6.740	179,392	1.126	-0.307	0.653	Nil
35 - 65	6.710	194,303	1.136	-0.196	0.904	Nil
30 - 70	6.680	209,213	1.146	-0.067	1.153	Nil
25 - 75	6.650	224,123	1.155	0.080	1.500	Nil
20 - 80	6.620	239,034	1.165	0.175	1.785	Nil
15 - 85	6.590	253,944	1.175	0.367	2.467	Nil
10 - 90	6.560	268,854	1.185	0.608	2.548	Nil
05 - 95	6.530	283,765	1.194	0.898	2.528	Nil
00 - 100	6.500	298,675	1.204	1.125	2.505	Nil



Oil Conservation Division
Case No. 14505
Exhibit No. 34

Pro-Kem, Inc.
WATER ANALYSIS REPORT

SAMPLE

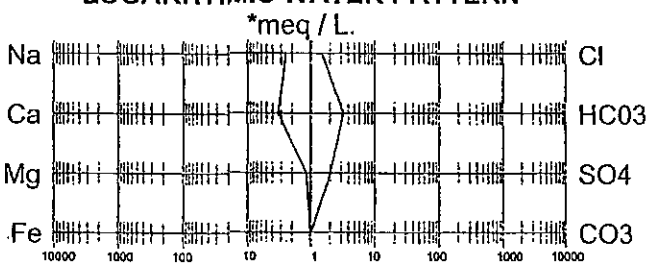
Oil Co. : **Celero Energy**
Lease :
Well No.: **Fresh Water**
Location:
Attention:

Date Sampled : **17-August-2007**
Date Analyzed: **23-August-2007**
Lab ID Number: **Aug2307.003- 2**
Salesperson :
File Name : **aug2307.003**

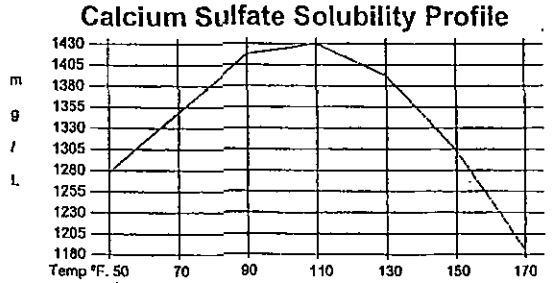
ANALYSIS

1.	Ph			7.100		
2.	Specific Gravity 60/60 F.			1.009		
3.	CACO3 Saturation Index	@ 80F		0.133	Mild	
		@140F		0.733	Moderate	
	Dissolved Gasses			MG/L.	EQ. WT.	*MEQ/L
4.	Hydrogen Sulfide			Not Present		
5.	Carbon Dioxide			Not Determined		
6.	Dissolved Oxygen			Not Determined		
	Cations					
7.	Calcium	(Ca++)		63	/ 20.1 =	3.13
8.	Magnesium	(Mg++)		13	/ 12.2 =	1.07
9.	Sodium	(Na+)	(Calculated)	54	/ 23.0 =	2.35
10.	Barium	(Ba++)		Not Determined		
	Anions					
11.	Hydroxyl	(OH-)		0	/ 17.0 =	0.00
12.	Carbonate	(CO3=)		0	/ 30.0 =	0.00
13.	Bicarbonate	(HCO3-)		193	/ 61.1 =	3.16
14.	Sulfate	(SO4=)		95	/ 48.8 =	1.95
15.	Chloride	(Cl-)		50	/ 35.5 =	1.41
16.	Total Dissolved Solids			468		
17.	Total Iron	(Fe)		2.00	/ 18.2 =	0.11
18.	Manganese	(Mn++)		Not Determined		
19.	Total Hardness as CaCO3			208		
20.	Resistivity @ 75 F. (Calculated)			2.462 Ohm · meters		

LOGARITHMIC WATER PATTERN



Calcium Sulfate Solubility Profile



PROBABLE MINERAL COMPOSITION

COMPOUND	*meq/L	X	EQ. WT.	=	mg/L.
Ca(HCO3)2	3.13		81.04		254
CaSO4	0.00		68.07		0
CaCl2	0.00		55.50		0
Mg(HCO3)2	0.02		73.17		2
MgSO4	1.04		60.19		63
MgCl2	0.00		47.62		0
NaHCO3	0.00		84.00		0
NaSO4	0.91		71.03		64
NaCl	1.41		58.46		82

* milliequivalents per Liter

Kevin Byrne, Analyst

Pro-Kem, Inc.
WATER ANALYSIS REPORT

SAMPLE

Oil Co. : **Celero**
Lease : **Rock Queen**
Well No.: **84**
Location:
Attention:

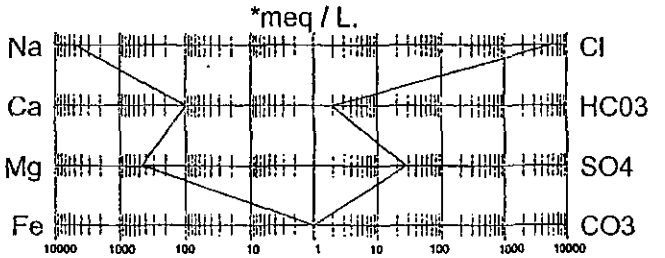
Date Sampled : **17-July-2007**
Date Analyzed: **20-July-2007**
Lab ID Number: **Jul2307.004- 1**
Salesperson :
File Name : **jul2307.004**

ANALYSIS

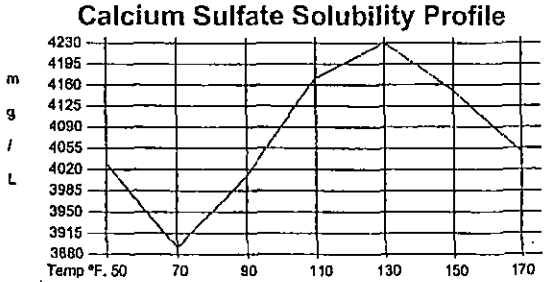
1.	Ph			6.500		
2.	Specific Gravity 60/60 F.			1.204		
3.	CACO3 Saturation Index		@ 80F	1.125	Moderate	
			@140F	2.505	Severe	

	Dissolved Gasses			MG/L.	EQ. WT.	*MEQ/L
4.	Hydrogen Sulfide			Not Present		
5.	Carbon Dioxide			300		
6.	Dissolved Oxygen			Not Determined		
	Cations					
7.	Calcium	(Ca++)		1,876	/ 20.1 =	93.33
8.	Magnesium	(Mg++)		5,310	/ 12.2 =	435.25
9.	Sodium	(Na+)	(Calculated)	107,113	/ 23.0 =	4,657.09
10.	Barium	(Ba++)		Not Determined		
	Anions					
11.	Hydroxyl	(OH-)		0	/ 17.0 =	0.00
12.	Carbonate	(CO3=)		0	/ 30.0 =	0.00
13.	Bicarbonate	(HCO3-)		117	/ 61.1 =	1.91
14.	Sulfate	(SO4=)		1,300	/ 48.8 =	26.64
15.	Chloride	(Cl-)		182,959	/ 35.5 =	5,153.77
16.	Total Dissolved Solids			298,675		
17.	Total Iron	(Fe)		11.50	/ 18.2 =	0.63
18.	Manganese	(Mn++)		Not Determined		
19.	Total Hardness as CaCO3			26,544		
20.	Resistivity @ 75 F. (Calculated)			0.001 Ohm · meters		

LOGARITHMIC WATER PATTERN



Calcium Sulfate Solubility Profile



PROBABLE MINERAL COMPOSITION

COMPOUND	*meq/L	X	EQ. WT.	=	mg/L.
Ca(HCO3)2	1.91		81.04		155
CaSO4	26.64		68.07		1,813
CaCl2	64.78		55.50		3,595
Mg(HCO3)2	0.00		73.17		0
MgSO4	0.00		60.19		0
MgCl2	435.25		47.62		20,726
NaHCO3	0.00		84.00		0
NaSO4	0.00		71.03		0
NaCl	4,653.75		58.46		272,058

* milliequivalents per Liter

Kevin Byrne, Analyst

Summary Report

Ike Tavarez
Highlander Environmental Services
1910 N. Big Spring Street
Midland, TX, 79705

Report Date: June 14, 2007

Work Order: 7052432

Project Location: Chaves Co. NM
Project Name: Celero Energy-Rock Queen ESA
Project Number: 2972

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
125351	Water Well 31-13-31	water	2007-05-22	00:00	2007-05-23

Location: Sec. 35(F), T13S, R31ECM

Sample: 125351 - Water Well 31-13-31

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		152	mg/L as CaCo3	4.00
Total Alkalinity		152	mg/L as CaCo3	4.00
Dissolved Calcium		63.5	mg/L	0.500
Chloride		32.1	mg/L	0.500
Specific Conductance		546	uMHOS/cm	0.00
Fluoride		<1.00	mg/L	0.200
Dissolved Potassium		1.98	mg/L	0.500
Dissolved Magnesium		8.79	mg/L	0.500
Dissolved Sodium		28.5	mg/L	0.500
Nitrate-N		4.10	mg/L	0.200
pH		7.83	s.u.	0.00
Sulfate		43.6	mg/L	0.500
Total Dissolved Solids		327.0	mg/L	10.00