NM OIL CONSERVATION ARTESIA DISTRICT

OCD Artesia NM OIL CONSERVATION ARTESIA DISTRICT JUL 31 2014

14-668

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Form 3160-3
(March 2012)

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☑ DRILL ☐ REENTER	5. Lease Serial No. NMNM-0557371
	6. If Indian, Allotee or Tribe Name
1b. Type of Well: ☐ Oil Well ☐ Gas Well ☑ Other ☐ Single Zone ☑ Multiple Zone	7. If Unit or CA Agreement, Name and No.
2. Name of Operator APACHE CORPORATION (873)	8. Lease Name and Well No. AAO FEDERAL SWD #1 <308703> ✓
3a. Address 303 VETERANS AIRPARK LN #1000 MIDLAND, TX 79705	3b. Phone No. (include area code) 432-818-1167
	9. API Well No. 30-015- 42549
4. Location of Well (Report location clearly and in accordance with any State requirements.*) At surface 2470' FNL & 2380' FEL At proposed prod. zone SAME	10. Field and Pool, or Exploratory SWD; Wolfcamp-Cisco (96136) SWD; Canyon (96184); SWD; Strawn (96188) ✓
	11. Sec., T. R. M. or Blk. and Survey or Area SEC: 1 T18S R27E
14. Distance in miles and direction from nearest town or post office* APPROX 11 MILES SOUTHEAST OF ARTESIA, NM	12. County or Parish EDDY / 13. State NM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 2380'	16. No. of acres in lease 440.3 / 17. Spacing Unit dedicated to this well 40
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. ~150'	19. Proposed Depth 9000' / 20. BLM/BIA Bond No. on file BLM-CO-1463 NATIONWIDE/NMB000736
21. Elevations (Show whether DF, KDB, RT, GL, etc.) GL: 3629'	22. Approximate date work will start* AS Soon As Approved / 23. Estimated duration ~12 DAYS

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature Sorina L. Flores	Name (Printed/Typed) SORINA L.FLORES	Date 3/23/14
Title SUPV OF DRILLING SERVICES		
Approved by (Signature) /s/ Cody Layton	Name (Printed/Typed)	Date JUL 25 2014
Title for FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached. APPROVAL FOR TWO YEARS

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

Roswell Controlled Water Basin

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Approval Subject to General Requirements & Special Stipulations Attached

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE
620 E. GREENE STREET
CARLSBAD, NM 88220

OPERATOR CERTIFICATION

I HEARBY CERTIFY THAT I, OR SOMEONE UNDER MY DIRECT SUPERVISION, HAVE INSPECTED THE DRILL SITE AND ACCESS ROUTE PROPOSED HEREIN; THAT I AM FAMILIAR WITH THE CONDITIONS WHICH CURRENTLY EXIST; THAT I HAVE FULL KNOWLEDGE OF STATE AND FEDERAL laws applicable to this operation; that the statements made in the APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Executed this 21st day of **March 2014**

Well: AAO FEDERAL SWD #1

Operator Name: APACHE CORPORATION

Signature: Maxwell Grove **Printed Name:** MAXWELL GROVE

Title: Drilling Engineer Date: 03/21/2014

Email (optional): maxwell.grove@apachecorp.com

Street or Box: 303 Veterans Airpark Ln., Ste. 1000

City, State, Zip Code: Midland, TX 79705

Telephone: 281-908-6821

Field Representative (if not above signatory): _____

Address (if different from above): _____

Telephone (if different from above): _____

Email (optional): _____

Agents not directly employed by the operator must submit a letter from the operator authorizing that the agent to act or file this application on their behalf.

NM OIL CONSERVATION
ARTESIA DISTRICT
AUG 01 2014
RECEIVED

DISTRICT I
. French Dr., Hobbs, NM 88240
(575) 393-6161 Fax: (575) 393-0720

DISTRICT II
811 S. First St., Artesia, NM 88210
Phone (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
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Phone (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone (505) 476-3460 Fax: (505) 476-3462

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 August 1, 2011

Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015-42549	98079	SWD; WC-CISCO-CYN-STRAWN

Property Code	Property Name	Well Number
~~308703~~ 313554	AAO FEDERAL SWD	1

OGRID No.	Operator Name	Elevation
873	APACHE CORPORATION	3629'

Surface Location

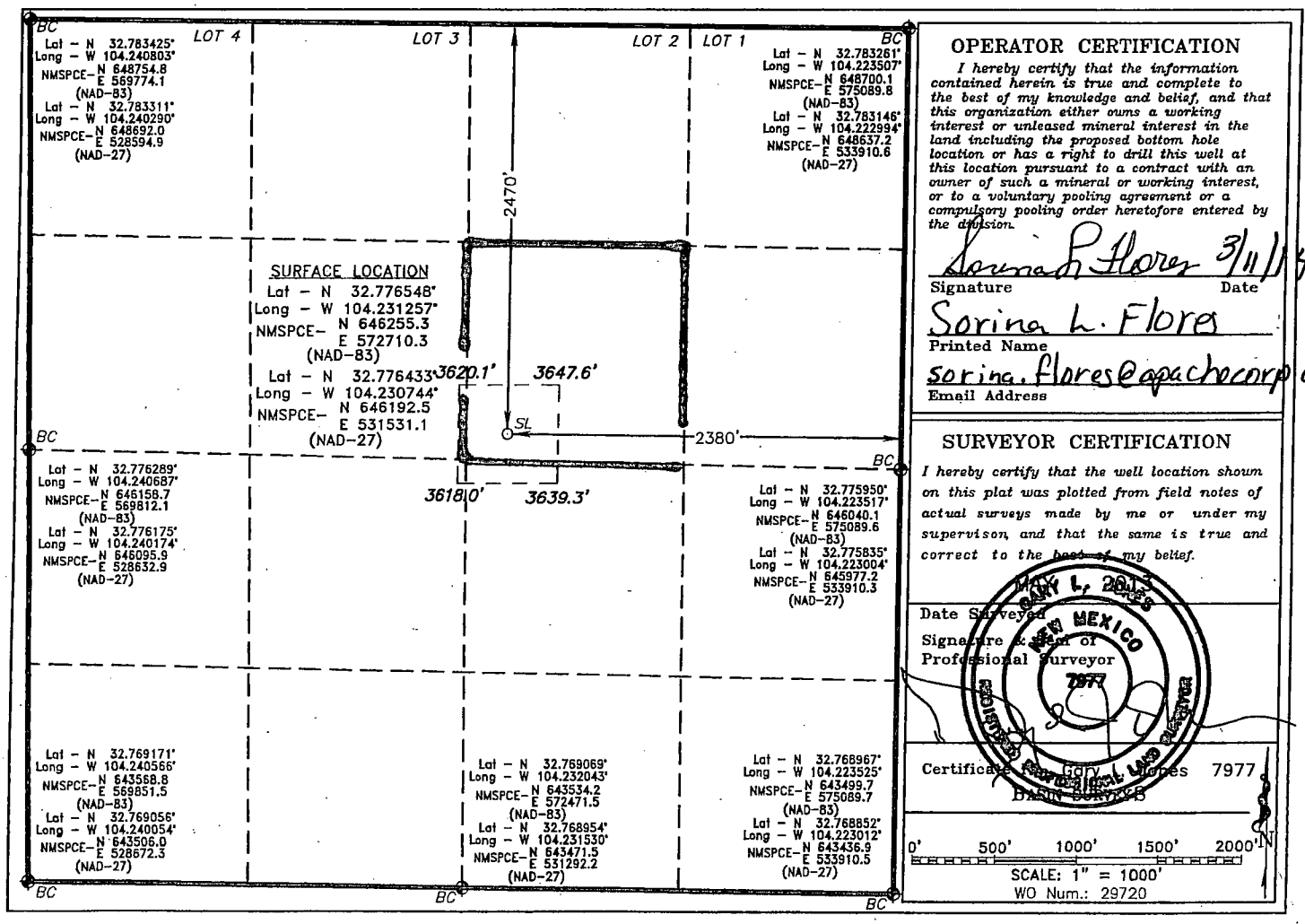
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
G	1	18 S	27 E		2470	NORTH	2380	EAST	EDDY

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 that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Sorina L Flores 3/11/14
Signature Date

Sorina L. Flores
Printed Name

sorina.flores@apachecorp.com
Email Address

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 supervison, and that the same is true and correct to the best of my belief.

MAY 1, 2013
Date Surveyed

Signature & Seal of Professional Surveyor

Certificate No. Gary L. Jones 7977

BASIN SURVEYS

0' 500' 1000' 1500' 2000' N
SCALE: 1" = 1000'
WO Num.: 29720

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1625 N. French Dr., Hobbs, NM 88240
Phone (575) 393-6161 Fax: (575) 393-0720
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25/31

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WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015- 42549	96136	SWD; Wolfcamp-Cisco

Property Code	Property Name	Well Number
~~308703~~	AAO FEDERAL ~~SWD~~	1

OGRID No.	Operator Name	Elevation
873	APACHE CORPORATION	3629'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
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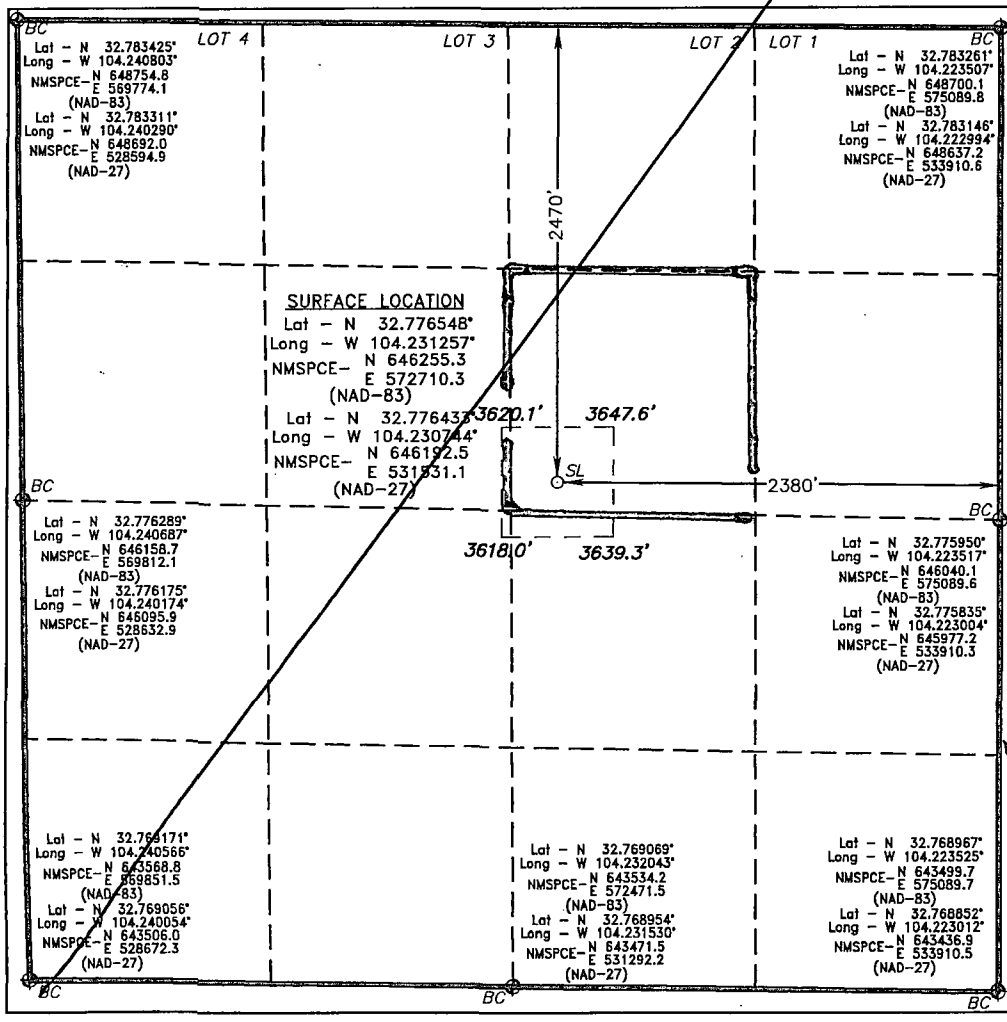

