

DATE IN 4/28/06	SUSPENSE	MIKE STOGNER ENGINEER	4/28/06 LOGGED IN	TYPE NSL	APP NO. P TDS0611844351
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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



Apache

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 _____

[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.

James Bruce
Print or Type Name

Signature

Attorney for applicant
Title

Date

jamesbruc@aol.com
e-mail Address

2006 APR 28 PM 12 10

4/28/06

JAMES BRUCE
ATTORNEY AT LAW

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SANTA FE, NEW MEXICO 87504

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(505) 660-6612 (Cell)
(505) 982-2151 (Fax)

jamesbruc@aol.com

April 28, 2006

Hand Delivered

Michael E. Stogner
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Dear Mr. Stogner:

Pursuant to Division Rule 104.F(2), Apache Corporation applies for administrative approval of an unorthodox oil well location for the following well:

<u>Well Name:</u>	Hawk B-1 Well No. 51
<u>Well Location:</u>	1280 feet FSL & 2515 FWL
<u>Well Unit:</u>	SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 8 Township 21 South, Range 37 East, N.M.P.M., Lea County, New Mexico

The well will test the Grayburg formation (Penrose Skelly Pool). The pool is developed on statewide rules, with 40 acre spacing and wells to be located no closer than 330 feet to a quarter-quarter section line. (The well be drilled to the San Andres formation, but will not be produced from that zone at this time.)

The application is based on engineering reasons. A complete discussion, with exhibits, is attached as Exhibit A (which includes a Form C-102). The well is located approximately equidistant between four Grayburg wells. The well data shows that wells in the Grayburg drain less than 40 acres. Therefore, the proposed location will recover undrained reserves in the Grayburg. **The SW $\frac{1}{4}$ NE $\frac{1}{4}$ will be simultaneously dedicated to the proposed well and the existing Hawk B-1 Well No. 16.**

30-025 - 26601

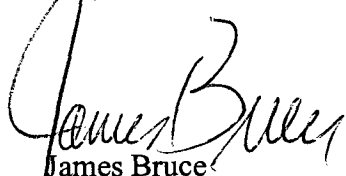
660' FSL - 1980' FWL

Exhibit B is a land plat. The Hawk B (federal) lease, which has common ownership in the Grayburg and San Andres formations, covers, among other acreage, the SE $\frac{1}{4}$ and E $\frac{1}{2}$ SW $\frac{1}{4}$ of

Section 8. No offset owner is adversely affected by the application, and notice has not been provided to anyone.

Please call me if you need any further information on this matter.

Very truly yours,

A handwritten signature in cursive script, appearing to read "James Bruce".

James Bruce

Attorney for Apache Corporation

Application of Apache Corporation for administrative approval of an unorthodox well location:

40 acres – 1280' FSL & 2515' FWL
Section 8, Township 21 South, Range 37 East, NMPM
Lea County, New Mexico

PRIMARY OBJECTIVE: GRAYBURG

SECONDARY OBJECTIVE: SAN ANDRES

In support:

1. Apache Corporation (Apache) is the operator of the proposed **Hawk B-1 #51** well (**Exhibit 1**). The proposed total depth is 4400' in the San Andres formation.
2. The location encroaches toward the following Penrose Skelly; Grayburg Oil wells (**Exhibit 2**).

OPER	WELL	LOC	RESERVOIR	CUM O/G/W	DAILY O/G/W
Apache	Hawk B-1 #22	08-J	Grayburg	10/71/89	17/281/373
Apache	Hawk B-1 #29	08-K	Grayburg	11/171/373	10/322/795
Apache	Hawk A #16	08-N	Grayburg	12/101/13	3/77/4
Apache	Hawk B-1 #12	08-O	Grayburg	78/823/40	2/24/2

Oil in MBO BOPD
Gas in MMCFG MCFGPD
Water in MBW BWPD

3. The proposed **Hawk B-1 #51** unorthodox Grayburg location of 1280' from south line and 2515' from west line is based on drainage considerations.

