

DATE IN 12/3/12	SUSPENSE	ENGINEER WVD	LOGGED IN 12/3	TYPE SWD	APP NO. DWJ 1300355799
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ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION
 - Engineering Bureau -
 1220 South St. Francis Drive, Santa Fe, NM 87505



A 1

ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]
[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

[1] TYPE OF APPLICATION - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Simultaneous Dedication
☐ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR

[D] Other: Specify _____

APACHE CORP
Gerardo 28 State SWD #2
I/28/125/28E/EDDY
11404-12500 Perf.
DEV/EL.

[2] NOTIFICATION REQUIRED TO: - Check Those Which Apply, or ☐ Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] ☒ Offset Operators, Leaseholders or Surface Owner

[C] ☒ Application is One Which Requires Published Legal Notice

[D] ☒ Notification and/or Concurrent Approval by BLM or SLO
 U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☒ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ☐ Waivers are Attached

[3] SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.

[4] CERTIFICATION: I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

David Catanach
 Print or Type Name

David Catanach
 Signature

Agent-Apache Corporation
 Title

12/3/12
 Date

drcatanach@netscape.com
 E-Mail Address

December 3, 2012

Energy, Minerals and Natural Resources Department
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Attention: Ms. Jami Bailey, CPG
Division Director

Re: Form C-108
Apache Corporation
Geronimo 28 State SWD No. 2
API No. (Not Yet Assigned)
1655' FSL & 800' FEL, Unit I
Section 28, T-17S, R-28E, NMPM,
Eddy County, New Mexico

Dear Ms. Bailey,

Enclosed please find a Division Form C-108 (Application for Authorization to Inject) for the Apache Corporation Geronimo 28 State SWD No. 2. Apache Corporation proposes to drill and utilize this well as a produced water disposal well, injection to occur into the Devonian and Ellenburger formations through the perforated interval from approximately 11,404 feet to 12,500 feet. Produced water from the Glorieta and Yeso formations originating from Apache Corporation operated wells in this area will be injected into the well.

I believe that all the information necessary to approve the application is enclosed. If additional information is needed, please contact me at (505) 690-9453.

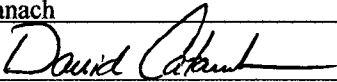
Sincerely,



David Catanach-Agent
Apache Corporation
303 Veterans Airpark Lane, Suite 3000
Midland, Texas 79705

Xc: OCD-Artesia

APPLICATION FOR AUTHORIZATION TO INJECT

- I. PURPOSE: Secondary Recovery Pressure Maintenance X Disposal Storage
Application qualifies for administrative approval? X Yes No
- II. OPERATOR: Apache Corporation (OGRID-873)
ADDRESS: 303 Veterans Airpark Lane, Suite 3000 Midland, Texas 79705
CONTACT PARTY: David Catanach-Agent PHONE: (505) 690-9453
- 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 Catanach TITLE: Agent-Apache Corporation
SIGNATURE:  DATE: 12/3/12
E-MAIL ADDRESS: drcatanach@netscape.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: _____

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
Apache Corporation
Geronimo 28 State SWD No. 2
1655' FSL & 800' FEL (Unit I)
Section 28, T-17S, R-28E, NMPM
Eddy County, New Mexico

- I. The purpose of the application is to request approval to utilize the proposed Geronimo 28 State SWD No. 2 as a produced water disposal well. This is a new well to be drilled for injection.
- II. Apache Corporation
303 Veterans Airpark Lane
Suite 3000
Midland, Texas 79705
Contact Party: David Catanach (505) 690-9453
- III. Injection well data sheet and wellbore schematic diagram showing the proposed wellbore configuration are attached.
- IV. This is not an expansion of an existing project.
- V. Attached is a map that identifies all wells/leases within a 2-mile radius of the proposed water disposal well and a map that identifies the ½ mile "Area of Review" ("AOR").
- VI. A listing of all wells within the AOR, including API No., operator, well name & number, well type and status, well location, and total depth is attached. An examination of the AOR well listing shows that no well within the AOR penetrates the proposed injection interval.
- VII.
 1. The average injection rate is anticipated to be approximately 4,000 BWPD. The maximum rate will be approximately 15,000 BWPD. If the average or maximum rates increase in the future, the Division will be notified.
 2. This will be a closed system.
 3. Apache Corporation will initially inject water into the subject well at or below a surface injection pressure that is in compliance with the Division's limit of 0.2 psi/ft., or approximately 2,280 psi. If a surface injection pressure above 2,280 psi is necessary, Apache will conduct a step rate injection test to determine the fracture pressure of the Devonian and Ellenburger formations in this area.

4. Produced water from the Glorieta and Yeso formations originating from Apache Corporation operated wells in this area will be injected into the subject well. Attached is a water analysis from Apache's Barnsdall Federal Well No. 9 which produces from the East Empire Glorieta-Yeso Pool, and a water analysis from Apache's Barnsdall Federal Well No. 17 which produces from the Bear Grass Draw Glorieta-Yeso Pool.
5. The Devonian and Ellenburger formations are not productive within one mile of the Geronimo 28 State SWD No. 2, and consequently, formation water samples are not available. The Devonian and Ellenburger formations are productive in numerous locations in Eddy and Lea Counties, and literature indicates that the water present in these formations is highly saline.

- VIII. Geologic Formation: Devonian
 Estimated Top: 11,404'
 Thickness: 1,000'
 Lithology: Dolomitic Limestone/Limestone
- Geologic Formation: Ellenburger
 Estimated Top: 12,404'
 Thickness: 96'
 Lithology: Dolomitic Limestone/Limestone
- USDW's: According to data obtained from the New Mexico State Engineer, there are no fresh water wells within one mile of the proposed injection well. Fresh water in this area is generally sparse and occurs at depths of less than 300'.
- IX. If necessary, the well will be stimulated with a mild acid job.
- X. Logs will be filed subsequent to the completion of drilling operations.
- XI. There are no fresh water wells located within one-mile of the proposed injection well.
- XII. Affirmative statement is enclosed.
- XIII. Proof of Notice is enclosed.

INJECTION WELL DATA SHEET

OPERATOR: Apache Corporation

WELL NAME & NUMBER: Geronimo 28 State SWD No. 2 (API No. N/A)

WELL LOCATION:	1655' FSL & 800' FEL	I	28	17 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" @ 500'

Cemented with: 580 Sx. or ft³

Top of Cement: Surface Method Determined: Circulate

Intermediate Casing

Hole Size: 12 1/4" Casing Size: 9 5/8" @ 4,500'

Cemented with: 1400 Sx. or ft³

Top of Cement: Surface Method Determined: Circulate

Production Casing

Hole Size: 8 3/4" Casing Size: 7" @ 12,500'

Cement with: 1st Stage-270 sx. DV Tool @ 10,900'
2nd Stage-810 sx. or _____ ft³

Top of Cement: 3,000' Method Determined: Calculated

Total Depth: 12,500'

Injection Interval

Perforated Interval -11,404'- 12,500'

INJECTION WELL DATA SHEET

Tubing Size: 4 1/2"

Lining Material: Duo Lined (Extruded Thermoplastic)

Type of Packer: Model A Lockset Injection Packer

Packer Setting Depth: 11,304' 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: Devonian & Ellenburger