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WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015-	96184	SWD; Canyon

Property Code	Property Name	Well Number
~~308703~~	AAO FEDERAL SWD	1

OGRID No.	Operator Name	Elevation
873	APACHE CORPORATION	3629'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
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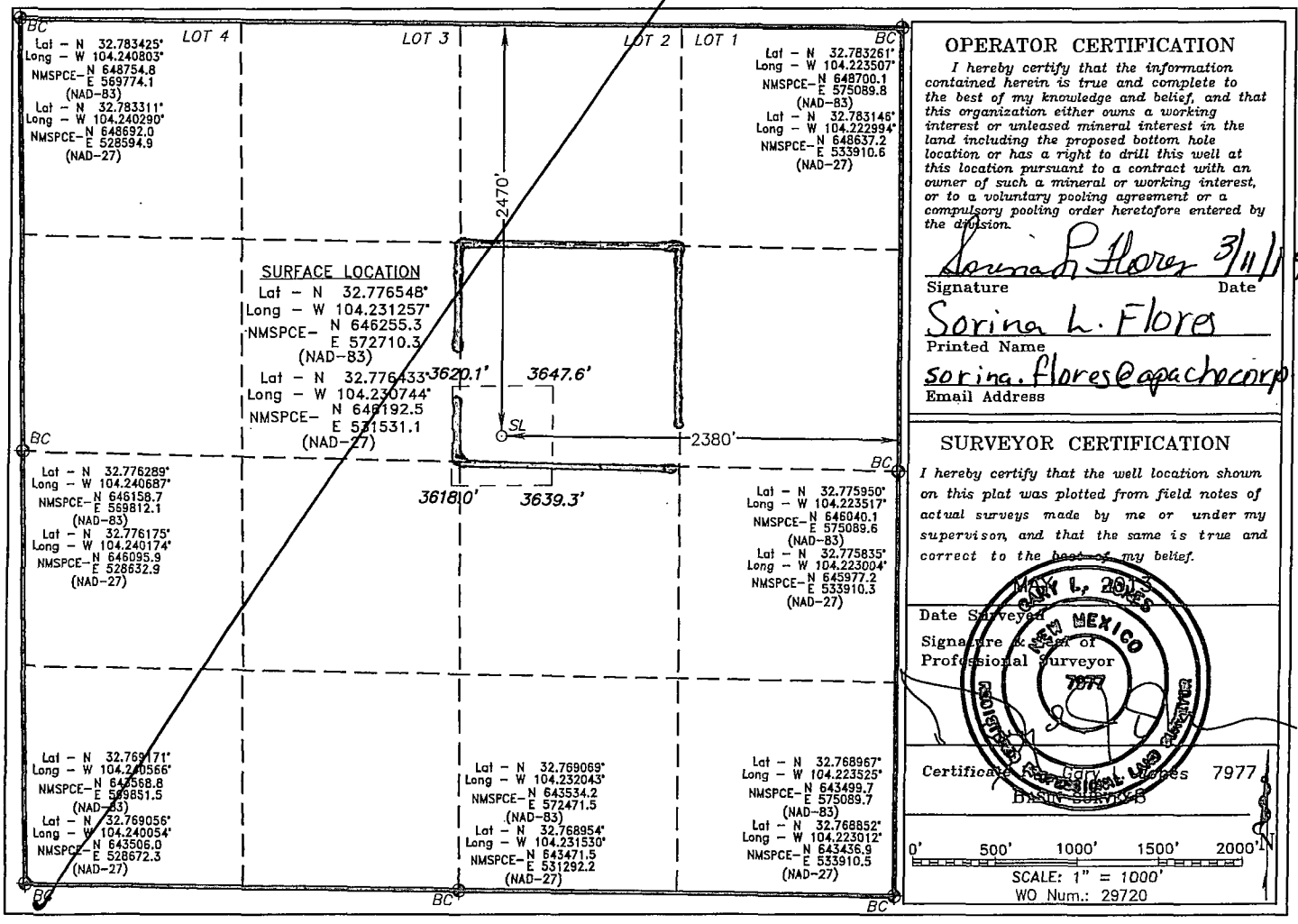

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NEW MEXICO
7977
REGISTERED PROFESSIONAL LAND SURVEYOR

Certificate Number Gary L. Jones 7977

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API Number	Pool Code	Pool Name
30-015-	96188	SWD; Strawn

Property Code	Property Name	Well Number
~~308703~~	AAO FEDERAL SWD	1

OGRID No.	Operator Name	Elevation
873	APACHE CORPORATION	3629'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
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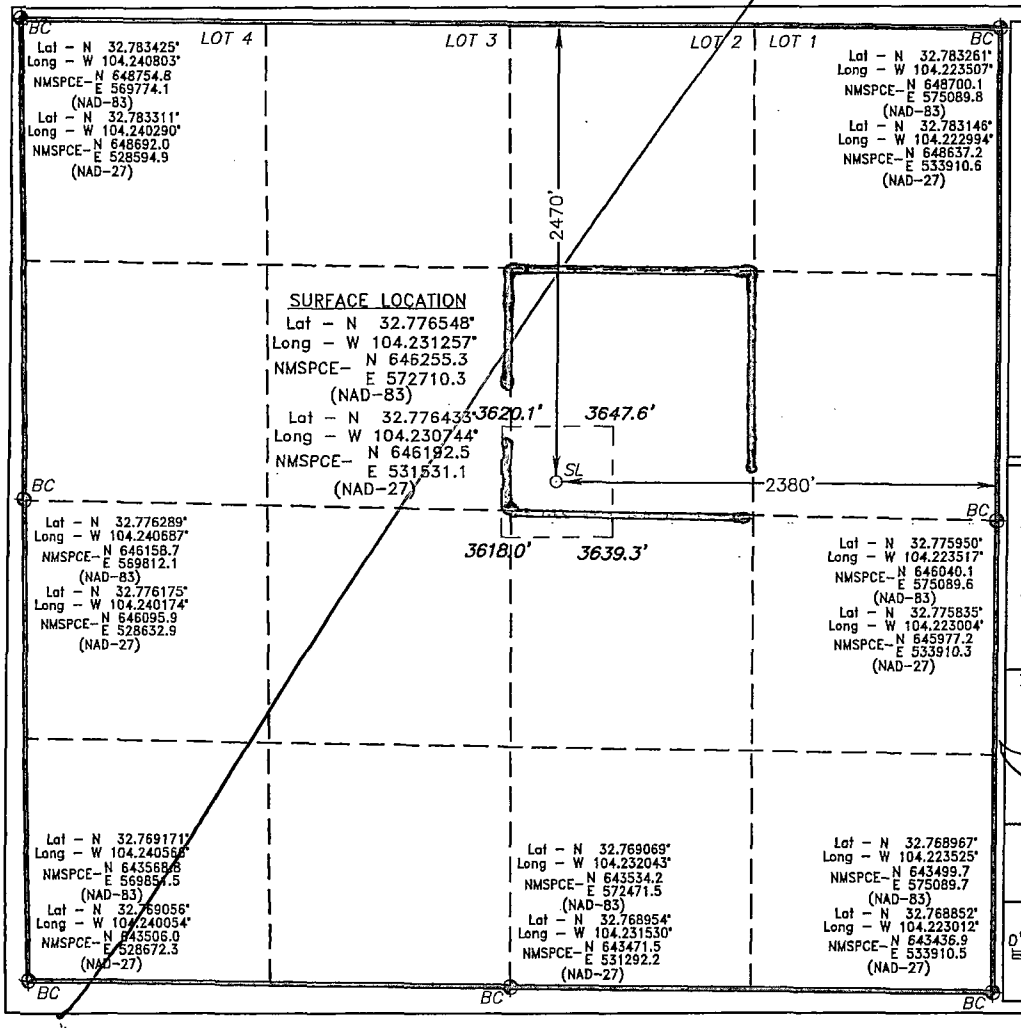

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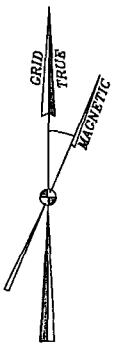
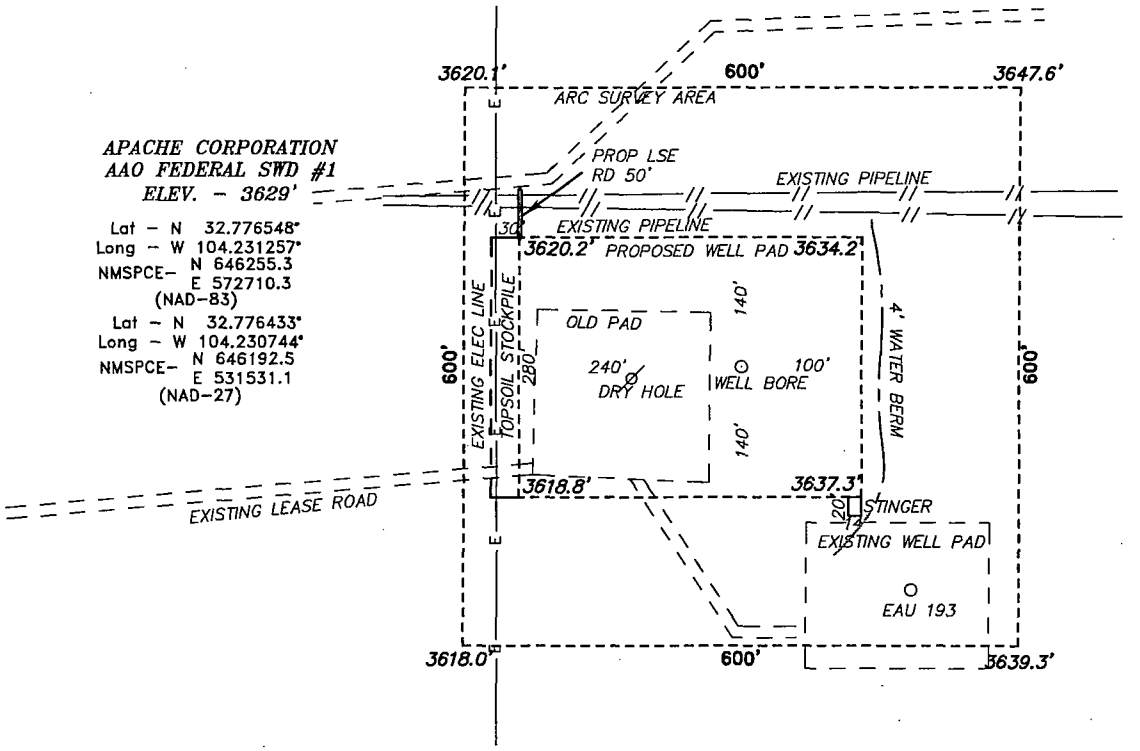
Certificate Number Gary L. Jones 7977

0' 500' 1000' 1500' 2000'
SCALE: 1" = 1000'
WO Num.: 29720

SECTION 1, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.,

EDDY COUNTY, **NEW MEXICO.**





WELL IS LOCATED ±11 MILES SOUTHEAST OF ARTESIA, NEW MEXICO.

200 0 200 400 FEET

SCALE: 1" = 200'

Directions to Location:

FROM THE JUNCTION ARCO AND HILLTOP, GO SOUTHWESTERLY 0.7 MILES TURNING SOUTH 0.2 MILES TURNING AGAIN WEST 0.4 MILES TO PROPOSED LOCATION.