a) **Grayburg Reservoir**

The Grayburg is a series of alternating subtidal and supratidal dolomites, with the subtidal rock having porosity and hydrocarbons and the supratidal rock being tight. The Grayburg environments varied rapidly so that porous and tight intervals do not necessarily correlate well-to-well. Tight dolomite and/or anhydrite intervals within the Grayburg additionally create vertical hydraulic barriers between different zones of porosity. Average porosity of the Grayburg is less than 10%, and average permeability is less than 1 millidarcy. Grayburg wells are thus not capable of draining the 40 Acre Spacing Unit.

— **Exhibit A** —

The reservoir was analyzed by mapping hydrocarbon pore volume (SoPhiH) (**Exhibit 3**). SoPhiH is the product of feet of net pay (H) times average porosity (PhiA) times oil saturation (So). The values were obtained as follows:

1. Net Pay was read from modern neutron-density logs which have contractor calculated cross-plotted porosity (XPhi) using a minimum of 6% and a maximum of 18%. Additionally, gamma ray (40 APIU) and water saturation (10% - 50%, using a standard equation with $a=1$ and $m=n=2$) cutoffs were also employed.
2. Average Porosity was calculated for intervals meeting those criteria.
3. Oil Saturation is the additive inverse of water saturation.

The following table provides drainage areas calculated from the SoPhiH map and reserves of the offsetting wells.

OPER	WELL	LOC	AREA A	EUR MBO	EUR MMCFG
Apache	Hawk B-1 #22	08-J	27	107	1180
Apache	Hawk B-1 #29	08-K	8	49	861
Apache	Hawk B-1 #16	08-N	4	22	254
Apache	Hawk B-1 #12	08-O	17	87	943

The intent of the well is to recover reserves that cannot be recovered by the existing wells. The location was placed in the center of the vacant area between the existing wells. The location was then moved due to surface conditions and cultural obstructions.

Reserves for the proposed location were calculated by planimetry the undrained area of the SoPhiH isopach which lies under a drainage circle (the size of which is the average of the direct offset drainage areas) centered on the proposed location. Any competitive drainage is shared between the proposed well and the existing offset wells. The results are as follows:

WELL	LOC	SoPhiH	AREA A	EUR MBO	EUR MMCFG
Hawk B-1 #51	08-N	6.32	14	64	515

4. Notice

Apache is the operator of the Grayburg wells toward which the proposed well will encroach. It is contained within one oil and gas lease (Hawk A Federal NM 031741(a) which includes, among other acreage, all of E/2SW/4 §8 and all of SE/4 §8) with common working and revenue interest owners. Therefore, there are no adversely affected parties and no one was notified of the application.

5. Approval of this application will afford the interest owners in these spacing units an opportunity to recover oil and gas which would not otherwise be recovered.

DISTRICT I

1626 N. FRENCH DR., ROBBE, NM 86240

DISTRICT II

1301 W. GRAND AVENUE, ARTESIA, NM 80210

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 and Natural Resources Department

OIL CONSERVATION DIVISION

1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

Form C-102

Revised JUNE 10, 2003

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number		Pool Code	Pool Name
Property Code	Property Name HAWK B-1		Well Number 51
OGRID No.	Operator Name APACHE CORPORATION		Elevation 3511'

Surface Location

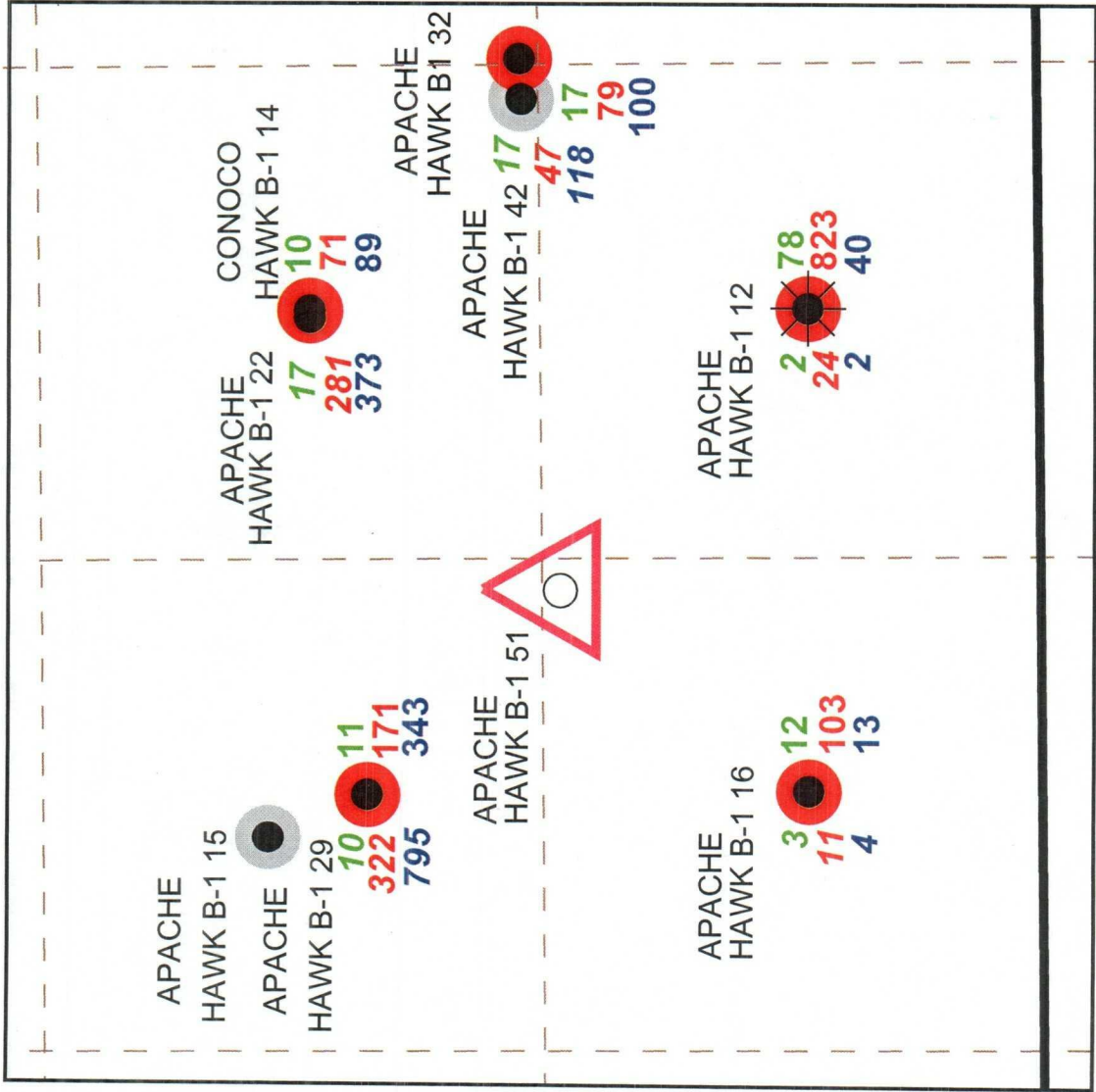
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	8	21-S	37-E		1280	SOUTH	2515	WEST	LEA


Bottom Hole Location If Different From Surface

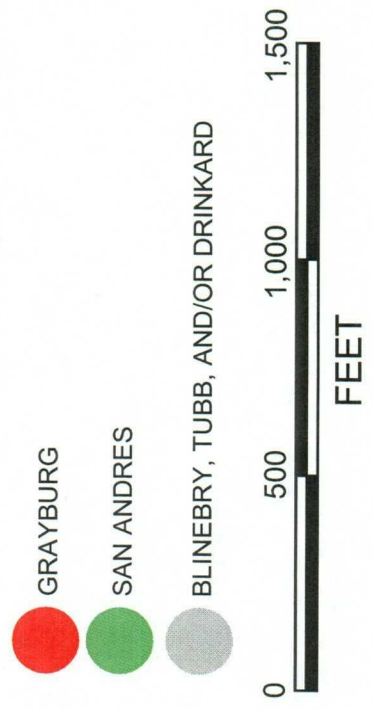
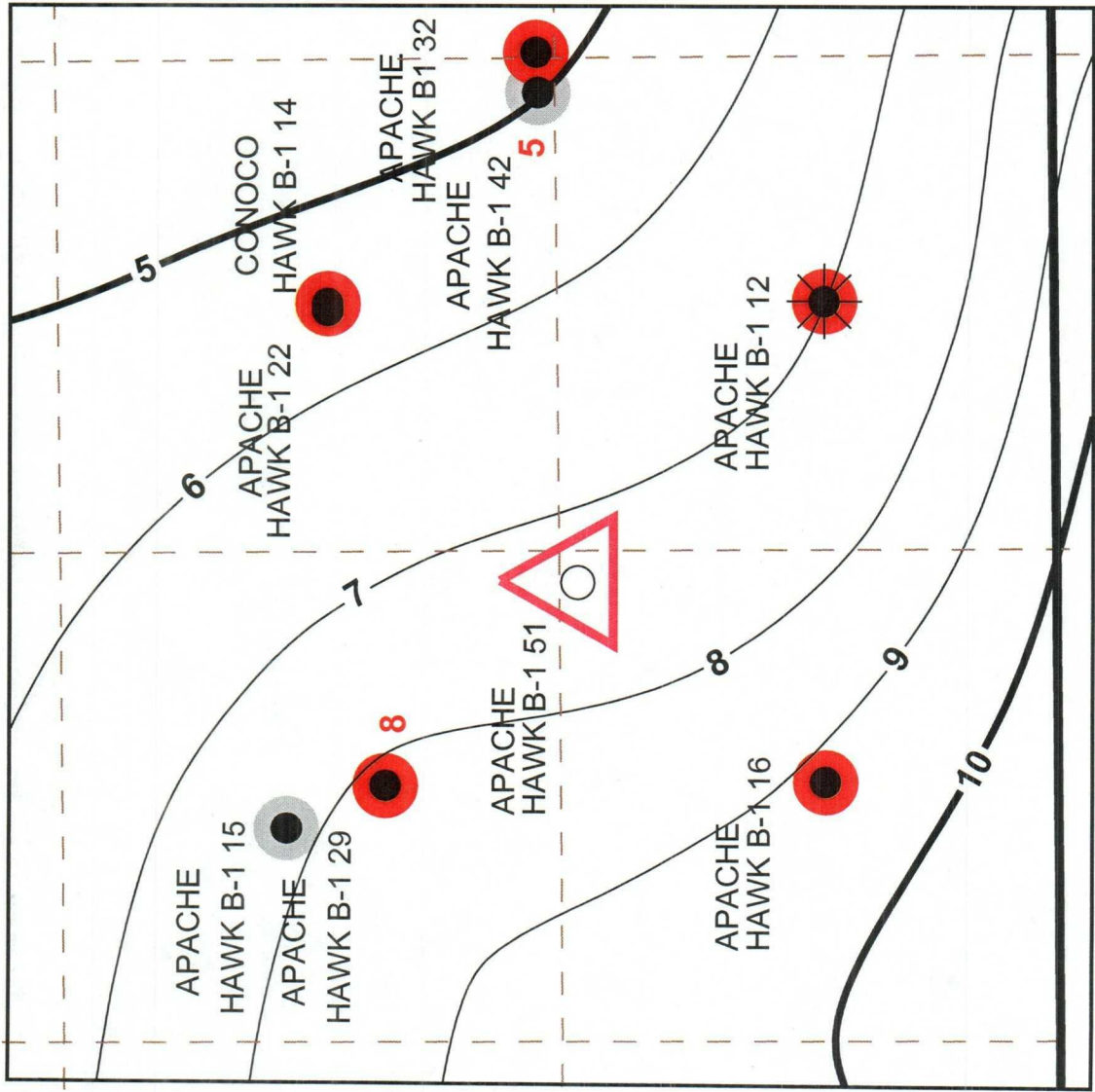
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
Dedicated Acres		Joint or Infill		Consolidation Code		Order No.			

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

	OPERATOR CERTIFICATION I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief. Signature _____ Printed Name _____ Title _____ Date _____
	SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision and that the same is true and correct to the best of my belief. NOVEMBER 30, 2005 Date Surveyed _____ JR Signature of Gary Edison Professional Surveyor
	Certificate No. RONALD L. EDISON 3239 GARY EDISON 12841



 APACHE CORPORATION CENTRAL REGION TWO WARREN PLACE, SUITE 1500 6120 SOUTH YALE TULSA, OKLAHOMA 74136-4224	
HAWK B-1 51	
SEC 8-T21S-R37E LEA COUNTY, NEW MEXICO	
EXHIBIT 2	
WELL INFORMATION	
DATE: 12/20/05	DWG: CURTIS\GBSA-NSL\WELL (EX2)




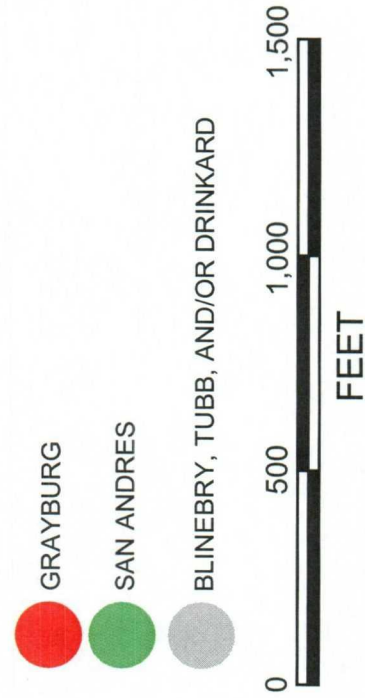
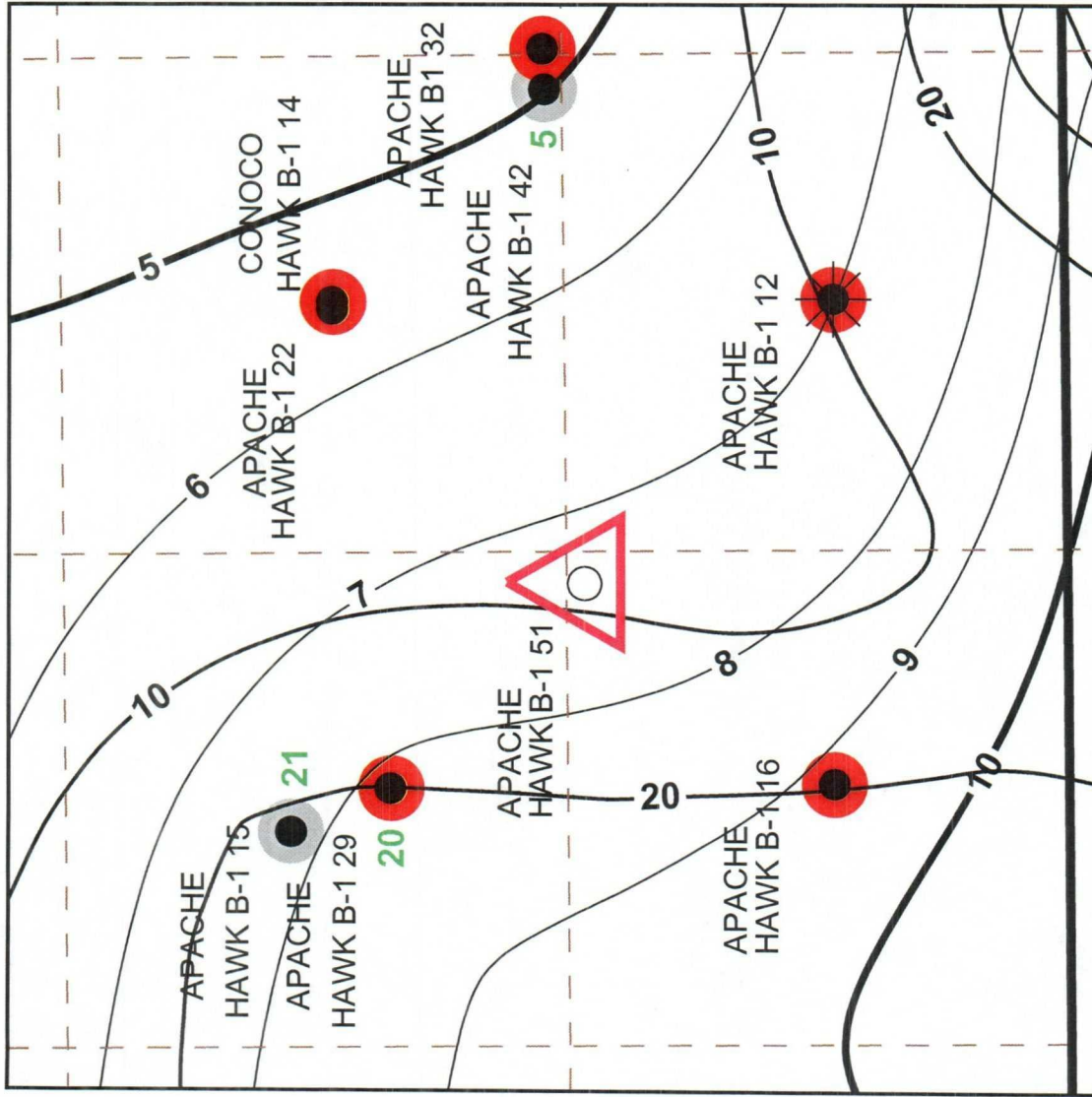
- WELL SYMBOLS**
- Location Only
 - Oil Well
 - ☼ Gas Well
 - ⊖ Dry

POSTED WELL DATA

OPERATOR
WELL LABEL

GRAYBURG SOPHIH ●

 <p>TWO WARREN PLACE, SUITE 1500 6120 SOUTH YALE TULSA, OKLAHOMA 74136-4224</p>	
HAWK B-1 51	
SEC 8-T21S-R37E	
LEA COUNTY, NEW MEXICO	
EXHIBIT 3	
GRAYBURG SOPHIH	
DATE: 12/20/05	DWG: CURTIS\GBSA-NSL\WELL (EX3)



WELL SYMBOLS

- Location Only
- Oil Well
- ☼ Gas Well
- ⊖ Dry

POSTED WELL DATA

OPERATOR
WELL LABEL

SAN ANDRES PAY ●

Apache <small>CORPORATION CENTRAL REGION</small>	TWO WARREN PLACE, SUITE 1500 6120 SOUTH YALE TULSA, OKLAHOMA 74136-4224
HAWK B-1 51	
SEC B-T21S-R37E	
LEA COUNTY, NEW MEXICO	
EXHIBIT 4	
SAN ANDRES PAY	
DATE: 12/20/05	DWG: CURTIS\GBSA-NSL\WELL (EX4)

