

ONSHORE OIL CONSERVATION

ARTESIA DISTRICT

Form 3160-3
(March 2012)

JAN 20 2015

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		7. If Unit or CA Agreement, Name and No.	
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		8. Lease Name and Well No. NFE FEDERAL #54-308724 > (454 H)	
2. Name of Operator APACHE CORPORATION		9. API Well No. 30-015- 42909	
3a. Address 303 VETERANS AIRPARK LN #1000 MIDLAND, TX 79705	3b. Phone No. (include area code) 432-818-1167	10. Field and Pool, or Exploratory CEDAR LAKE; GLORIETA-YESO <9683>	
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 420' FNL & 1025' FEL At proposed prod. zone 420' FNL & 330' FWL		11. Sec., T. R. M. or Blk. and Survey or Area SEC: 6 T17S R31E	
14. Distance in miles and direction from nearest town or post office* APPROX 8 MILES NORTHEAST OF LOCO HILLS, 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) 330'	16. No. of acres in lease 1885 ACRES	17. Spacing Unit dedicated to this well 151.09 ACRES	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 25'	19. Proposed Depth TVD: 5300' MD: 8729'	20. BLM/BIA Bond No. on file BLM-CO-1463 NATIONWIDE / NMB000736	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) GL: 3769'	22. Approximate date work will start* As Soon As Approved	23. Estimated duration ~ 18 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. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification |
| 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). | 6. Such other site specific information and/or plans as may be required by the BLM. |

25. Signature <i>Sorina L Flores</i>	Name (Printed/Typed) SORINA L. FLORES	Date 6/5/14
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Title
SUPV OF DRILLING SERVICES

Approved by (Signature) IS/ STEPHEN J. CAFFEY	Name (Printed/Typed)	Date JAN 13 2015
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Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE
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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
AND SPECIAL STIPULATIONS
ATTACHED**

*1/22/2015
AD*

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

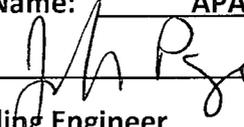
OPERATOR CERTIFICATION

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 5 day of June

Well: NFE FEDERAL #54H

Operator Name: APACHE CORPORATION

Signature:  Printed Name: JOE PAYNE

Title: Drilling Engineer Date: 6/5/14

Email (optional): joe.payne@apachecorp.com

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

City, State, Zip Code: Midland, TX 79705

Telephone: 432-818-1624

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.

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone: (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
1000 Rio Brazos Road, Aztec, NM 87410
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 & 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 30-015-42909	Pool Code 96831	Pool Name Cedar Lake, Glorieta - Yeso
Property Code 308724	Property Name NFE FEDERAL	Well Number 54H
OGRID No. 873	Operator Name APACHE CORPORATION	Elevation 3769'

Surface Location

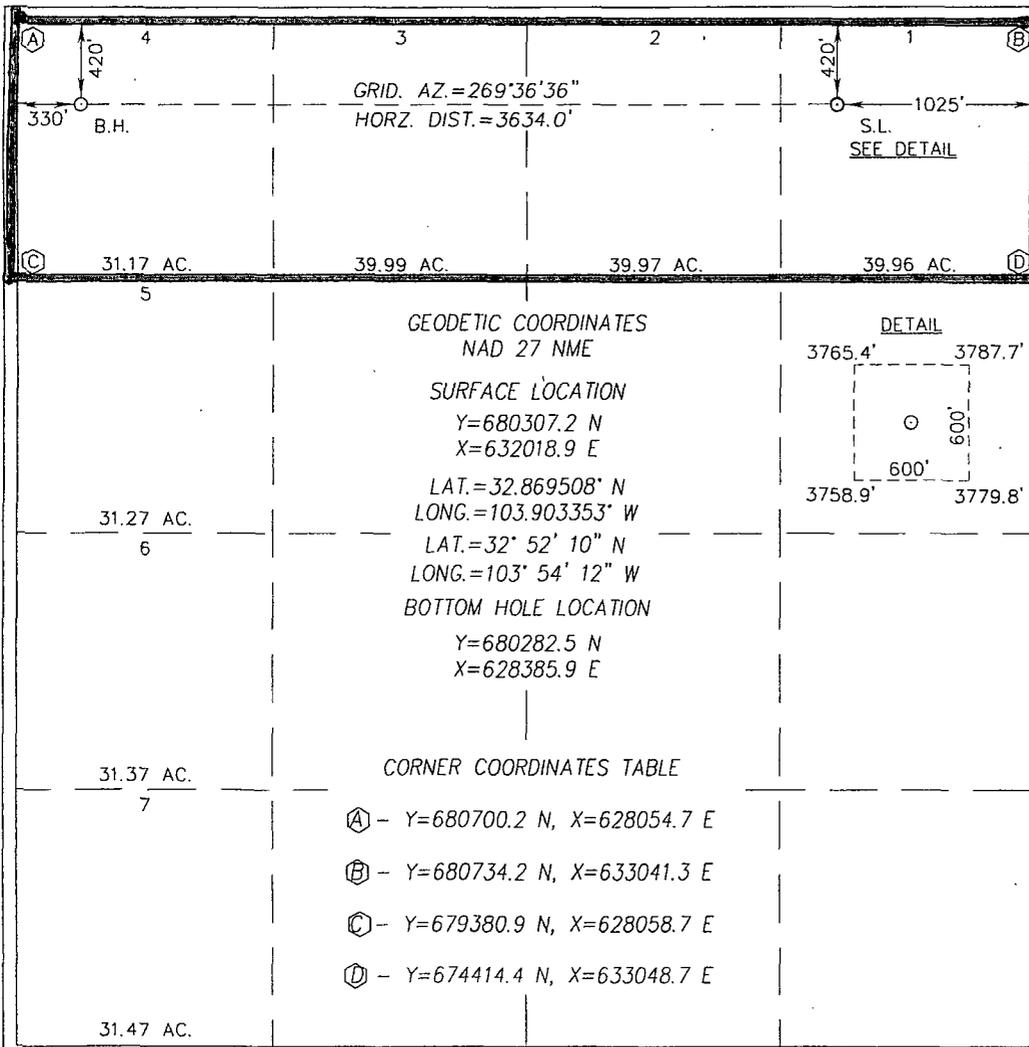
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
1	6	17-S	31-E		420	NORTH	1025	EAST	EDDY

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
4	6	17-S	31-E		420	NORTH	330	WEST	EDDY

Dedicated Acres 151.09	Joint or Infill	Consolidation Code	Order No.
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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 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 mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Sorina L Flores 5/13/14
Signature Date
Sorina L. Flores
Printed Name
Sorina.Flores@apachecorp.com
E-mail Address

SURVEYOR CERTIFICATION

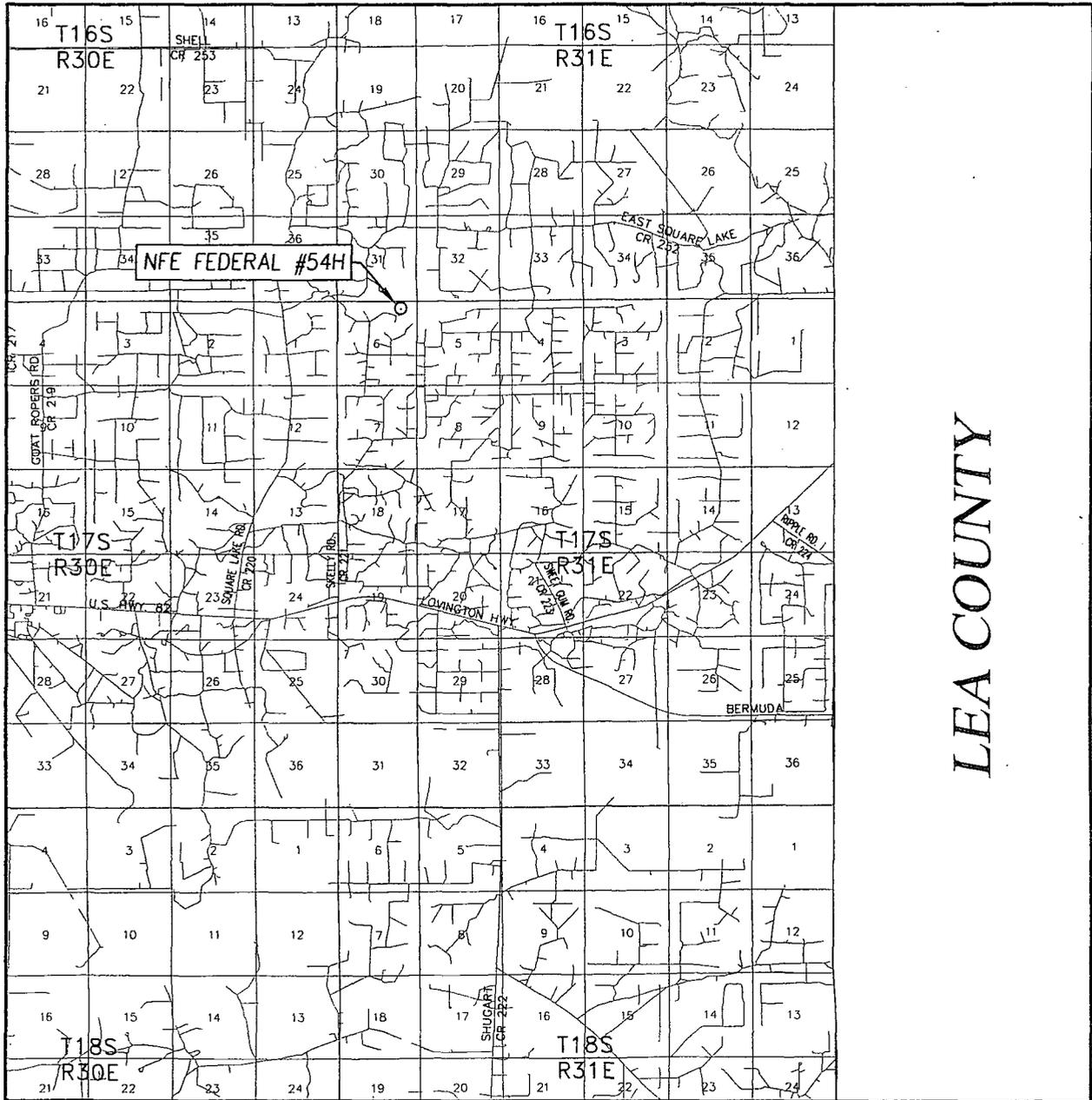
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

APRIL 18, 2012

Date of Survey
Signature & Seal of Professional Surveyor:

RONALD J. EIDSON
NEW MEXICO
REG. SURVEYOR
3239
APR 18 2012
Certification Number: 3239
City: Eidsen
State: New Mexico
WSC W.O.: 12.11.0743

VICINITY MAP



LEA COUNTY

SCALE: 1" = 2 MILES

SEC. 6 TWP. 17-S RGE. 31-E
 SURVEY _____ N.M.P.M. _____
 COUNTY EDDY STATE NEW MEXICO
 DESCRIPTION 420' FNL & 1025' FEL
 ELEVATION 3769'
 OPERATOR APACHE CORPORATION
 LEASE NFE FEDERAL

PROVIDING SURVEYING SERVICES
 SINCE 1946
JOHN WEST SURVEYING COMPANY
 412 N. DAL PASO
 HOBBS, N.M. 88240
 (575) 393-3117 www.jwsc.biz

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
LOCO HILLS, N.M. - 10'

SEC. 6 TWP. 17-S RGE. 31-E

SURVEY _____ N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 420' FNL & 1025' FEL

ELEVATION 3769'

OPERATOR APACHE CORPORATION

LEASE NFE FEDERAL

U.S.G.S. TOPOGRAPHIC MAP

LOCO HILLS, N.M.