3. Name of Field or Pool (if applicable): N/A

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

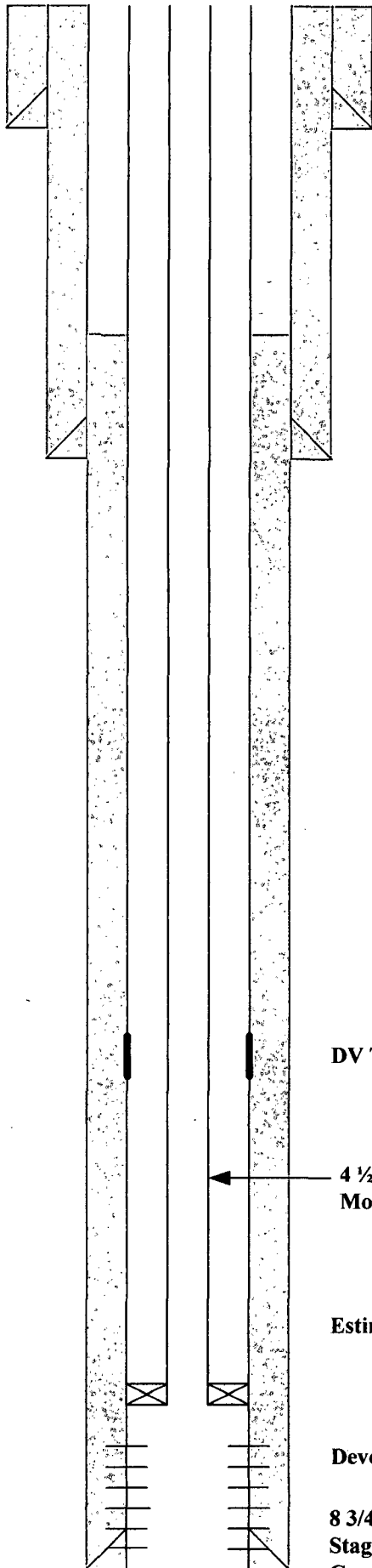
5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area:

East Empire Yates-Seven Rivers Pool (2,050'); Red Lake Queen-Grayburg-San Andres Pool (3,700'); Artesia Glorieta-

Yeso Pool (4,200'); Empire-Abo Pool (6,200'); Empire-Penn Gas Pool (10,600');

Proposed Wellbore Configuration

Apache Corporation
Geronimo 28 State SWD No. 2
API No. N/A
1655' FSL & 800' FEL (Unit I)
Section 28, T-17 South, R-28 East, NMPM



17 ½" Hole; Set 13 ⅜" 48# H-40 Csg @ 500'
Cement w/580 Sx. Circulate cement to surface.

TOC @ 3,000' (Proposed)

12 ¼" Hole; Set 9 ⅝" 40# J-55 Csg @ 4,500'
Cement w/1400 Sx. Circulate cement to surface.

DV Tool @ 10,900'

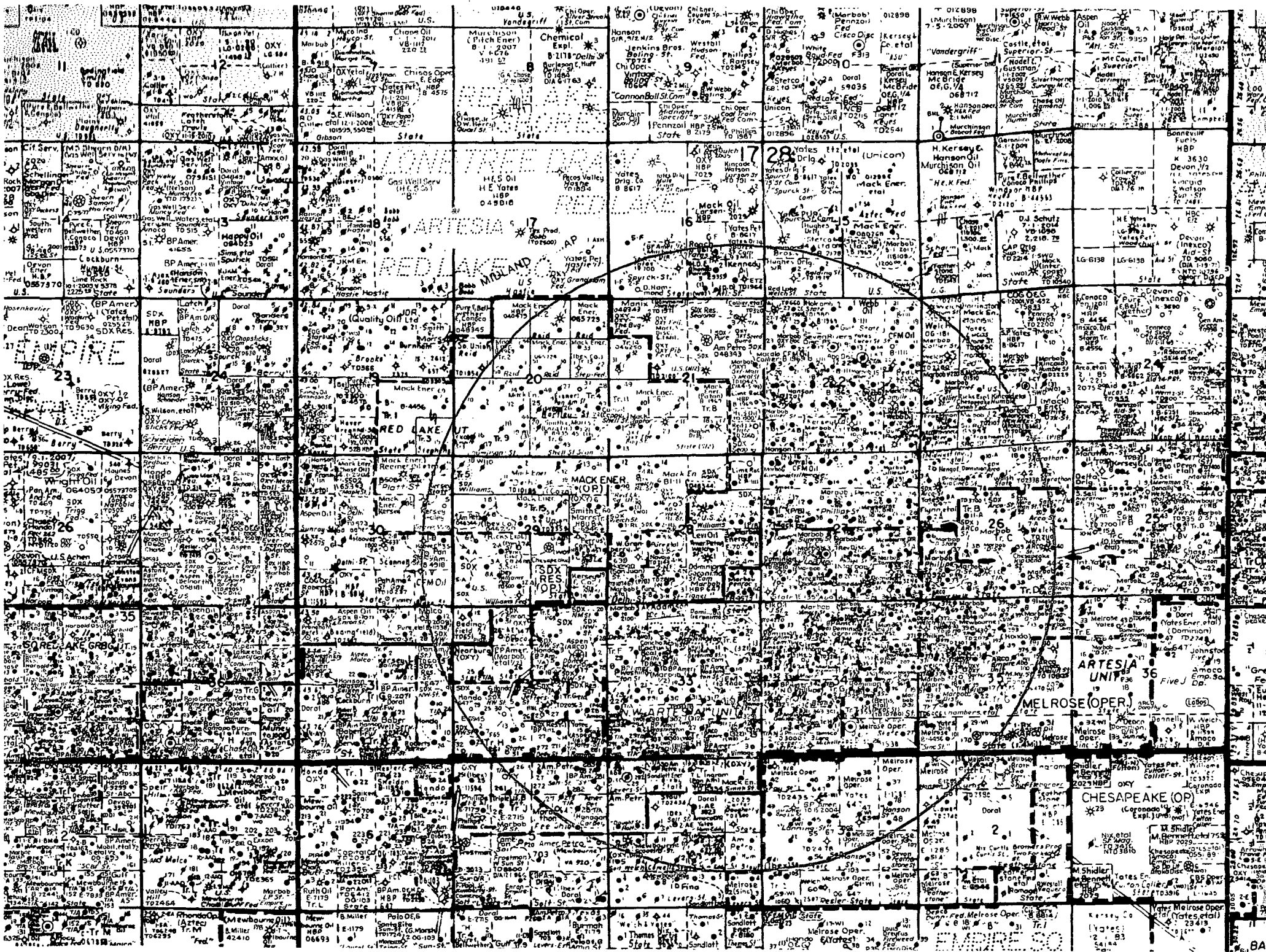
4 ½" Duo-Lined Injection Tubing set in a
Model A Lockset Packer @ 11,304'

Estimated Formation Tops: Devonian: 11,404'
Ellenburger: 12,404'

Devonian & Ellenburger Perforations: 11,404'-12,500'

8 ¾" Hole; Set 7" 26# L-80 & HCL-80 Csg. @ 12,500'
Stage Cement: 1st-270 Sx. 2nd-810 Sx. DV Tool @ 10,900'
Cement to a depth of 3,000'

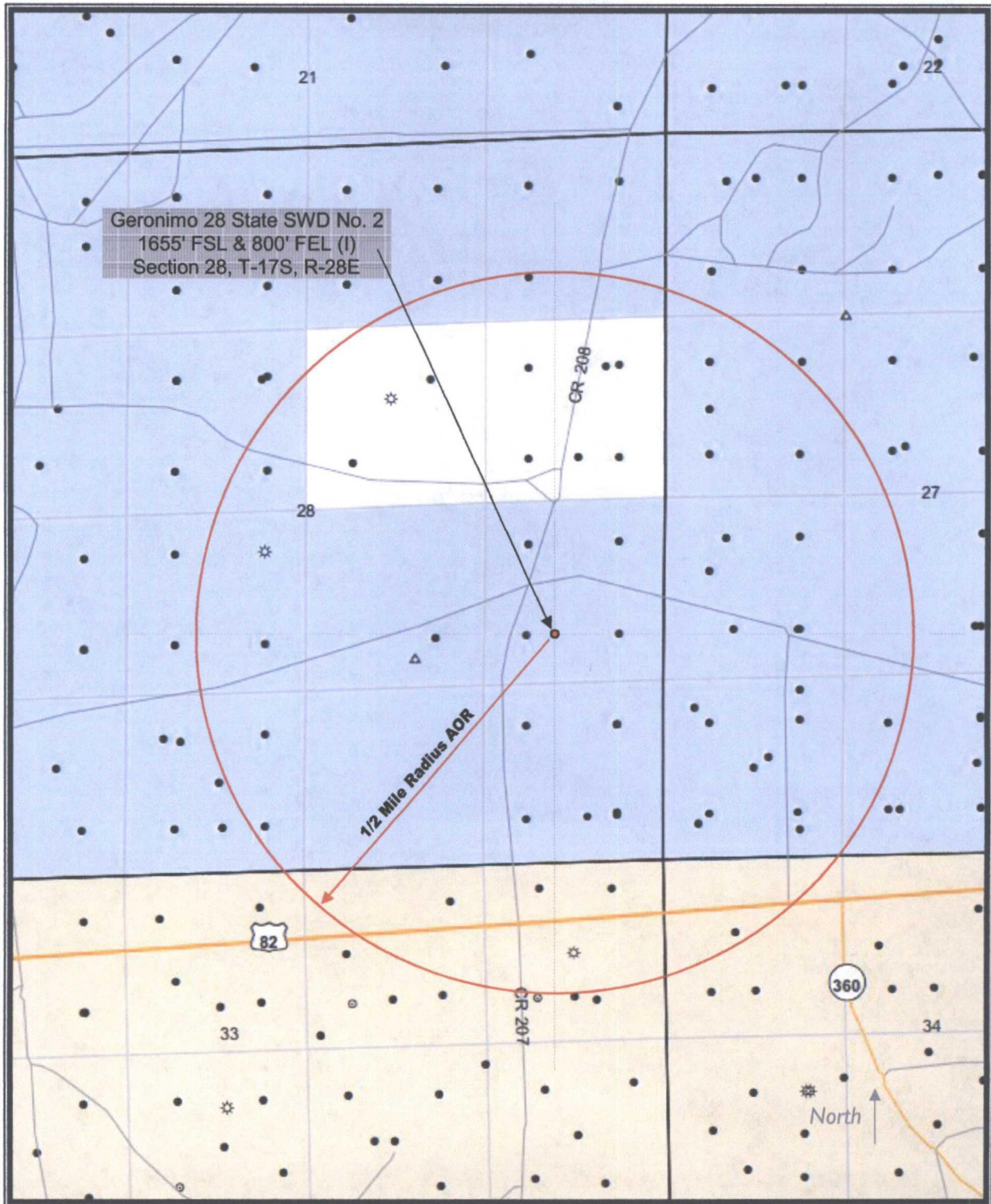
T.D. 12,500'



C-108 - Item V
Area of Review Map

(1/2 mi)

Geronimo 28 State SWD No. 2



APACHE CORPORATION
FORM C-108: GERONIMO 28 STATE SWD NO. 2
AREA OF REVIEW WELL LIST

API NUMBER	OPERATOR	LEASE NAME	WELL NO.	WELL TYPE	STATUS	FTG. N/S	N/S	FTG. E/W	E/W	UNIT	SEC.	TSHF.	RNG.	TOTAL DEPTH
30-015-01568	COG Operating, LLC	TJ State	2	P	Active	660'	S	660'	W	M	27	17S	28E	2,200'
30-015-01576	COG Operating, LLC	N G Phillips State	8	P	Active	2310'	N	990'	W	E	27	17S	28E	1,995'
30-015-01577	Marbob Energy Corp.	Abo	1	P	PA	990'	S	2310'	W	N	27	17S	28E	2,060'
30-015-01578		Pre-Ongard	1	P	PA	1650'	S	990'	W	L	27	17S	28E	2,018'
30-015-01593		Pre-Ongard	1	P	PA	250'	S	250'	W	M	27	17S	28E	2,512'
30-015-10330	COG Operating, LLC	Sunray State	1	P	Active	1650'	S	978'	W	L	27	17S	28E	6,200'
30-015-21260	COG Operating, LLC	N G Phillips State	11	P	Active	2310'	N	330'	W	E	27	17S	28E	813'
30-015-21272	Mack Energy Corp.	Collier State	2	P	PA	1650'	S	500'	W	L	27	17S	28E	814'
30-015-21441	Mack Energy Corp.	Collier State	3	P	PA	2310'	S	450'	W	L	27	17S	28E	842'
30-015-21567	COG Operating, LLC	N G Phillips State	14	P	Active	1650'	N	330'	W	E	27	17S	28E	839'
30-015-21712	Mack Energy Corp.	Collier State	4	P	PA	2310'	S	990'	W	L	27	17S	28E	7,200'
30-015-22072	COG Operating, LLC	TJ State	3	P	Active	990'	S	330'	W	M	27	17S	28E	2,010'
30-015-23088	COG Operating, LLC	Abo	2	P	Active	965'	S	1639'	W	N	27	17S	28E	1,000'
30-015-24259	COG Operating, LLC	N G Phillips State	31	P	Active	1980'	N	330'	W	E	27	17S	28E	3,704'
30-015-24521	COG Operating, LLC	TJ State	1	P	Active	990'	S	990'	W	M	27	17S	28E	2,200'
30-015-24569	COG Operating, LLC	Sunray State	2	P	Active	2075'	S	330'	W	L	27	17S	28E	2,900'
30-015-25845	COG Operating, LLC	Elk State	1	P	Active	719'	S	760'	W	M	27	17S	28E	3,065'
30-015-31716	Judah Oil, LLC	Gerónimo 27 St.	2C	Never Drilled		990'	S	660'	W	M	27	17S	28E	N/A
30-015-40364	COG Operating, LLC	Mina State	3	P	NYD	330'	S	330'	W	M	27	17S	28E	5,600'
30-015-40365	COG Operating, LLC	Mina State	1	P	NYD	1100'	S	220'	W	M	27	17S	28E	5,600'
30-015-40366	COG Operating, LLC	Mina State	4	P	NYD	200'	S	990'	W	M	27	17S	28E	5,600'
30-015-40444	COG Operating, LLC	Mina State	2	P	NYD	1200'	S	990'	W	M	27	17S	28E	5,600'
30-015-01595	COG Operating, LLC	Hanover State	3	P	Active	330'	S	330'	E	P	28	17S	28E	6,173'
30-015-10102	COG Operating, LLC	Pan Am State	1	P	Active	2310'	S	330'	E	I	28	17S	28E	1,999'
30-015-10230	LRE Operating, LLC	Kersey WM A Fed	3	P	Active	2310'	N	330'	E	H	28	17S	28E	1,985'
30-015-20355	COG Operating, LLC	Hanover State	2	P	Active	360'	S	330'	E	O	28	17S	28E	6,158'
30-015-20811	COG Operating, LLC	Pan Am State	2	P	Active	1650'	S	330'	E	I	28	17S	28E	810'
30-015-21147	COG Operating, LLC	State	2	P	Active	990'	S	330'	E	P	28	17S	28E	800'
30-015-21383	COG Operating, LLC	Pan Am State	3	P	Active	2310'	S	990'	E	I	28	17S	28E	810'
30-015-21392	COG Operating, LLC	State	3	P	Active	330'	S	990'	E	P	28	17S	28E	800'
30-015-21463	COG Operating, LLC	Delhi State	3	P	Active	330'	S	2310'	W	N	28	17S	28E	796'
30-015-21527	COG Operating, LLC	State	4	P	Active	990'	S	990'	E	P	28	17S	28E	832'
30-015-21969	LRE Operating, LLC	Kersey WM A Fed	4	P	Active	2310'	N	990'	E	H	28	17S	28E	775'
30-015-22969	COG Operating, LLC	State	5	P	Active	330'	S	550'	E	P	28	17S	28E	825'
30-015-23055	COG Operating, LLC	Pan Am State	4	P	Active	1650'	S	990'	E	I	28	17S	28E	800'

AREA OF REVIEW WELL LIST (PAGE 2)

NYD-Not Yet Drilled; ND-Never Drilled

North Permian Basin Region
P.O. Box 740
Sundown, TX 79372-0740
(806) 229-8121
Lab Team Leader - Sheila Hernandez
(432) 495-7240

Water Analysis Report by Baker Petrolite

Company:	APACHE CORPORATION	Sales RDT:	33514
Region:	PERMIAN BASIN	Account Manager:	REGGIE GUY (575) 513-9135
Area:	ARTESIA, NM	Sample #:	580738
Lease/Platform:	BARNSDALL FED	Analysis ID #:	119642
Entity (or well #):	9	Analysis Cost:	\$90.00
Formation:	UNKNOWN		
Sample Point:	WELLHEAD		

Summary		Analysis of Sample 580738 @ 75 °F					
Sampling Date:	04/13/12	Anions	mg/l	meq/l	Cations	mg/l	meq/l
Analysis Date:	04/26/12	Chloride:	56172.0	1584.41	Sodium:	35903.6	1561.72
Analyst:	STACEY SMITH	Bicarbonate:	939.4	15.4	Magnesium:	226.0	18.59
TDS (mg/l or g/m3):	99816	Carbonate:	0.0	0	Calcium:	1973.0	98.45
Density (g/cm3, tonne/m3):	1.065	Sulfate:	4237.0	88.21	Strontium:	36.0	0.82
Anion/Cation Ratio:	1	Phosphate:			Barium:	0.1	0
		Borate:			Iron:	1.5	0.05
		Silicate:			Potassium:	327.0	8.36
Carbon Dioxide:	200 PPM	Hydrogen Sulfide:		221 PPM	Aluminum:		
Oxygen:		pH at time of sampling:		6.6	Chromium:		
Comments:		pH at time of analysis:			Copper:		
RESISTIVITY: .075 OHM-M @ 75°F		pH used in Calculation:		6.6	Lead:		
					Manganese:	0.400	0.01
					Nickel:		

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl										
Temp	Gauge Press.	Calcite CaCO ₃		Gypsum CaSO ₄ *2H ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Barite BaSO ₄		CO ₂ Press
°F	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	psi
80	0	0.53	71.15	-0.02	0.00	-0.05	0.00	0.00	0.00	0.57	0.00	1.91
100	0	0.63	85.77	-0.08	0.00	-0.03	0.00	-0.02	0.00	0.38	0.00	2.43
120	0	0.73	100.70	-0.12	0.00	0.01	18.74	-0.02	0.00	0.22	0.00	3
140	0	0.84	115.94	-0.15	0.00	0.07	167.09	-0.02	0.00	0.08	0.00	3.61

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

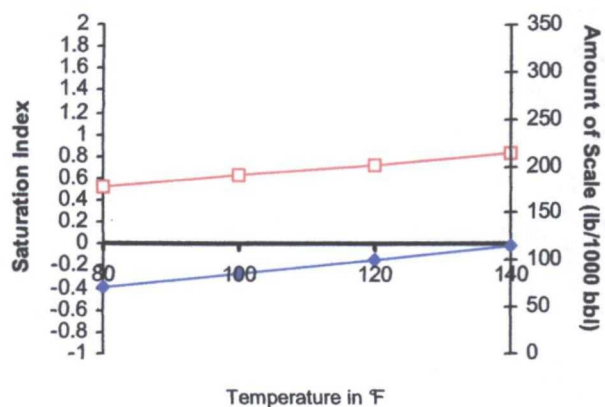
Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

Note 3: The reported CO₂ pressure is actually the calculated CO₂ fugacity. It is usually nearly the same as the CO₂ partial pressure.

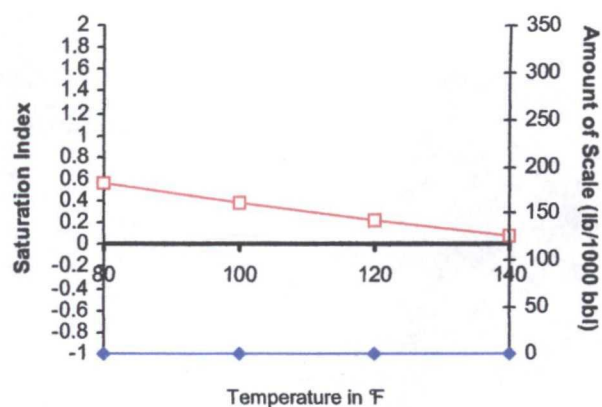
Scale Predictions from Baker Petrolite

Analysis of Sample 580738 @ 75 °F for APACHE CORPORATION, 04/26/12

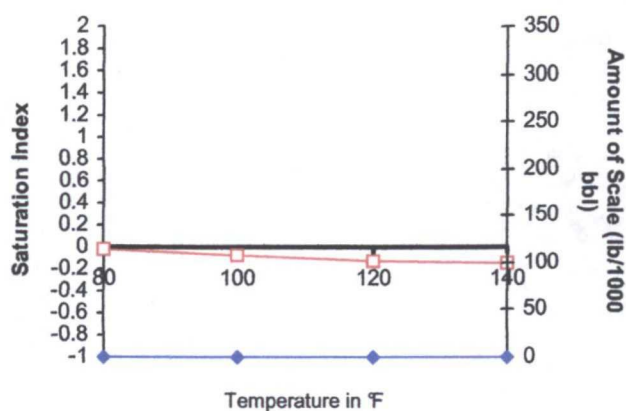
Calcite - CaCO_3



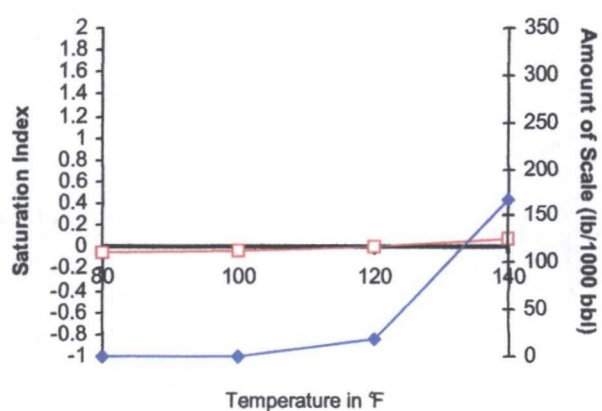
Barite - BaSO_4



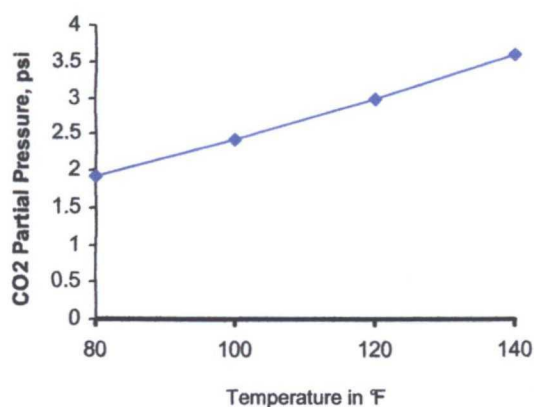
Gypsum - $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$



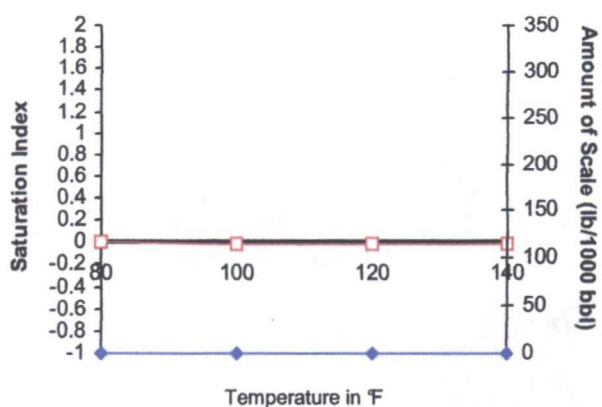
Anhydrite - CaSO_4



Carbon Dioxide Partial Pressure



Celestite - SrSO_4



North Permian Basin Region
P.O. Box 740
Sundown, TX 79372-0740
(806) 229-8121
Lab Team Leader - Sheila Hernandez
(432) 495-7240

Water Analysis Report by Baker Petrolite

Company:	APACHE CORPORATION	Sales RDT:	33512
Region:	PERMIAN BASIN	Account Manager:	WAYNE PETERSON (575) 910-9389
Area:	LOCO HILL, NM	Sample #:	580725
Lease/Platform:	BARNSDALL FED	Analysis ID #:	118869
Entity (or well #):	17	Analysis Cost:	\$90.00
Formation:	UNKNOWN		
Sample Point:	WELLHEAD		

Summary		Analysis of Sample 580725 @ 75 °F					
Sampling Date:	03/28/12	Anions	mg/l	meq/l	Cations	mg/l	meq/l
Analysis Date:	04/05/12	Chloride:	141028.0	3977.89	Sodium:	72252.0	3142.78
Analyst:	LEAH DURAN	Bicarbonate:	73.2	1.2	Magnesium:	3784.0	311.29
TDS (mg/l or g/m3):	231342	Carbonate:	0.0	0.0	Calcium:	10305.0	514.22
Density (g/cm3, tonne/m3):	1.155	Sulfate:	1906.0	39.68	Strontium:	267.0	6.09
Anion/Cation Ratio:	1	Phosphate:			Barium:	0.2	0.0
		Borate:			Iron:	21.0	0.76
		Silicate:			Potassium:	1705.0	43.6
Carbon Dioxide:	200 PPM	Hydrogen Sulfide:		0	Aluminum:		
Oxygen:		pH at time of sampling:		6.2	Chromium:		
Comments:		pH at time of analysis:			Copper:		
		pH used in Calculation:		6.2	Lead:		
					Manganese:	0.600	0.02
					Nickel:		

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl										
Temp	Gauge Press.	Calcite CaCO ₃		Gypsum CaSO ₄ *2H ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Barite BaSO ₄		CO ₂ Press
°F	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	psi
80	0	-0.14	0.00	0.19	352.34	0.23	323.47	0.21	59.14	0.19	0.00	0.29
100	0	-0.06	0.00	0.11	224.52	0.22	310.29	0.18	53.26	-0.01	0.00	0.35
120	0	0.02	0.28	0.05	98.11	0.23	325.43	0.17	50.17	-0.19	0.00	0.41
140	0	0.10	1.12	-0.01	0.00	0.27	363.55	0.17	49.61	-0.34	0.00	0.47

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

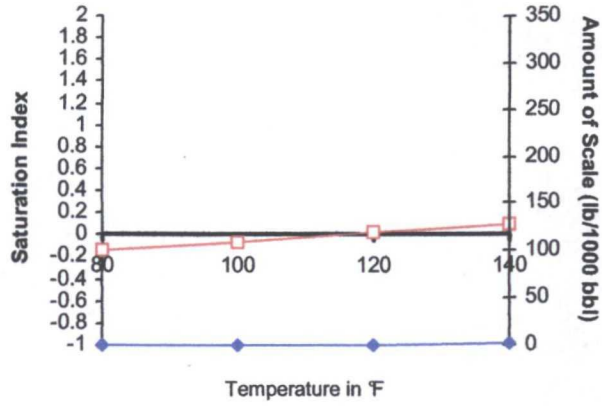
Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

Note 3: The reported CO2 pressure is actually the calculated CO2 fugacity. It is usually nearly the same as the CO2 partial pressure.

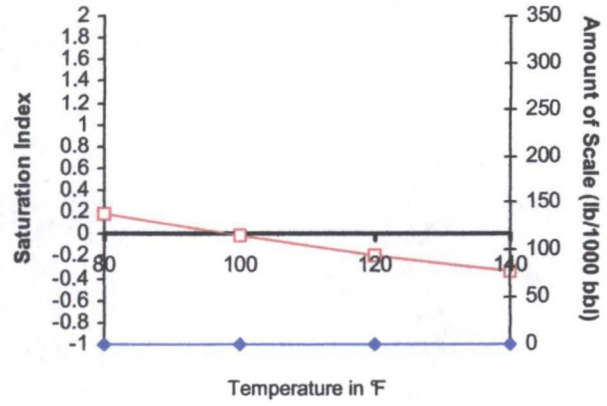
Scale Predictions from Baker Petrolite

Analysis of Sample 580725 @ 75 °F for APACHE CORPORATION, 04/05/12

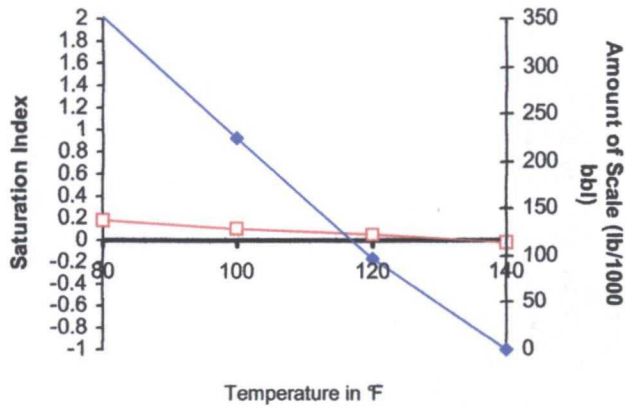
Calcite - CaCO_3



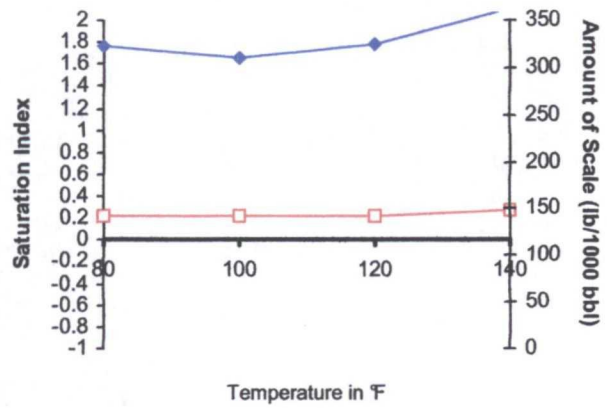
Barite - BaSO_4



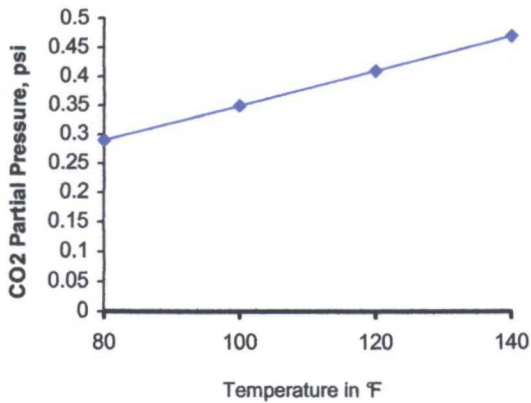
Gypsum - $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$



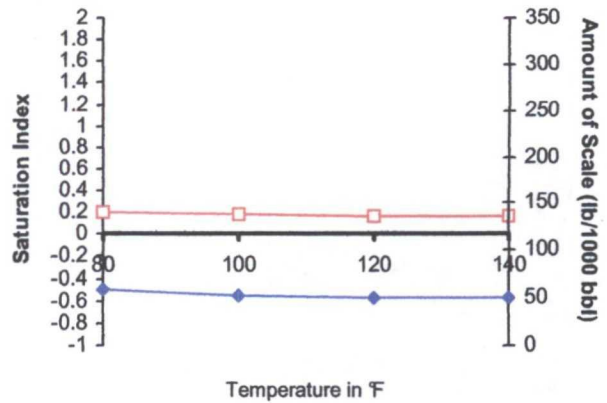
Anhydrite - CaSO_4



Carbon Dioxide Partial Pressure



Celestite - SrSO_4





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

No records found.

PLSS Search:

Section(s): 32-34

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.

10/25/12 11:03 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): 21-22

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.

10/25/12 11:02 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): 27-29


Township: 17S

Range: 28E

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Form C-108
Affirmative Statement
Apache Corporation
Geronimo 28 State SWD No. 2
Section 28, T-17 South, R-28 East, NMPM,
Eddy County, New Mexico

Available geologic and engineering data has been examined and no evidence of open faults or hydrological connection between the injection zone and any underground sources of drinking water has been found.



David Catanach
Agent for Apache Corporation

12/3/12
Date

December 3, 2012

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

TO: OFFSET LEASEHOLD OWNERS & SURFACE OWNER

Re: Apache Corporation
Form C-108 (Application for Authorization to Inject)
Geronimo 28 State SWD No. 2
API No. N/A
1655' FSL & 800' FEL, Unit I, Section 28, T-17S, 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 Apache Corporation Geronimo 28 State SWD No. 2. You are being provided a copy of the application as an offset leaseholder or the surface owner of the land on which the well is located. Apache Corporation proposes to drill the Geronimo 28 State SWD No. 2 and utilize the well as a produced water disposal well, injection to occur into the Devonian and Ellenburger formations through the perforated interval from approximately 11,404 feet to 12,500 feet.

Objections must be filed with the Oil Conservation Division, 1220 South St. Francis Drive, Santa Fe, New Mexico 87505, within 15 days.

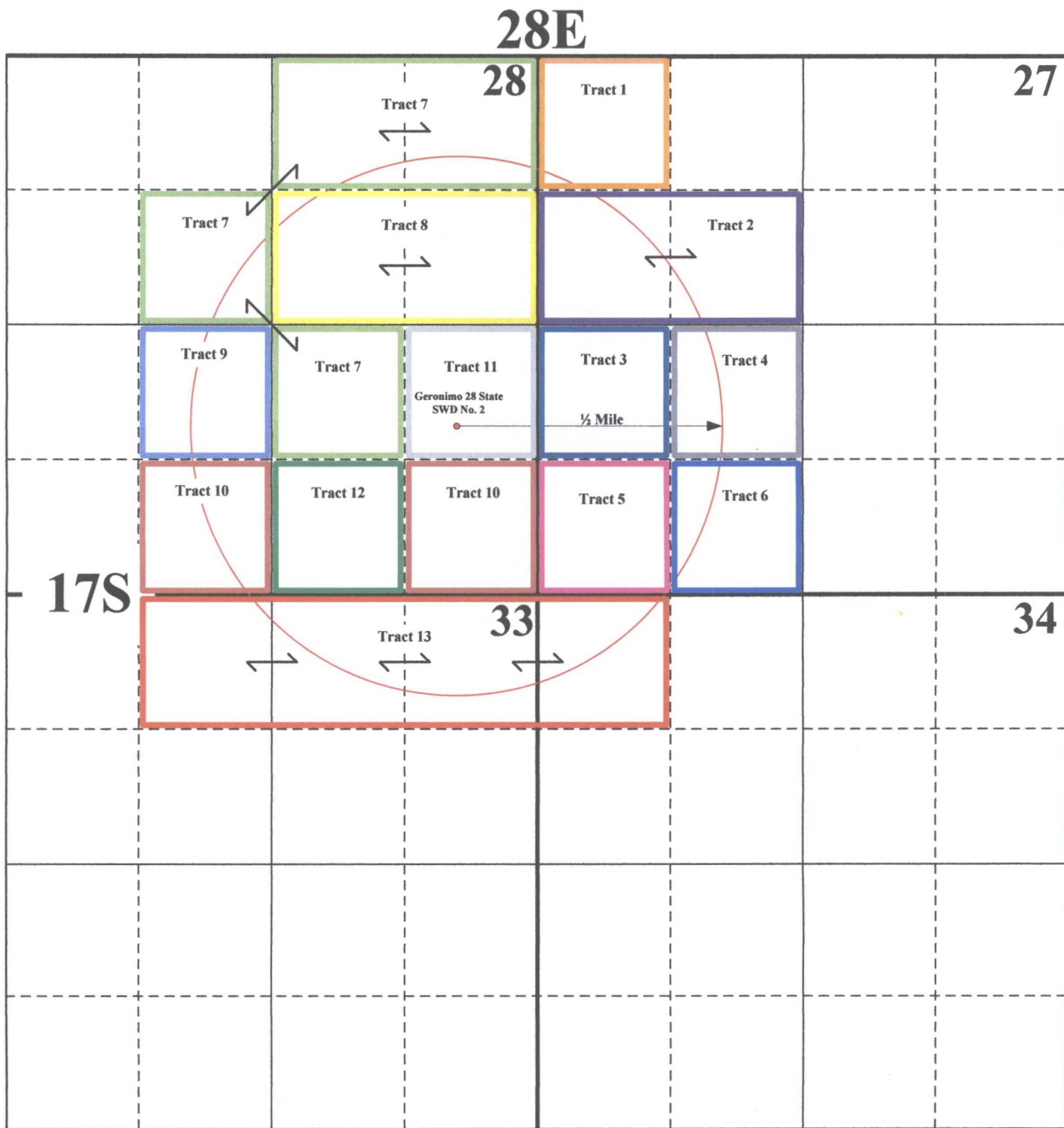
If you should have any questions, please contact me at (505) 690-9453.

Sincerely,



David Catanach-Agent
Apache Corporation
303 Veterans Airpark Lane, Suite 3000
Midland, Texas 79705

Enclosure



Apache Corporation
Form C-108: Geronimo 28 State SWD No. 2
Offset Leasehold Owner Tract Identification

Apache Corporation
Form C-108: Geronimo 28 State SWD No. 2
Section 28, T-17 South, R-28 East, NMPM
Eddy County, New Mexico

Offset Leasehold Owner Notification List (See Attached Map)

Tracts No. 1, 7 & 8

Leasehold Owners (All Depths below 3,500' **Less & Except** the Morrow Formation):

ConocoPhillips Company P.O. Box 7500 Bartlesville, Oklahoma 74005	RSE Partners I L.P. 3141 Hood Street, #350 Dallas, Texas 75219	Khody Land & Minerals Co. 210 Park Avenue, Suite 900 Oklahoma City, Oklahoma 73102
Marathon Oil Company P.O. Box 552 Midland, Texas 79702	Yates Petroleum Corporation 105 S. Fourth Street Artesia, New Mexico 88210	John A Yates, MSU 207 S. Fourth Street Artesia, New Mexico 88210
Trust Q U/W/O Peggy A. Yates, deceased 207 South 4 th Street Artesia, NM 88210	Sharbro Energy, LLC P.O. Box 840 Artesia, New Mexico 88211-0840	Yates Industries, LLC P.O. Box 1091 Artesia, New Mexico 88211-1091
Spiral, Inc. P.O. Box 1933 Roswell, New Mexico 88202-1933	Santo Legado, LLP P.O. Box 1020 Artesia, New Mexico 88211-1020	Tulipan, LLC P.O. Box 1020 Artesia, New Mexico 88211-1020
Marigold, LLLP P.O. Box 1290 Artesia, NM 88211-1290		

Tract No. 2

Leasehold Owner (All depths below 4,000'):

OXY USA WTP, Ltd. Partnership
P.O. Box 50250
Midland, TX 79710

Tract No. 3

Leasehold Owner (All depths below the base of the Abo Formation):

Khody Land & Minerals Company
210 Park Avenue, Suite 900
Oklahoma City, Oklahoma 73102

Apache Corporation
Form C-108: Geronimo 28 State SWD No. 2
Section 28, T-17 South, R-28 East, NMPM
Eddy County, New Mexico

Offset Leasehold Owner Notification List (Page 2)

Tract No. 4

Leasehold Owner: (All depths)

Yates Petroleum Corporation
105 S. Fourth Street
Artesia, New Mexico 88210

John A Yates, MSU
207 S. Fourth Street
Artesia, New Mexico 88210

Marigold, LLLP
P.O. Box 1290
Artesia, New Mexico 88211-1290

Trust Q
U/W/O Peggy A. Yates, deceased
207 South 4th Street
Artesia, NM 88210

Sharbro Energy, LLC
P.O. Box 840
Artesia, New Mexico 88211-0840

Yates Industries, LLC
P.O. Box 1091
Artesia, New Mexico 88211-1091

Spiral, Inc.
P.O. Box 1933
Roswell, NM 88202-1933

Santo Legado, LLP
P.O. Box 1020
Artesia, New Mexico 88211-1020

Tulipan, LLC
P.O. Box 1020
Artesia, New Mexico 88211-1020

Tract No. 5

Leasehold Owners (All depths below the base of the Abo Formation):

COG Operating, LLC
600 W. Illinois Ave.
One Concho Center
Midland, Texas 79701

Concho Oil & Gas Company
600 W. Illinois Ave.
One Concho Center
Midland, Texas 79701

Tracts No. 6 & 9

Leasehold Owner (All depths below the base of the Yeso Formation):

ConocoPhillips Company
P.O. Box 7500
Bartlesville, Oklahoma 74005

Chisos Ltd.
670 Donna Ana Road
Deming, New Mexico 88030

Roca Exploration, Ltd.
P.O. Box 1981
Midland, Texas 79702

Tract No. 10

Leasehold Owners: (All depths):

ConocoPhillips Company
P.O. Box 7500
Bartlesville, Oklahoma 74005

Chisos Ltd.
670 Donna Ana Road
Deming, New Mexico 88030

Roca Exploration, Ltd.
P.O. Box 1981
Midland, Texas 79702

Apache Corporation
Form C-108: Geronimo 28 State SWD No. 2
Section 28, T-17 South, R-28 East, NMPM
Eddy County, New Mexico

Offset Leasehold Owner Notification List (Page 3)

Tract No. 11

Leasehold Owners (All depths below 3,500’):

Oxy USA WTP, Ltd. Partnership
P.O. Box 50250
Midland, Texas 79710

McCombs Energy, LLC
5599 San Felipe, Suite 1200
Houston, Texas 77056-2794

Tract No. 12

Leasehold Owners (All depths below the base of the Morrow Formation):

Yates Petroleum Corporation
105 S. Fourth Street
Artesia, New Mexico 88210

Khody Land & Minerals Company
210 Park Avenue, Suite 900
Oklahoma City, Oklahoma 73102

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

ZPZ Delaware I, LLC
(Wholly owned subsidiary of
Apache Corporation)

Tract No. 13

Leasehold Owners (All depths):

ZPZ Delaware I, LLC
(Wholly owned subsidiary of
Apache Corporation)

Surface Owner

Commissioner of Public Lands
P.O. Box 1148
Santa Fe, New Mexico 87504-1148

Additional Notice

Oil Conservation Division
811 S. First Street
Artesia, New Mexico 88210

7012 0470 0001 5936 1468

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Certified Fee	\$2.95
Return Receipt Fee (Endorsement Required)	\$2.35
Restricted Delivery Fee (Endorsement Required)	\$0.00
Total Postage & Fees	\$ 7.20

Sent To **ConocoPhillips Company**
P.O. Box 7500
Bartlesville, Oklahoma 74005

PS Form 3800, August 2006 See Reverse for Instructions

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Restricted Delivery Fee (Endorsement Required)	\$0.00
Total Postage & Fees	\$ 7.20

Sent To **RSE Partners I, L.P.**
3141 Hood Street, #350
Dallas, Texas 75219

PS Form 3800, August 2006 See Reverse for Instructions

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Restricted Delivery Fee (Endorsement Required)	\$0.00
Total Postage & Fees	\$ 7.20

Sent To **Khody Land & Minerals Co.**
210 Park Avenue, Suite 900
Oklahoma City, Oklahoma 73102

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Total Postage & Fees	\$ 7.20

Sent To **Marathon Oil Company**
P.O. Box 552
Midland, Texas 79702

PS Form 3800, August 2006 See Reverse for Instructions

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Return Receipt Fee (Endorsement Required)	\$2.35
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Sent To **Yates Petroleum Corporation**
105 S. Fourth Street
Artesia, New Mexico 88210

PS Form 3800, August 2006 See Reverse for Instructions

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Restricted Delivery Fee (Endorsement Required)	\$0.00
Total Postage & Fees	\$ 7.20

Sent To **John A Yates, MSU**
Trust Q, U/W/O Peggy A. Yates
107 South Fourth Street
Artesia, New Mexico 88210

PS Form 3800, August 2006 See Reverse for Instructions

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Return Receipt Fee (Endorsement Required)	\$ 2.35
Restricted Delivery Fee (Endorsement Required)	\$ 0.00
Total Postage & Fees	\$ 7.20

Sent To **Sharbro Energy, LLC**
P.O. Box 840
 Street, Apt. No., or PO Box No.
Artesia, New Mexico 88211-0840
 City, State, ZIP+4

PS Form 3800, August 2006 See Reverse for Instructions

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Restricted Delivery Fee (Endorsement Required)	\$ 0.00
Total Postage & Fees	\$ 7.20

Sent To **Commissioner of Public Lands**
P.O. Box 1148
 Street, Apt. No., or PO Box No.
Santa Fe, N.M. 87504-1148
 City, State, ZIP+4

PS Form 3800, August 2006 See Reverse for Instructions

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Restricted Delivery Fee (Endorsement Required)	\$ 0.00
Total Postage & Fees	\$ 7.20

Sent To **Roca Exploration, Ltd.**
P.O. Box 1981
 Street, Apt. No., or PO Box No.
Midland, Texas 79702
 City, State, ZIP+4

PS Form 3800, August 2006 See Reverse for Instructions

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Restricted Delivery Fee (Endorsement Required)	\$ 0.00
Total Postage & Fees	\$ 7.20

Sent To **Yates Industries, LLC**
P.O. Box 1091
 Street, Apt. No., or PO Box No.
Artesia, New Mexico 88211-1091
 City, State, ZIP+4

PS Form 3800, August 2006 See Reverse for Instructions

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Restricted Delivery Fee (Endorsement Required)	\$ 0.00
Total Postage & Fees	\$ 7.20

Sent To **McCombs Energy, LLC**
5599 San Felipe, Suite 1200
 Street, Apt. No., or PO Box No.
Houston, Texas 77056-2794
 City, State, ZIP+4

PS Form 3800, August 2006 See Reverse for Instructions

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Return Receipt Fee (Endorsement Required)	\$ 2.35
Restricted Delivery Fee (Endorsement Required)	\$ 0.00
Total Postage & Fees	\$ 7.20

Sent To **Chisos, Ltd.**
670 Donna Ana Road
 Street, Apt. No., or PO Box No.
Deming, New Mexico 88030
 City, State, ZIP+4

PS Form 3800, August 2006 See Reverse for Instructions

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MIDLAND TX 79701

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Restricted Delivery Fee (Endorsement Required)	\$ 0.00
Total Postage & Fees	\$ 7.20

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 DEC - 3 2012

0501 SANTA FE, NM 87505
 CORONADO STATION

Sent To **COG Operating, LLC**
 Concho Oil & Gas Company
 600 W. Illinois Ave.
 One Concho Center
 Midland, Texas 79701

PS Form 3800, August 2006 See Reverse for Instructions

7012 0470 0001 5936 1372

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MIDLAND TX 79710

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Certified Fee	\$ 2.95
Return Receipt Fee (Endorsement Required)	\$ 2.35
Restricted Delivery Fee (Endorsement Required)	\$ 0.00
Total Postage & Fees	\$ 7.20

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 DEC - 3 2012

0501 SANTA FE, NM 87505
 CORONADO STATION

Sent To **Oxy USA WTP Ltd. Partnership**
 P.O. Box 50250
 Midland, Texas 79710

PS Form 3800, August 2006 See Reverse for Instructions

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ARTESIA NM 88211

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Restricted Delivery Fee (Endorsement Required)	\$ 0.00
Total Postage & Fees	\$ 7.20

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0501 SANTA FE, NM 87505
 CORONADO STATION

Sent To **Marigold, LLP**
 P.O. Box 1290
 Artesia, New Mexico 88211-1290

PS Form 3800, August 2006 See Reverse for Instructions

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Certified Fee	\$ 2.95
Return Receipt Fee (Endorsement Required)	\$ 2.35
Restricted Delivery Fee (Endorsement Required)	\$ 0.00
Total Postage & Fees	\$ 7.20

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 DEC - 3 2012

0501 SANTA FE, NM 87505
 CORONADO STATION

Sent To **Santo Legado, LLP**
 Tulipan, LLC
 P.O. Box 1020
 Artesia, New Mexico 88211-1020

PS Form 3800, August 2006 See Reverse for Instructions

7012 0470 0001 5936 1402

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ROSWELL NM 88202

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Restricted Delivery Fee (Endorsement Required)	\$ 0.00
Total Postage & Fees	\$ 7.20

Postmark Here
 DEC - 3 2012

0501 SANTA FE, NM 87505
 CORONADO STATION

Sent To **Spiral, Inc.**
 P.O. Box 1933
 Roswell, New Mexico 88202-1933

PS Form 3800, August 2006 See Reverse for Instructions

Form C-108
Apache Corporation
Geronimo 28 State SWD No. 2
Section 28, T-17 South, R-28 East, NMPM,
Eddy County, New Mexico

The following-described legal notice will be published in the:

Artesia Daily Press
503 W. Main Street
Artesia, New Mexico 88210-2067

The Affidavit of Publication will be forwarded to the Division upon receipt by Apache Corporation.

LEGAL NOTICE

Apache Corporation, 303 Veterans Airpark Lane, Suite 3000, Midland, Texas 79705 has filed a Form C-108 (Application for Authorization to Inject) with the Oil Conservation Division ("Division") seeking administrative approval to drill its proposed Geronimo 28 State SWD No. 2 (API No. N/A) located 1655 feet from the South line and 800 feet from the East line (Unit I) of Section 28, Township 17 South, Range 28 East, NMPM, Eddy County, New Mexico and complete the well as a produced water disposal well in the Devonian and Ellenburger formations. Injection is to occur through the perforated interval from approximately 11,404 feet to 12,500 feet.

Produced water from the Glorieta & Yeso formations originating from Apache Corporation operated wells in this area will be injected into the Geronimo 28 State SWD No. 2 at average and maximum rates of 4,000 and 15,000 barrels of water per day, respectively. The initial surface injection pressure for the well is anticipated to be at or below 2,280 psi., which is in compliance with Division regulations. The maximum surface injection pressure will be determined by step rate injection test.

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 Mr. David Catanach Agent-Apache Corporation at (505) 690-9453.

Jones, William V., EMNRD

From: David Catanach <drcatanach@netscape.com>
Sent: Saturday, December 08, 2012 6:57 AM
To: Jones, William V., EMNRD
Subject: Affidavit of Publication
Attachments: Publication Notice.pdf

Mr. Jones,

Attached is the publication notice for the Apache Geronimo 28 State SWD No. 2 (SWD application).

If you need anything else, let me know.

Thanks,

David

Netscape. Just the Net You Need.

Affidavit of Publication

NO.

22390

STATE OF NEW MEXICO

County of Eddy:

Danny Scott

being duly sworn, says that he is the Publisher
of the Artesia Daily Press, a daily newspaper of general
circulation, published in English at Artesia, said county
and state, and that the hereto attached

Legal Notice

was published in a regular and entire issue of the said
Artesia Daily Press, a daily newspaper duly qualified
for that purpose within the meaning of Chapter 167 of
the 1937 Session Laws of the state of New Mexico for

1 Consecutive weeks/days on the same

day as follows:

First Publication December 2, 2012

Second Publication

Third Publication

Fourth Publication

Fifth Publication

Subscribed and sworn to before me this

3rd day of December 2012



OFFICIAL SEAL
Latisha Romine
NOTARY PUBLIC-STATE OF NEW MEXICO

My commission expires: 5/12/2015

Latisha Romine

Latisha Romine
Notary Public, Eddy County, New Mexico

Copy of Publication:

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Published in the Artesia Daily Press, Artesia, N.M., Dec. 2, 2012. Legal No 22390.

Injection Permit Checklist

First Email Date: _____

Final Reply Date: _____

Final Notice Date: 12/3/12

Issued Permit: WFX

PMX

SWD

1378Permit Date 1/3/13# Wells 1Well Name(s): GERONIMO 28 STATE SWD #2API Num: 30-015-40876

Spud Date: _____

New/Old: _____

(UIC Cl II Primacy March 7, 1982)

Footages 1655 FSL/800 FEL Lot _____ Unit I Sec 28 Tsp 17S Rge 28E County EDDYGeneral Location or Pool Area: RED LAKE/ARTESIAN UMT areaOperator: APACHE CORP.Contact DAVID CATANACHOGRID: 873RULE 5.9 Compliance (Wells) 2/123(Finan Assur) OK IS 5.9 OK? OKWell File Reviewed ✓ Current Status: Permitted NOT DRILLEDPlanned Work to Well: DRILL/EQUIP/DISPOSEDiagrams: Before Conversion ✓ After Conversion ✓ Are Elogs in Imaging? Will Be Filed

Well Details:	Sizes Hole.....Pipe	Setting Depths	Stage Tool	Cement Sx or Cf	Cement Top and Determination Method
Planned <u>✓</u> or Existing <u>—</u> Surface	<u>17 1/2 - 13 3/8</u>	<u>500'</u>	<u>—</u>	<u>580 SX</u>	<u>CIRC</u>
Planned <u>✓</u> or Existing <u>—</u> Interm	<u>12 1/4 - 9 5/8</u>	<u>4500'</u>	<u>—</u>	<u>1400 SX</u>	<u>CIRC</u>
Planned <u>✓</u> or Existing <u>—</u> LongSt	<u>8 3/4 - 7"</u>	<u>12500' TR 10900</u>	<u>270/810</u>	<u>3000' CALC</u>	
Planned <u>—</u> or Existing <u>—</u> Liner					
Planned <u>—</u> or Existing <u>—</u> OpenHole					

Depths/Formations:

Depths, Ft.

Formation

Tops?

Above

Above

11404DEV✓Proposed Interval TOP 1140411404DevMax. PSI 2281 OpenHole — Perfs ✓Proposed Interval BOTTOM 1250012500BlankTubing Size 4 1/2 Packer Depth 11304

Below

12404EU.✓

Below

Capitan Reef? (in / thru) _____ Potash? _____ Noticed? _____ (WIPP? _____ Noticed? _____) Galardo Top _____ Bot _____ Cliff House? _____

Fresh Water: MaxDepth: 300' FW Formation _____ Wells? None Analysis? _____ Affirmative Statement ✓Disposal Fluid: Formation Source (Analysis) GLOR/Yaso (APACHE operated wells)Disposal Interval: Protectable Waters? NO H/C Potential: Log _____ /Mudlog _____ /DST _____ /Tested _____ /Depleted _____ Other NO PROD w/E 1 miNotice: Newspaper Post Date 12/2/12 Surface Owner S.L.O. N. Date 12/3/12RULE 26.7(A) Affected Persons See LISTN. Date 12/3/12AOR: Maps? ✓ Well List? ✓ Producing in Interval? NO Wellbore Diagrams? _____

Penetrating

.....Active Wells 0 Repairs? _____ Which Wells? _____.....P&A Wells 0 Repairs? _____ Which Wells? _____Permit Conditions: None (Normal Logging) MUD LOG

Issues:

Issues: Burrell Gas JUST TO NORTH MISS OIL TO NW

Issues: