

BEFORE THE NEW MEXICO OIL CONSERVATION DIVISION

APPLICATION OF LRE OPERATING, LLC
FOR A SALT WATER DISPOSAL WELL,
IN EDDY COUNTY, NEW MEXICO.

RECEIVED OOD

2012 MAY 22 P 2:45
Case No. 14863

APPLICATION FOR SALT WATER DISPOSAL

LRE Operating, LLC by and through its undersigned attorney, applies for an order approving a salt water disposal well, and in support thereof, states:

1. Applicant seeks an order proposing to drill and utilize this well as a produced water disposal well, its Eddy-Humble "4" State No. 1, located 2,310' FSL and 1,650' FEL, Unit J, Section 4, Township 18 South, Range 28 East, N.M.P.M., Eddy County, New Mexico
2. Applicant proposes to set a packer at 6,625 feet below the surface of the earth or within 100 feet of the upper most injections perforations and then inject into the Abo, Wolfcamp and Cisco formations at the following depths;

6,705' – 6,805' perforated; and, 6,805' – 9,300' open hole.
3. Attached hereto is Form C-108.
4. The granting of this application will prevent waste and protect correlative rights.

WHEREFORE, Applicant requests that, after notice and hearing, the Division enter its order approving this application.

Respectfully submitted,

PADILLA LAW FIRM, P.A.



ERNEST L. PADILLA,
Attorney for LRE Operating, LLC
PO Box 2523
Santa Fe, New Mexico 87504
505-988-7577

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Case 14863
FORM C-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

- I. PURPOSE: Secondary Recovery Pressure Maintenance X Disposal Storage
Application qualifies for administrative approval? X Yes No
- II. OPERATOR: LRE Operating, LLC (OGRID-281994)
ADDRESS: 1111 Bagby Street, Suite 4600 Houston, Texas 77002
CONTACT PARTY: David Sibley, Production Engineer PHONE: (713) 345-2134
- III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection.
Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project? Yes X No
If yes, give the Division order number authorizing the project: _____
- V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
- VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
- VII. Attach data on the proposed operation, including:
1. Proposed average and maximum daily rate and volume of fluids to be injected;
 2. Whether the system is open or closed;
 3. Proposed average and maximum injection pressure;
 4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
 5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
- *VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.
- IX. Describe the proposed stimulation program, if any.
- *X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).
- *XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
- XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
- NAME: David Sibley TITLE: Production Engineer
SIGNATURE: David Sibley DATE: 5-17-2012
E-MAIL ADDRESS: dsibley@limerockresources.com
- * If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office.

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

- (1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.
- (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
- (3) A description of the tubing to be used including its size, lining material, and setting depth.
- (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

- (1) The name of the injection formation and, if applicable, the field or pool name.
- (2) The injection interval and whether it is perforated or open-hole.
- (3) State if the well was drilled for injection or, if not, the original purpose of the well.
- (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
- (5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

- (1) The name, address, phone number, and contact party for the applicant;
- (2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;
- (3) The formation name and depth with expected maximum injection rates and pressures; and,
- (4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

C-108 Application
LRE Operating, LLC
Eddy-Humble "4" State SWD #1
2310' FSL & 1650' FEL (Unit J)
Section 4, T-18S, R-28E, NMPM
Eddy County, New Mexico

- I. The purpose of the application is to request approval to drill the Eddy-Humble "4" State SWD #1 and complete it as a produced water disposal well in the Abo, Wolfcamp and Cisco formations.
- II. LRE Operating, LLC ("LRE")
1111 Bagby Street, Suite 4600
Houston, Texas 77002
Contact Party: David Sibley, Production Engineer-(713) 345-2134
- III. Injection well data sheet is attached. In addition, attached is a schematic well diagram showing the proposed wellbore configuration. LRE proposes to drill this well setting 13 3/8" casing at 250' cemented to surface, 9 5/8" casing at 2,800' cemented to surface, 7" casing at 6,805' cemented to 2,800', and complete the well for injection through the perforated interval from 6,705 feet to 6,805 feet and open-hole interval from 6,805 feet to 9,300 feet.
- IV. This is not an expansion of an existing project.
- V. A map showing all wells/leases within a 2-mile radius of the Eddy-Humble "4" State SWD #1 is attached. Also attached is a more detailed map showing the 1/2-mile Area of Review ("AOR") for the Eddy-Humble "4" State SWD #1.
- VI. Within the area of review, there are numerous producing and plugged and abandoned wells that produce or have produced from shallow horizons (i.e. Queen, Grayburg, San Andres, Glorieta, Yeso, etc.). There is only one active producing well that penetrates the proposed injection interval. The Mewbourne Oil Company Scoggin Draw "4" State Com No. 1 is constructed adequately to preclude the migration of fluid from the proposed injection interval. There are also no plugged wells within the AOR that penetrate the proposed injection interval.
- VII.
 1. The average injection rate is anticipated to be approximately 10,000 BWPD. The maximum rate will be approximately 20,000 BWPD. If the average or maximum rates increase in the future, the Division will be notified.
 2. This will be a closed system.
 3. The injection pressure will initially be in conformance with the Division assigned gradient of 0.2 psi/ft. or 1341 psi. If a higher injection pressure is necessary, LRE will conduct a step rate injection test to determine the fracture pressure of the injection interval.
 4. Produced water from the Glorieta, San Andres, Grayburg, Queen and Yeso formations originating from wells in the area of the disposal well will be injected into the Eddy-Humble "4" State SWD #1. Attached are produced water analysis from the Glorieta-Yeso formation originating from LRE's Enron State, Kersey, Staley State A

and Staley State wells, and a produced water analysis from the Queen-Grayburg-San Andres formation originating from LRE's Jeffery 1 and 36 State wells.

5. Injection is to occur into the Abo, Wolfcamp and Cisco formations. Division records show that the following producing pools are located in the area of the Eddy-Humble "4" State SWD No. 1: i) the Empire-Abo Pool is located approximately 0.2 of a mile from the Eddy-Humble "4" State SWD No. 1; ii) the Empire-Wolfcamp Pool is located approximately 0.75 of a mile from the Eddy-Humble "4" State SWD No. 1; and iii) the Illinois Camp-Cisco Gas Pool is located approximately 0.5 of a mile from the Eddy-Humble "4" State SWD No. 1 (See attached pool maps).

VIII. The proposed injection interval lies between depths of 6,705 feet and 9,300 feet and includes the Permian age lower Abo and Wolfcamp formations and the Pennsylvanian age Cisco formation. These formations serve as common disposal zones for this area of the Delaware Basin. Within the AOR, the interval consists of interbedded crystalline dolomites, limestones, and shales with the dolomites making up approximately 40 percent of the interval and generally providing for the better injection capacity. Their porosities range from 6% to 14% and average approximately 9%. The limestones are less porous but do offer some additional injection capacity with porosities ranging from 4% to 10%. In this area, fresh water occurs down to a depth of approximately 150 feet. No known fresh water sources underlie the injection interval.

IX. Proposed to acid stimulate the injection interval as needed.

X. Logs will be filed when the well is drilled.

XI. According to the State Engineer, there are no fresh water wells located within one mile of the Eddy-Humble "4" State SWD No. 1.

District I

1625 N. French Dr., Hobbs, NM 88240

District II

1301 W. Grand Avenue, Artesia, NM 88210

District III

1000 Rio Brazos Rd., Aztec, NM 87410

District IV

1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico

Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.

Santa Fe, NM 87505

Form C-102

Revised October 15, 2009

Submit one copy to appropriate

District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number		Pool Code		Pool Name			
Property Code		Property Name				Well Number	
		EDDY-HUMBLE "4" STATE SWD				1	
OGRID No.		Operator Name				Elevation	
281994		LRE OPERATING, LLC				3664.7	

" Surface Location

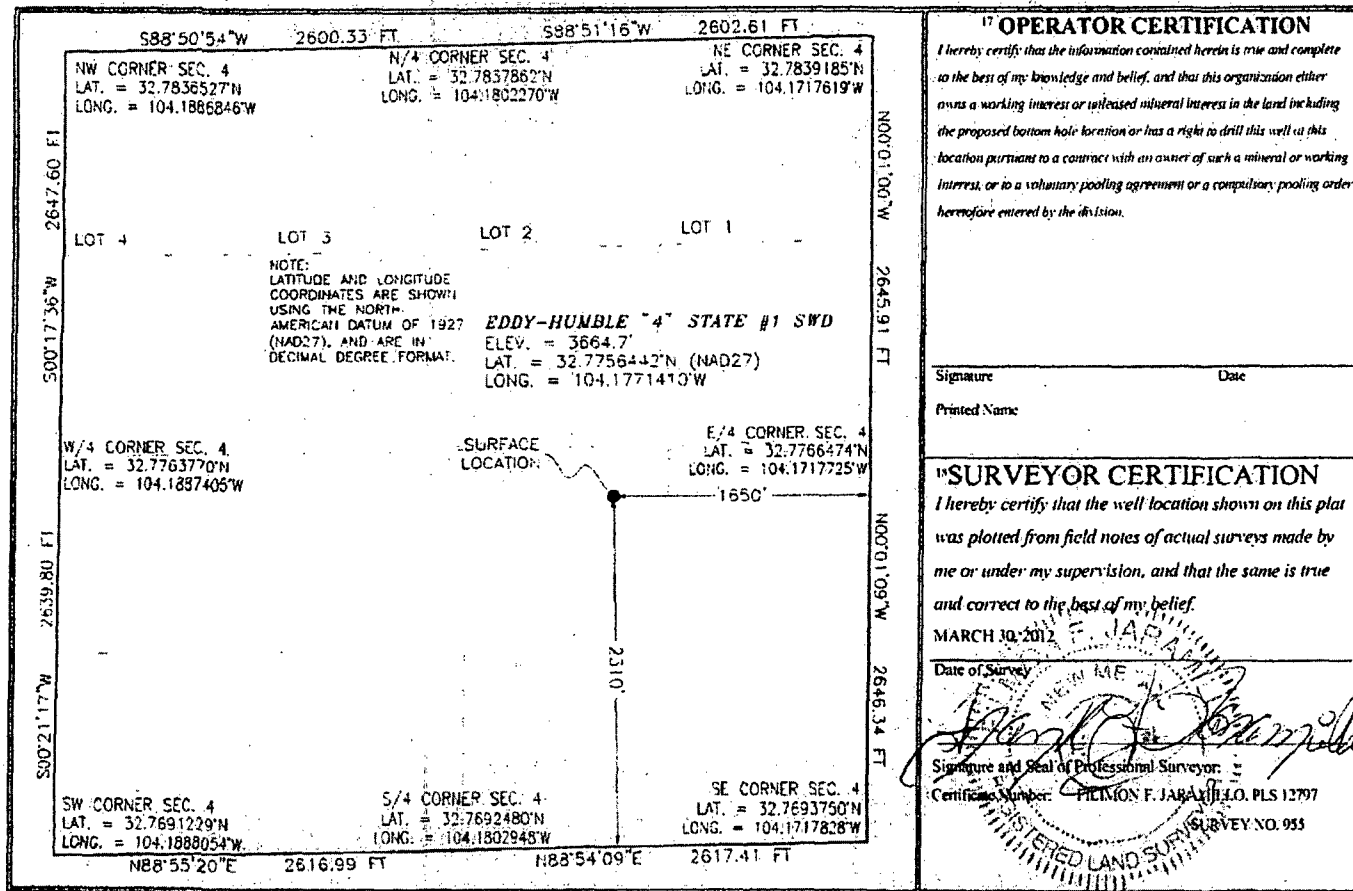
U.L. or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
J	4	18 S	28 E		2310	SOUTH	1650	EAST	EDDY

" Bottom Hole Location If Different From Surface

U.L. or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

" Dedicated Acres	" Joint or Infill	" Consolidation Code	" Order No.

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



INJECTION WELL DATA SHEET

OPERATOR: LRE Operating, LLC

WELL NAME & NUMBER: Eddy-Humble "4" State SWD No. 1 (API No. Not Yet Assigned)

WELL LOCATION:	2310' FSL & 1650' FEL	J	4	18 South	28 East
	FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATIC

See Attached Wellbore Schematic

WELL CONSTRUCTION DATA (Proposed)

Surface Casing

Hole Size: 17 1/2" Casing Size: 13 3/8" @ 250'

Cemented with: 280 Sx. or ft³

Top of Cement: Surface Method Determined: Circulate

Intermediate Casing

Hole Size: 12 1/4" Casing Size: 9 5/8" @ 2,800'

Cemented with: 845 Sx. or ft³

Top of Cement: Surface Method Determined: Circulate

Production Casing

Hole Size: 8 3/4" Casing Size: 7" @ 6,805'

Cement with: 610 Sx. or ft³

Top of Cement: 2,800' Method Determined: Proposed

Total Depth: 9,300' PBTD: 9,300'

Injection Interval

Perforated: 6,705'-6,805' Open Hole: 6,805'-9,300'

INJECTION WELL DATA SHEET

Tubing Size: 4 1/2" Lining Material: Duoline Fiberglass Coated

Type of Packer: Arrowset 1X or similar type injection packer

Packer Setting Depth: 6,625' or within 100' of the uppermost injection perforations

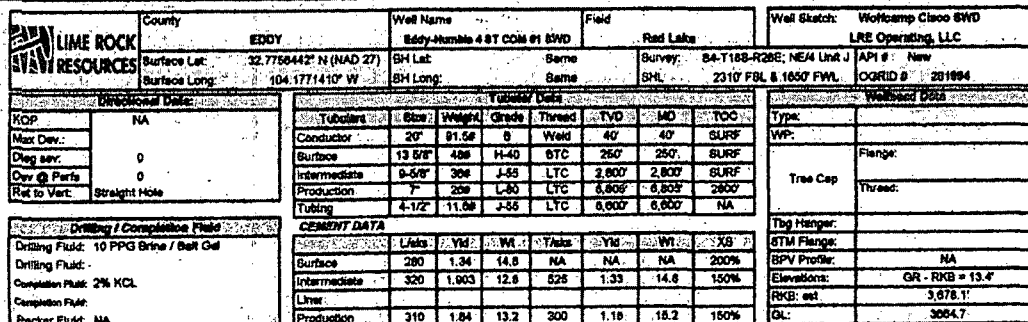
Other Type of Tubing/Casing Seal (if applicable): None

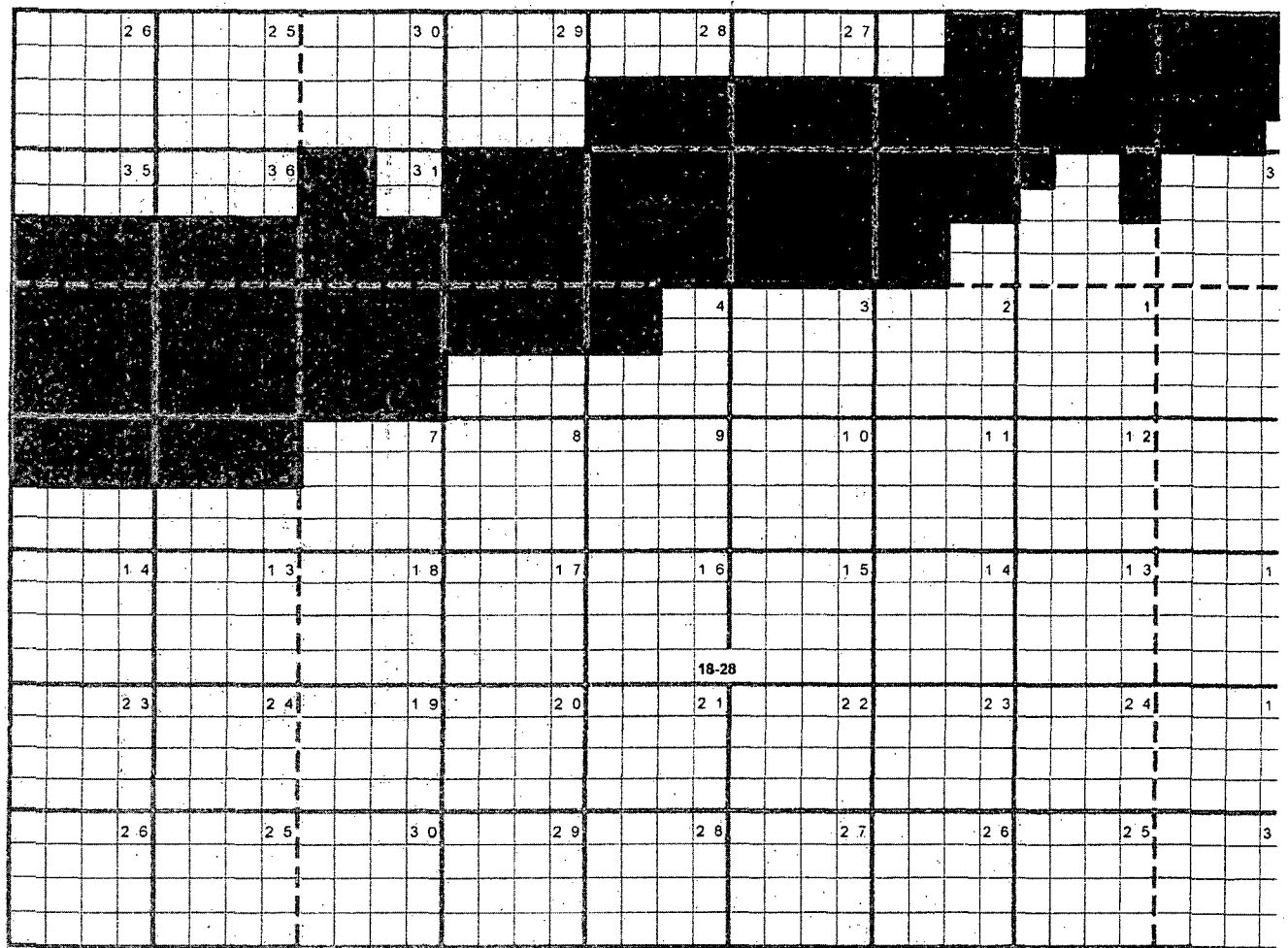
Additional Data

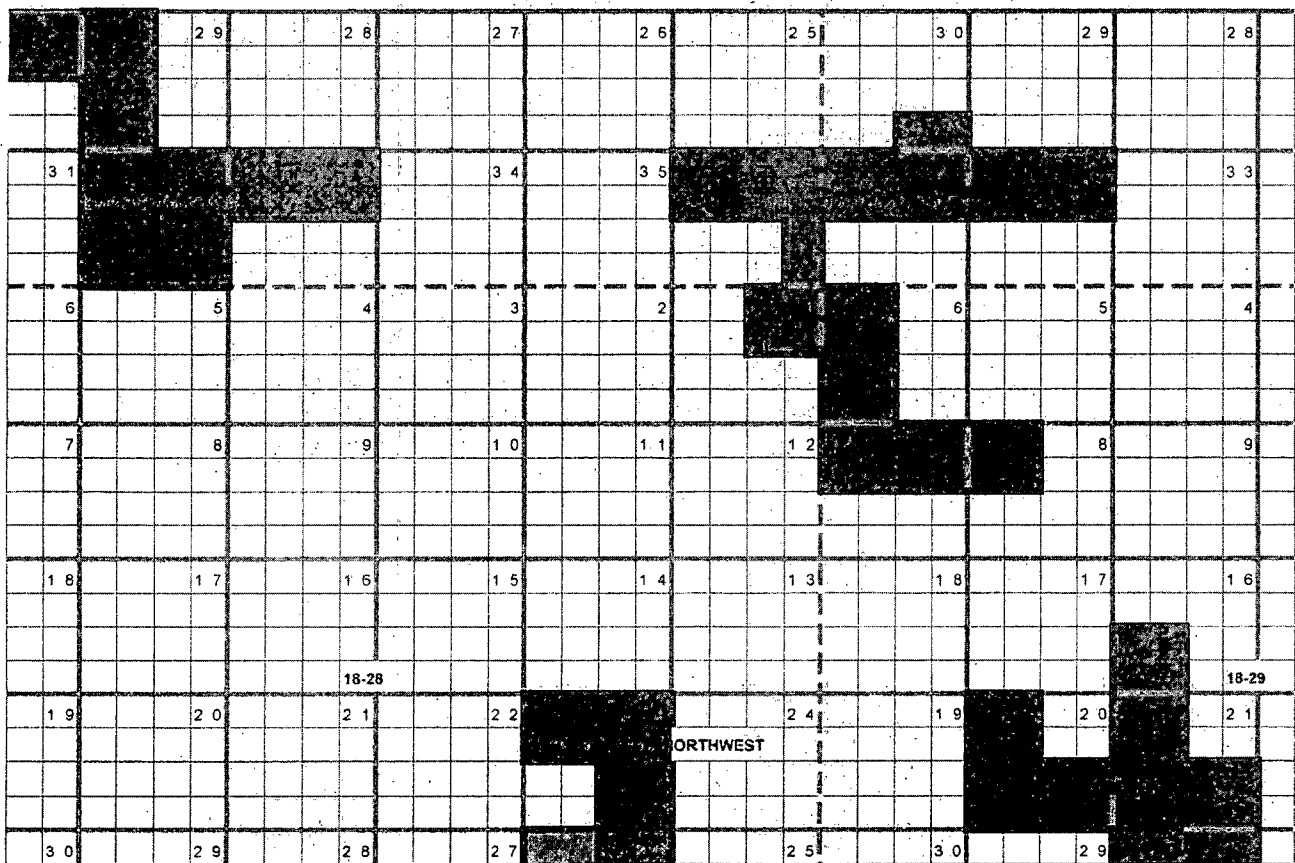
1. Is this a new well drilled for injection: _____ X _____ Yes _____ No
If no, for what purpose was the well originally drilled: _____
2. Name of the Injection Formation: _____ Abo, Wolfcamp and Cisco Formations _____
3. Name of Field or Pool (if applicable): _____ There are no Abo, Wolfcamp or Cisco pools within the NW/4 SE/4 of Section 4. _____
4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used.