PROVIDING SURVEYING SERVICES
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SECTION 6, TOWNSHIP 17 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY NEW MEXICO

GLO "1916" B.C.

¼ GLO
"1916" B.C.

N89°36'13"E-1788.8'

850.6' (TIE)

31 32
6 5

S00°33'.36"E
209.3'

S89°58'50"E-350.0'

N00°01'10"E-400.0'

S00°01'10"W-400.0'

#57H
#56H
#55H
#54H
#53H
#52H

3.214 ACRES

N89°58'50"W-350.0'

BPL

S00°19'17"W-5280.4'

USA



6 5
7 8

U.S. GLO
"1916" B.C.

DESCRIPTION

A PROPOSED WELL PAD SITUATED IN THE NORTHEAST QUARTER OF SECTION 6, TOWNSHIP 17 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF THIS TRACT, WHICH LIES S89°36'13"W 850.6 FEET AND S00°33'36"E 209.3 FEET FROM THE NORTHEAST CORNER. THEN S00°01'10"W 400.0 FEET; THEN N89°58'50"W 350.0 FEET; THEN N00°01'10"E 400.0 FEET; THEN S89°58'50"E 350.0 FEET TO THE POINT OF BEGINNING, CONTAINING 3.214 ACRES MORE OR LESS.

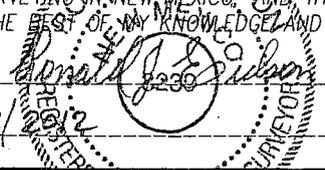
NOTE

BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

I, RONALD J. EIDSON, NEW MEXICO PROFESSIONAL SURVEYOR No. 3239, DO HEREBY CERTIFY THAT THIS SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION, THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO, AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

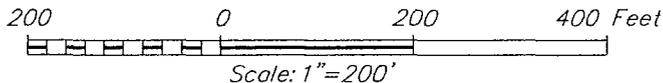
RONALD J. EIDSON

DATE: 05/02/2012



LEGEND

- ⊙ DENOTES FOUND CORNER AS NOTED
- DENOTES SET SPIKE NAIL



APACHE CORPORATION

SURVEY FOR WELL PAD
SITUATED IN THE NE/4 OF SECTION 6,
TOWNSHIP 17 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, NEW MEXICO

Survey Date: 4/18/12	CAD Date: 5/1/12	Drawn By: AF
W.O. No.: 12110693	Rev: 12/10/12	Ref. W.O.:
		Sheet 1 of 1

PROVIDING SURVEYING SERVICES
SINCE 1958

JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz

Exhibit # 2

APACHE CORPORATION

NFE Federal 52H 53H 54H 55H 56H 57H

1 MILE RADIUS AROUND SHL & BHL

T17S R31E

POSTED WELL DATA

○ Well Number

WELL SYMBOLS

- Dry Hole, With Show of Oil & Gas
- Dry Hole, With Show of Oil
- Dry Hole
- Injection Well
- Location
- Proposed Drilling Location
- Oil Well
- Active Producer
- T & A' D
- PERMIT
- New Symbol



May 14, 2014

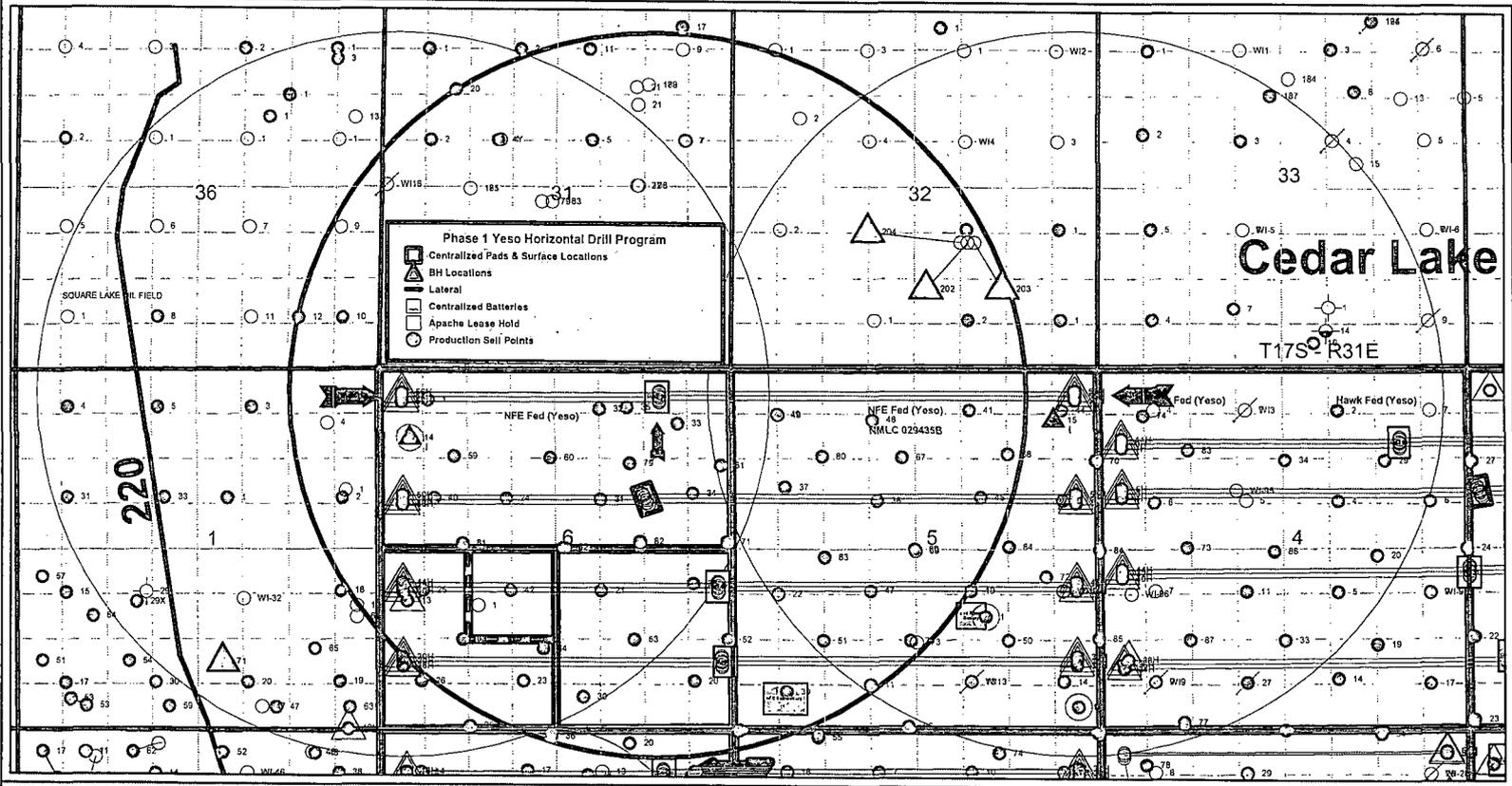


Exhibit #1

SECTIONS 5, 6, 7 & 8, TOWNSHIP 17 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY NEW MEXICO

LINE TO RAVEN #5 WELL PAD

LINE	BEARING	DISTANCE
L1	N16°33'39"W	229.6'
L2	N25°05'28"E	250.3'
L3	N87°13'52"E	509.0'
L4	N30°41'54"E	199.9'
L5	S89°20'45"E	148.6'
L6	S48°51'50"E	212.7'
L7	N86°39'36"E	972.1'
L8	N44°52'31"E	123.6'
L9	N88°52'45"E	140.7'
L10	S45°46'57"E	119.8'
L11	N89°10'42"E	876.8'
L12	N30°10'48"E	124.6'
L13	N00°46'48"E	736.5'
L14	N35°11'21"W	154.9'
L15	N52°04'50"E	490.8' (TIE)
L16	S62°05'35"E	2592.8' (TIE)

LINE TO RAVEN #8 WELL

LINE	BEARING	DISTANCE
L1	S88°52'13"W	451.2'
L2	S57°19'25"W	119.4'
L3	S30°47'46"W	369.0'
L4	S55°01'08"W	402.6'
L5	S73°53'44"W	280.8'
L6	N44°50'19"E	1165.7' (TIE)

LINE TO NFE #1 BATTERY

LINE	BEARING	DISTANCE
L1	N80°44'18"E	43.9'
L2	S51°06'17"W	713.3' (TIE)

LINE TO NFE #10 WELL PAD

LINE	BEARING	DISTANCE
L1	N82°58'21"W	498.6'
L2	S00°41'22"W	1166.4' (TIE)

LINE TO RAVEN FED. #1 WELL

LINE	BEARING	DISTANCE
L1	N75°14'43"W	529.7'
L2	N85°35'09"W	694.8'
L3	S62°49'56"E	1266.7' (TIE)

LINE TO NFE #12 WELL PAD

LINE	BEARING	DISTANCE
L1	N87°23'50"W	555.9'

LINE TABLE TO RAVEN FED. #14 & 16 WELL

LINE	BEARING	DISTANCE
L1	S89°44'31"E	131.8'
L2	N01°00'22"W	1039.7'
L3	N09°49'13"W	426.7'
L4	N00°55'54"W	1207.2'
L5	N00°15'24"W	988.3'
L6	N00°58'55"E	586.3'
L7	N00°13'41"W	778.1'
L8	N83°33'40"W	681.6'
L9	N54°48'54"W	1057.0'
L10	N24°04'32"W	400.2'
L11	N22°54'17"W	371.8'
L12	N12°22'20"E	380.9'
L13	N47°08'20"E	509.6'
L14	S54°03'54"W	1048.5' (TIE)

LINE TO RAVEN #1 WELL PAD

LINE	BEARING	DISTANCE
L1	S00°09'17"E	1240.9'
L2	S31°33'48"W	139.9'
L3	N03°37'15"W	607.2' (TIE)

LINE TO RAVEN #3 WELL PAD

LINE	BEARING	DISTANCE
L1	N00°09'00"W	285.4'
L2	N09°06'18"W	1697.8' (TIE)

DESCRIPTION

SURVEY OF A STRIP OF LAND 50.0 FEET WIDE AND 18970.5 FEET OR 3.593 MILES IN LENGTH CROSSING USA LAND IN SECTIONS 5, 6, 7 & 8, TOWNSHIP 17 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO, AND BEING 25.0 FEET LEFT AND 25.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

NOTE

BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

I, RONALD J. EIDSON, NEW MEXICO PROFESSIONAL SURVEYOR No. 3239, DO HEREBY CERTIFY THAT THIS SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION, THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

RONALD J. EIDSON

DATE: 08/27/2012



PROVIDING SURVEYING SERVICES
SINCE 1976
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz

APACHE CORPORATION

SURVEY OF PIPELINES CROSSING SECTIONS 5, 6, 7 & 8,
TOWNSHIP 17 SOUTH, RANGE 31 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

Survey Date: 7/2/12	CAD Date: 8/17/12	Drawn By: ACR
W.O. No.: 12110970	Rev:	Rel. W.O.:

Sheet 2 of 2

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

APACHE CORPORATION (OGRID: 873) NFE FEDERAL #54H

Lease #: NMLC-029435B Projected TVD: 5300' MD: 8729' GL: 3769'
SL: 420' FNL & 1025' FEL UL: 1 SEC: 6 BHL: 420' FNL & 330' FWL UL: 4 SEC: 6
T17S R31E 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	Queen	2402'
Rustler	354'	Grayburg	2824'
Top of Salt	840'	San Andres	3135'
Base of Salt/Tansill	1346'	Glorieta	4575'
Yates	1524'	Yeso (Paddock)	4675' (Oil)
Seven Rivers	1800'	Yeso (Blinebry)	5110' (Oil)
		TD	TVD: 5300' MD: 8729'

Avg Depth to Ground Water: ~91'

All fresh water and prospectively valuable minerals, as described by BLM, encountered during drilling, will be recorded by depth and adequately protected. All oil and gas shows within zones of correlative rights will be tested to determine commercial potential. The surface fresh water sands will be protected by setting 13-3/8" surface casing at 400' and circulating cement to surface. All intervals will be isolated by setting a 7" and 5-1/2" tapered production casing string at TD and cementing as shown below.

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

STRING	HOLE SIZE	DEPTH	OD CASING	WEIGHT	COLLAR	GRADE	COLLAPSE	BURST	TENSION
Surface	17-1/2"	0' - 400'	13-3/8"	48#	STC	H-40	770 psi 4.04	1730 psi 6.18	322000 lbs 19.38
Intermediate	12-1/4"	0' - 3500'	9-5/8"	36#	STC	J-55	2020 psi 1.13	3520 psi 1.61	394000 lbs 3.68
Production*	8-3/4"	0' - 4823'	7"	29#	LTC	L-80	8715 psi 3.56	9190 psi 3.76	416000 lbs 2.67
	8-3/4"	4823' - 5584'	5-1/2"	20#	LTC	L-80			
	7-7/8"	5584' - 8729'	5-1/2"	20#	LTC	L-80			

* Production casing will be a tapered string with 7" casing from surface to KOP (cemented through a stage tool from KOP to 2500'), uncemented 5-1/2" casing from KOP to LP, and uncemented 5-1/2" casing with packers and sleeves from LP to TD. To isolate the San Andres and Glorieta formations, two hydraulic-set open hole packers will be placed in the 5-1/2" casing and set 50' above and 50' below the top of the Glorieta formation.

4. CEMENT PROGRAM:

A. Surface (TOC – Surface) **100% excess cmt Cmt with:**

Single Slurry: 470 sx Class C w/2% CaCl₂ (14.8 wt, 1.34 yld, 6.31 gal wtr/sk)

Compressive Strengths: 12 hr – 1270 psi 24 hr – 2029 psi

If lost circulation is encountered while drilling the 17-1/2" hole, operator may pump 200 sx Class C thixotropic cement (14.4 wt, 1.55 yld, 6.65 gal wtr/sk) ahead of the cement slurry shown above.

If cmt does not circulate to surface, the appropriate BLM office shall be notified. The TOC shall be determined by a method approved by BLM. Operator will propose a remediation method and request BLM approval.

B. Intermediate (TOC – Surface) **50% excess cmt Cmt with:**

Lead: 700 sx 35/65 Poz C w/6% Gel + 5% Salt (12.9 wt, 1.92 yld, 9.92 gal wtr/sk)

Compressive Strengths: 12 hr – 820 psi 24 hr – 1189 psi

Tail: 290 sx Class C (14.8 wt, 1.33 yld, 6.31 gal wtr/sk)

Compressive Strengths: 12 hr – 1120 psi 24 hr – 2106 psi

If a water flow is encountered, operator may use a DV tool in the 9-5/8" intermediate casing and operator may place an ECP below the DV tool. Operator may also set casing slips before cementing. Assuming a DV tool is set at 1800', the following cement would be used: 1st Stage 630 sx Class C (14.8 wt, 1.33 yld, 6.31 gal wtr/sk) 50% excess cement 2nd Stage 670 sx Class C (14.8 wt, 1.33 yld, 6.31 gal wtr/sk) 50% excess cement If a DV tool is set at a different depth, cement volumes will be adjusted accordingly.

C. Production (TOC: ~2500' from Surface) **35% excess cmt Cmt with:**

Lead: 110 sx 35-65 Poz C w/6% Gel + 5% Salt (12.6 wt, 2.06 yld, 10.95 gal wtr/sk)

Compressive Strengths: 12 hr – 317 psi 24 hr – 500 psi

Tail: 730 sx TXI Lightweight w/1.3% Salt + 0.3% Retarder (13.0 wt, 1.48 yld, 7.58 gal wtr/sk)

Compressive Strengths: 12 hr – 1100 psi 24 hr – 1755 psi

If operator chooses to run a fluid caliper, the above cement volumes may be revised based on fluid caliper measurement.

5. PROPOSED CONTROL EQUIPMENT

"EXHIBIT 3" shows a 13-5/8" 3M psi WP BOP consisting of an annular bag type preventer. This BOP will be nipped up on the 13-3/8" surface casing head and tested to 2000psi using a test plug. After the 9-5/8" intermediate casing is set & cemented, an 11" 3M BOP consisting of an annular bag type preventer, middle pipe rams and bottom blind rams will be installed and utilized continuously until TD is reached ("EXHIBIT 3A"). That BOP will be tested at 2000 psi; maximum surface pressure is not expected to exceed 2000 psi. BHP is calculated to be approximately 2299 psi at TD & 2332 psi at the deepest point in the lateral. All BOPs and associated equipment will be tested per BLM *Drilling Operations Order #2*. The BOPs will be operated and checked each 24 hour period and blind rams will be operated and checked when the drill pipe is out of the hole. Function tests will be documented on the daily driller's log. "EXHIBIT 3 & 3A" also show a 3M psi choke manifold with a 3" blow down line. Full opening stabbing valve and kelly cock will be on the 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.

6. AUXILIARY WELL CONTROL EQUIPMENT / MONITORING EQUIPMENT:

13-5/8" 3000 psi annular preventer (3M BOP/BOPE to be used as a 2M system)

11" 3000 psi double BOP (blind & pipe rams) and annular preventer (3M BOP/BOPE to be used as a 2M system)

4-1/2" x 3000 psi kelly valve

13-5/8" or 11" x 3000 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 per BLM *Onshore Order #2*

7. PROPOSED MUD CIRCULATION SYSTEM: (CLOSED LOOP SYSTEM)

INTERVAL	MUD WEIGHT (ppg)	VISCOSITY (sec/qt)	FLUID LOSS (cc)	MUD TYPE
0' – 400'	8.3 – 8.8	28 – 36	NC	FW
400' - 3500'	9.8 – 10.0	28 – 29	NC	Brine
3500' – 5584'	9.0 – 10.0	28 – 29	NC	Brine/Cut Brine
5584' – 8729'	9.0 – 9.3	28 – 29	NC	Cut Brine

** Visual mud monitoring equipment shall be in place to detect volume changes. A mud test shall be performed every 24 hours after mudding up to determine density, viscosity, gel strength, filtration, and pH. The necessary mud products for weight addition and fluid loss control will be on location at all times.

8. LOGGING, CORING & TESTING PROGRAM:

A. No cores, DSTs, or open hole logs are planned at this time.

B. Mudloggers from 4200' to TD.

C. Additional testing will be initiated subsequent to setting the 7" and 5-1/2" tapered production casing string. Specific intervals will be targeted based on geological sample shows.

9. POTENTIAL HAZARDS:

No abnormal pressures or temperatures are anticipated. In the event abnormal pressures are encountered, the proposed mud program will be modified to increase the mud-weight. There is known presence of H2S in this area. If H2S is encountered the operator will comply with the provisions of BLM *Onshore Oil & Gas Order #6*. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated maximum BHP: 2332 psi and estimated BHT: 115° F.

10. ANTICIPATED STARTING DATE AND DURATION OF OPERATIONS:

Road and location construction will begin after BLM has approved APD. Anticipated spud date will be after BLM approval and as soon as an appropriate rig is available. Move in operations and drilling is expected to take approximately 20 days. If production casing is run, an additional 90 days will be needed to complete the well and construct surface facilities and/or lay flow lines in order to place the well on production.

11. OTHER FACETS OF OPERATION:

After running casing, cased hole Gamma Ray, Neutron Collar logs will be run from TD back to all possible productive zones. The Cedar Lake; Glorieta-Yeso formation will be stimulated in order to establish production. The well will be tested and potentialized as an oil well.



EXPLORING WHAT'S POSSIBLE

Apache Corporation

Eddy County, NM (NAD27 NME)

NFE Federal

#54H

WB1

Plan: Plan #1 05-19-14

Standard Planning Report

19 May, 2014



PHOENIX
TECHNOLOGY SERVICES



Phoenix Technology Services

Planning Report



Database:	GCR DB	Local Co-ordinate Reference:	Well #54H
Company:	Apache Corporation	TVD Reference:	KB @ 3780.00usft (TBD)
Project:	Eddy County, NM (NAD27.NME)	MD Reference:	KB @ 3780.00usft (TBD)
Site:	NFE Federal	North Reference:	Grid
Well:	#54H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #1 05-19-14		

Project	Eddy County, NM (NAD27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	NFE Federal		
Site Position:	Northing:	673,264.70 usft	Latitude: 32° 51' 0.49036 N
From: Map	Easting:	633,303.50 usft	Longitude: 103° 53' 57.34966 W
Position Uncertainty:	0.00 usft	Slot Radius: 13-3/16 "	Grid Convergence: 0.24 °

Well	#54H		
Well Position	+N/-S	7,042.50 usft	Northing: 680,307.20 usft
	+E/-W	-1,284.60 usft	Easting: 632,018.90 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	Ground Level: 3,769.00 usft

Wellbore	WB1				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	BGGM2013	05/19/14	(°) 7.55	(°) 60.64	(nT) 48,647

Design	Plan #1 05-19-14			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth: 0.00	
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	269.61

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,822.50	0.00	0.00	4,822.50	0.00	0.00	0.00	0.00	0.00	0.00	
5,584.15	91.37	269.61	5,300.00	-3.32	-489.01	12.00	12.00	0.00	269.61	
8,729.11	91.37	269.61	5,225.00	-24.70	-3,633.00	0.00	0.00	0.00	0.00	PBHL-NFE Fed #54H



Phoenix Technology Services

Planning Report



Database:	GCR DB	Local Co-ordinate Reference:	Well #54H
Company:	Apache Corporation	TVD Reference:	KB @ 3780.00usft (TBD)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	KB @ 3780.00usft (TBD)
Site:	NFE Federal	North Reference:	Grid
Well:	#54H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #1 05-19-14		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
278.00	0.00	0.00	278.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler										
538.00	0.00	0.00	538.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
T/Salt										
1,199.00	0.00	0.00	1,199.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B/Salt										
1,356.00	0.00	0.00	1,356.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yates										
1,789.00	0.00	0.00	1,789.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Seven Rivers										
2,388.00	0.00	0.00	2,388.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Queen										
2,807.00	0.00	0.00	2,807.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grayburg										
3,109.00	0.00	0.00	3,109.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
San Andrés										
4,631.00	0.00	0.00	4,631.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Glorieta										
4,642.00	0.00	0.00	4,642.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yeso (Paddock)										
4,822.50	0.00	0.00	4,822.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP, 12°/100' Build										
4,900.00	9.30	269.61	4,899.66	-0.04	-6.27	6.27	12.00	12.00	0.00	0.00
5,000.00	21.29	269.61	4,995.94	-0.22	-32.60	32.60	12.00	12.00	0.00	0.00
5,100.00	33.29	269.61	5,084.65	-0.53	-78.37	78.37	12.00	12.00	0.00	0.00
5,119.66	35.65	269.61	5,100.86	-0.61	-89.50	89.50	12.00	12.00	0.00	0.00
Yeso (Blinberry)										
5,200.00	45.28	269.61	5,161.91	-0.96	-141.57	141.57	12.00	12.00	0.00	0.00
5,300.00	57.28	269.61	5,224.34	-1.49	-219.45	219.46	12.00	12.00	0.00	0.00
5,400.00	69.28	269.61	5,269.23	-2.10	-308.61	308.61	12.00	12.00	0.00	0.00
5,500.00	81.27	269.61	5,294.60	-2.75	-405.14	405.15	12.00	12.00	0.00	0.00
5,584.15	91.37	269.61	5,300.00	-3.32	-489.01	489.02	12.00	12.00	0.00	0.00
LP, Begin 91.37° Inc Hold										
5,600.00	91.37	269.61	5,299.62	-3.43	-504.85	504.86	0.00	0.00	0.00	0.00
5,700.00	91.37	269.61	5,297.23	-4.11	-604.82	604.84	0.00	0.00	0.00	0.00
5,800.00	91.37	269.61	5,294.85	-4.79	-704.79	704.81	0.00	0.00	0.00	0.00
5,900.00	91.37	269.61	5,292.46	-5.47	-804.76	804.78	0.00	0.00	0.00	0.00
6,000.00	91.37	269.61	5,290.08	-6.15	-904.73	904.75	0.00	0.00	0.00	0.00
6,100.00	91.37	269.61	5,287.69	-6.83	-1,004.70	1,004.72	0.00	0.00	0.00	0.00
6,200.00	91.37	269.61	5,285.31	-7.51	-1,104.67	1,104.69	0.00	0.00	0.00	0.00
6,300.00	91.37	269.61	5,282.93	-8.19	-1,204.64	1,204.66	0.00	0.00	0.00	0.00
6,400.00	91.37	269.61	5,280.54	-8.87	-1,304.61	1,304.64	0.00	0.00	0.00	0.00
6,500.00	91.37	269.61	5,278.16	-9.55	-1,404.58	1,404.61	0.00	0.00	0.00	0.00
6,600.00	91.37	269.61	5,275.77	-10.23	-1,504.54	1,504.58	0.00	0.00	0.00	0.00
6,700.00	91.37	269.61	5,273.39	-10.91	-1,604.51	1,604.55	0.00	0.00	0.00	0.00
6,800.00	91.37	269.61	5,271.00	-11.59	-1,704.48	1,704.52	0.00	0.00	0.00	0.00
6,900.00	91.37	269.61	5,268.62	-12.27	-1,804.45	1,804.49	0.00	0.00	0.00	0.00
7,000.00	91.37	269.61	5,266.23	-12.95	-1,904.42	1,904.47	0.00	0.00	0.00	0.00
7,100.00	91.37	269.61	5,263.85	-13.63	-2,004.39	2,004.44	0.00	0.00	0.00	0.00
7,200.00	91.37	269.61	5,261.46	-14.31	-2,104.36	2,104.41	0.00	0.00	0.00	0.00
7,300.00	91.37	269.61	5,259.08	-14.99	-2,204.33	2,204.38	0.00	0.00	0.00	0.00
7,400.00	91.37	269.61	5,256.69	-15.67	-2,304.30	2,304.35	0.00	0.00	0.00	0.00

Database:	GCR DB	Local Co-ordinate Reference:	Well #54H
Company:	Apache Corporation	TVD Reference:	KB @ 3780.00usft (TBD)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	KB @ 3780.00usft (TBD)
Site:	NFE Federal	North Reference:	Grid
Well:	#54H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #1_05-19-14		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
7,500.00	91.37	269.61	5,254.31	-16.35	-2,404.27	2,404.32	0.00	0.00	0.00	
7,600.00	91.37	269.61	5,251.93	-17.03	-2,504.24	2,504.30	0.00	0.00	0.00	
7,700.00	91.37	269.61	5,249.54	-17.71	-2,604.21	2,604.27	0.00	0.00	0.00	
7,800.00	91.37	269.61	5,247.16	-18.39	-2,704.18	2,704.24	0.00	0.00	0.00	
7,900.00	91.37	269.61	5,244.77	-19.06	-2,804.15	2,804.21	0.00	0.00	0.00	
8,000.00	91.37	269.61	5,242.39	-19.74	-2,904.11	2,904.18	0.00	0.00	0.00	
8,100.00	91.37	269.61	5,240.00	-20.42	-3,004.08	3,004.15	0.00	0.00	0.00	
8,200.00	91.37	269.61	5,237.62	-21.10	-3,104.05	3,104.12	0.00	0.00	0.00	
8,300.00	91.37	269.61	5,235.23	-21.78	-3,204.02	3,204.10	0.00	0.00	0.00	
8,400.00	91.37	269.61	5,232.85	-22.46	-3,303.99	3,304.07	0.00	0.00	0.00	
8,500.00	91.37	269.61	5,230.46	-23.14	-3,403.96	3,404.04	0.00	0.00	0.00	
8,600.00	91.37	269.61	5,228.08	-23.82	-3,503.93	3,504.01	0.00	0.00	0.00	
8,700.00	91.37	269.61	5,225.69	-24.50	-3,603.90	3,603.98	0.00	0.00	0.00	
8,729.11	91.37	269.61	5,225.00	-24.70	-3,633.00	3,633.08	0.00	0.00	0.00	

TD at 8729.11 = PBHL-NFE Fed #54H

Design Targets										
Target Name	hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL-NFE Fed #54H		0.00	0.00	5,225.00	-24.70	-3,633.00	680,282.50	628,385.90	32° 52' 10.12852 N	103° 54' 54.66912 W
- plan hits target center										
- Point										

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
278.00	278.00	Rustler		-1.37	269.61	
538.00	538.00	T/Salt		-1.37	269.61	
1,199.00	1,199.00	B/Salt		-1.37	269.61	
1,356.00	1,356.00	Yates		-1.37	269.61	
1,789.00	1,789.00	Seven Rivers		-1.37	269.61	
2,388.00	2,388.00	Queen		-1.37	269.61	
2,807.00	2,807.00	Grayburg		-1.37	269.61	
3,109.00	3,109.00	San Andres		-1.37	269.61	
4,631.00	4,631.00	Glorieta		-1.37	269.61	
4,642.00	4,642.00	Yeso (Paddock)		-1.37	269.61	
5,119.66	5,100.86	Yeso (Blinebry)		-1.37	269.61	

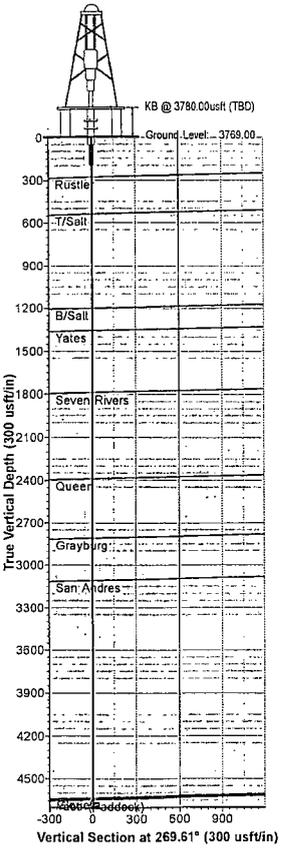
Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Local Coordinates	Comment
4,822.50	4,822.50	0.00	0.00		KOP, 12°/100' Build
5,584.15	5,300.00	-3.32	-489.01		LP, Begin 91.37° Inc Hold
8,729.11	5,225.00	-24.70	-3,633.00		TD at 8729.11



Project: Eddy County, NM (NAD27 NME)
 Site: NFE Federal
 Well: #54H
 Wellbore: WB1
 Design: Plan #1 05-19-14
 Rig: TBD



T G M
 Azimuths to Grid North
 True North: -0.23°
 Magnetic North: 7.32°
 Magnetic Field
 Strength: 48646.8nT
 Dip Angle: 60.64°
 Date: 05/19/2014
 Model: BGGM2013



WELL DETAILS									
+N-S	+E-W	Northing	Ground Level	3769.00	Latitude	Longitude			
0.00	0.00	680307.20	Easting	632016.90	32° 52' 10.22852 N	103° 54' 12.07186 W			

SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSec	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	4822.50	0.00	0.00	4822.50	0.00	0.00	0.00	0.00	0.00	0.00	KOP, 12°/100' Build
3	5584.15	91.37	269.61	5300.00	-3.32	-489.01	12.00	269.61	489.02		LP, Begin 91.37° Inc Hold
4	8729.11	91.37	269.61	5225.00	-24.70	-3633.00	0.00	0.00	3633.08	PBHL-NFE Fed #54H	TD at 8729.11

DESIGN TARGET DETAILS									
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude	Shape	
PBHL-NFE Fed #54H	5225.00	-24.70	-3633.00	680282.50	628385.90	32° 52' 10.12852 N	103° 54' 54.66912 W	Point	- plan hits target center

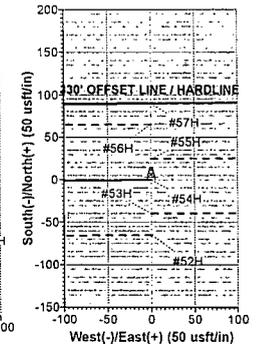
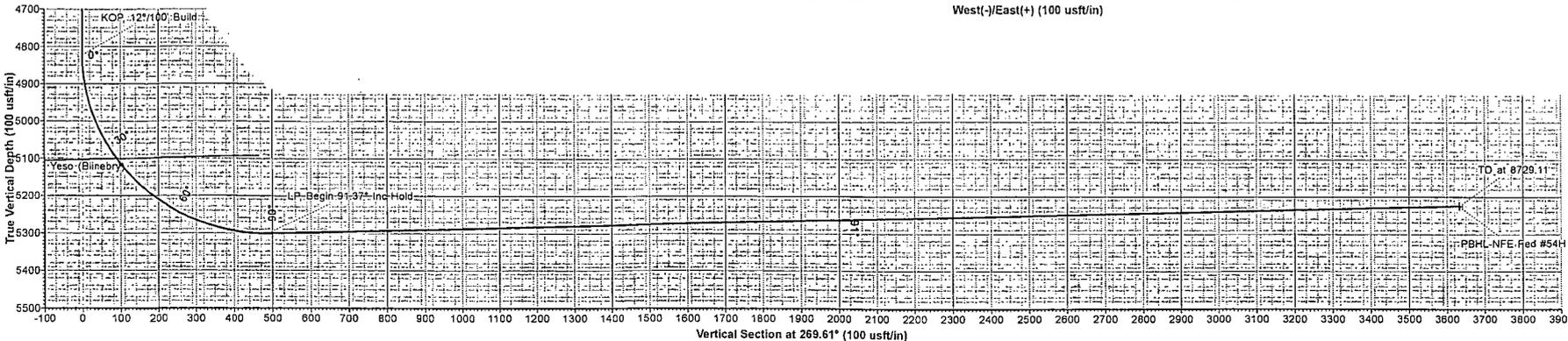
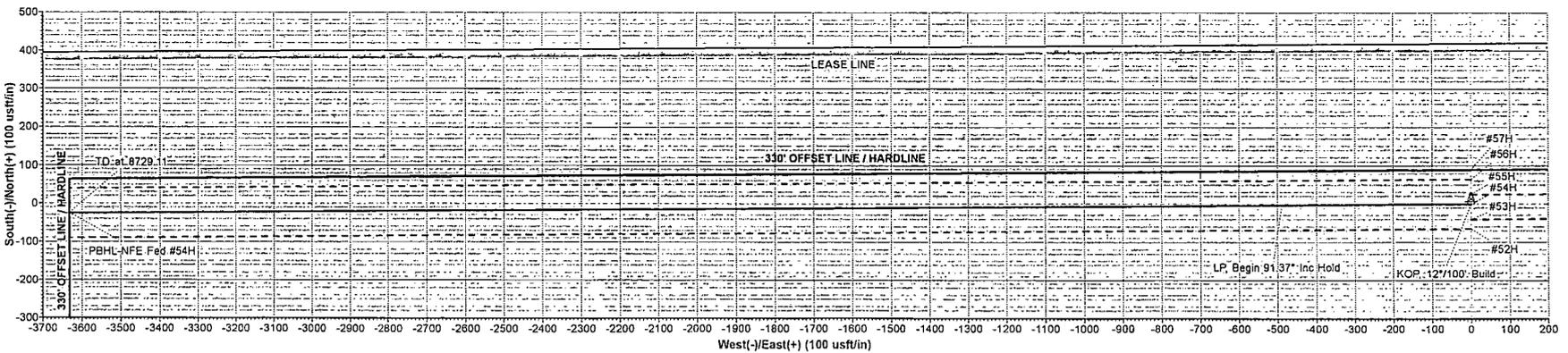
PROJECT DETAILS: Eddy County, NM (NAD27 NME)	
Geodetic System:	US State Plane 1927 (Exact solution)
Datum:	NAD 1927 (NADCON CONUS)
Ellipsoid:	Clarke 1866
Zone:	New Mexico East 3001
System Datum:	Mean Sea Level

SITE DETAILS: NFE Federal	
Site Centre Northing:	673264.70
Easting:	633303.50
Positional Uncertainty:	0.00
Convergence:	0.24
Local North:	Grid

FORMATION TOP DETAILS				
TVDPath	MOPath	Formation	DipAngle	DipDz
278.00	278.00	Rustler	-1.37	269.61
538.00	538.00	T/Salt	-1.37	269.61
1199.00	1199.00	B/Salt	-1.37	269.61
1356.00	1356.00	Yates	-1.37	269.61
1789.00	1789.00	Seven Rivers	-1.37	269.61
2388.00	2388.00	Queen	-1.37	269.61
2807.00	2807.00	Grayburg	-1.37	269.61
3109.00	3109.00	San Andres	-1.37	269.61
4631.00	4631.00	Glorieta	-1.37	269.61
4642.00	4642.00	Yeso (Paddock)	-1.37	269.61
5100.88	5119.66	Yeso (Blinebry)	-1.37	269.61

Map System: US State Plane 1927 (Exact solution)	
Datum:	NAD 1927 (NADCON CONUS)
Ellipsoid:	Clarke 1866
Zone Name:	New Mexico East 3001
Local Origin:	Well #54H, Grid North
Latitude:	32° 52' 10.22852 N
Longitude:	103° 54' 12.07186 W
Grid East:	632016.90
Grid North:	680307.20
Scale Factor:	1.000
Geomagnetic Model:	BGGM2013
Sample Date:	19-May-14
Magnetic Declination:	7.55°
Dip Angle from Horizontal:	60.64°
Magnetic Field Strength:	48647
To convert a Magnetic Direction to a Grid Direction, Add 7.32°	
To convert a Magnetic Direction to a True Direction, Add 7.55° East	
To convert a True Direction to a Grid Direction, Subtract 0.23°	

LEGEND	
---	#56H, WB1, Plan #1 05-19-14 VO
---	#53H, WB1, Plan #1 05-19-14 VO
---	#55H, WB1, Plan #1 05-19-14 VO
---	#52H, WB1, Plan #1 05-19-14 VO
---	#57H, WB1, Plan #1 05-19-14 VO
---	Plan #1 05-19-14



APACHE BOP AND CHOKE MANIFOLD SCHEMATIC

NFE FEDERAL #52H #53H #54H #55H #56 #57H

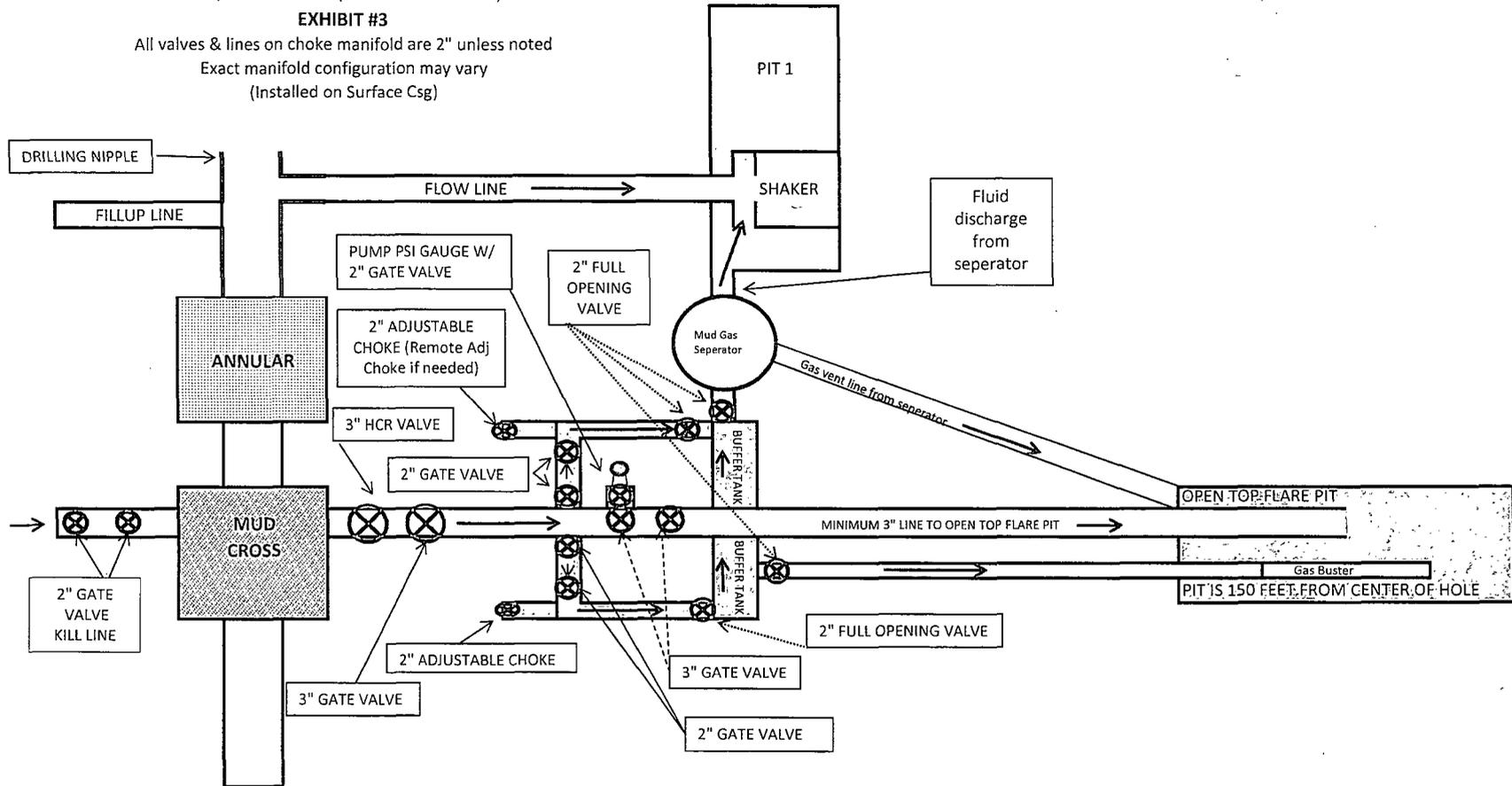
13-5/8" 3M PSI BOP (to be tested as a 2M)

EXHIBIT #3

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

Exact manifold configuration may vary

(Installed on Surface Csg)



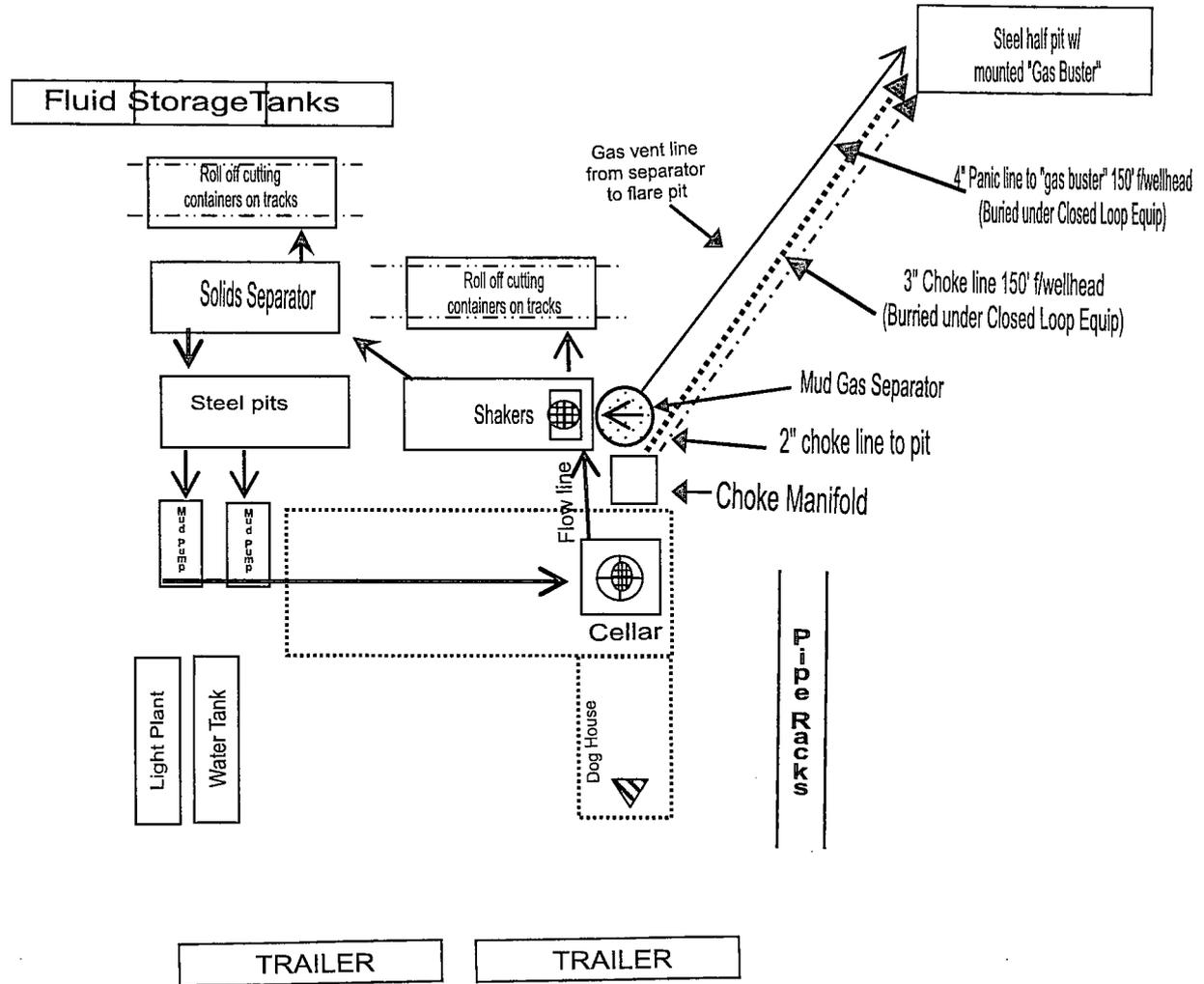
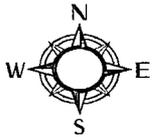
*** If H2S is encountered in quantities greater than 100ppm, Apache will shut in well & install a remote operated choke ***

Apache

Closed Loop Equipment Diagram

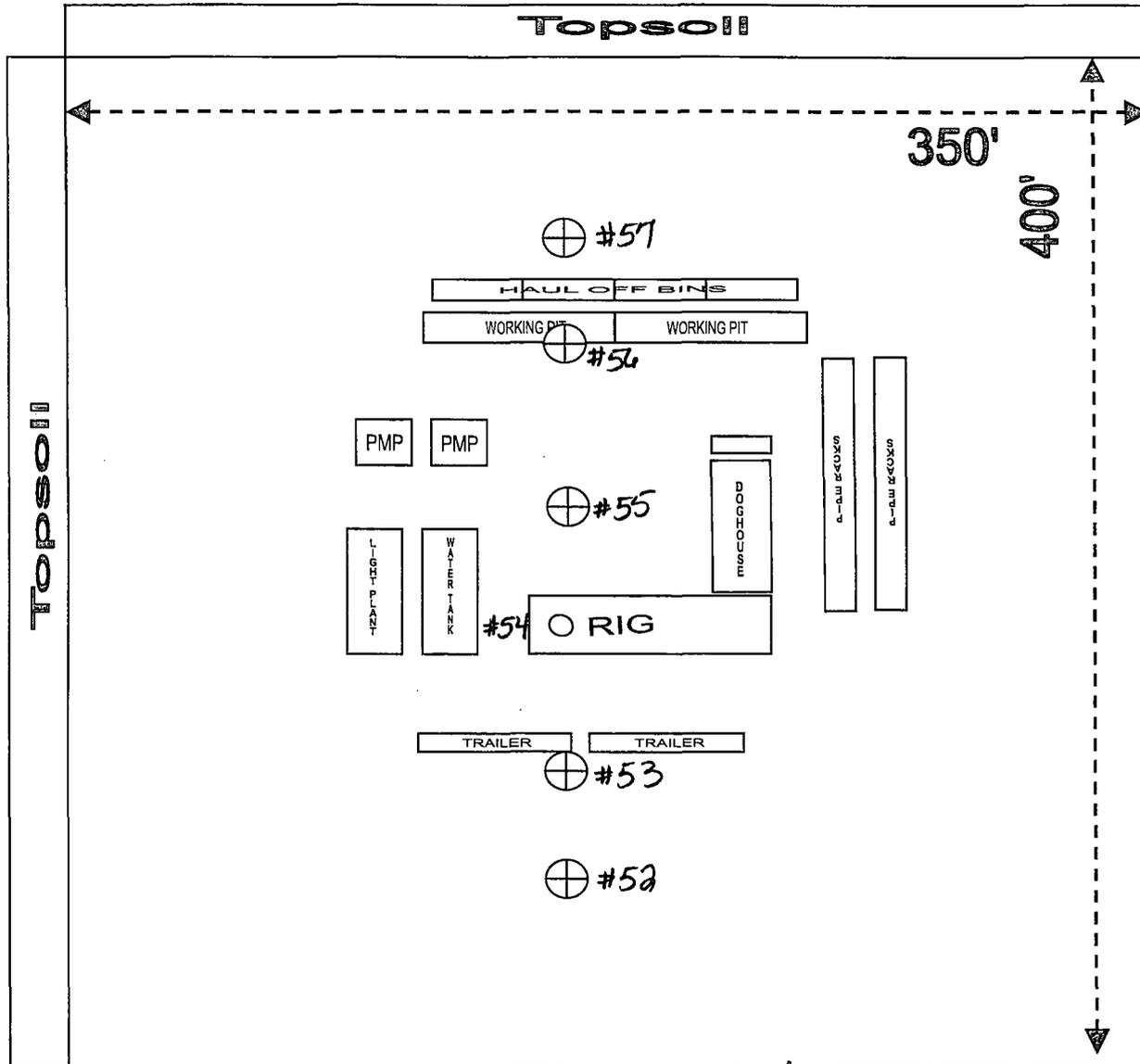
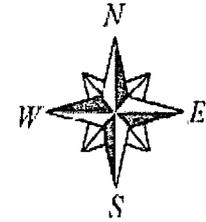
Exhibit 4

NFE Federal #52H #53H #54H #55H #56H #57H



Approx 455' of new road from the Southeast corner of the entire well pad

RIG ORIENTATION & LAYOUT
NFE FEDERAL #52H #53H #54H #55H #56H #57H
EXHIBIT 5

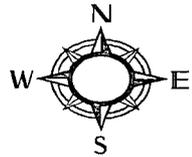


V DOOR

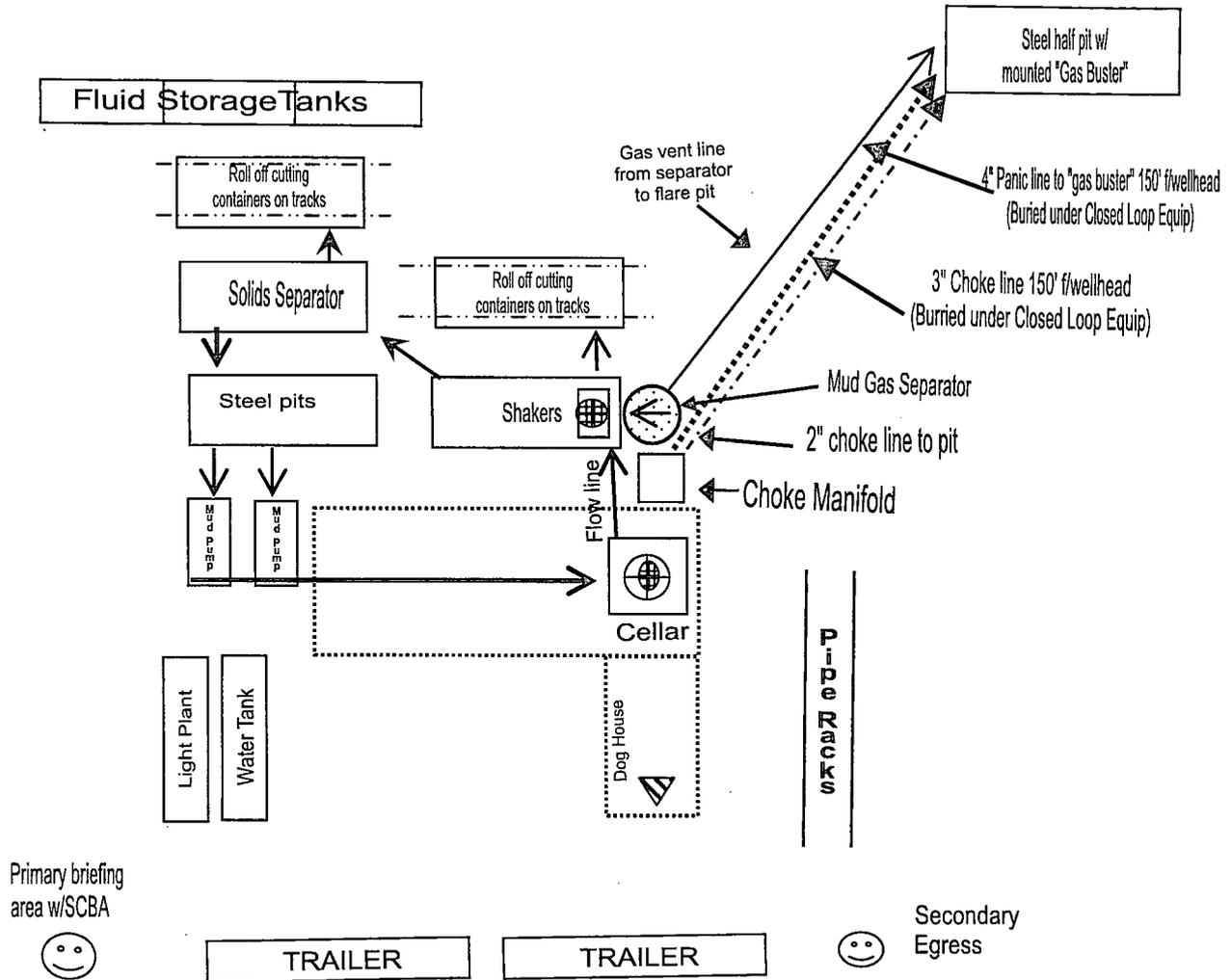
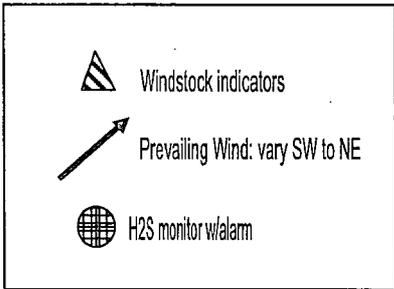
⊕ → Proposed wellsites

Apache

Drilling Location
H2S Safety Equipment Diagram
Exhibit 6



NFE Federal #52H #53H #54H #55H #56H #57H



Approx 455' of new road from the Southeast corner of the entire well pad

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

HYDROGEN SULFIDE (H₂S) 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 (H₂S)
- The proper use and maintenance of personal protective equipment and life support systems.
- The proper use of H₂S 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 H₂S 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 H₂S Drilling Operations Plan

There will be an initial training session just prior to encountering a known or probable H₂S zone (within 3 days or 500') and weekly H₂S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H₂S 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.

H₂S SAFETY EQUIPMENT AND SYSTEMS:

Well Control Equipment that will be available & installed if H₂S 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 Detection and Monitoring Equipment:

- Two portable H₂S monitors positioned on location for best coverage & response. These units have warning lights & audible sirens when H₂S levels of 20 ppm are reached.
- One portable H₂S 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 H₂S circulated to the surface. Proper mud weights, safe drilling practices & the use of H₂S scavengers will minimize hazards when penetrating H₂S bearing zones.
- A mud-gas separator and H₂S 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 H₂S service.
- All elastomers used for packing & seals shall be H₂S trim.

Communication:

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

HYDROGEN SULFIDE (H₂S) CONTINGENCY PLAN

Assumed 100 ppm ROE = 3000'

100 ppm H₂S concentration shall trigger activation of this plan.

Emergency Procedures

In the event of a release of gas containing H₂S, 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 H₂S 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 H₂S, 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 (SO₂). Intentional ignition must be coordinated with the NMOCDD 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 H₂S and SO₂

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H ₂ S	1.189 Air = 1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO ₂	2.21 Air = 1	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 an 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
Richard McKay – Drlg Superintendent	432-818-1628	432-234-7430	
Joe Payne – Drilling Engineer	432-818-1624	432-425-2195	
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 **CD KEMP** is out of contact, **BARRY GREEN** 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 #8

WARNING

**YOU ARE ENTERING AN H2S AREA
AUTHORIZED PERSONNEL ONLY**

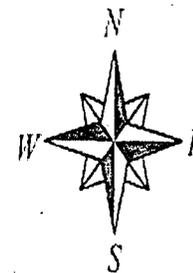
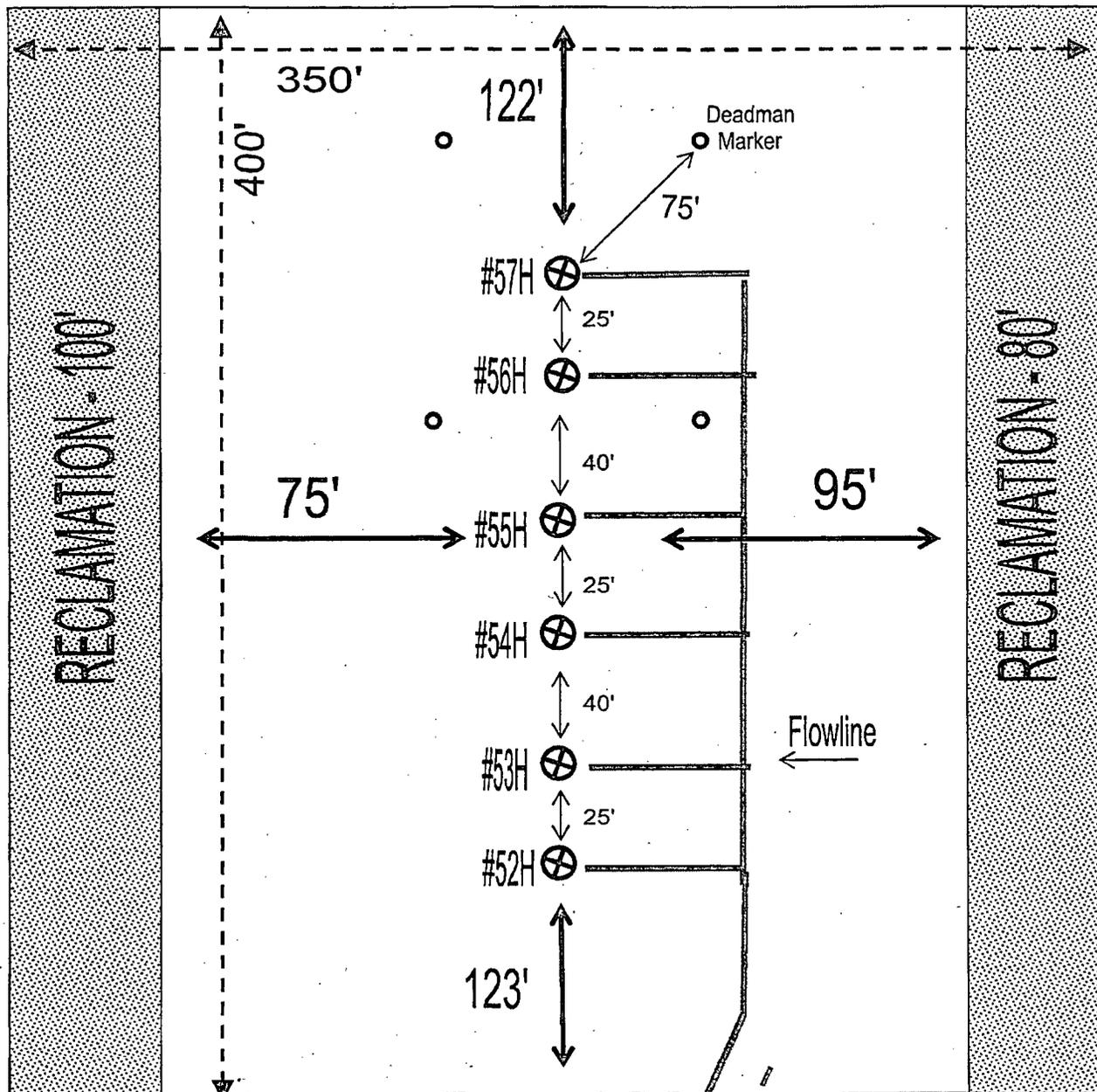
- 1. BEARDS OR CONTACT LENSES NOT ALLOWED**
- 2. HARD HATS REQUIRED**
- 3. SMOKING DESIGNATED AREAS ONLY**
- 4. BE WIND CONSCIOUS AT ALL TIMES**
- 5. CHECK WITH APACHE CORPORATION**

APACHE CORPORATION

1-888-257-6840

INTERIM RECLAMATION LAYOUT
NFE FEDERAL #52H #53H #54H #55H #56H #57H

EXHIBIT #7



Approx 455' of new lease road



SURFACE USE PLAN OF OPERATIONS

NFE Federal #54H

SHL: 420' FNL & 1025' FEL BHL: 420' FNL & 330' FWL SEC: 6
T17S R31E Eddy County, NM

EXISTING ROADS

- A. Proposed Well Site Location:
- The well site & elevation plat for the proposed well are reflected on the well site layout (form C-102). Well staked by John West Surveying Company.
- B. Existing Roads
- From the intersection of US Hwy #82 & CoRd #221 (Skelly Rd), go North approx 1.3 miles, turn Right & go Northeast approx 0.5 miles, turn Right, go East approx 0.1 miles, turn Left, go North approx 0.4 miles, go West follow curve approx 0.3 miles, turn Right, go North approx 0.8 miles, turn Right, go Northeast approx 0.3 miles to road survey, follow road survey 455' Northeast to location.
- C. Route Location
- Approx 455' 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
- EXHIBIT 1* 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 RED on *EXHIBIT 1*. Right of way using this proposed route will be requested if necessary.
 - 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
- 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. Existing production facilities are located at the Raven Battery.
- B. New Facilities in the Event of Production
- In the event well is productive, APACHE will install approx 40 of 6" surface pipeline from well to existing 6" buried pipeline (1 for liquid, 1 for gas) internal poly liner, externally wrapped with synergy, to the proposed Raven Federal Battery following existing lease roads. Pipeline has been applied for under ROW #NM-129160. (No pumping units will be used, fluid will be lifted with Electronic Submersible Pump.) If electricity is needed, power will be obtained from Central Valley Electric. Central Valley Electric will apply for ROW for their power lines. "SEE EXHIBIT 1A".
- 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
Caliche will be hauled or trucked 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
Apache will use a Closed Loop System. Cuttings will be contained in roll off bins, hauled & disposed of 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. "SEE EXHIBIT 4"
- C. Location of Access Road
"SEE EXHIBIT 1"

PLANS FOR SURFACE RECLAMATION

PLANS FOR SURFACE RECLAMATION

- A. Reserve Pit Cleanup
Not applicable. Closed Loop System will be used.
- B. Restoration Plans (Production Developed) *"SEE EXHIBIT 7"*
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 Apache agrees to contribute funding to the Permian Basin Cultural Resource Fund in lieu of being required to conduct a Class III survey for cultural resources associated with this project. Any location or construction conflicts will be resolved before construction begins.
- G. Onsite: Onsite by John Fast, BLM Specialist.
- H. Well Signs: Well signs will be in compliance 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

Richard McKay
Drilling Superintendent
303 Veterans Airpark Ln #1000
Midland, TX 79705
432-818-1628 - office
432-234-7430 – cell

PRODUCTION

Craig Maxwell
Sr. Production Foreman
2350 W. Marland Blvd
Hobbs, NM 88240
575-393-7106 – w
575-441-2568 – c

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Apache Corporation
LEASE NO.:	NMLC-029435B
WELL NAME & NO.:	NFE Federal 54H
SURFACE HOLE FOOTAGE:	0420' FNL & 1025' FEL
BOTTOM HOLE FOOTAGE:	0420' FNL & 0330' FWL
LOCATION:	Section 06, T. 17 S., R 31 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.

- General Provisions**
- Permit Expiration**
- Archaeology, Paleontology, and Historical Sites**
- Noxious Weeds**
- Special Requirements**
 - Lesser Prairie-Chicken Timing Stipulations
 - Ground-level Abandoned Well Marker
 - Dunes Sagebrush Lizard Trenching Monitor Stipulation
- Construction**
 - Notification
 - Topsoil
 - Closed Loop System
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- Road Section Diagram**
- Drilling**
 - Cement Requirements
 - H2S Requirements
 - Logging Requirements
 - Waste Material and Fluids
- Production (Post Drilling)**
 - Well Structures & Facilities
 - Pipelines
- Interim Reclamation**
- Final Abandonment & Reclamation**

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)

Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken:

Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

Dunes Sagebrush Lizard Trenching Monitor Stipulation

- Pre-construction contact with a BLM wildlife biologist is required 5 days prior to any ground disturbing activities associated with the project occurs.
- Successful completion of the BLM Trench Stipulation Workshop is required for a non-agency person to be approved as a monitor.
- Any trench left open for (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, an agency approved monitor shall walk the entire length of the open trench and remove all trapped vertebrates. The bottom surface of the trench will be disturbed a minimum of 2 inches in order to arouse any buried vertebrates. All vertebrates will be released a minimum of 100 yards from the trench.
- For trenches left open for eight (8) hours or more the following requirements apply:
 - Earthen escape ramps and/or structures (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench. Metal structures will not be authorized. Options will be discussed in detail at the required Trench Stipulation Workshop.
 - One approved monitor shall be required to survey up to three miles of trench between the hours of 11 AM-2 PM. A daily report (consolidate if there is more than one monitor) on the vertebrates found and removed from the trench shall be provided to the BLM (email/fax is acceptable) the following morning.

- Prior to backfilling of the trench all structures used as escape ramps will be removed and the bottom surface of the trench will be disturbed a minimum of 2 inches in order to arouse any buried vertebrates. All vertebrates will be released a minimum of 100 yards from the trench.

- This stipulation shall apply to the entire length of the project in the DSL habitat polygon regardless of land ownership or CCA/CCAA enrollment status.

- A project closeout will be required within three business days of the completion of the project.

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

This authorization is subject to your Certificate of Participation and/or Certificate of Inclusion under the New Mexico Candidate Conservation Agreement. Because it involves surface disturbing activities covered under your Certificate, your Habitat Conservation Fund Account with the Center of Excellence for Hazardous Materials Management (CEHMM) will be debited according to Exhibit B Part 2 of the Certificate of Participation.

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

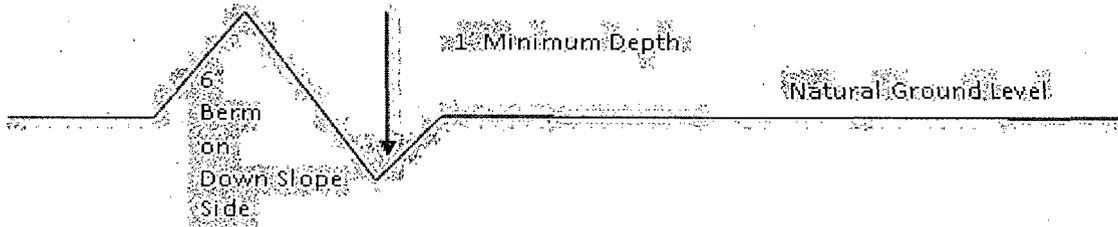
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

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:

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

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

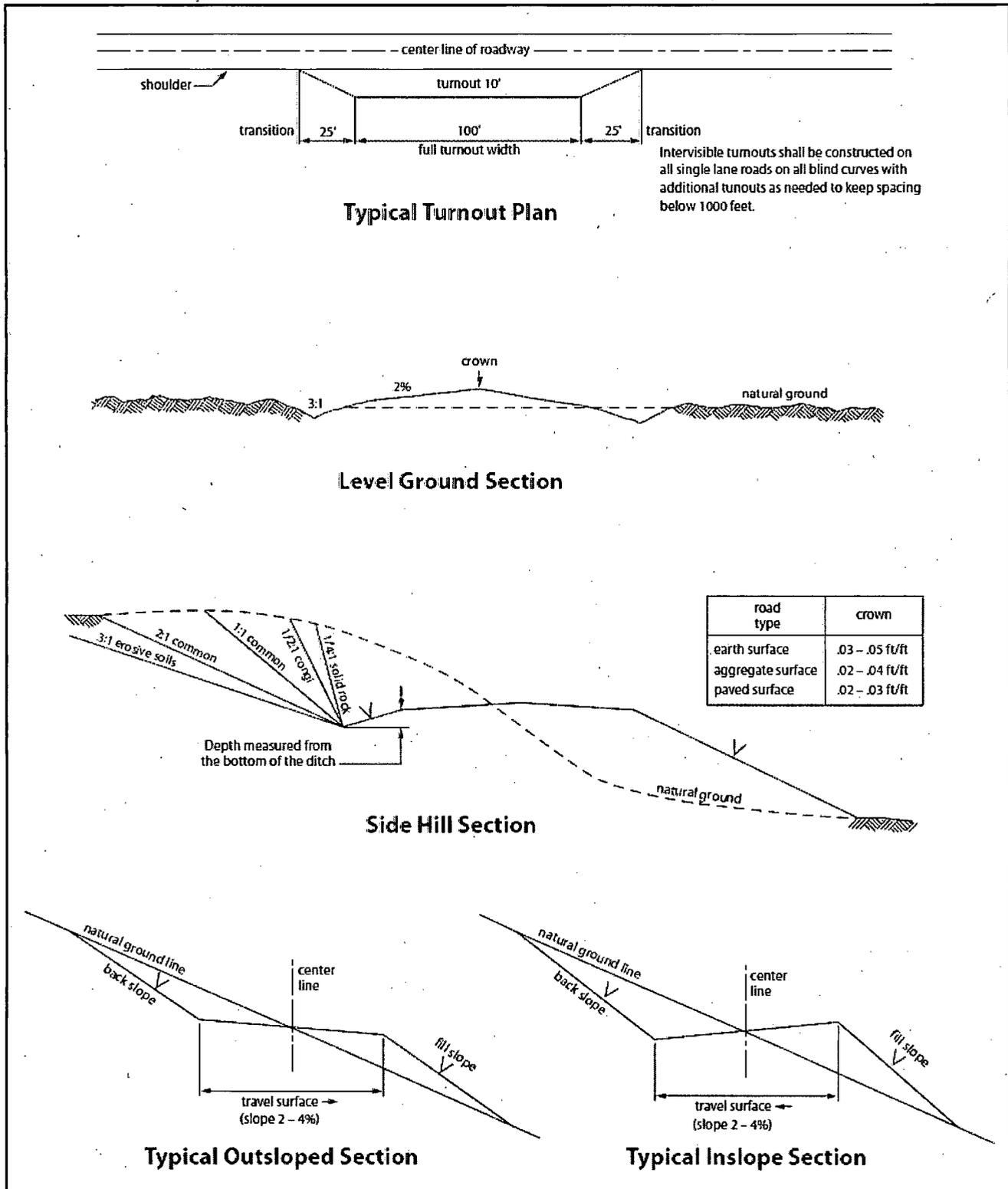


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

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 **Grayburg** 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. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) 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. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

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.). The initial wellhead installed on the well will remain on the well with spools used as needed.

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. 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.

1. The 13-3/8 inch surface casing shall be set at approximately 400 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**
 - 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.

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

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

Option #1 (Single Stage):

- Cement to surface. If cement does not circulate see B.1.a, c-d above.

Option #2:

Operator has proposed DV tool at depth of 1800', 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. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.

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 circulation on the next stage.

b. Second stage above DV tool:

- Cement to surface. If cement does not circulate see B.1.a, c-d above.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

3. The minimum required fill of cement behind the 7 X 5-1/2 inch production casing is:

- 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 3M annular, testing to 2,000 psi).**

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 **2000 (2M) psi (Installing 3M BOP, testing to 2,000 psi).**

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**.
 - 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. 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 010815

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

BURIED PIPELINE STIPULATIONS

A copy of the application (Grant, APD, or Sundry Notice) and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.
4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take

such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized right-of-way.
6. The pipeline will be buried with a minimum cover of 36 inches between the top of the pipe and ground level.
7. The maximum allowable disturbance for construction in this right-of-way will be 30 feet:
 - Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed 20 feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)
 - Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed 30 feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)
 - The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)
8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.
9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.
10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.
11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.
12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

- | | |
|---|--|
| <input type="checkbox"/> seed mixture 1 | <input type="checkbox"/> seed mixture 3 |
| <input type="checkbox"/> seed mixture 2 | <input type="checkbox"/> seed mixture 4 |
| <input type="checkbox"/> seed mixture 2/LPC | <input type="checkbox"/> Aplomado Falcon Mixture |

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder 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 will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

17. 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 associated roads, 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.

18. Escape Ramps - The operator will construct and maintain pipeline/utility trenches that are not otherwise fenced, screened, or netted to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

- a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.
- b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

19. . The period of time that any trenches or other excavations are kept open will be held to the minimum compatible with construction requirements. The holder shall not leave more than one-half mile of trench open overnight or otherwise unattended. Open trenches will have ramps, bridges, or earthen plugs, at least six feet wide, ever one-quarter mile to pass livestock and wildlife.

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).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture for LPC Sand/Shinnery 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 of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/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:

<u>Species</u>	<u>lb/acre</u>
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

*Pounds of pure live seed:

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