Apache
EXPLORING WHAT'S POSSIBLE

REF: AAO FEDERAL SWD #1 / ROAD MAP

THE AAO FEDERAL SWD #1 LOCATED 2470'

FROM THE NORTH LINE AND 2380' FROM THE EAST LINE OF

SECTION 1, TOWNSHIP 18 SOUTH, RANGE 27 EAST,

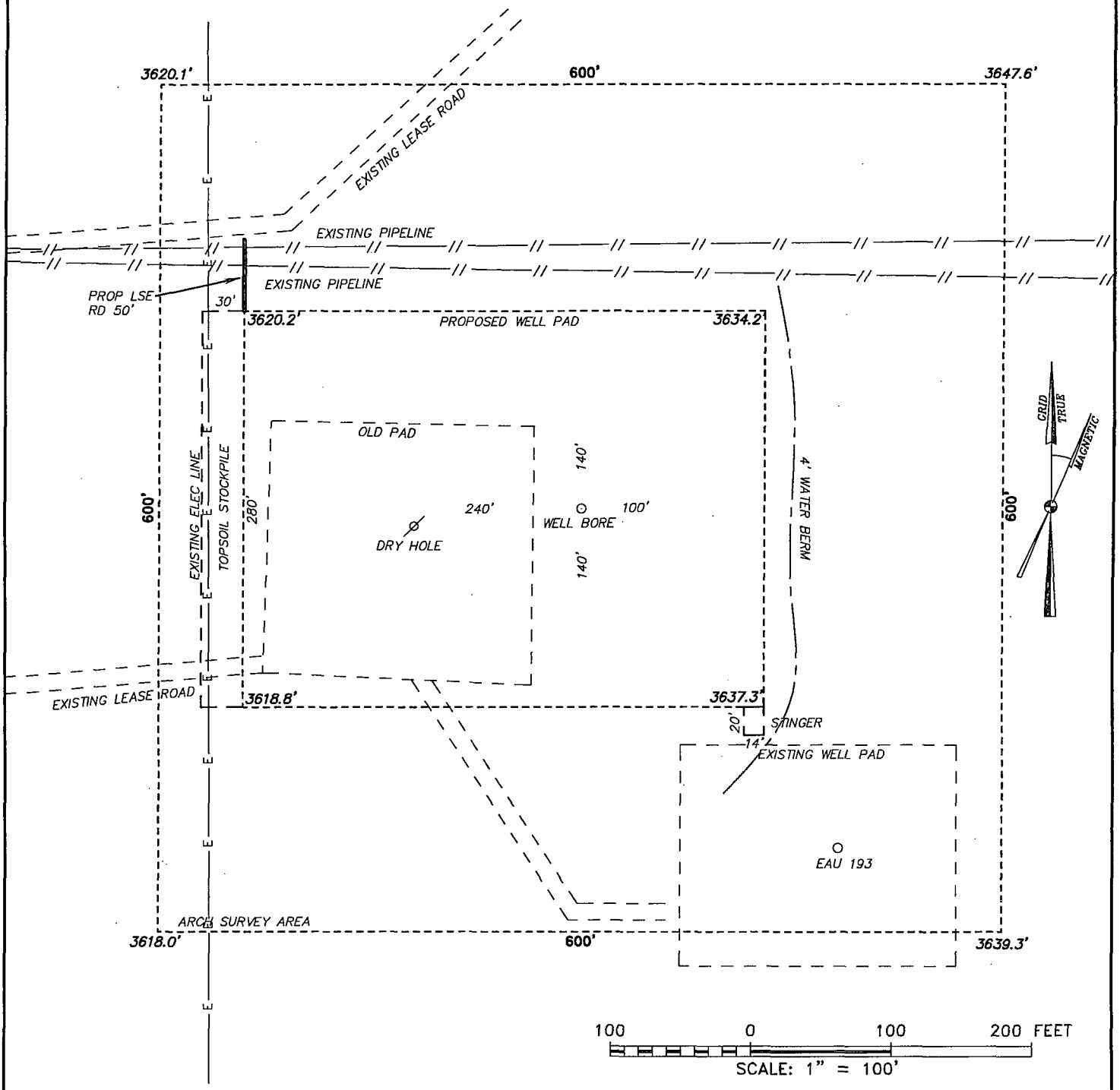
N.M.P.M., EDDY COUNTY, NEW MEXICO.

basin surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 - Office
(575) 392-2206 - Fax
basinsurveys.com

W.O. Number: 29720	Drawn By: J. SMALL	Date: 11-11-2013	Survey Date: 11-05-2013	Sheet 1 of 1 Sheets

SECTION 1, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.,

EDDY COUNTY, **NEW MEXICO.**



Apache
EXPLORING WHAT'S POSSIBLE

REF: AAO FEDERAL SWD #1 / WELL PAD TOPO

THE AAO FEDERAL SWD #1 LOCATED 2470' FROM THE NORTH LINE AND 2380' FROM THE EAST LINE OF SECTION 1, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

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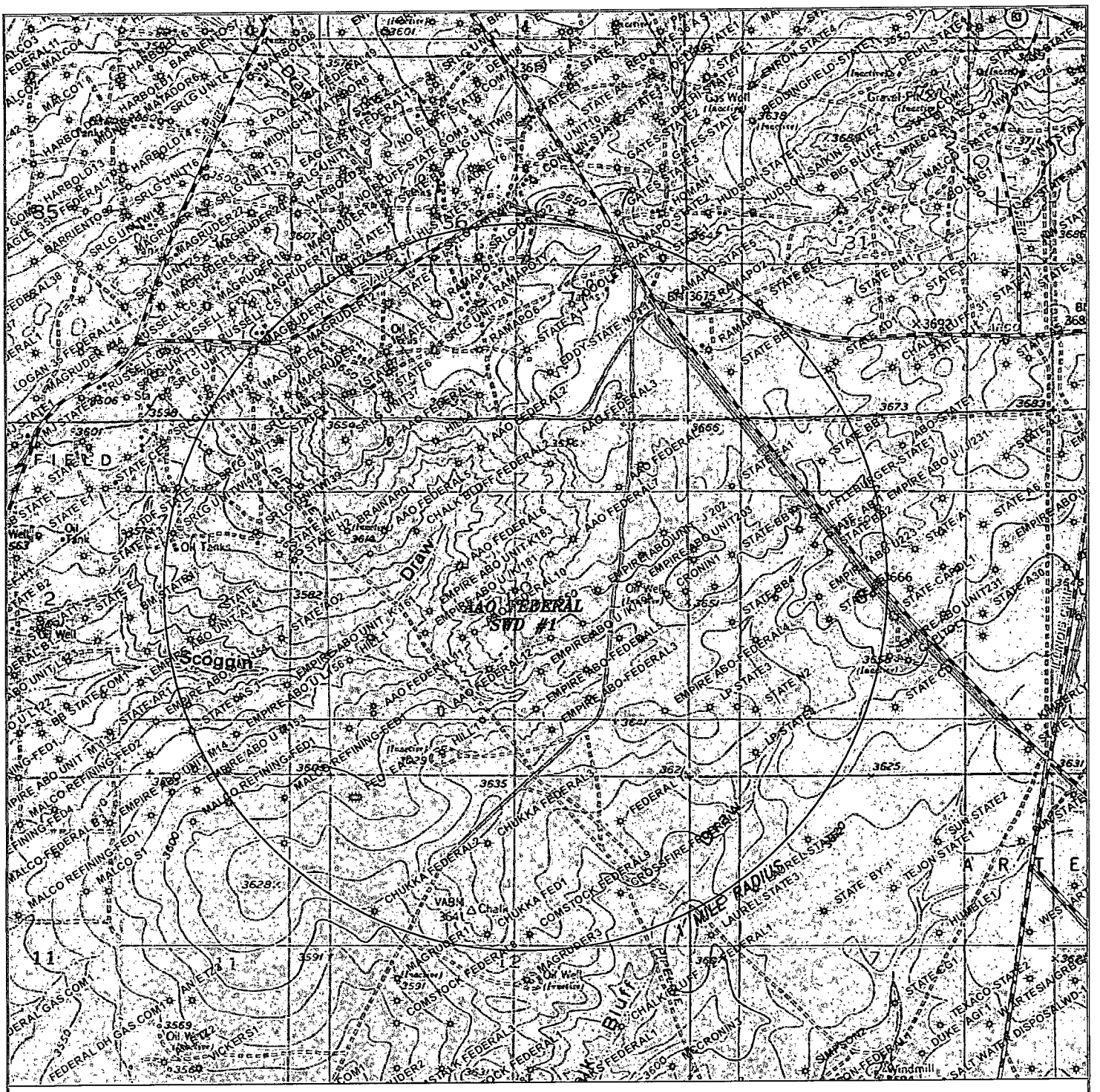

AAO FEDERAL SWD #1

Located 2470' FNL and 2380' FEL
Section 1, Township 18 South, Range 27 East,
N.M.P.M., Eddy County, New Mexico.

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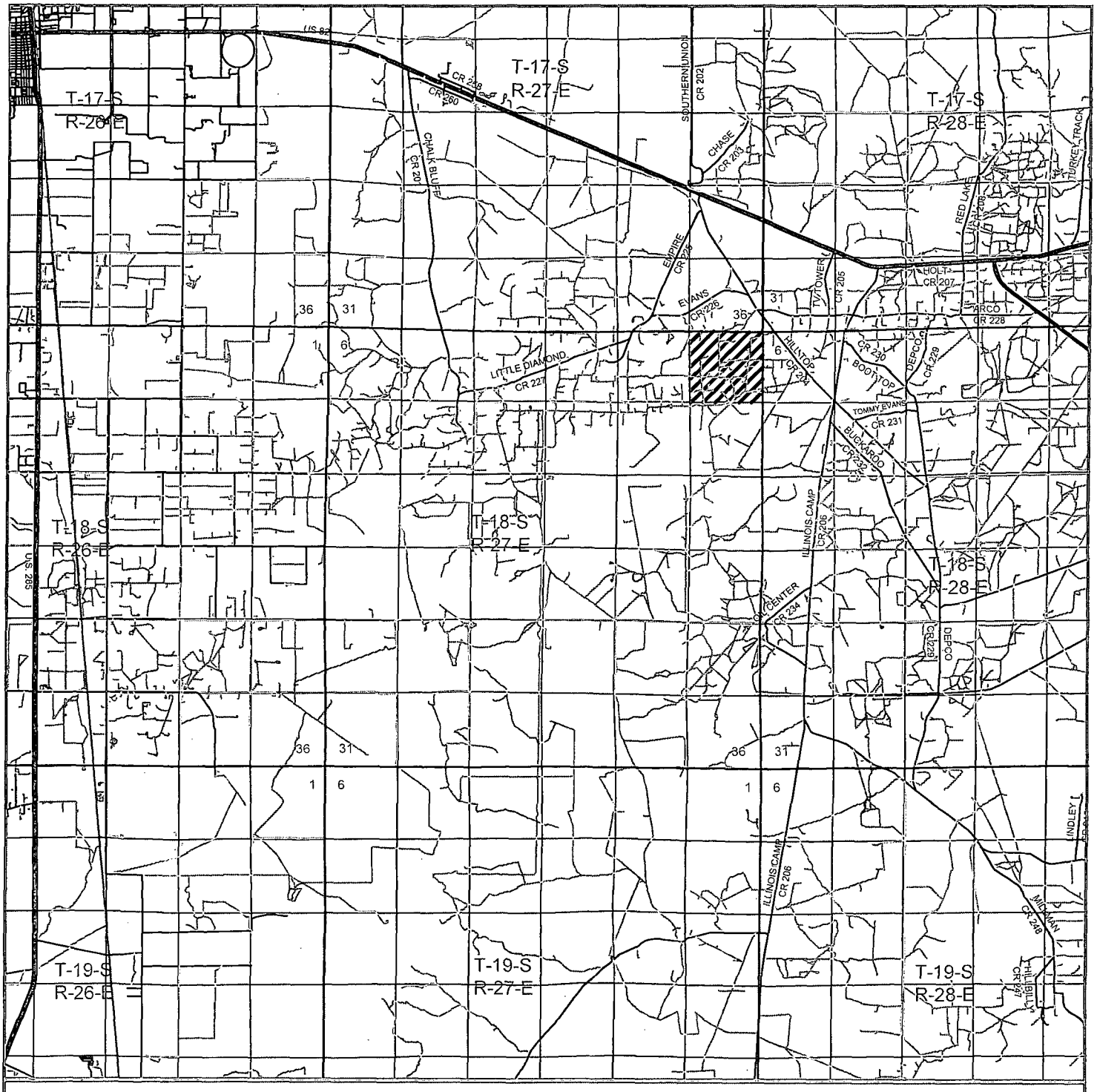
0' 1000' 2000' 3000' 4000'
SCALE: 1" = 2000'

W.O. Number: JMS 29720

Survey Date: 11-05-2013

YELLOW TINT – USA LAND
BLUE TINT – STATE LAND
NATURAL COLOR – FEE LAND

Apache
EXPLORING WHAT'S POSSIBLE



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0 1 MI 2 MI 3 MI 4 MI
SCALE: 1" = 2 MILES

W.O. Number: JMS 29720

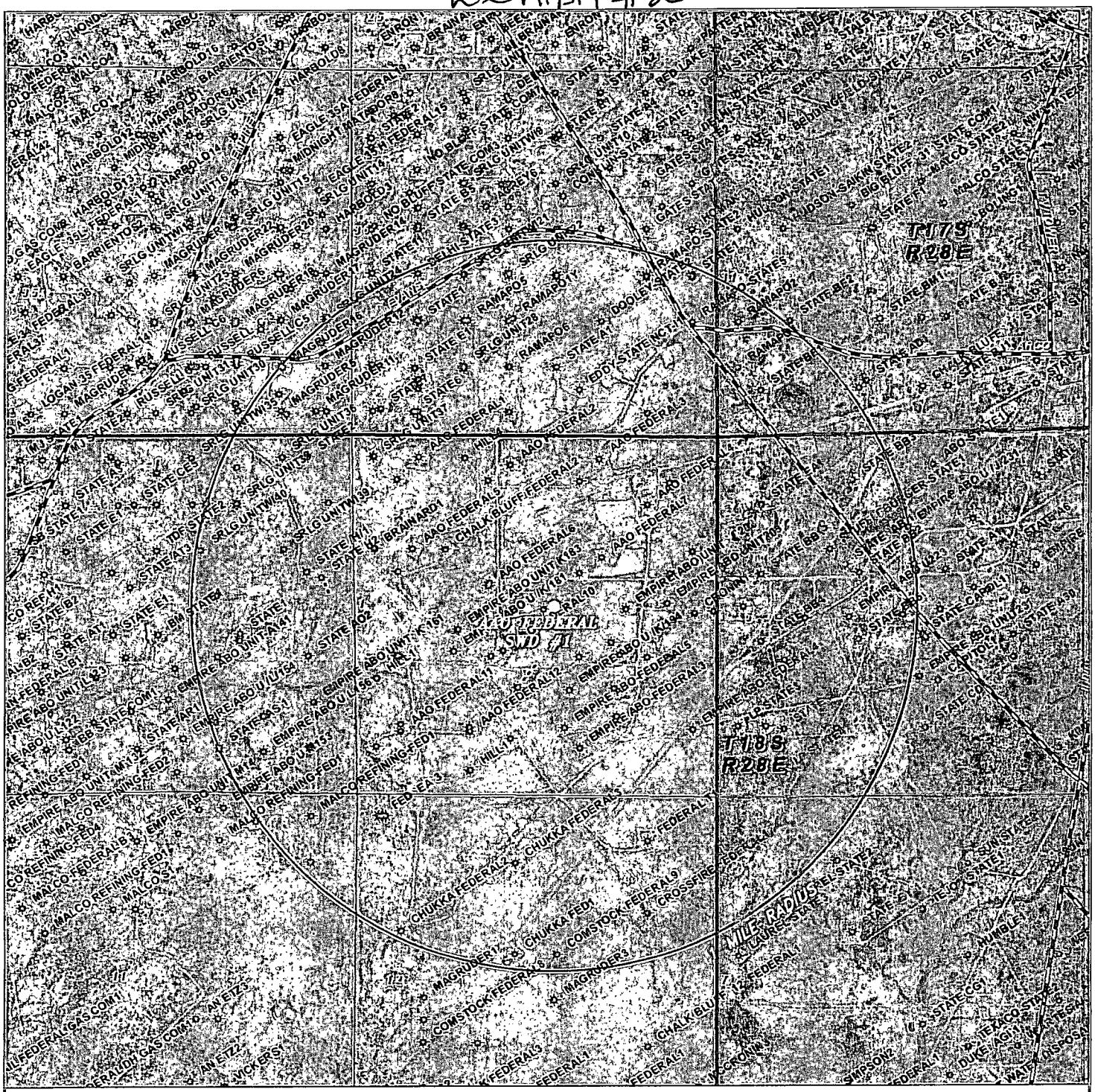
Survey Date: 11-05-2013

YELLOW TINT – USA LAND
BLUE TINT – STATE LAND
NATURAL COLOR – FEE LAND

GRID TRUE MAGNETIC

Apache
EXPLORING WHAT'S POSSIBLE

Exhibit #2



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YELLOW TINT - USA LAND
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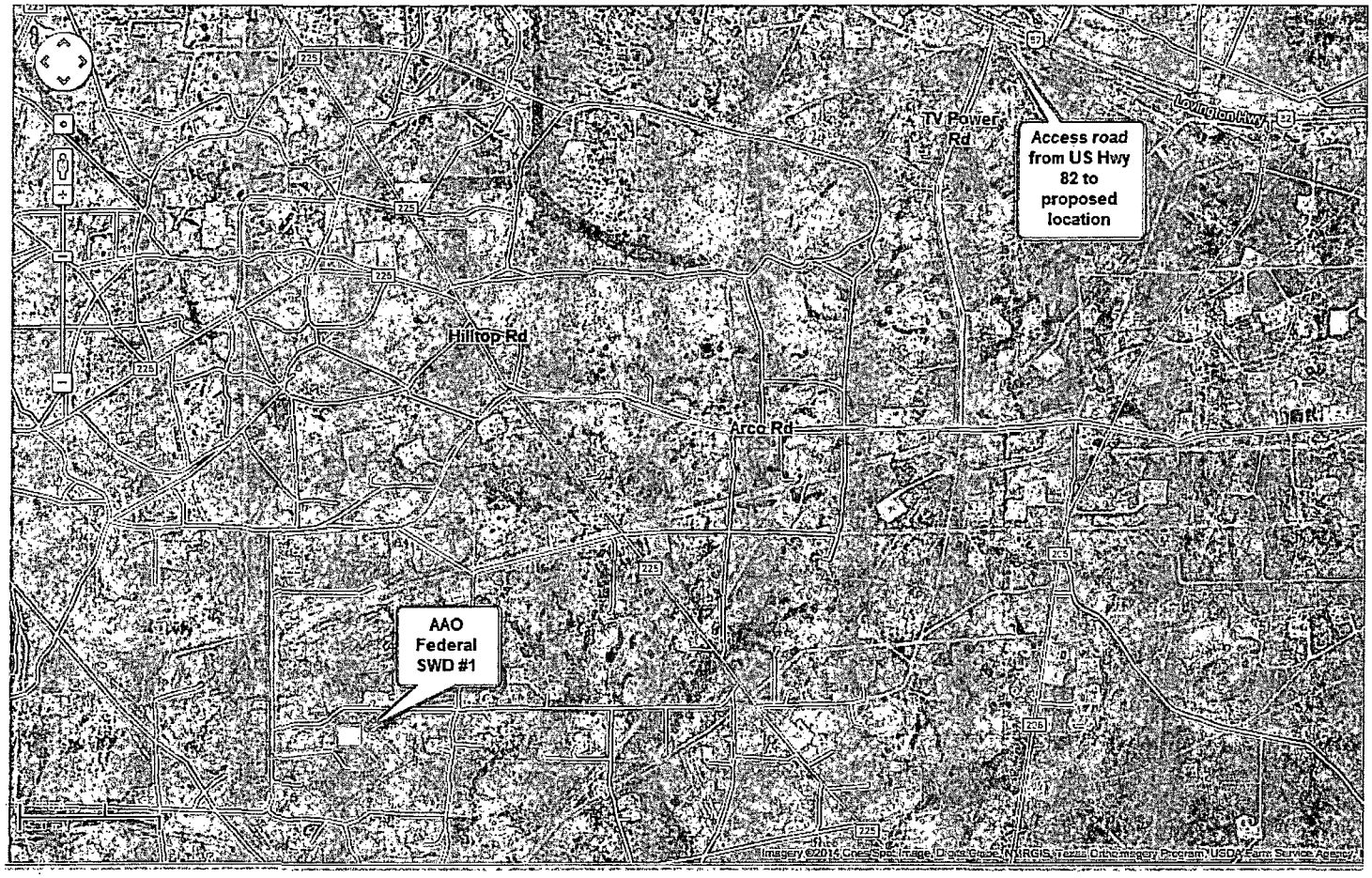
Apache
EXPLORING WHAT'S POSSIBLE

AAO FEDERAL SWD #1

ACCESS ROAD

EXHIBIT #1



DRILLING PLAN: BLM COMPLIANCE
(Supplement to BLM 3160-3)

APACHE CORPORATION (OGRID: 873) AAO FEDERAL SWD #1

Lease #: NMNM-0557371 Projected TD: 9100' GL: 3629'
2470' FNL & 2380' FEL UL: G SEC: 1 T18S R27E EDDY COUNTY, NM

1. GEOLOGIC NAME OF SURFACE FORMATION: Eolian/Piedmond Alluvial Deposits

2. ESTIMATED TOPS OF GEOLOGICAL MARKERS & DEPTHS OF ANTICIPATED FRESH WATER, OIL OR GAS:

Quaternary Aeolian	Surf	Glorieta	2338'
Rustler	~~Surf~~ NP	Paddock	3374'
Top of Salt	~~Surf~~ NP	Blinebry	3759'(Oil)
Base of Salt	~~Surf~~ NP	Tubb	4540'(Oil)
Yates	247'	ABO	5347'(Oil)
Seven Rivers	488'	Wolfcamp	6806'(Oil)
Queen	775'	Cisco	7840'(Oil)
San Andres	1845'	Canyon	8795'
		Strawn	9029'
		TD	9100'

There is not believed to be ground water present in this area.

3. CASING PROGRAM: All casing is new & API approved

HOLE SIZE	DEPTH	OD CSG	WEIGHT	COLLAR	GRADE	Mud Wt	COLLAPSE Rating/SF*	BURST Rating/SF*	TENSION Rating/SF*
17-1/2"	0' – 400'	13-3/8"	48#	STC	H-40	8.8 ppg	740/4.043	1730/1.429	322k/19.374
12-1/4"	0' - 4000' 4000' – 4500'	9-5/8"	40# 40#	LTC LTC	J-55 HCK-55	10.0 ppg	2570/1.236 4230/1.808	3950/1.429 3950/1.624	520k/3.409 694k/40.952
8-3/4"	0-9100'	7"	26#	LTC	L-80	9.8 ppg	5410/1.180	7240/1.182	511k/2.568

*Calculated Safety Factors based on:
Burst: Mud gradient in annulus for all strings except 7" which uses a 0.30 psi/ft formation pore pressure as backup. Casing is filled with 8.4 ppg fresh water and pressure tested up to 70% of respective casing string's minimum burst rating, but not to exceed 5000 psi..
Collapse: Mud gradient in annulus and full evacuation of casing.
Tension: Hole and casing filled with mud.

4. CEMENT PROGRAM:

A. **13-3/8" Surface** (100% excess cmt to surf) Cmt with:
Lead: 415 sx Cl C w/ 1% CaCl2 *(14.8wt, 1.34yld, 6.32gal/sk) Comp Strengths :* ***12 hr*** *– 813 psi* ***24 hr*** *– 1205 psi*

B. **9-5/8" Intermediate** (50% excess cmt to surf). Cmt with:
Lead: 700 sx Cl C 35/65 Poz w/6% Bentonite + 5% Salt *(12.4wt, 2.1 yld, 11.65gal/sk)*
Comp Strengths: ***12 hr*** *– 257 psi* ***24 hr*** *– 579 psi*

Tail: 550 sx Class C *(14.8 wt, 1.33 yld, 6.31gal/sx) Comp Strengths:* ***12 hr*** *– 813 psi* ***24 hr*** *– 1205 psi*

C. **7" Production:** (TOC: ~3000' from surface DVT: 6000' 35% excess cmt) Cmt with:

1st Stage : 475 sx Cl H 50/50 Poz w/2% Bentonite + 5% Salt *(14.2 wt, 1.30 yld, 5.81gal/sk)*
Comp Strengths: ***12 hr*** *– 210 psi* ***24 hr*** *– 879 psi*

2nd Stage Lead: 225 sx Cl C 35/65 Poz w/ 6% Bentonite + 5% Salt *(12.4 wt, 2.11 yld, 11.65 gal/sk)*
Comp Strengths: ***12 hr*** *– 324 psi* ***24 hr*** *– 569 psi*

2nd Stage Tail: 175 sx Class C 50/50 Poz w/2% Bentonite + 5% Salt *(14.2 wt, 1.30 yld,5.81 gal/sk)*
Comp Strengths: ***12 hr*** *– 210 psi* ***24 psi*** *– 879 psi*

*** **The above cmt volumes could be revised pending caliper measurement from open hole logs.** *For Surface csg: If cmt does not circ to surface, the appropriate BLM office shall be notified, TOC shall be determined by running a method approved by BLM, operator will propose a remediation method & request BLM approval.*

If DVT is set at a different depth, cmt volumes will be adjusted accordingly.

5. PROPOSED CONTROL EQUIPMENT

"EXHIBIT 3" shows a 13-5/8" 5M psi WP BOP consisting of an annular bag type preventer, middle pipe rams, bottom blind rams. This BOP will be nippled up on the 13-3/8" surface csg head & tested to 2000psi using a test plug. After intermediate casing is set & cemented a 13-5/8" 5M BOP consisting of an annular bag type preventer, middle pipe rams, and bottom blind rams *(see "EXHIBIT 3")* will be installed & utilized continuously until TD is reached. The BOP will be tested at 5000 psi (maximum surface pressure is not expected to exceed 5M psi). BHP is calculated to be approximately 6028 psi. All BOPs & associated equipment will be tested as per BLM *Drilling Operations Order #2*. The BOPs will be operated and checked each 24 hr period & the blind rams will be operated & checked when the drill pipe is out of the hole. Function tests will be documented on the daily driller's log. *"EXHIBIT 3"* also show a 5M psi choke manifold with a 3" blow down line. Full opening stabbing valve & kelly cock will be on derrick floor in case of need. No abnormal pressures or temperatures are expected in this well. No nearby wells have encountered any well control problems.

See COA

6. AUXILIARY WELL CONTROL EQUIPMENT / MONITORING EQUIPMENT:

* 13-5/8" 5000 psi Double BOP/Pipe & Blind ram & annular (5M BOPE to be used as 2M system while drilling intermediate hole & as 5M system while drilling production hole)
* 4-1/2" x 5000 psi Kelly valve
* 13-5/8" 5000 psi mud cross – H2S detector on production hole
* Gate-type safety valve - 3" choke line from BOP to manifold
* 2" adjustable chokes – 3" blow down line
* Fill up line as per Onshore Order 2

7. PROPOSED MUD CIRCULATION SYSTEM: (Closed Loop System)

INTERVAL	MW (ppg)	VISC (sec/qt)	FLUID LOSS (cc)	MUD TYPE
0' –400'	8.8-9.2	34 - 38	NC	FW
400' to 4500'	9.9 – 10.0	28 - 29	NC	Brine
4500' – 9100'	9.5 – 10.2	28 - 29	NC	Brine

***** Visual mud monitoring equipment shall be in place to detect volume changes. A mud test shall be performed every 24 hrs after mudding up to determine, as applicable: density, visc, gel strength, filtration, and pH. The necessary mud products for weight addition & fluid loss control will be on location at all times. In order to run open hole logs & casing, the above mud properties may be altered to meet these needs.***

8. LOGGING, CORING & TESTING PROGRAM:

A. OH logs: Dual Laterolog/ MSFL, CNL, Litho-Density, Gamma Ray & Caliper from TD back to 9-5/8" csg shoe.
B. Run CNL, Gamma Ray from 9-5/8" csg shoe back to surface.
C. Mudlogging is planned from 3000' to TD.
D. Additional testing will be initiated subsequent to setting the 7" production casing. Specific intervals will be targeted based on log evaluation & geological sample shows.

9. POTENTIAL HAZARDS:

See COA

No abnormal pressures or temperatures are anticipated. In the event abnormal pressures are encountered, however, the proposed mud program will be modified to increase the mud-weight. There is known presence of H_2S in this area. If H_2S is encountered the operator will comply with the provisions of *Onshore Oil & Gas Order No. 6.* All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP: 6028 psi and estimated BHT : 180°.

10. ANTICIPATED STARTING DATE AND DURATION OF OPERATIONS:

Road and location construction will begin after BLM has approved APD. Anticipated spud date will be as soon after Santa Fe and BLM approval and as soon as rig will be available. Move in operations and drilling is expected to take ~ 40 days. If production casing is run then an additional 90 days will be needed to complete well and construct surface facilities and/or lay injection lines in order to place well on injection.

11. OTHER FACETS OF OPERATION:

After running csg, cased hole Gamma Ray, Neutron Collar logs will be run from TD back to all possible injection zones. The Wolfcamp-Cisco, Canyon & Strawn formations will be perforated & stimulated. The proposed well will be tested as an SWD well. need approval from State

APACHE BOP AND CHOKE MANIFOLD SCHEMATIC

AAO FEDERAL SWD #1

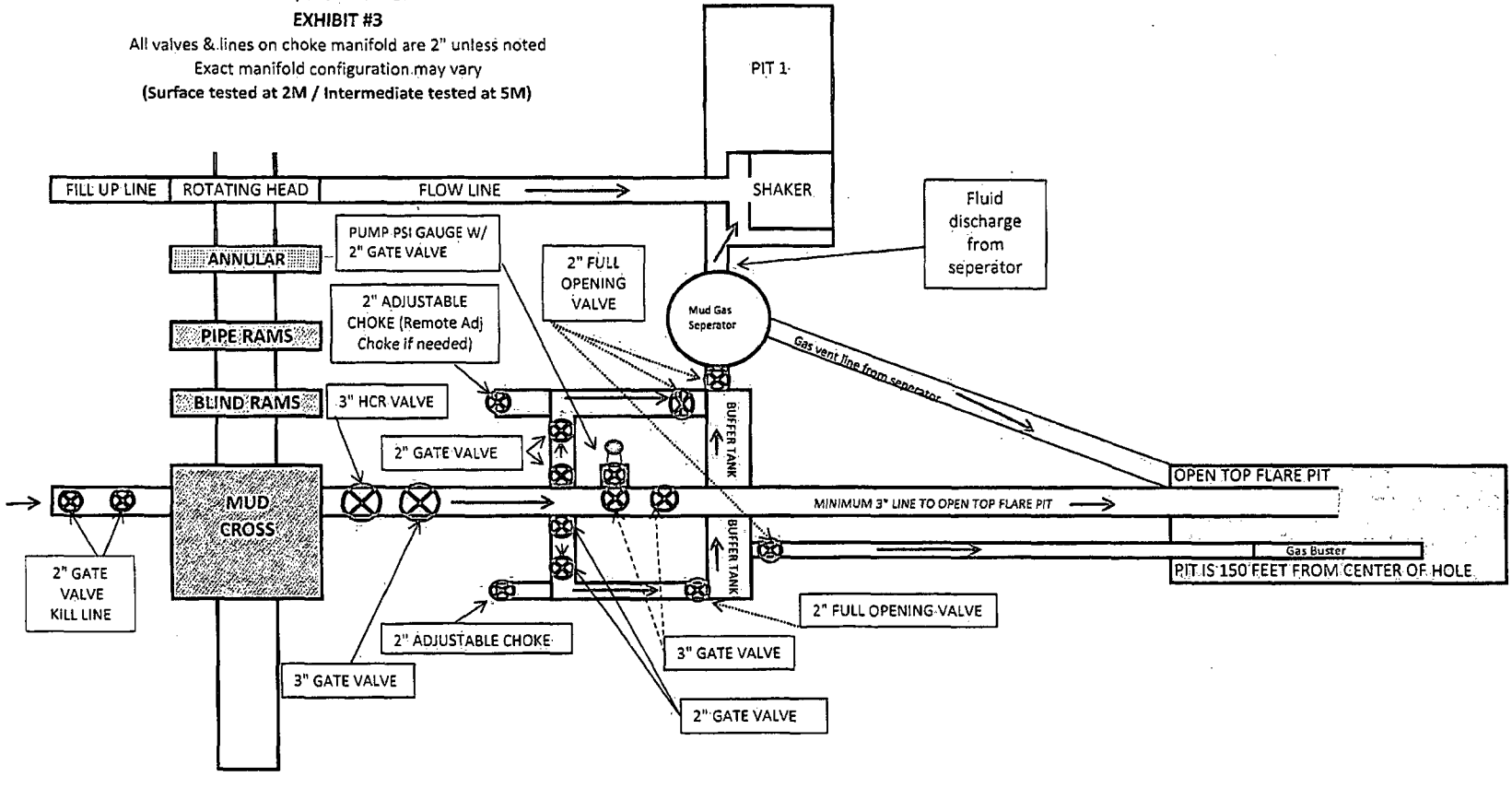
13-5/8" 5M PSI BOP

EXHIBIT #3

All valves & lines on choke manifold are 2" unless noted

Exact manifold configuration may vary

(Surface tested at 2M / Intermediate tested at 5M)



*** If H2S is encountered in quantities greater than 100ppm, Apache will shut in well & install a remote operated choke ***

Existing Road

OLD PAD

AAO Federal SWD #1

Closed Loop Equipment Diagram
Exhibit 4

Approx 50' of new road

Existing Road

TRAILER

TRAILER

Pipe Racks

Water Tank

Light Plant

Flow line

Choke Manifold

2" choke line to pit

Shakers

Steel pits

2" Choke line 150' f/wellhead
(Buried under Closed Loop Equip)

Roll off cutting container on tracks

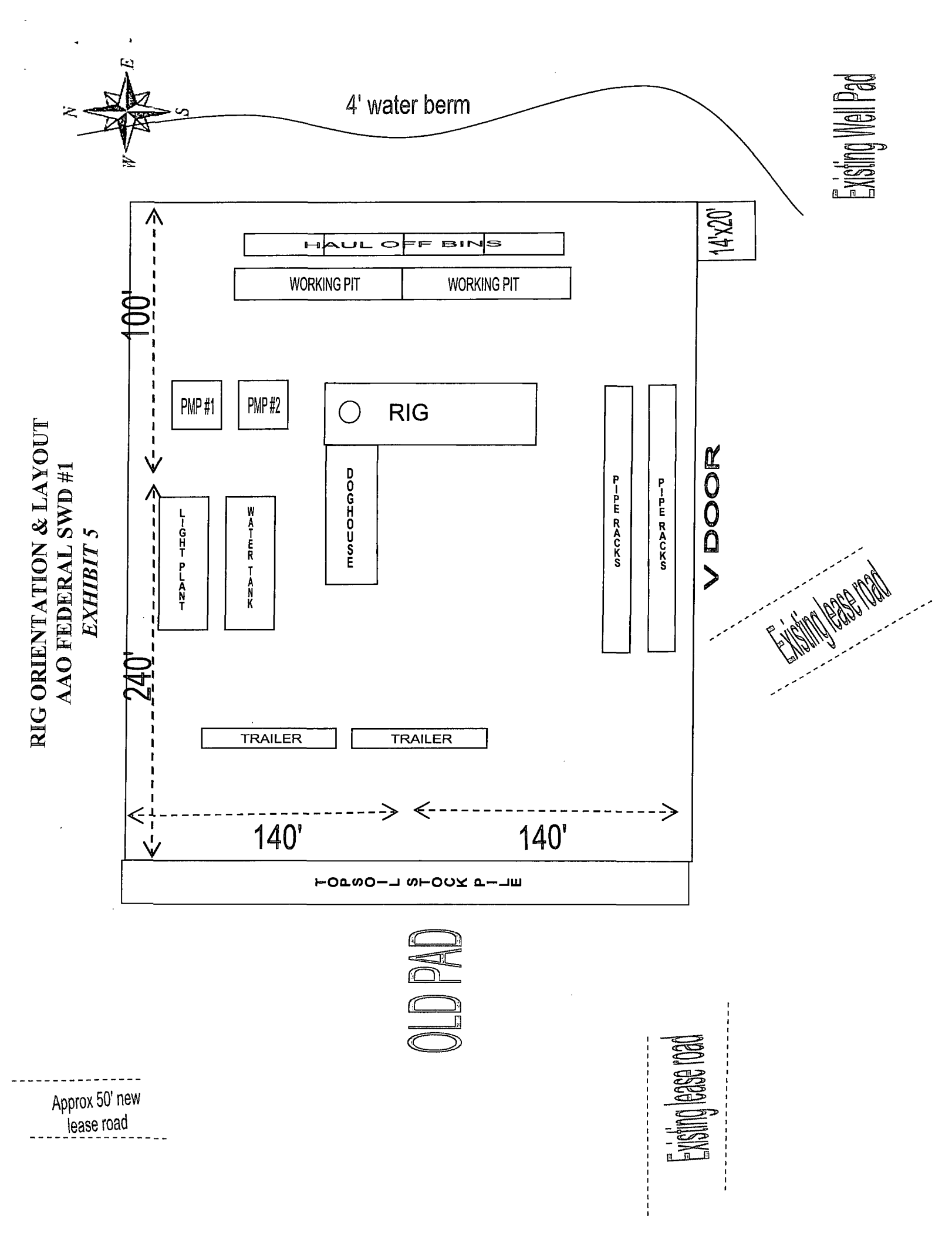
Solids Separator

4" Panic line 150' f/wellhead
(Buried under Closed Loop Equip)

Roll off cutting containers on tracks

Steel half pit

Fluid Storage Tanks


RIG ORIENTATION & LAYOUT
AAO FEDERAL SWD #1
EXHIBIT 5
N
E
S
W
4' water berm
Existing Well Pad
HAUL OFF BINS
14'x20'
WORKING PIT
WORKING PIT
100'
PMP #1
PMP #2
RIG
DOGHOUSE
PIPE RACKS
PIPE RACKS
V DOOR
LIGHT PLANT
WATER TANK
240'
Existing lease road
TRAILER
TRAILER
140'
140'
OLD PAD
Approx 50' new lease road
Existing lease road

Apache

Drilling Location
H2S Safety Equipment Diagram
Exhibit 3A

AAO Federal SWD #1

OLD PAD

H2S Warning Sign ~ 200' but no more than 500' from well location

approx 50' of new road

Windstock indicators

Prevailing Wind: vary SW to NE

H2S monitor w/alarm

H2S Warning Sign ~ 200' but no more than 500' from well location

Existing Road

Secondary Egress

Light Plant

Water Tank

TRAILER

TRAILER

Mud Pump

Mud Pump

Steel pits

Solids Separator

Roll off cutting containers on tracks

Fluid Storage Tanks

Shakers

Roll off cutting containers on tracks

Flow line

Dog House

Cellar

Gas vent line from separator to flare pit

Choke Manifold

2" choke line to pit

Mud Gas Separator

3" Choke line 150' f/wellhead (Burried under Closed Loop Equip)

4" Panic line to "gas buster" 150' f/wellhead (Buried under Closed Loop Equip)

Steel half pit w/ mounted "Gas Buster"

Pipe Racks

Primary briefing area w/SCBA

Existing Road

HYDROGEN SULFIDE (H_2S) DRILLING OPERATIONS PLAN

Hydrogen Sulfide Training:

All regularly assigned personnel, contracted or employed by Apache Corporation will receive training from qualified instructor(s) in the following areas prior to commencing drilling possible hydrogen sulfide bearing formations in this well:

- The hazards and characteristics of hydrogen sulfide (H_2S)
- The proper use and maintenance of personal protective equipment and life support systems.
- The proper use of H_2S detectors, alarms, warning systems, briefing area, evacuation procedures & prevailing winds.
- The proper techniques for first aid and rescue procedures.

Supervisory personnel will be trained in the following areas:

- The effects of H_2S on metal components. If high tensile tubulars are to be utilized, personnel will be trained in their special maintenance requirements.
- Corrective action & shut-in procedures when drilling or reworking a well & blowout prevention / well control procedures.
- The contents and requirements of the H_2S Drilling Operations Plan

There will be an initial training session just prior to encountering a known or probable H_2S zone (within 3 days or 500') and weekly H_2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H_2S Drilling Operations Plan and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received proper training.

H_2S SAFETY EQUIPMENT AND SYSTEMS:

Well Control Equipment that will be available & installed if H_2S is encountered:

- Flare Line with electronic igniter or continuous pilot.
- Choke manifold with a minimum of one remote choke.
- Blind rams & pipe rams to accommodate all pipe sizes with properly sized closing unit.
- Auxiliary equipment to include: annular preventer, mud-gas separator, rotating head & flare gun with flares

Protective Equipment for Essential Personnel:

- Mark II Survive-air 30 minute units located in dog house & at briefing areas, as indicated on wellsite diagram.

H2S Dection and Monitoring Equipment:

- Two portable H_2S monitors positioned on location for best coverage & response. These units have warning lights & audible sirens when H_2S levels of 20 ppm are reached.
- One portable H_2S monitor positioned near flare line.

H2S Visual Warning Systems:

- Wind direction indicators are shown on wellsite diagram.
- Caution / Danger signs shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used when appropriate.

Mud Program:

- The Mud Program has been designed to minimize the volume of H_2S circulated to the surface. Proper mud weights, safe drilling practices & the use of H_2S scavengers will minimize hazards when penetrating H_2S bearing zones.
- A mud-gas separator and H_2S gas buster will be utilized as needed.

Metallurgy:

- All drill strings, casing, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold & lines, & valves will be suitable for H_2S service.
- All elastomers used for packing & seals shall be H_2S trim.

Communication:

- Cellular telephone and 2-way radio communications in company vehicles, rig floor and mud logging trailer.

HYDROGEN SULFIDE (H_2S) CONTINGENCY PLAN

Assumed 100 ppm ROE = 3000'

100 ppm H_2S concentration shall trigger activation of this plan.

Emergency Procedures

In the event of a release of gas containing H_2S, the first responder(s) must

- Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- Evacuate any public places encompassed by the 100 ppm ROE.
- Be equipped with H_2S monitors and air packs in order to control the release.
- Use the "buddy system" to ensure no injuries occur during the response
- Take precautions to avoid personal injury during this operation.
- Contact operators and/or local officials to aid in operation. See list of phone numbers attached.
- Have received training in the :
  - Detection of H_2S, and
  - Measures for protection against the gas,
  - Equipment used for protection and emergency response.

Ignition of Gas source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO_2). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever this is an ignition of the gas.

Characteristics of H_2S and SO_2

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H_2S	1.189 Air = I	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO_2	2.21 Air = I	2 ppm	N/A	1000 ppm

Contacting Authorities

Apache Corporation personnel must liaison with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. Apache's response must be in coordination with the State of New Mexico's *"Hazardous Materials Emergency Response Plan" (HMER).*

WELL CONTROL EMERGENCY RESPONSE PLAN

I. GENERAL PHILOSOPHY

Our objective is to ensure that during an emergency, a predetermined procedure is followed so that prompt decisions can be made based on accurate information.

The best way to handle and emergency is with an experienced organization set up for the sole purpose of solving the problem. The *Well Control Emergency Response Team* was organized to handle dangerous & expensive well control problems. The *Team* is structured such that each individual can contribute the most from his area of expertise. Key decision-makers are determined prior to an emergency to avoid confusion about who is in charge.

If the well is flowing uncontrolled at the surface or subsurface, *The Emergency Response Team* will be mobilized. The *Team* is customized for the people currently on the Apache staff. Staff changes may require a change in the plan.

II. EMERGENCY PROCEDURE ON DRILLING OR COMPLETION OPERATIONS

A. In the event of an emergency the *Drilling Foreman or Tool-Pusher* will immediately contact only one of the following starting with the first name listed:

Name	Office	Mobile	Home
CD Kemp – Drlg Superintendent	432-818-1977	432-210-3234	432-520-3528
Barry Green – Drilling Engineer	432-818-1059	214-923-2528	
Bobby Smith – Drilling Manager	432-818-1020	432-556-7701	
Bill Jones – EH&S Coordinator		432-967-9576	

***This one phone call will free the Drilling Foreman to devote his full time to securing the safety of personnel & equipment. This call will initiate the process to mobilize the Well Control Emergency Response Team. Apache maintains an Emergency Telephone Conference Room in the Houston office. This room is available for us by the Permian Region. The room has 50 separate telephone lines.*

B. The Apache employee contacted by the Drilling Foreman will begin contacting the rest of the *Team*. If **Danny Laman** is out of contact, **Bob Lange** will be notified.

C. If a member of the *Emergency Response Team* is away from the job, he must be available for call back. Telephone numbers should be left with secretaries or a key decision-maker.

D. Apache's reporting procedure for spills or releases of oil or hazardous materials will be implemented when spills or releases have occurred or are probable.

EMERGENCY RESPONSE NUMBERS:

SHERIFF DEPARTMENT	
Eddy County	575-887-7551
Lea County	575-396-3611
FIRE DEPARTMENT	911
Artesia	575-746-5050
Carlsbad	575-885-2111
Eunice	575-394-2111
Hobbs	575-397-9308
Jal	575-395-2221
Lovington	575-396-2359
HOSPITALS	911
Artesia Medical Emergency	575-746-5050
Carlsbad Medical Emergency	575-885-2111
Eunice Medical Emergency	575-394-2112
Hobbs Medical Emergency	575-397-9308
Jal Medical Emergency	575-395-2221
Lovington Medical Emergency	575-396-2359
AGENT NOTIFICATIONS	
Bureau of Land Management	575-393-3612
New Mexico Oil Conservation Division	575-393-6161

EXHIBIT #7

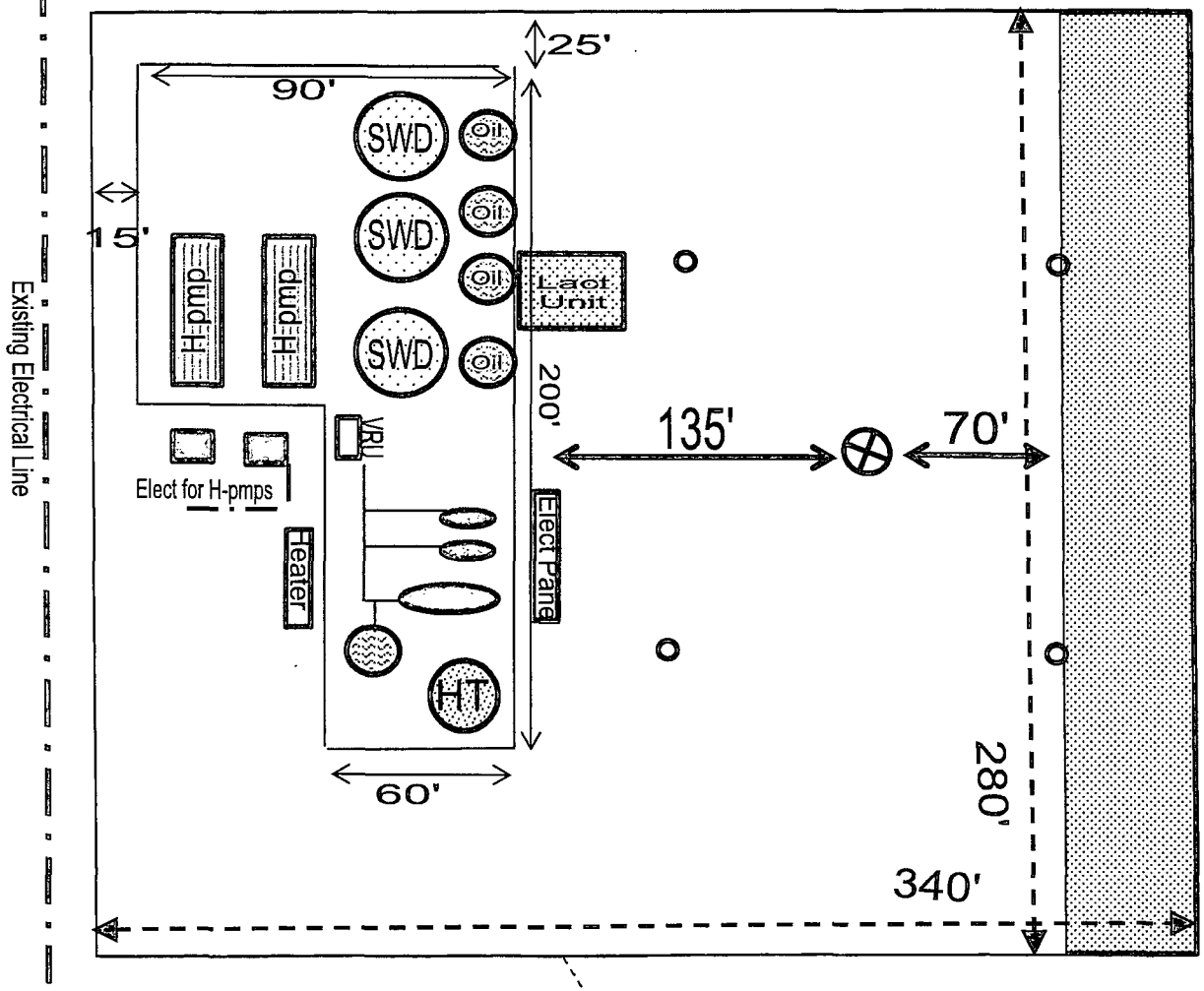
WARNING

YOU ARE ENTERING AN H2S AREA
AUTHORIZED PERSONNEL ONLY

1. BEARDS OR CONTACT LENSES NOT ALLOWED
2. HARD HATS REQUIRED
3. SMOKING DESIGNATED AREAS ONLY
4. BE WIND CONSCIOUS AT ALL TIMES
5. CHECK WITH APACHE CORPORATION

APACHE CORPORATION
1-888-257-6840

INTERIM RECLAMATION LAYOUT
AAO FEDERAL SWD #1
Exhibit #6



Approx 50' new lease road

Existing lease road

Existing lease road

Existing Well Pad

SURFACE USE PLAN OF OPERATIONS

AAO Federal SWD #1 Lease #: NMNM-0557371
2470' FNL & 2380' FEL UL: G SEC: 1 T18S R27E
Eddy County, NM

EXISTING ROADS

A. Proposed Well Site Location:

a. The well site & elevation plat for the proposed well are reflected on the well site layout (form C-102). Well staked by Basin Surveying Company.

B. Existing Roads

a. From the Junction of Arco & Hilltop, go Southwesterly 0.7 miles, turn South 0.2 miles, turn again West 0.4 miles to proposed location.

C. Route Location

a. Approx 50' of new road is expected to be constructed. The existing lease road will be used to the extent possible. If a lease/access road needs to be constructed, all lease roads will be graded in compliance with BLM standards. See E (a).

D. Existing Road Maintenance or Improvement Plan

a. *EXHIBIT 1, Location Verification Map,* is a portion of a topo map showing the well & roads in the vicinity of the proposed location. The proposed well site & access route to the location are indicated in BLUE on *EXHIBIT 1*. Right of way using this proposed route will be requested if necessary.

b. Routing grading & maintenance of existing roads will be conducted as necessary to maintain their condition as long as any operations continue on this lease. Roads will be maintained according to specifications in "EXISTING ROADS *Section E (a)"* of this Surface Use Plan.

E. Width, Max Grade, Turnout Ditches, Culverts, Cattle Guards, & Surface Equipment

a. All lease roads will be graded in compliance with BLM standards. All new & reconstructed roads will have a width & "crown design" (i.e. The max width of the driving surface will be 14'. The road will be crowned & ditched with a 2% slope from the tip of the crown to the edge of the driving surface. The ditches will be 1' deep with 3:1 slopes. The driving surface will be made of 6" rolled & compacted caliche.) If required, culverts and cattle guards will be set per BLM Specs.

LOCATION OF EXISTING WELLS

A. *"EXHIBIT 2 "* indicates existing wells within a one mile radius of the proposed location.

LOCATION OF EXISTING AND/OR PROPOSED FACILITIES

A. Facilities will be located West of location.

B. New Facilities in the Event of Production

In the event well is productive, APACHE will install a new 3" NUPI rated 300psi up to 140 deg surface flow line, approx 800' in length, to the proposed Battery. (Flow line pipe rated @ 300psi, WP: ~80psi, kill switches & chokes will be installed to prevent exceeding 125psi for above ground pipelines.) If electricity is needed, power will be obtained from Central Valley Electric. Path & length will vary pending Central Valley Electric Coop evaluation. Central Valley Electric will apply for ROW for their power lines. ***Apache will also construct a new production facility on the West side of the pad in compliance with BLM standards & specs. "SEE EXHIBIT 6"

C. Rehabilitation of Disturbed Areas Unnecessary for Production

Following the construction, those access areas required for continued production will be graded to provide drainage and minimize erosion. The areas unnecessary for use will be graded to blend in with the surrounding topography *"SEE PLANS FOR RESTORATION OF THE SURFACE"*

LOCATION AND TYPE OF WATER SUPPLY

A. All water (fresh or otherwise) needed for the drilling and completion of this well will be purchased from a commercial source and trucked to the location via existing and/or proposed access roads. No water source wells will be drilled and no surface water will be utilized.

CONSTRUCTION MATERIALS

A. Materials

On-site caliche will be used for any required access road and/or well site pad. If necessary, caliche will be hauled from a BLM approved pit. No surface materials will be disturbed except those necessary for actual grading and construction of the drill site and access road.

METHODS FOR HANDLING WASTE DISPOSAL

A. Cuttings

Cuttings will be contained in roll off bins and disposed of hauled to a state approved disposal facility.

B. Drilling Fluids

Drilling fluids will be contained in steel pits, frac tanks and disposed at licensed disposal sites and/or will be cleaned and reused.

C. Produced Fluids

Water production will be contained in steel pits. Fluids may be cleaned and reused and/or disposed at a state approved facility. Hydrocarbon fluid or other fluids that may be produced during testing will be retained in test tanks until sold and hauled from site.

D. Salts

Salts remaining after completion will be picked up by supplier, including broken sacks.

E. Sewage

Current laws and regulations pertaining to the disposal of human waste will be complied with. A Port-a-John will be provided for the crews. This will be properly maintained during the drilling operations and removed upon completion of the well. Port-a-John will be cleaned out periodically.

F. Garbage

Receptacles for garbage disposal during the drilling of this well will be provided and equipped to prevent scattering by wind, animals, etc. This waste will be hauled to an approved landfill site.

G. Cleanup of Well Site

Upon release of the drilling rig, the surface of the drilling pad will be graded to accommodate a completion rig if electric log analysis indicates potential productive zones. Reasonable cleanup will be performed prior to the final restoration of the site.

ANCILLARY FACILITIES

A. Upon completion, and/or testing of this well, rental tank facilities will be utilized until permanent storage is established. No camps, airstrips or staging are anticipated to be constructed.

WELLSITE LAYOUT

A. Rig Orientation and Layout

"EXHIBIT 5 " shows the dimensions of the well pad, closed loop system and the location of the major rig components. Only minor leveling of the well site will be required. No significant cuts or fills will be necessary.

B. Closed Loop System

A Closed Loop System will be used. Cuttings will be stored in steel roll off bins until they are hauled to a state approved disposal facility.

C. Location of Access Road

"SEE EXHIBIT 1 & John West Surveying well site pad location plat "

PLANS FOR SURFACE RECLAMATION

A. Reserve Pit Cleanup

Not applicable. Closed Loop System will be used.

B. Restoration Plans (Production Developed) *"SEE EXHIBIT 6 "*

Those areas not required for production will be graded & recontoured to match surrounding topography and surfacing material will be removed. Topsoil from the soil pile will be loaded over the disturbed area to the extent possible and will be seeded. The portion of the site required for production will be graded to minimize erosion and provide access during inclement conditions. This may need to be modified in certain circumstances to prevent inundation of the locations' pad and surface facilities. Due to the topography of the area, no problems are anticipated and no erosion or other detrimental effects are expected as a result of this operation. Following depletion and abandonment of the site, restoration procedures will be those that follow under *"ITEM C"* of *"PLANS FOR SURFACE RECLAMATION"*.

C. Restoration Plans (No Production Developed)

With no production developed, the entire surface disturbed by construction of the well site will be restored as closely as possible to its pre-operation appearance, including re-vegetation. Surfacing material will be removed and the site will be recontoured to match surrounding topography with provisions made to minimize erosion. The topsoil, as available, shall be placed in a uniform layer and seeded according to the Bureau of Land Management's stipulations. Due to the topography of the area, no problems are anticipated and no erosion or other detrimental effects are expected as a result of this operation.

D. Rehabilitation's Timetable

Upon completion of drilling operations, the initial cleanup of the site will be performed as soon as weather and site conditions allow economic execution of the work.

SURFACE OWNERSHIP

A. Surface Ownership of drill site & access routes:

United States Department of the Interior
c/o Bureau of Land Management
620 E. Greene St.
Carlsbad, NM 88220

OTHER INFORMATION

A. Terrain, Soil, Vegetation, Wildlife, Surface Use

Slightly rolling hills; Topsoil is made up of caliche and sand; Plants are sparse, primarily grasses, some mesquite & shinnery oak; No wildlife observed but likely that deer, rabbits, coyotes & rodents traverse the area, which are all typical of the semi-arid desert land; Land primarily used for grazing.

B. Surface Water

There are no ponds, lakes, streams or rivers within several miles of the proposed location.

C. Water Wells

No known water wells within 1-1/2 miles of the proposed location.

D. Residences and Buildings

No dwellings within the immediate vicinity of the proposed location.

E. Historical Sites

None observed.

F. Archeological Resources

An archeological survey has been performed & submitted by Boone Archeological Services LLC (NMCRIS-129570). Any location or construction conflicts will be resolved before construction begins.

G. Onsite: Onsite by Tanner Nygren, BLM Specialist.

H. Well Signs: Well signs will be incompliance per State requirements and specifications.

I. Drilling Contractor: Pending

OPERATOR'S FIELD REPRESENTATIVE
(Field personnel responsible for compliance with development plan for surface use)

DRILLING

Claude (CD) Kemp
Drilling Superintendent
303 Veterans Airpark Ln #1000
Midland, TX 79705
432-818-1977 - office
432-210-3234 – cell

PRODUCTION

Travis Carnes
Sr. Production Foreman
2350 W. Marland Blvd
Hobbs, NM 88240
575-393-2144 – w
432-425-2962 – c

Grove, Maxwell

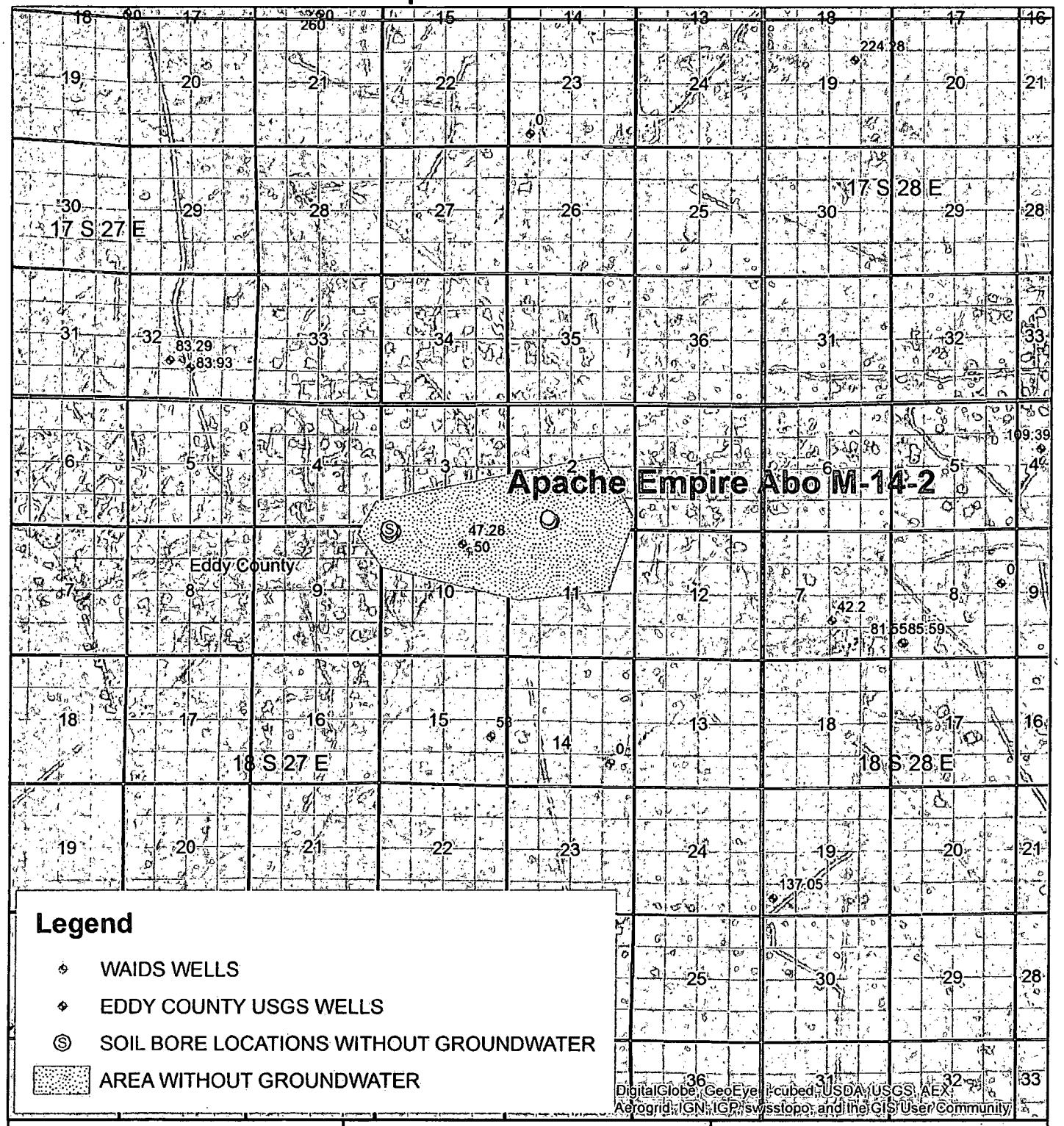
From: Baker, Larry
Sent: Monday, April 21, 2014 11:11 AM
To: Grove, Maxwell
Subject: Ground water data for Section 1
Attachments: DGW Report.jpg; ARC Enviro-M142SoilBor-Lttrofgrndwtrvrfctn.doc