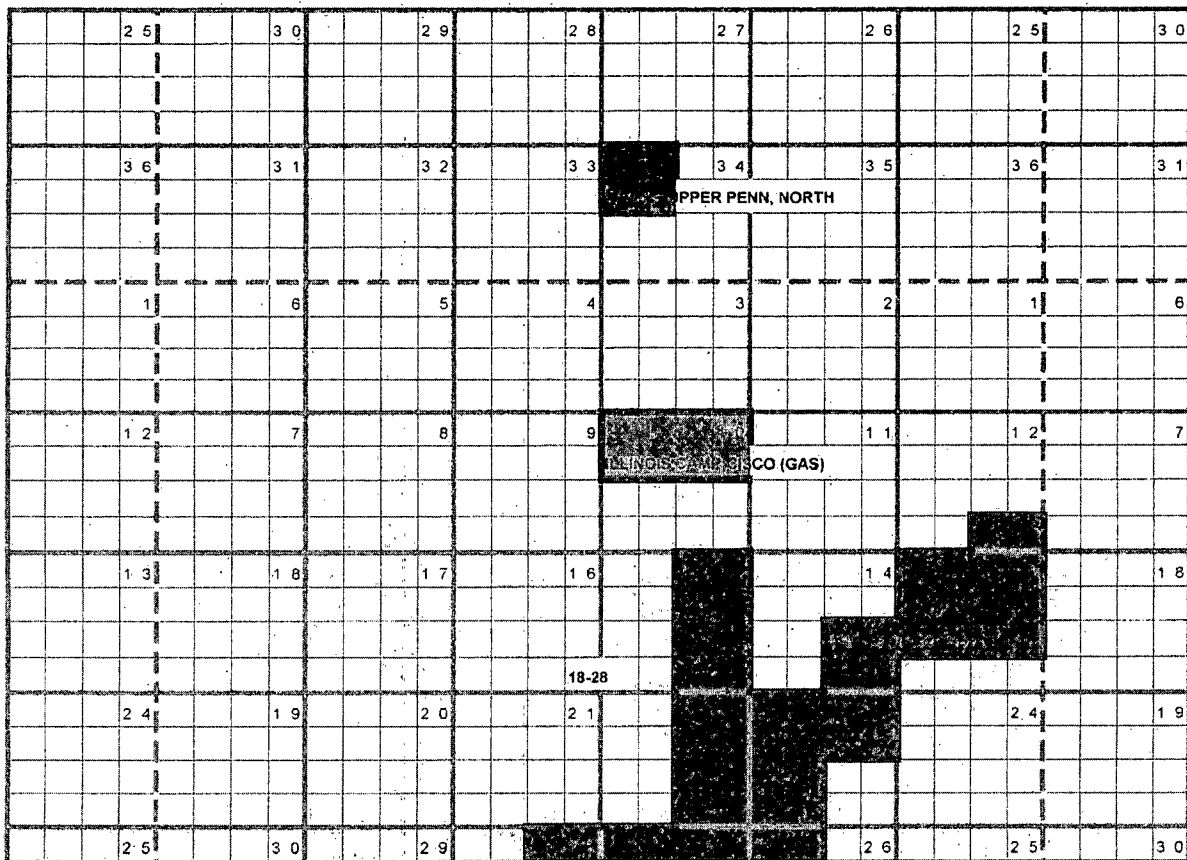
None. _____
5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area:

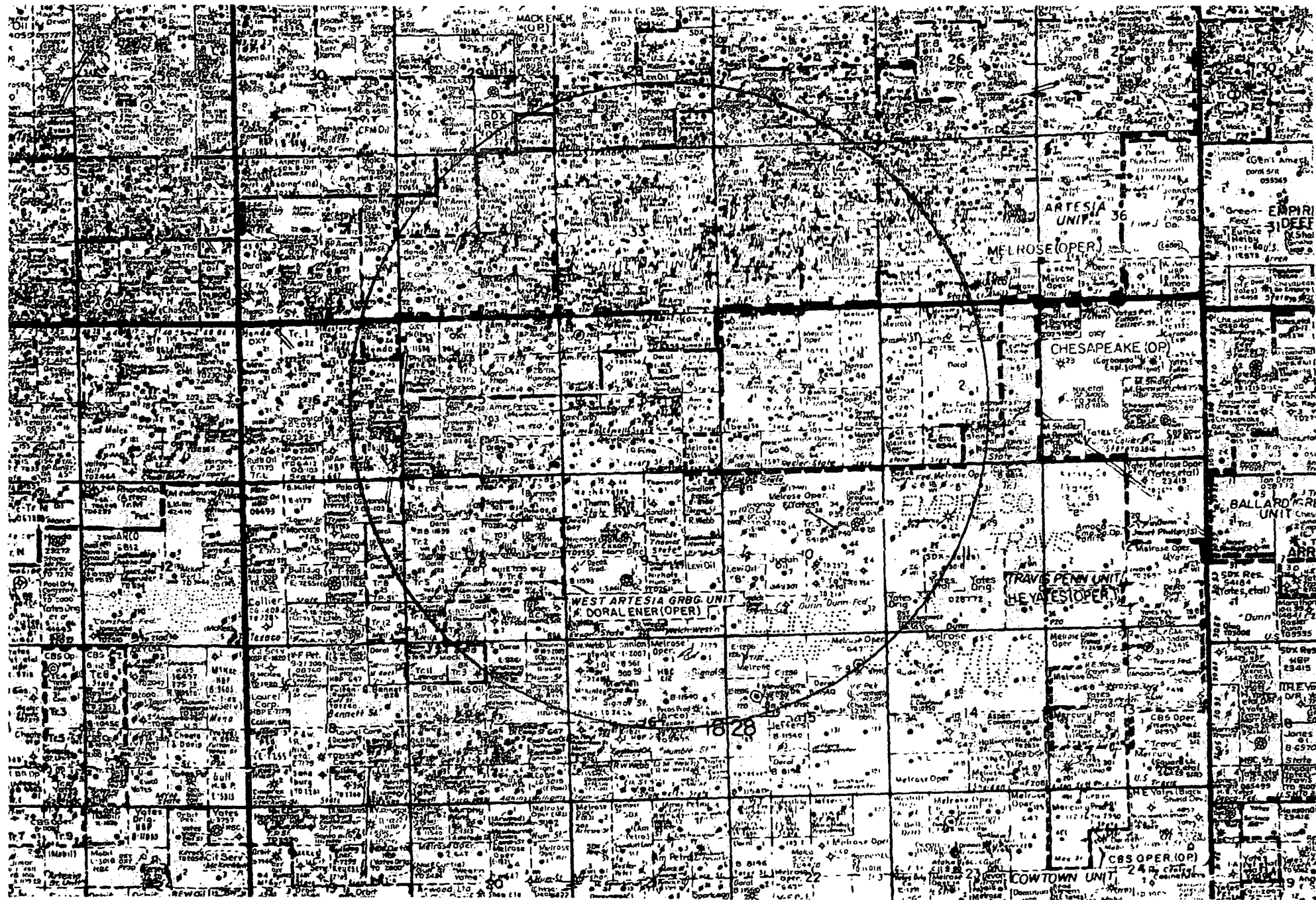
Within Section 4: Artesia Queen-Grayburg-San Andres Pool (1,478'-3,850'); Artesia Glorieta-Yeso Pool (3,850'-5,750'). The subject well is located approximately 0.2 of a mile from the outer boundary of the Empire-Abo Pool, 0.75 of a mile from the outer boundary of the Empire-Wolfcamp Pool, and 0.5 of a mile from the outer boundary of the Illinois Camp-Cisco Gas Pool (See Attached Pool Maps).











LRE OPERATING, LLC
AREA OF REVIEW WELL DATA
EDDY-HUMBLE "4" STATE SWD NO. 1

API NUMBER	OPERATOR	LEASE NAME	WELL NO.	WELL TYPE	STATUS	RTO N/E	N/A	RTO EW	UNIT	SZC	TSPR	HQD	DATE DRIELED	TOTAL DEPTH	HOLE SIZE	CSG SIZE	BET AT	BX CMT	GWT TOP	MTD	HOLE SIZE	CSG SIZE	BET AT	BX CMT	GWT TOP	MTD	COMP	REMARKS					
30-015-02566	Alamo Permian Resources, LLC	Smith State	1	P	Active	660'	N	680'	E	A	4	18S	28E		2,307'																		
30-015-26403	Alamo Permian Resources, LLC	State AE	2	P	Active	2295'	N	2211'	W	F	4	18S	28E		3,630'														Artesia Queen-Grayburg-San Andres				
30-015-26402	Alamo Permian Resources, LLC	State AE	1	P	Active	1850'	N	2310'	E	G	4	18S	28E		3,530'														Artesia Queen-Grayburg-San Andres				
30-015-02560	Sunny Oil	Pre-Osgard	1	N/A	PA	1570'	S	1070'	E	I	4	18S	28E		2,419'																		
30-015-02590	Grardige Corp.	Humble Stout St.	1	N/A	PA	2310'	S	350'	E	I	4	18S	28E		2,526'																		
30-015-02555	Grardige Corp.	Eddy-Humble St.	1	N/A	PA	2310'	S	2283'	E	J	4	18S	28E		2,450'																		
30-015-02594	Frontier Petroleum Co.	McQuigg St.	4	N/A	PA	1650'	S	2088'	E	J	4	18S	28E		2,371'																		
30-015-02551	Frontier Petroleum Co.	McQuigg St.	11	N/A	PA	2399'	S	1560'	W	K	4	18S	28E		2,297'																		
30-015-02562	Grardige Corp.	Cowell State	1	N/A	PA	1572'	S	1549'	W	K	4	18S	28E		2,338'																		
30-015-02563	American Petrofina	Cowell State	2	N/A	PA	1570'	S	2105'	W	K	4	18S	28E		502'																		
30-015-06118	Frontier Petroleum Co.	McQuigg St.	10	N/A	PA	2397'	S	2062'	W	K	4	18S	28E		2,311'																		
30-015-02586	Dandiger Oil & Refining	Kaseman State	3	N/A	PA	2390'	S	1059'	W	L	4	18S	28E		2,293'																		
30-015-02576	American Petrofina	Lavers State	8	N/A	PA	1075'	S	1567'	W	N	4	18S	28E		2,353'																		
30-015-02578	Grardige Corp.	Lavers State	10	N/A	PA	1061'	S	2271'	W	N	4	18S	28E		2,380'																		
30-015-28823	Newbourne Oil Co.	Scoggin Draw 4 St.	2	N/A	N/A	990'	S	1650'	W	N	4	18S	28E																				
30-015-02566	Sandlot Energy	Lavers State	13	P	Active	992'	S	2287'	E	O	4	18S	28E		2,495'																		
30-015-02573	Grardige Corp.	Lavers State	5	N/A	PA	1082'	S	1862'	E	O	4	18S	28E		2,418'														Artesia Queen-Grayburg-San Andres				
30-015-02577	Grardige Corp.	Lavers State	9	N/A	PA	257'	S	1581'	E	O	4	18S	28E		4,035'																		
30-015-29688	Newbourne Oil Co.	Scoggin Draw 4 St.	1	P	Active	2310'	S	860'	W	O	4	18S	28E	Nov-97	10,470'	17 1/2"	13 3/8"	423'	345	Surface	Circ.	12 1/4"	9 5/8"	2,850'	1050	Surface	Circ.	10,288'-96"	N. Illinois Camp Morrow Gas Pool				

Pro-Kem, Inc.

WATER ANALYSIS REPORT

SAMPLE

Co.: LimeRock Resources
 Lease: Enron
 Well No.: ST
 Location:
 Attention:

Date Sampled: 15-July-2010
 Date Analyzed: 28-July-2010
 Lab ID Number: Jul2810.001-9
 Salesperson:
 File Name: Jul2810.001

ANALYSIS

1. Ph 5.600
2. Specific Gravity 60/60 F. 1.138
3. CACO3 Saturation Index

@ 80F
 @140F

-0.530
 0.410

Negligible
 Mild

Dissolved Gases

4. Hydrogen Sulfide
5. Carbon Dioxide
6. Dissolved Oxygen

MG/L. EQ. WT. *MEQ/L

100

80

Not Determined

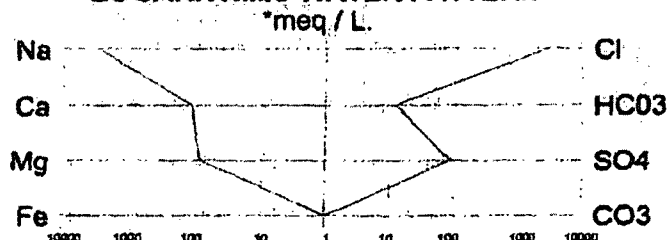
Cations

7. Calcium (Ca++) 2,166 / 20.1 = 107.76
8. Magnesium (Mg++) 971 / 12.2 = 79.59
9. Sodium (Na+) (Calculated) 65,383 / 23.0 = 2,842.74
10. Barium (Ba++) Not Determined

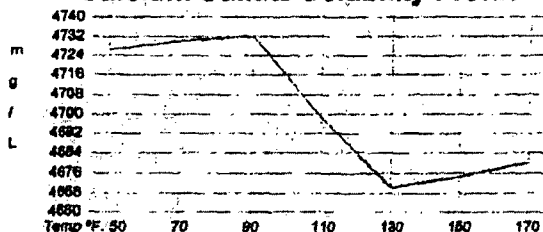
Anions

11. Hydroxyl (OH-) 0 / 17.0 = 0.00
12. Carbonate (CO3=) 0 / 30.0 = 0.00
13. Bicarbonate (HCO3-) 714 / 61.1 = 11.69
14. Sulfate (SO4=) 4,200 / 48.8 = 86.07
15. Chloride (Cl-) 103,977 / 35.5 = 2,928.93
16. Total Dissolved Solids 177,411
17. Total Iron (Fe) 1.50 / 18.2 = 0.08
18. Manganese (Mn++) Not Determined
19. Total Hardness as CaCO3 9,408
20. Resistivity @ 75 F. (Calculated) 0.017 Ohm · meters

LOGARITHMIC WATER PATTERN



Calcium Sulfate Solubility Profile



PROBABLE MINERAL COMPOSITION

COMPOUND	*meq/L	X	EQ. WT.	=	mg/L
Ca(HCO3)2	11.69		81.04		947
CaSO4	86.07		68.07		5,858
CaCl2	10.01		55.50		556
Mg(HCO3)2	0.00		73.17		0
MgSO4	0.00		60.19		0
MgCl2	79.59		47.62		3,790
NaHCO3	0.00		84.00		0
NaSO4	0.00		71.03		0
NaCl	2,839.33		58.46		165,987

* milliequivalents per Liter

Tony Abernathy, Analyst

Pro-Kem, Inc.

WATER ANALYSIS REPORT

SAMPLE

Il Co.: LimeRock Resources
 Lease: Jeffery 01
 Well No.: ST
 Location:
 Attention:

Date Sampled: 15-July-2010
 Date Analyzed: 28-July-2010
 Lab ID Number: Jul2810.001- 8
 Salesperson:
 File Name: Jul2810.001

ANALYSIS

1. Ph
2. Specific Gravity 60/60 F.
3. CaCO₃ Saturation Index

5.600
1.133

@ 80F
@140F

-0.527 Negligible
0.463 Mild

Dissolved Gasses

4. Hydrogen Sulfide
5. Carbon Dioxide
6. Dissolved Oxygen

MG/L. EQ. WT. *MEQ/L

0

90

Not Determined

Cations

7. Calcium (Ca++)
8. Magnesium (Mg++)
9. Sodium (Na+)
10. Barium (Ba++)

(Calculated)

1,884 / 20.1 = 93.73

1,428 / 12.2 = 117.05

67,431 / 23.0 = 2,931.78

Not Determined

Anions

11. Hydroxyl (OH-)
12. Carbonate (CO₃=)
13. Bicarbonate (HCO₃-)
14. Sulfate (SO₄=)
5. Chloride (Cl-)

0 / 17.0 = 0.00

0 / 30.0 = 0.00

703 / 61.1 = 11.51

4,200 / 48.8 = 86.07

107,976 / 35.5 = 3,041.58

16. Total Dissolved Solids

183,622

17. Total Iron (Fe)

1.50 / 18.2 = 0.08

18. Manganese (Mn++)

Not Determined

19. Total Hardness as CaCO₃

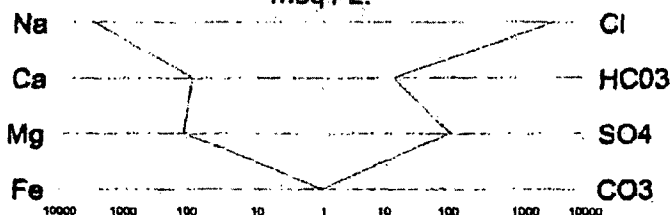
10,584

20. Resistivity @ 75 F. (Calculated)

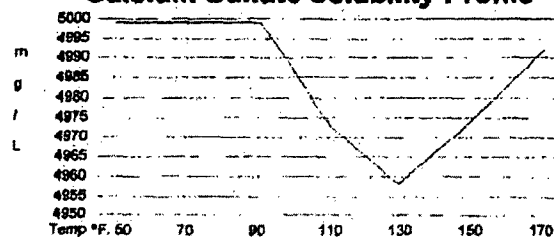
0.012 Ohm · meters

LOGARITHMIC WATER PATTERN

*meq / L



Calcium Sulfate Solubility Profile



PROBABLE MINERAL COMPOSITION

COMPOUND	*meq/L	X	EQ. WT. =	mg/L
Ca(HCO ₃) ₂	11.51		81.04	932
CaSO ₄	82.23		68.07	5,597
CaCl ₂	0.00		55.50	0
Mg(HCO ₃) ₂	0.00		73.17	0
MgSO ₄	3.84		60.19	231
MgCl ₂	113.21		47.62	5,391
NaHCO ₃	0.00		84.00	0
NaSO ₄	0.00		71.03	0
NaCl	2,928.37		58.46	171,192

* milliequivalents per Liter

Tony Abernathy, Analyst

Pro-Kem, Inc.

WATER ANALYSIS REPORT

SAMPLE

Co.: LimeRock Resources
 Lease: Kersey
 Well No.: ST
 Location:
 Attention:

Date Sampled: 15-July-2010
 Date Analyzed: 28-July-2010
 Lab ID Number: Jul2810.001-6
 Salesperson:
 File Name: Jul2810.001

ANALYSIS

1. Ph 5.600
2. Specific Gravity 60/60 F. 1.143
3. CACO3 Saturation Index @ 80F -0.496 Negligible
 @140F 0.494 Mild

Dissolved Gases

4. Hydrogen Sulfide 30
5. Carbon Dioxide 50
6. Dissolved Oxygen Not Determined

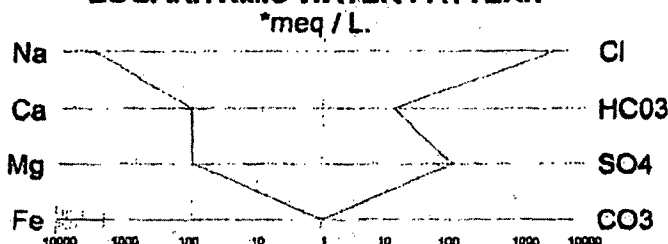
Cations

- | | | | |
|------------------------------|----------------|----------|----------|
| 7. Calcium (Ca++) | 2,072 | / 20.1 = | 103.08 |
| 8. Magnesium (Mg++) | 1,143 | / 12.2 = | 93.69 |
| 9. Sodium (Na+) (Calculated) | 69,836 | / 23.0 = | 3,036.35 |
| 10. Barium (Ba++) | Not Determined | | |

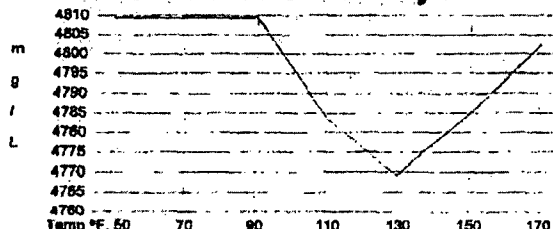
Anions

- | | | | |
|--------------------------------------|--------------------|----------|----------|
| 11. Hydroxyl (OH-) | 0 | / 17.0 = | 0.00 |
| 12. Carbonate (CO3=) | 0 | / 30.0 = | 0.00 |
| 13. Bicarbonate (HCO3-) | 686 | / 61.1 = | 11.23 |
| 14. Sulfate (SO4=) | 4,500 | / 48.8 = | 92.21 |
| 15. Chloride (Cl-) | 110,975 | / 35.5 = | 3,126.06 |
| 16. Total Dissolved Solids | 189,212 | | |
| 17. Total Iron (Fe) | 14.50 | / 18.2 = | 0.80 |
| 18. Manganese (Mn++) | Not Determined | | |
| 19. Total Hardness as CaCO3 | 9,879 | | |
| 20. Resistivity @ 75 F. (Calculated) | 0.008 Ohm · meters | | |

LOGARITHMIC WATER PATTERN



Calcium Sulfate Solubility Profile



PROBABLE MINERAL COMPOSITION

COMPOUND	*meq/L	X	EQ. WT. =	mg/L
Ca(HCO3)2	11.23		81.04	910
CaSO4	91.86		68.07	6,253
CaCl2	0.00		55.50	0
Mg(HCO3)2	0.00		73.17	0
MgSO4	0.36		60.19	21
MgCl2	93.33		47.62	4,444
NaHCO3	0.00		84.00	0
NaSO4	0.00		71.03	0
NaCl	3,032.72		58.46	177,293

* milliequivalents per Liter

Tony Abernathy, Analyst

Pro-Kem WATER ANALYSIS REPORT

SAMPLE

Co.: Lime Rock Resources
 Lease: Staley ST
 Well No.:
 Location:
 Attention:

Date Sampled: 15-July-2010
 Date Analyzed: 28-July-2010
 Lab ID Number: Jul2810.003- 4
 Salesperson:
 File Name: Jul2810.003

ANALYSIS

1. Ph 5.500
2. Specific Gravity 60/60 F. 1.178
3. CACO3 Saturation Index

@ 80F
 @ 140F

-2.905 Negligible
 -1.145 Negligible

Dissolved Gasses

4. Hydrogen Sulfide
5. Carbon Dioxide
6. Dissolved Oxygen

MG/L.	EQ. WT.	*MEQ/L
0		
0		
Not Determined		

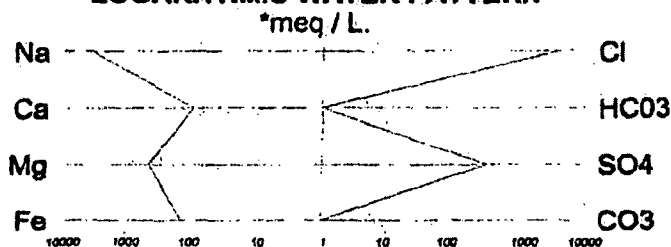
Cations

- | | | | |
|------------------------------|----------------|----------|----------|
| 7. Calcium (Ca++) | 1,884 | / 20.1 = | 93.73 |
| 8. Magnesium (Mg++) | 5,371 | / 12.2 = | 440.25 |
| 9. Sodium (Na+) (Calculated) | 80,438 | / 23.0 = | 3,497.30 |
| 10. Barium (Ba++) | Not Determined | | |

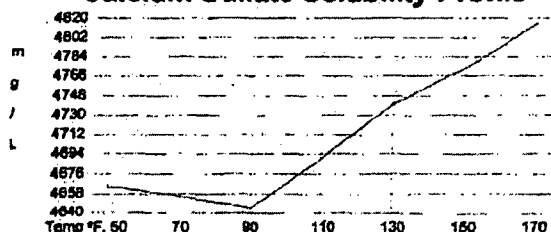
Anions

- | | | | |
|--------------------------------------|--------------------|----------|----------|
| 11. Hydroxyl (OH-) | 0 | / 17.0 = | 0.00 |
| 12. Carbonate (CO3=) | 0 | / 30.0 = | 0.00 |
| 13. Bicarbonate (HCO3-) | 0 | / 61.1 = | 0.00 |
| 14. Sulfate (SO4=) | 15,000 | / 48.8 = | 307.38 |
| 15. Chloride (Cl-) | 131,970 | / 35.5 = | 3,717.46 |
| 16. Total Dissolved Solids | 234,663 | | |
| 17. Total Iron (Fe) | 2,500.00 | / 18.2 = | 137.36 |
| 18. Manganese (Mn++) | Not Determined | | |
| 19. Total Hardness as CaCO3 | 26,814 | | |
| 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	0.00		81.04		0
CaSO4	93.73		68.07		6,380
CaCl2	0.00		55.50		0
Mg(HCO3)2	0.00		73.17		0
MgSO4	213.65		60.19		12,859
MgCl2	226.60		47.62		10,791
NaHCO3	0.00		84.00		0
NaSO4	0.00		71.03		0
NaCl	3,490.86		58.46		204,076

* milliequivalents per Liter

Tony Abernathy, Analyst

Pro-Kem WATER ANALYSIS REPORT

SAMPLE

Co. : Lime Rock Resources
Lease : Staley ST A
Well No.:
Location:
Attention:

Date Sampled : 15-July-2010
Date Analyzed: 28-July-2010
Lab ID Number: Jul2810.003- 5
Salesperson :
File Name : Jul2810.003

ANALYSIS

1. Ph
2. Specific Gravity 60/60 F.
3. CACO3 Saturation Index

5.600
1.118

@ 80F
@140F

-0.204
0.716

Negligible
Moderate

Dissolved Gasses

4. Hydrogen Sulfide
5. Carbon Dioxide
6. Dissolved Oxygen

MG/L. EQ. WT. *MEQ/L

80

160

Not Determined

Cations

7. Calcium (Ca++)
8. Magnesium (Mg++)
9. Sodium (Na+)
10. Barium (Ba++)

(Calculated)

3,391

1,371

58,430

Not Determined

/ 20.1 =

/ 12.2 =

/ 23.0 =

168.71

112.38

2,540.44

Anions

11. Hydroxyl (OH-)
12. Carbonate (CO3=)
13. Bicarbonate (HCO3-)
14. Sulfate (SO4=)
15. Chloride (Cl-)
16. Total Dissolved Solids
17. Total Iron (Fe)
18. Manganese (Mn++)
19. Total Hardness as CaCO3
20. Resistivity @ 75 F. (Calculated)

0

0

1,060

3,400

96,978

164,630

18.00

Not Determined

14,113

0.027 Ohm · meters

/ 17.0 =

/ 30.0 =

/ 61.1 =

/ 48.8 =

/ 35.5 =

0.00

0.00

17.35

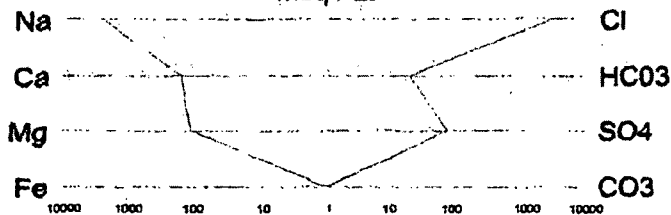
69.67

2,731.77

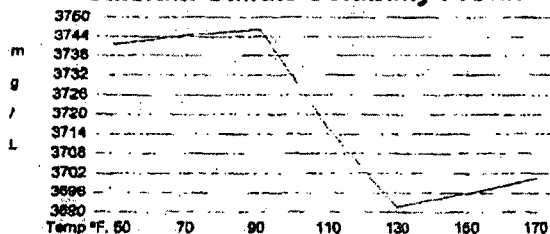
0.99

LOGARITHMIC WATER PATTERN

*meq / L.



Calcium Sulfate Solubility Profile



PROBABLE MINERAL COMPOSITION

COMPOUND	*meq/L	X	EQ. WT. =	mg/l
Ca(HCO3)2	17.35		81.04	1,401
CaSO4	69.67		68.07	4,741
CaCl2	81.69		55.50	4,534
Mg(HCO3)2	0.00		73.17	
MgSO4	0.00		60.19	
MgCl2	112.38		47.62	5,351
NaHCO3	0.00		84.00	
NaSO4	0.00		71.03	
NaCl	2,537.71		58.46	148,351

* milliequivalents per Liter

Tony Abernathy, Analyst



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

No records found.

PLSS Search:

Section(s): 3, 4, 5

Township: 18S

Range: 28E

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

5/14/12 9:42 AM

Page 1 of 1

WATER COLUMN/ AVERAGE
DEPTH TO WATER



New Mexico Office of the State Engineer **Water Column/Average Depth to Water**

No records found.

PLSS Search:

Section(s): 8, 9, 10

Township: 18S

Range: 28E

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

5/14/12 9:43 AM

Page 1 of 1

**WATER COLUMN/AVERAGE
DEPTH TO WATER**



New Mexico Office of the State Engineer **Water Column/Average Depth to Water**

No records found.

PLSS Search:

Section(s): 32, 33, 34

Township: 17S

Range: 28E

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

5/14/12 9:44 AM

Page 1 of 1

**WATER COLUMN/ AVERAGE
DEPTH TO WATER**

May 18, 2012

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

TO: OFFSET OPERATORS/LEASEHOLD OWNERS/WORKING INTEREST OWNERS &
SURFACE OWNER

Re: LRE Operating, LLC
Form C-108 (Application for Authorization to Inject)
Eddy-Humble "4" State SWD No. 1
API No. Not Yet Assigned
2310' FSL & 1650' FEL, Unit J, Section 4, T-18S, R-28E, NMPM,
Eddy County, New Mexico

Ladies & Gentlemen:

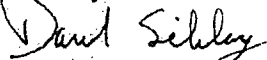
Enclosed please find a copy of Oil Conservation Division Form C-108 (Application for Authorization to Inject) for the LRE Operating, LLC. ("LRE") Eddy-Humble "4" State SWD Well No. 1. You are being provided a copy of the application as an offset operator, offset leaseholder, offset working interest owner or surface owner. LRE proposes to drill this well and complete it as a produced water disposal well, injection to occur into the Abo, Wolfcamp and Cisco formations through the perforated and open-hole interval from 6,705 feet to 9,300 feet.

This application is being filed administratively, and is also being docketed for the Examiner Hearing scheduled for June 21, 2012. If the application qualifies, LRE is seeking administrative approval of this application. Objections must be filed with the Oil Conservation Division, 1220 South St. Francis Drive, Santa Fe, New Mexico 87505, within 15 days.

If a hearing for this application is required, this application will be set for hearing before a Division Examiner on June 21, 2012 at 8:15 a.m. at the New Mexico Oil Conservation Division, 1220 South St. Francis Drive, Santa Fe, New Mexico. You are not required to attend this hearing, but as an owner of an interest that may be affected, you may appear and present testimony. Failure to appear at the time and become a party of record will preclude you from challenging this application at a later time. If you intend to attend the hearing and present testimony or evidence, you must enter your appearance and serve the Division, counsel for the Applicant, and other parties with a pre-hearing statement at least four business days before the scheduled hearing date in accordance with 19.15.4.13(B) NMAC.

If you should have any questions, please contact me at (713) 345-2134.

Sincerely,



David Sibley, Production Engineer
LRE Operating, LLC
1111 Bagby Street, Suite 4600
Houston, Texas 77002

Enclosure

LRE Operating, LLC
Form C-108; Eddy-Humble "4" State SWD No. 1
½ Mile Notice Area Ownership
(Working Interest Owners Unless Otherwise Noted)

Section 3; W/2
T-18-S, R-28-E, N.M.P.M.
Eddy County, NM

H & S Oil Company
P.O. Box 186
Artesia, NM 88211

Khody Land & Minerals Company
3817 NW Expressway, Suite 950
Oklahoma City, OK 73112

Melrose Operating Company
20333 State Hwy 249, Suite 310
Houston, TX 77070

SDX Resources Inc
507 N. Marienfield St., Suite 100
Midland, TX 79701

Roy L Burrow
P.O. Box 706
Roswell, NM 88201

S. A. Lanning
1102 Hermosa Dr.
Artesia, NM 88210

Yates Petroleum Corporation (Offset Operator)
105 S Fourth Street
Artesia, NM 88210

Marathon Oil Company
P.O. Box 552
Midland, TX 79702

BP America Production Company
P.O. Box 3092
Houston, TX 77253

Oxy USA, Inc.
P.O. Box 4294
Houston, TX 77210

Black Diamond Resources, LLC
1401 McKinney St., Suite 2400
Houston, TX 77010

OAC Carried WI, LP
1401 McKinney St., Suite 2400
Houston, TX 77010

QRE Operating, LLC
1401 McKinney St., Suite 2400
Houston, TX 77010

LRE Operating, LLC
Form C-108; Eddy-Humble "4" State SWD No. 1
1/2 Mile Notice Area Ownership (Page 2)

Apache Corporation
303 Veterans Airpark Lane, Suite 3000
Midland, TX 79705

Quantum Resource Management, LLC
1401 McKinney St., Suite 2400
Houston, TX 77010

Bogle LTD Company
P.O. Box 460
Dexter, NM 88231

Section 4; All sae NW/4 NW/4
T-18-S, R-28-E, N.M.P.M
Eddy County, NM

Oxy USA, Inc.
P.O. Box 4294
Houston, TX 77210

Chase Oil Corporation
P.O. Box 1767
Artesia, NM 88211

Penroc Oil Corporation
P.O. Box 2769
Hobbs, NM 88241

Chisos, LTD & Pure Energy Group, Inc
670 Dona Ana Road SW
Deming, NM 88030

Marathon Oil Company
P.O. Box 552
Midland, TX 79702

Exxon Mobil Corporation
P.O. Box 2305
Houston, TX 77252

DeKalb Energy Company
14000 Quail Springs Pkwy, Suite 600
Oklahoma City, OK 73134

Melrose Operating Company
20333 State Hwy 249, Suite 310
Houston, TX 77070

Black Diamond Resources, LLC
1401 McKinney St., Suite 2400
Houston, TX 77010

QAC Carried WI, LP
1401 McKinney St., Suite 2400
Houston, TX 77010

QRE Operating, LLC
1401 McKinney St., Suite 2400
Houston, TX 77010

LRE Operating, LLC
Form C-108; Eddy-Humble "4" State SWD No. 1
½ Mile Notice Area Ownership (Page 3)

Yates Petroleum Corporation (Offset Operator)
105 S Fourth Street
Artesia, NM 88210

Marathon Oil Company
P.O. Box 552
Midland, TX 79702

Alamo Permian Resources, LLC
415 W Wall Street # 500
Midland, TX 79701

Apache Corporation
303 Veterans Airpark Lane, Suite 3000
Midland, TX 79705

Sandlott Energy
P.O. Box 711
Lovington, NM 88260

Mewbourne Oil Co. (Offset Operator)
P.O. Box 7698
Tyler, TX 75711

Quantum Resource Management, LLC
1401 McKinney St., Suite 2400
Houston, TX 77010

Atlantic Richfield Company
1601 Summit Ave
Plano, TX 75074

Nearburg Producing Company
3300 North A St., Suite 8100
Midland, TX 79705

Doral Energy Corporation
415 W. Wall St., Suite 500
Midland, TX 79701

BP America Production Company
P.O. Box 3092
Houston, TX 77253

American Petrofina Company
P.O. Box 1311
Big Spring, TX 79720

Graridge Corporation
P.O. Box 752
Breckenridge, TX 76424

B&W Oil Company, Inc
R -252 N. Haldeman Rd
Artesia, NM 88210

LRE Operating, LLC
Form C-108; Eddy-Humble "4" State SWD No. 1
1/2 Mile Notice Area Ownership (Page 4)

Tom L Ingram
P.O. Box 1757
Roswell, NM 88201

Mack Energy Corporation
P.O. Box 960
Artesia, NM 88210

Marbob Energy Corporation
P.O. Drawer 217
Artesia, NM 88210

Warren Hanson dba Hanson Energy
R342 S. Haldeman Road
Artesia, NM 88210

COG Operating, LLC
550 W Texas Ave., Suite 100
Midland, TX 79701

Concho Oil & Gas, LLC
550 W Texas Ave., Suite 100
Midland, TX 79701

Alamo Resources II
820 Gessner Rd, Suite 1650
Houston, TX 77024

Rainbow Energy Corporation
2610 Camarie
Midland, TX 79705

Arrowhead Operating, Inc
2610 Camarie
Midland, TX 79705

Plains Petroleum Operating Company
415 W. Wall St. Suite 2110
Midland, TX 79701

Arch Petroleum Inc
777 Taylor St. Suite IIA
Fort Worth, TX 76102

Edge Petroleum Exploration Company
1301 Travis St Ste 2000
Houston, TX 77002

Mission Resources Incorporation
1100 La St Ste 4400
Houston, TX 77002

Manix Energy, LLC
3300 N A St Bldg 8
Midland, TX 79705

LRE Operating, LLC
Form C-108; Eddy-Humble "4" State SWD No. 1
1/2 Mile Notice Area Ownership (Page 5)

Amoco Production Company
P.O. Box 3092
Houston, TX 77079

Nadel & Gussman Permian, LLC (Offset Operator)
601 N. Marienfeld, Suite 508
Midland, Texas 79701

Commissioner of Public Lands (Surface Owner)
P.O. Box 1148
Santa Fe, New Mexico 87507

**Section 9; N/2 NE/4
T-18-S, R-28-E, N.M.P.M.
Eddy County, NM**

F&M Oil & Gas Company
P.O. Box 891
Midland, TX 79702

Exxon Mobil Corporation
P.O. Box 2305
Houston, TX 77252

Rainbow Energy Corporation
2610 Camarie
Midland, TX 79705

Arrowhead Operating, Inc
2610 Camarie
Midland, TX 79705

Plains Petroleum Operating Company
415 W. Wall St. Suite 2110
Midland, TX 79701

Arch Petroleum Inc
777 Taylor St. Suite IIA
Fort Worth, TX 76102

Finwing Corporation
P.O. Box 10886
Midland, TX 79702

Khody Land & Minerals Company
3817 NW Expressway, Suite 950
Oklahoma City, OK 73112

Sandlott Energy
P.O. Box 711
Lovington, NM 88260

Bogle LTD Company
P.O. Box 460
Dexter, NM 88231

LRE Operating, LLC
Form C-108; Eddy-Humble "4" State SWD No. 1
½ Mile Notice Area Ownership (Page 6)

EGL Resources, Inc.
508 W. Wall Street,
Suite 1250
Midland, Texas 79701

Form C-108
LRE Operating, LLC
Eddy-Humble "4" State SWD #1
2310' FSL & 1650' FEL(Unit J)
Section 4, T-18 South, R-28 East, NMPM,
Eddy County, New Mexico

Legal notice will be published in the:

*Artesia Daily Press
P.O. Box 190
Artesia, New Mexico 88221-0190*

A copy of the legal advertisement will be forwarded to the Division upon publication.

LRE Operating, LLC, 1111 Bagby Street, Suite 4600, Houston, Texas 77002 has filed a Form C-108 (Application for Authorization to Inject) with the Oil Conservation Division seeking administrative approval to utilize as a produced water disposal well it's proposed Eddy-Humble "4" State SWD #1 to be drilled 2310' FSL & 1650' FEL (Unit J) of Section 4, Township 18 South, Range 28 East, NMPM, Eddy County, New Mexico. The well will be utilized to dispose produced water from various producing formations in the area of the disposal well. Injection will occur into the Abo, Wolfcamp and Cisco formations through the perforated interval from 6,705 feet to 6,805 feet, and the open-hole interval from 6,805 feet to 9,300 feet. The average and maximum injection rates will be 10,000 and 20,000 barrels of water per day, respectively, and the average and maximum surface injection pressure is anticipated to be 1,000 psi and 1,341 psi, respectively.

Interested parties must file objections with the New Mexico Oil Conservation Division, 1220 S. St Francis Drive, Santa Fe, New Mexico 87505, within 15 days of the date of this publication.

Additional information can be obtained by contacting David Sibley, Production Engineer, LRE Operating, LLC at (713) 345-2134.