Mr. Grove,

Attached is a plat with the USGS and NMOSE well data and Soil Bore data from the area. Apache drilled a soil bore in unit letter N in section 2 township 18S range 27E and confirmed there was no ground water. Apache also drilled a soil bore in unit letter D section 10 township 18S range 27E and confirmed there was no ground water. Both of the locations are west of section 1 township 18S range 27E. Since there are no wells in section 1 township 18S range 27E and the confirmation of no water in sections 2 and 10 township 18S range 27E and due to lack of known hydrology of the area one can make the assumption that there is no ground water in Section 1 township 18S range 27E. Please let me know if you have any questions or need anything else. Thanks and have a good day.

Bruce Baker
Apache Corporation
Environmental Technician
Eunice District
Email: larry.baker@apachecorp.com
Cell: 432-631-6982

Depth to Groundwater



RICE ENVIRONMENTAL CONSULTING & SAFETY

APACHE EMPIRE ABO M-14-2

LEGALS: UL/ N sec. 2
T-18-S R-27-E
EDDY COUNTY, NM

DGW: NONE

N W E S

0 0.65 1.3 Miles

Drawing date: 4/21/14
Drafted by: L. Weinheimer

Arc Environmental
P. O. Box 1772
Lovington, New Mexico 88260
(575) 631-9310
Rozanne Johnson ~ rozanne@valornet.com

June 29, 2011

Mr. Hack Conder
Rice Environmental Consulting and Safety
112 West Taylor
Hobbs, New Mexico 88240

Re: Apache Empire Abo Unit #M-14-2

Mr. Conder,

On Tuesday June 28, 2011 soil bore #1 at the Apache Empire Abo Unit #M-14-2, Eddy County, was checked with a Solinist Water Level Meter for water accumulation within the borehole. The meter indicated no water had accumulated within the borehole at the total depth of 95.32.

Sincerely,
Arc Environmental

Rozanne Johnson
Rozanne Johnson

Electronic Copy: Hack Conder
Katie Jones
Bruce Baker
Lara Weinheimer

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Apache Corporation**
LEASE NO.:	**NMNM-0557371**
WELL NAME & NO.:	**AAO Federal SWD 1**
SURFACE HOLE FOOTAGE:	**2470' FNL & 2380' FEL**
LOCATION:	**Section 01, T. 18 S., R 27 E., NMPM**
COUNTY:	**Eddy County, New Mexico**

TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Watershed Protection

- Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion.
- Apache will prevent runoff from coming onto the pad. If needed, Apache is authorized to construct a berm directly above the well pad and redirect drainage flow to the south of the location. The berm will be of sufficient size to redirect water but will be no larger than 4 feet tall.
- Stockpiling of topsoil is required. The top soil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control.

Tank Battery COAs Only:

- Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.
- Automatic shut off, check values, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

Cave and Karst

** Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

Cave/Karst Surface Mitigation

The following stipulations will be applied to minimize impacts during construction, drilling and production.

Construction:
In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

No Blasting:
No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

Pad Berming:
The pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the pad. All sides will be bermed.

Tank Battery Liners and Berms:
Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

Leak Detection System:
A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating values and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

Automatic Shut-off Systems:
Automatic shut off, check values, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

Cave/Karst Subsurface Mitigation

The following stipulations will be applied to protect cave/karst and ground water concerns:

Rotary Drilling with Fresh Water:
Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

Directional Drilling:
Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

Lost Circulation:
ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

Abandonment Cementing:
Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

Pressure Testing:
Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS

Road Width
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

Surfacing
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching
Ditching shall be required on both sides of the road.

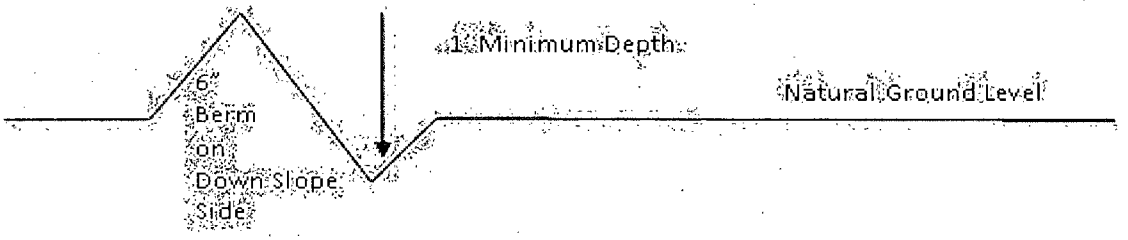
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

400 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ lead-off ditch interval

Cattleguards

An appropriately sized cattleguard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattleguards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguards that are in place and are utilized during lease operations.

Fence Requirement

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Construction Steps

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

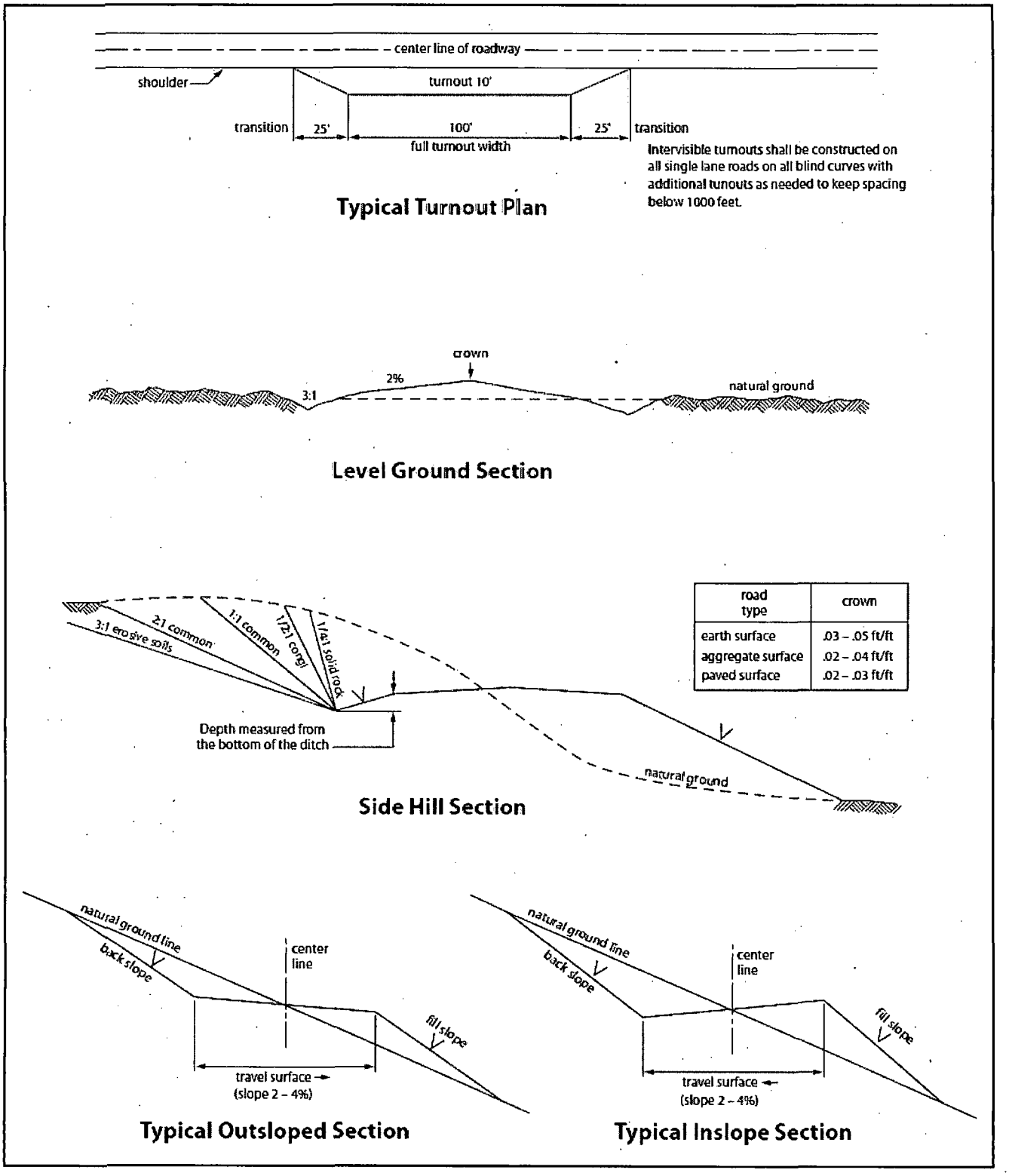


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ **Eddy County**
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

1. A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Queen** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS. See individual casing strings for details regarding lead cement slurry requirements.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Medium Cave/Karst
Possible water flows in the Artesia Group.
Possible lost circulation in the Artesia Group, Grayburg, and San Andres.
Abnormal pressures may be encountered within the Wolfcamp and subsequent formations.

1. The **13-3/8** inch surface casing shall be set at approximately **400** feet and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

    ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

If 75% or greater lost circulation occurs while drilling the intermediate casing hole, the cement on the production casing must come to surface.

Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe and the mud weight for the bottom of the hole. Report results to BLM office.

Production casing shall be kept fluid filled while running into hole to meet BLM minimum collapse requirements.

3. The minimum required fill of cement behind the 7 inch production casing is:

Operator has proposed DV tool at depth of 6000', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.

a. First stage to DV tool:

☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve approved top of cement on the next stage.

b. Second stage above DV tool:

☒ Cement as proposed by operator. Operator shall provide method of verification.

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi **(Installing 5M, testing to 2,000 psi)**.

    a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** intermediate casing shoe shall be **5000 (5M)** psi. **5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**

4. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

    b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

    c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

    d. The results of the test shall be reported to the appropriate BLM office.

e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. WELL COMPLETION

A NOI sundry with the completion procedure for this well shall be submitted and approved prior to commencing completion work. The procedure will be reviewed to verify that the completion proposal will allow the operator to:

1. **Properly evaluate the injection zone utilizing open hole logs, swab testing and/or any other method to confirm that hydrocarbons cannot be produced in paying quantities. This evaluation shall be reviewed by the BLM prior to injection commencing.**
2. **Restrict the injection fluid to the approved formation.**

If off-lease water will be disposed in this well, the operator shall provide proof of right-of-way approval.

F. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

JAM 072314

VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures
Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the

largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

B. PIPELINES (No offsite pipelines applied for in APD)

C. ELECTRIC LINES (Not applied for in APD)

IX. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

X. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory

revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Seed Mixture 1, for Loamy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (small/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Plains lovegrass (Eragrostis intermedia)	0.5
Sand dropseed (Sporobolus cryptandrus)	1.0
Sideoats grama (Bouteloua curtipendula)	5.0
Plains bristlegrass (Setaria macrostachya)	2.0

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed