1

ATS-13-205

OCD Artesia

RECEIVED
APR 08 2013
NMOCD ARTESIA

Form 3160-3
(August 2007)

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

TCS 4/8/2013

HIGH CAVEKARST

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. BHL
NMNM059381/NMNM27801

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.
MERIDIAN FED #2H COM <39803>

2. Name of Operator Manzano, LLC <231429?

9. API Well No.
30-015-41252

3a. Address P.O. BOX 2107, Roswell, NM 88202-2107

3b. Phone No. *(include area code)*
575-623-1996

10. Field and Pool, or Exploratory
PARKWAY BONE SPRINGS <49622>

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 330 FNL & 660 FWL, ~~SEC~~ LOT 4 3-T20S-R29E
At proposed prod. zone BHL 990' FNL & 330' FEL, ~~Sec~~ LOT 1 3-T20S-R29E

11. Sec., T. R. M. or Blk. and Survey or Area
Sec 3-T20S-R29E

14. Distance in miles and direction from nearest town or post office*
20 miles east of Carlsbad

12. County or Parish
EDDY

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. unit line, if any)
SHL- 330'

16. No. of acres in lease
~~80~~ 83.75 ACRES+483.1 ACRE
~~563.1~~ 566.480 ACRES TOTAL

17. Spacing Unit dedicated to this well
~~160~~ 166.48

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
330' (Meridian Fed #1)

19. Proposed Depth
TVD- 8160'
MD - 12182'

20. BLM/BIA Bond No. on file
NM-2567

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
GL-3348'

22. Approximate date work will start*
02/15/2012

23. Estimated duration
45 DAYS

24. Attachments

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

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

25. Signature Paul Ragsdale
Name *(Printed Typed)* Paul Ragsdale
Date 12/12/2012

Title Engineer

Approved by *(Signature)* James A. Amos
Name *(Printed Typed)*
Date APR - 4 2013

Title FIELD MANAGER
Office CARLSBAD FIELD OFFICE

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

APPROVAL FOR TWO YEARS

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

(Continued on page 2)

*(Instructions on page 2)

Capitan Controlled Water Basin

CAPITAN CONTROLLED WATER BASIN

SEE ATTACHED FOR CONDITIONS OF APPROVAL

APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED

12. OPERATOR'S REPRESENTATIVE:

CERTIFICATION:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route, that I am familiar with the conditions which presently exist; that the statements made in this plan are to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Manzano, LLC and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

Manzano, LLC

12/12/12
Date

Paul Ragsdale
Operations Engineer
Manzano, LLC

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 Rd., 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 and Natural Resources Department

OIL CONSERVATION DIVISION

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

Form C-102
Revised August 1, 2011

Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015-41252	49622	Parkway; B.S.

Property Code	Property Name	Well Number
39803	MERIDIAN FEDERAL COM	2H

OGRID No.	Operator Name	Elevation
231429	MANZANO, LLC	3348'

Surface Location

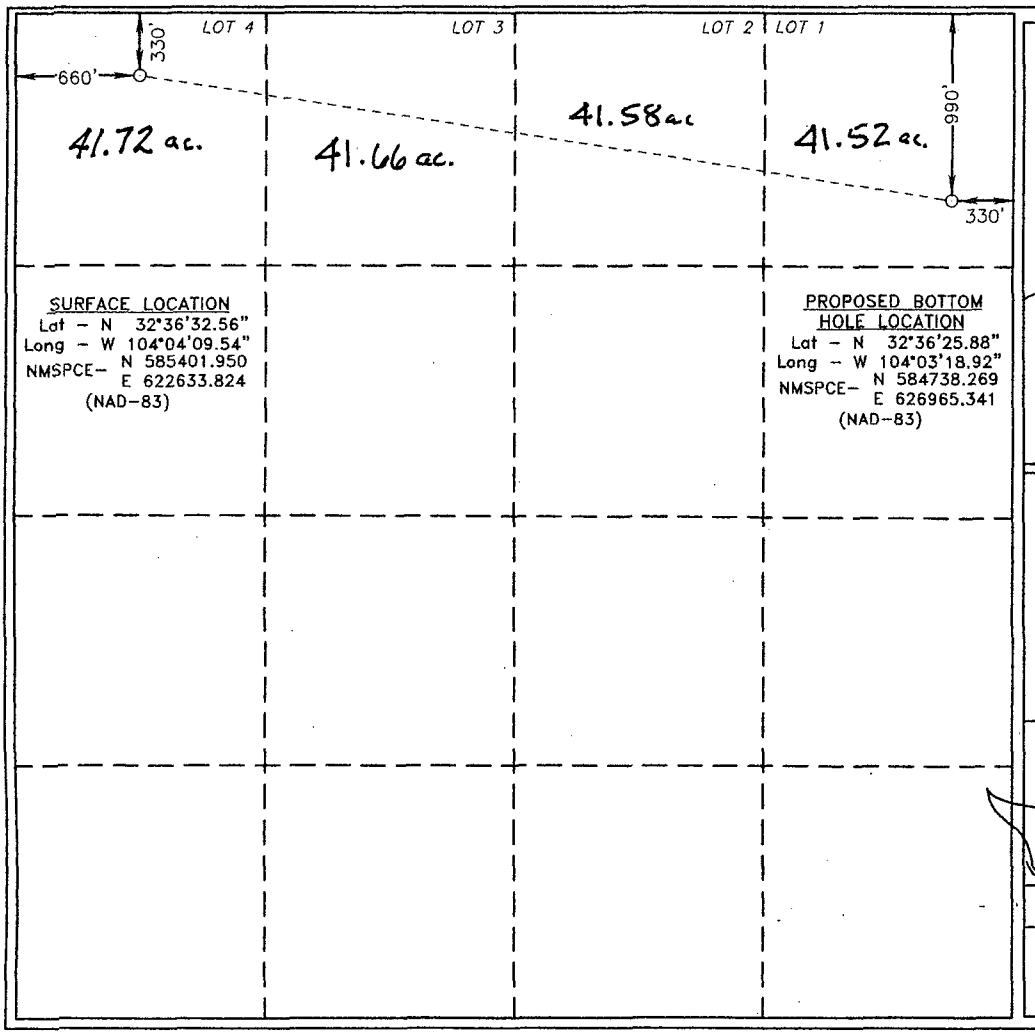
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
LOT 4	3	20 S	29 E		330	NORTH	660	WEST	EDDY

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
LOT 1	3	20 S	29 E		990	NORTH	330	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
166.48			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

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

Signature 1/25/13 Date

Mike Hanagan
Printed Name

mike@manzanoenergy.com
Email Address

SURVEYOR CERTIFICATION

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

DECEMBER 03, 2012
Date Surveyed

Signature & Seal of Professional Surveyor

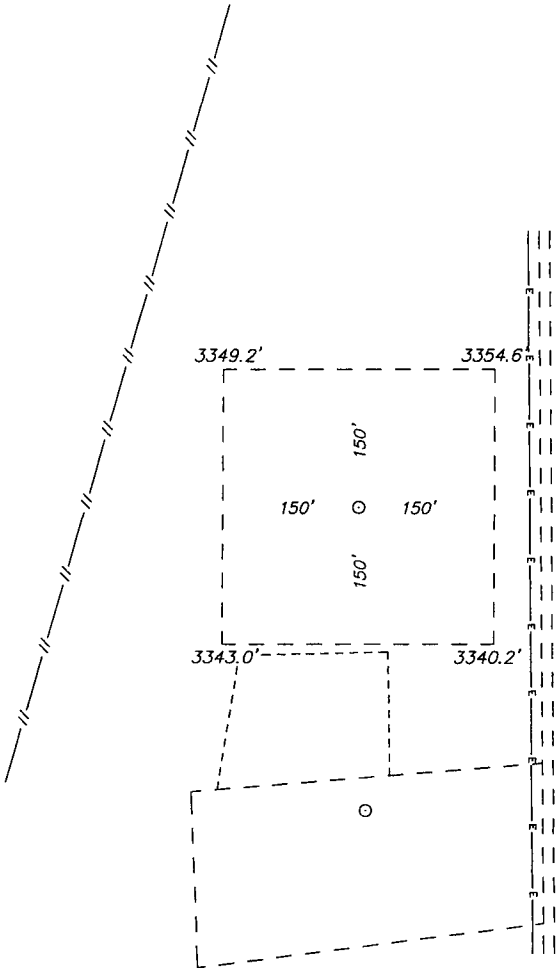
NEW MEXICO 7977 REGISTERED PROFESSIONAL LAND SURVEYOR

W.O. No. 12113

Certificate No. Gary L. Jones 7977

BASIN SURVEYS 27713

SECTION 3, TOWNSHIP 20 SOUTH, RANGE 29 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.



MANZANO, LLC
MERIDIAN FEDERAL COM #2H
ELEV. - 3348'

Lat - N 32°36'32.56"
Long - W 104°04'09.54"
NMSPCE- N 585401.950
E 622633.824
(NAD-83)

200 0 200 400 FEET

SCALE: 1" = 200'

Directions to Location:

FROM THE JUNCTION OF HWY 62-180 AND BURTON FLAT, GO NORTH 2.0 MILES ON BURTON FLATS TURNING WEST THENCE NORTH AGAIN 3.7 MILES TO LEASE ROAD, GO WEST 0.5 MILES TURNING SOUTH 0.1 MILES TO PROPOSED LEASE ROAD.

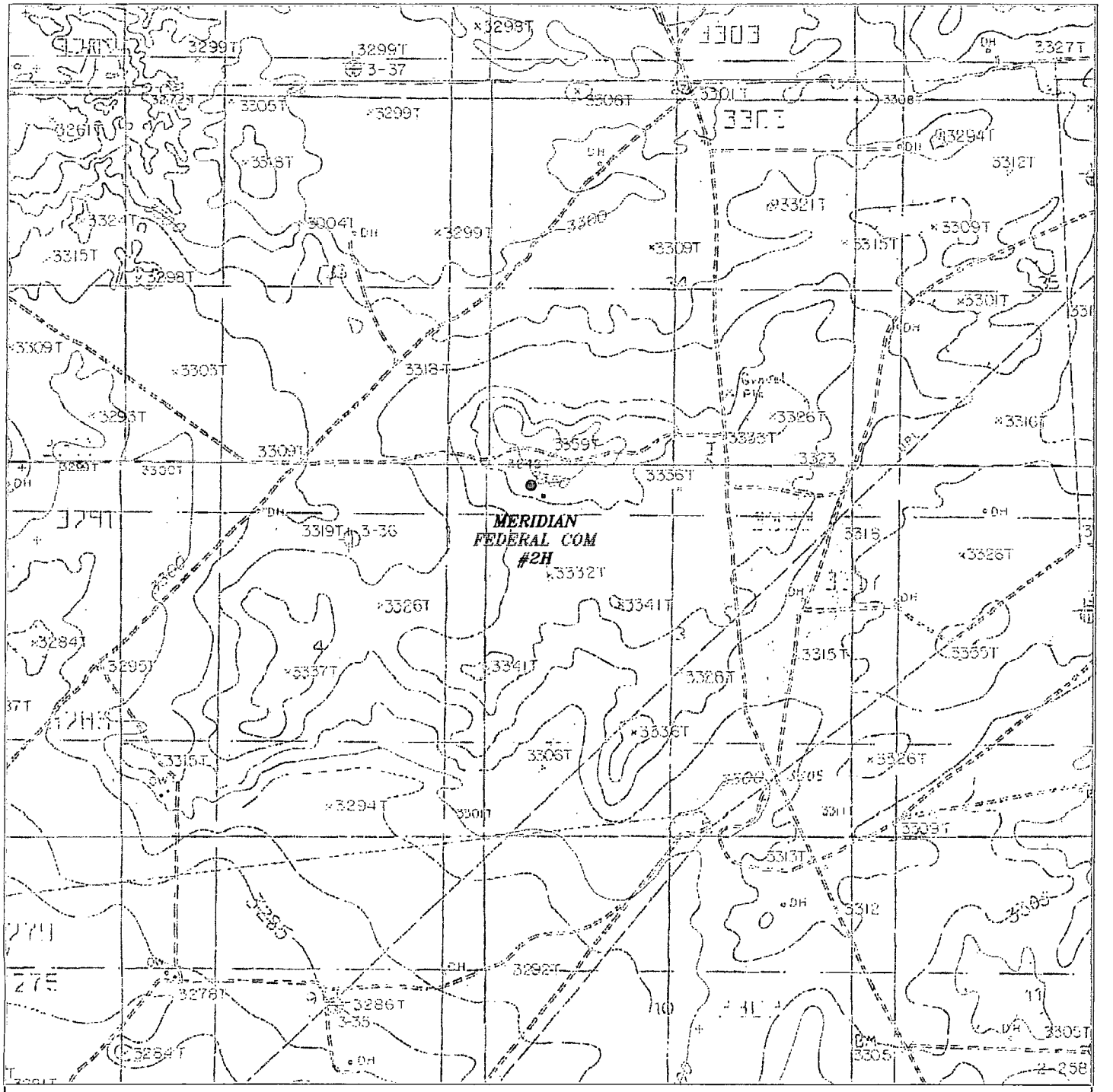
MANZANO, LLC

REF: MERIDIAN FEDERAL COM #2H / WELL PAD TOPO

THE MERIDIAN FEDERAL COM #2H LOCATED 330' FROM THE NORTH LINE AND 660' FROM THE WEST LINE OF SECTION 3, TOWNSHIP 20 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

BASIN SURVEYS P.O. BOX 1786 - HOBBS, NEW MEXICO

W.O. Number: 27713	Drawn By: J. SMALL		
Date: 12-12-2011	Disk: JMS 27713	Survey Date: 12-03-2012	Sheet 1 of 1 Sheets



MERIDIAN FEDERAL COM #2H
Located 330' FNL and 660' FWL
Section 3, Township 20 South, Range 29 East,
N.M.P.M., Eddy County, New Mexico.

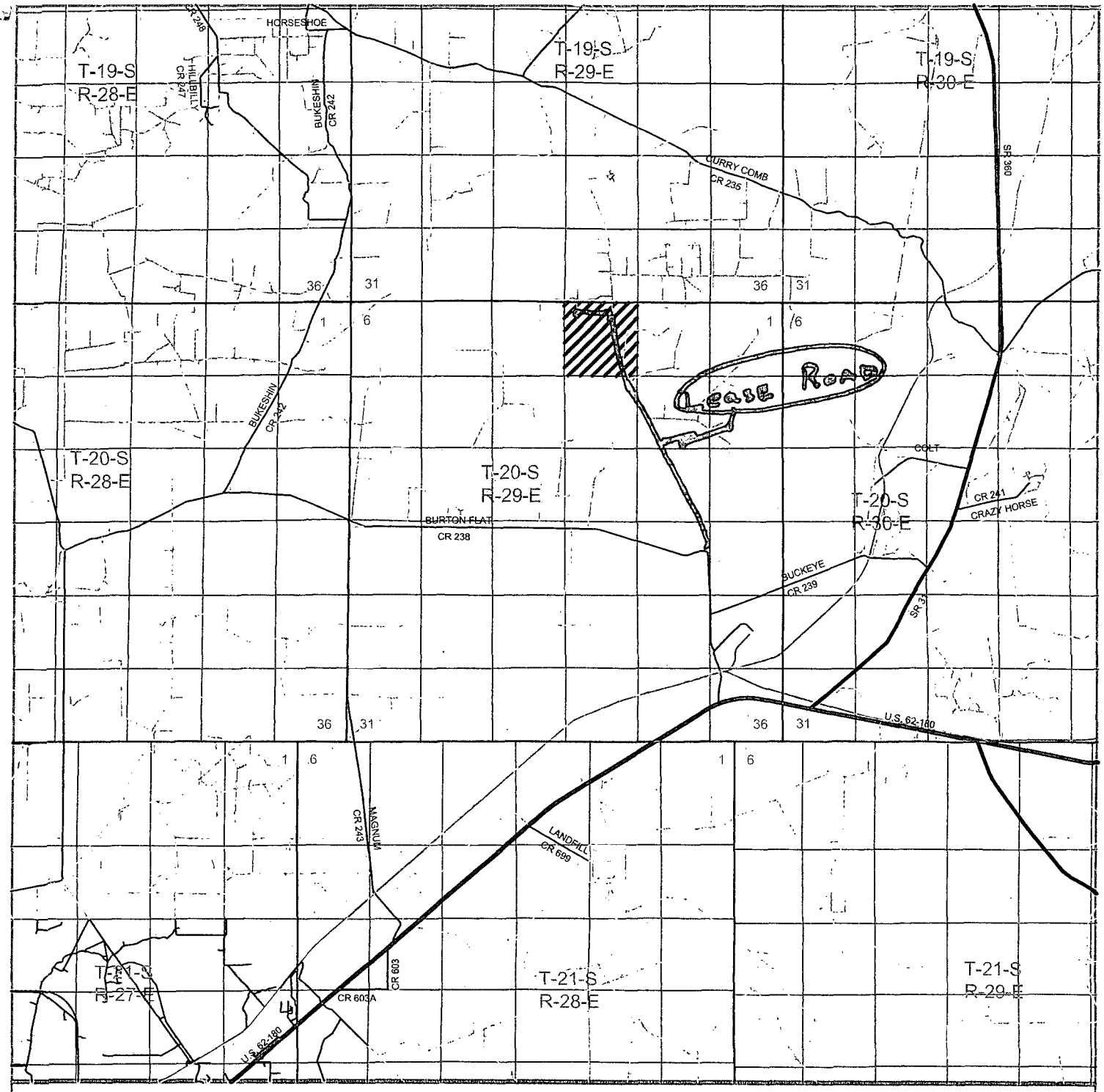
Basin Surveys
focused on excellence in the oilfield

P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 - Office
(575) 392-2206 - Fax
basinsurveys.com

W.O. Number:	JMS 27713
Survey Date:	12-03-2012
Scale:	1" = 2000'
Date:	12-12-2012

N

MANZANO, LLC



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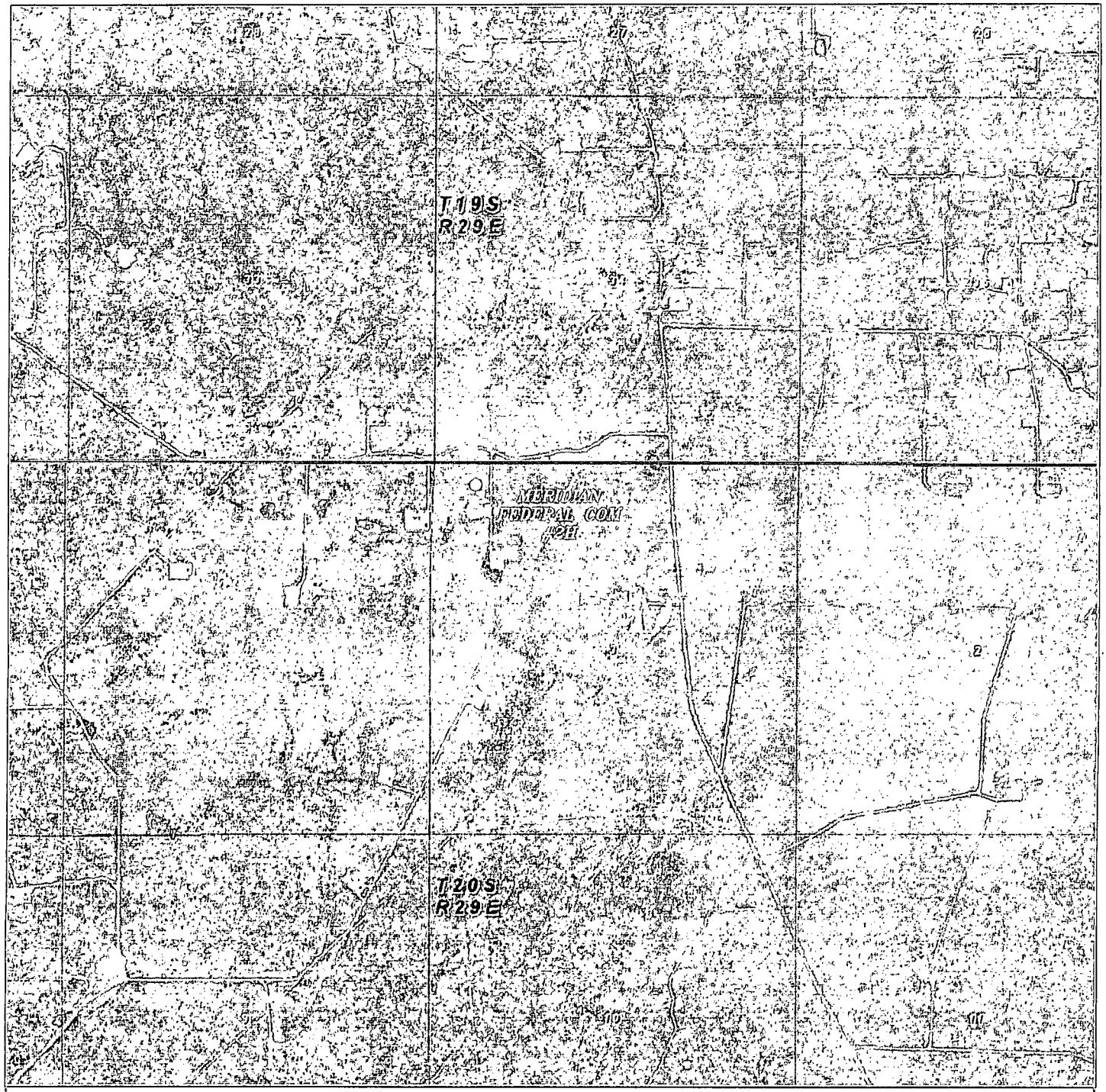
basinsurveys.com

W.O. Number:	JMS 27713
Survey Date:	12-03-2012
Scale:	1" = 2 Miles
Date:	12-12-2012

N

MANZANO, LLC



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(575) 392-2206 - Fax
basinsurveys.com

W.O. Number: JMS 27713

Scale: 1" = 2000'

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

N

MANZANO, LLC

Manzano LLC

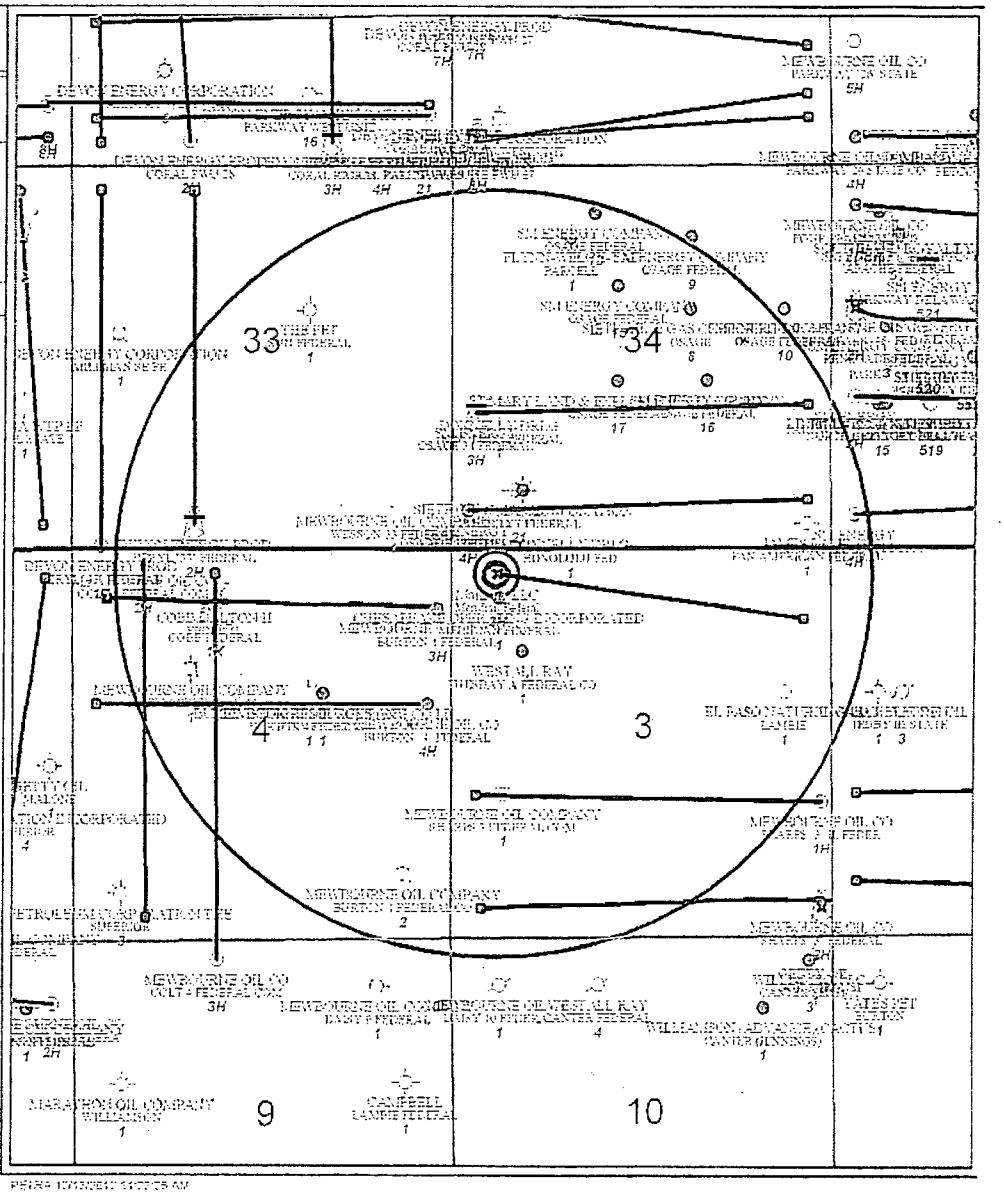
Meriridan Federal com #2H

Section 3-T20S-R29E

Surface Location: 330 Fnl, 660 Fwl

Bottomhole Location: 990 Fnl, 330 Fel

December 13, 2012



Manzano LLC

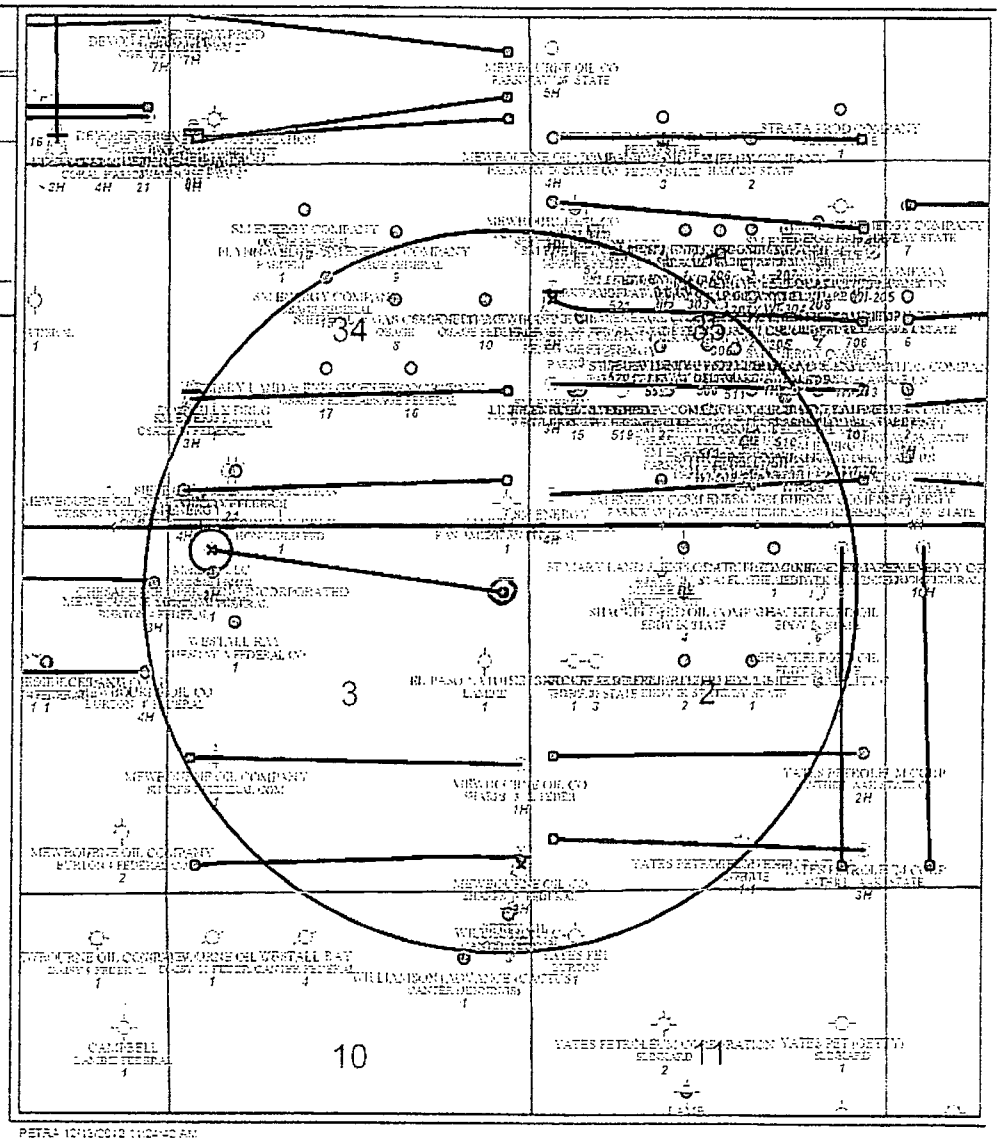
Meriridan Federal #2H

Section 3-T20S-R29E

Surface Location: 330 Fnl, 660 Fwl

Bottomhole Location: 990 Fnl, 330 Fel

December 13, 2012



Manzano, LLC
DRILLING AND OPERATIONS PROGRAM
com
MERIDIAN FED #2H
Surface Location
330 FNL & 660 FWL
Section 3-T20S- R29E
Bottom Hole Location
990 FNL & 330 FEL
Section 3-T20S-R29E
EDDY County, New Mexico

In conjunction with Form 3160-3, Application for Permit to Drill subject well, Manzano, LLC submits the following ten items of pertinent information in accordance with BLM requirements.

1. **Geological surface formation:** Permian

2. **The estimated tops of geologic markers are as follows:**

Geologic Marker	Depth
Red Beds	Surface
Rustler	150'
Top of Salt	600'
Base of Salt	1100'
Yates	1262'
Seven Rivers	1525'
Capitan Reef	1600'
Delaware	3420'
Bone Springs	5680'
Avalon Sand	5810'
Top 1st Sand	7110'
Top 2nd Sand	7810'
TD	8060'

3. **The estimated depths at which anticipated water, oil or gas formations are expected to be encountered:**

Water	90'-200'
Oil/Gas in Delaware	3420'-5680
Oil/Gas in Bone Springs	5810'-8060'

No other formations are expected to give up oil, gas, or fresh water in measurable quantities.

The surface fresh water sands will be protected by setting 20" casing at ~~250~~ 350' in a 26" hole and circulating cement back to surface. Potash / salt sections will be protected by setting 13 3/8" casing at ~~1200~~ 1600' and circulating cement back to surface.

After the 13 3/8" casing is set and cemented, the hole size will be reduced to 12 ¼" and drilling will continue. 9 5/8" casing will be set at ~~3200~~ 3300' into the Delaware formation and cement circulated back to surface to protect the Capitan Reef.

The 9 5/8" casing will be drilled out with an 8 ¾" bit and drilled to a kick off point at 7450' tvd. At that point, directional drilling tools will be installed and the well will be "kicked off" and a curve will be drilled with the 2nd Bone Springs at 8060 tvd as the target. 7" casing will be set and cemented once the lateral is "landed" at 90° and cement will be circulated back to surface.

The hole size will be reduced again to 6 1/8" and the lateral will be drilled across the section from west to east with a proposed tvd of 8060' at the curve and a md of 12,182'. TVD will be 8160' at the end of the lateral. A 4 ½" liner will be run into the open hole with a 20 stage "port and packer" system. The liner will be hung and the rig will be moved off awaiting completion.

4. Proposed Casing Program:

HOLE SIZE	HOLE INTERVAL	CASING INTERVAL	CASING OD	NEW	WT	COLLAR	GRADE	Collapse Design Factor	Burst Design Factor	Tension Design Factor
26"	0-250' ~~: OK~~	0-250	20"	new	94#	BT&C	H-40	1.125	1.125	1.6
17 ½"	250'-1200' ~~1600'~~	0-1200'	13 3/8"	new	48#	ST & C	H-40	1.125	1.125	1.6
12 ¼"	1200'-3200' ~~3300'~~	0'-3200'	9 5/8"	new	36#	LT&C	J-55/K-55	1.125	1.125	1.6
8 ¾"	3200'-8060'	0'-7450'	7"	new	26#	LT&C	P-110	1.125	1.125	1.6
8 ¾"		7450'-8060'	7"	new	26#	BT&C	P-110	1.125	1.125	1.6
6 1/8"	8060'-12,182'	7900'-12,182'	4 ½"	new	11.6#	LT&C	P-110	1.125	1.125	1.6

See COA

5. Proposed Cement Program:

20" surface casing: 500 sks Class "C"w/ 2% CaCl2 (yd @1.34 cuft/sk @ 14.8 PPG) Using 100 % excess cement circulated to surface.

13 3/8" intermediate casing: 450 sks Howco Lite Class "C" (35:65:4) w/ 5# sk LCM 1 & ¼ #/sk celloflake (yd @2.13 cuft/sk @ 12.5 PPG). Tail w/ 200 sks Class "C" NEAT (yd @ 1.33 cuft/sk @ 14.8 PPG). Using 100 % excess in open hole. Cement circulated to surface

9 5/8" intermediate casing: 500 sks Liteweight Class "C" (35:65:4) w/ 5# sk LCM 1 & ¼ #/sk celloflake (yd @2.23 cuft/sk @ 12.5 PPG). Tail w/ 250 sks Class "C" Neat (yd @ 1.33 cuft/sk @ 14.8 PPG). Using 100 % excess in open hole, 10% excess in casing annulus. Cement circulated to surface.

7" production casing 500 sks BJ Lite Class "H" (35:65:4) w/ 5# sk LCM 1 & ¼ #/sk celloflake (yd @2.13 cuft/sk @ 12.5 PPG). Tail w/ 300 sks Class "H" Neat (yd @ 1.33 cuft/sk @ 14.8 PPG). Using 100 % excess in open hole, 10% excess in casing annulus. Cement circulated to surface.

4 ½" liner: . This is a Packer/Port completion. A 4 ½" liner will be run from at least 100' inside the 7" casing to TD of the lateral. A packer type liner hanger.

The above cement volumes could be revised pending the caliper measurement from the open hole logs and using fluid calipers to calculate cement volumes.. **All casing is new and API approved.**

6. Minimum Specifications for Pressure Control:

13 5/8" per operator e-mail 2/18/13

A 21.25" x 2000# Annular system with a 2000# choke manifold will be installed after running the 20" casing. A ~~21.25"~~ x 2000# Annular system with a 2M choke manifold will be installed after running the 13 3/8" casing. A 3000# Double Ram BOP and a 3000# Annular will be installed after running the 9 5/8" and 7" casing strings. Pressure tests will be conducted prior to drilling out all casing strings. BOPE will be inspected and operated as recommended in Onshore Order #2. Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock, floor safety valve (inside BOP), choke lines and choke manifold with 3000 psi WP rating.

7. Downhole Conditions & Estimated BHP:

From: 0' -250' Possible lost circulations. Est. BHP 110 PSI
From: 250'-1200' Possible lost circulations and water flows. Est BHP 624 psi
From: 1200'-3200' Possible Lost Circulation. Est BHP – 1400 PSI

8. **Mud Program:** The applicable depths and properties of this system are as follows:

Depth	Type System	Weight(lb/gal)	Viscosity	Water Loss
0-250 250'	fresh water gel	8.4-8.9	32-34	No control
250'-1200' 1600'	Brine	9.5-10.0	28-29	No control
1200'-3200' 3300'	fresh water gel	8.6-9.1	28-32	No control
3200'-7450'	Fresh water gel	8.4-9.0	28-34	15 cc
7450'-12,182'	Polymer & fresh water	8.4-8.9	28-34	15 cc

See COA

The necessary mud products for weight addition and fluid loss control will be on location at all times.

Visual mud monitoring equipment will be in place to detect volume changes indicating loss or gain of circulating fluid volume. Visual pit level monitors and audible alarms will be utilized and will be available to the control room and the supervisors. Mud properties will be monitored daily and reported on the automatic monitoring system.

9. **Testing, Logging and Coring Program:**

a. No drill stem test are planned
b. 10' samples from 3200' to TD.
c. A mud log will be run from the top of the Delaware to TD.
d. A Gamma Ray & Gyro will be run in the lateral and to the top of the curve.

10. **Potential Hazards:**

a. No abnormal pressures or temperatures are expected. It is possible that some lost circulation may be encountered and LCM materials will be on location. If necessary, cement plugs will be utilized to control circulation.

See COA

H2S has been detected in the Delaware in this area during drilling and there is some H2S in the Delaware gas in the Lusk field. H2S has not been detected in the Bone Springs zones. The rig will be equipped with H2S monitors, H2S warning signs and pit monitors. Wind socks will indicate wind direction. If H2S is encountered the operator will comply with the provisions of Onshore Oil and Gas Order No. 6. No lost circulation is expected to occur but lost circulation materials will be on site to help seal off any losses. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP: 4000 - 4600 psi. Estimated BHT: 120°.

Weatherford

Drilling Services

Proposal

MANZANO LLC

MERIDIAN FEDERAL COM #2H

EDDY CO, NM

WELL FILE: **PLAN 1**

DECEMBER 14, 2012

Weatherford International, Ltd.
P.O. Box 61028
Midland, TX 79711 USA
+1.432.561.8892 Main
+1.432.561.8895 Fax
www.weatherford.com

Manzano, LLC
Meridian Federal Com #2H
Eddy Co., New Mexico

KB ELEV: 3362
GL ELEV: 3348

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	98.71	0.00	0.00	0.00	0.00	0.00	0.00	
2	7450.00	0.00	98.71	7450.00	0.00	0.00	0.00	0.00	0.00	
3	8392.42	88.49	98.71	8060.00	-89.98	587.26	9.39	98.71	594.11	
4	12181.70	88.49	98.71	8160.00	-663.69	4331.52	0.00	0.00	4382.07	PBHL

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	8160.00	-663.69	4331.52	584738.26	626965.34	32°36'25.870N	104°03'18.937W	Point

WELL DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
Meridian Federal Com #2H	0.00	0.00	585401.95	622633.82	32°36'32.547N	104°04'09.557W	N/A

FIELD DETAILS

Eddy Co., NM (NAD 83)

Geodetic System: US State Plane Coordinate System 1983
Ellipsoid: GRS 1980
Zone: New Mexico, Eastern Zone
Magnetic Model: IGRF2010

System Datum: Mean Sea Level
Local North: Grid North

SITE DETAILS

Meridian Federal Com #2H

Site Centre Northing: 585401.95
Easting: 622633.82

Ground Level: 3348.00
Positional Uncertainty: 0.00
Convergence: 0.14

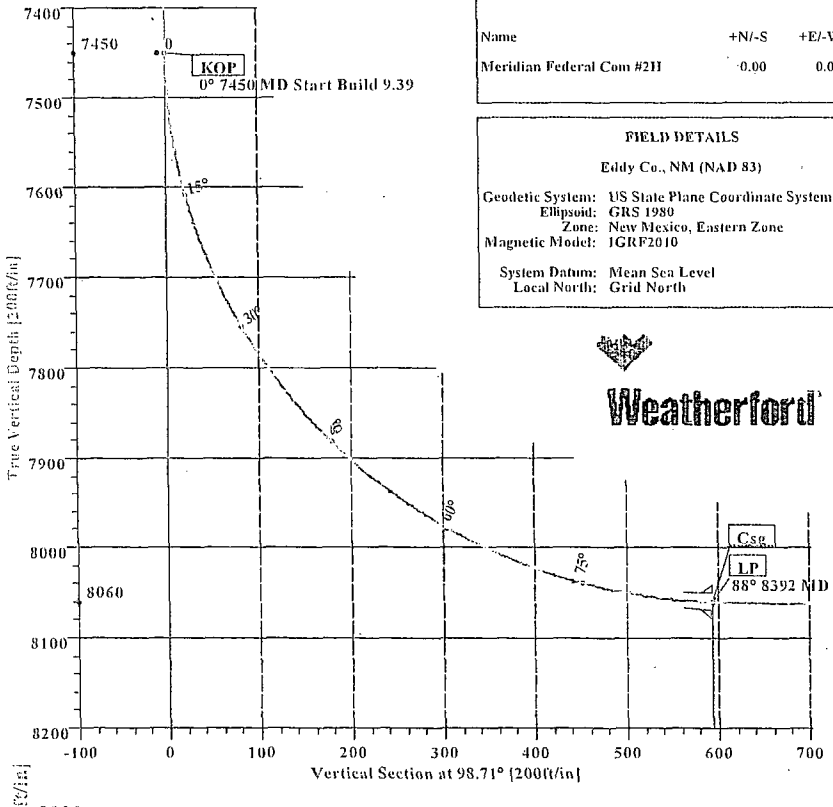
Azimuths to Grid North
True North: -0.14°
Magnetic North: 7.49°

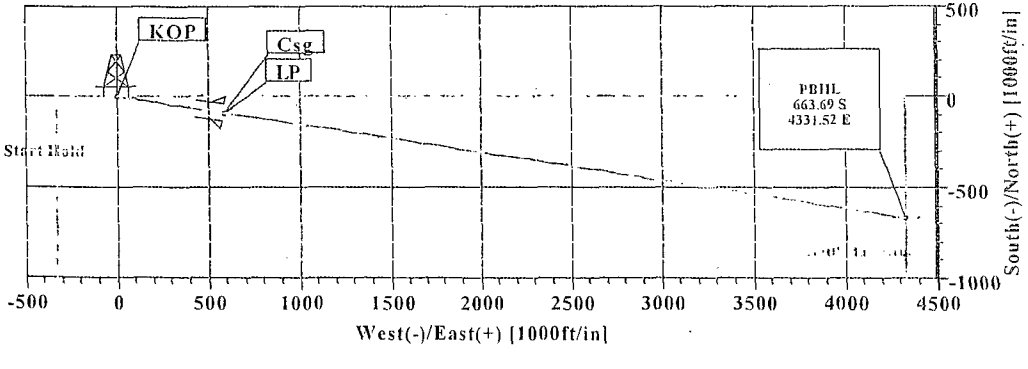
Magnetic Field
Strength: 48644nT
Dip Angle: 60.41°
Date: 3/15/2013
Model: IGRF2010

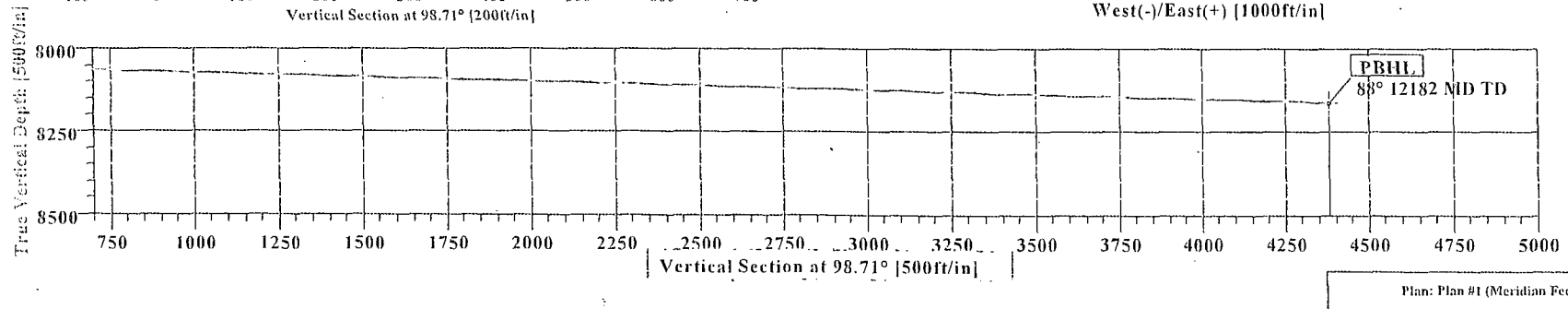
LEGEND

1
Plan #1

Weatherford







Plan: Plan #1 (Meridian Federal Com #21l/1)

Created By: Russell W. Joyner Date: 12/14/2012

Weatherford

WFT Plan Report - X & Y's

Weatherford

Company:	Manzano LLC	**Date:** 12/14/2012 **Time:** 08:35:34	**Page:** 1
Field:	Eddy Co., NM (NAD 83)	**Co-ordinate(NE) Reference:**	Well: Meridian Federal Com #2H
Site:	Meridian Federal Com #2H	**Vertical (TVD) Reference:**	SITE 3362.0
Well:	Meridian Federal Com #2H	**Section (VS) Reference:**	Well (0.00N,0.00E,98.71Azi)
Wellpath: 1		**Survey Calculation Method:**	Minimum Curvature **Db:** Sybase

Plan:	Plan #1	**Date Composed:**	12/14/2012
		Version:	1
Principal:	Yes	**Tied-to:**	From Surface

Field:	Eddy Co., NM (NAD 83)		
Map System:	US State Plane Coordinate System 1983	**Map Zone:**	New Mexico, Eastern Zone
Geo Datum:	GRS 1980	**Coordinate System:**	Well Centre
Sys Datum:	Mean Sea Level	**Geomagnetic Model:**	IGRF2010

Site:	Meridian Federal Com #2H				
Site Position:		**Northing:**	585401.95 ft	**Latitude:**	32 36 32.547 N
From:	Map	**Easting:**	622633.82 ft	**Longitude:**	104 4 9.557 W
Position Uncertainty:	0.00 ft			**North Reference:**	Grid
Ground Level:	3348.00 ft			**Grid Convergence:**	0.14 deg

Well:	Meridian Federal Com #2H				**Slot Name:**	
Well Position:	+N/-S	0.00 ft	**Northing:**	585401.95 ft	**Latitude:**	32 36 32.547 N
	+E/-W	0.00 ft	**Easting:**	622633.82 ft	**Longitude:**	104 4 9.557 W
Position Uncertainty:		0.00 ft				

Wellpath: 1				**Drilled From:**	Surface
				Tie-on Depth:	0.00 ft
Current Datum:	SITE	**Height**	3362.00 ft	**Above System Datum:**	Mean Sea Level
Magnetic Data:	3/15/2013			**Declination:**	7.63 deg
Field Strength:	48644 nT			**Mag Dip Angle:**	60.41 deg

Vertical Section: Depth From (TVD) ft	+N/-S ft	+E/-W ft	Direction deg
0.00	0.00	0.00	98.71

Plan Section Information

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	TFO deg	Target
0.00	0.00	98.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
7450.00	0.00	98.71	7450.00	0.00	0.00	0.00	0.00	0.00	0.00	
8392.42	88.49	98.71	8060.00	-89.98	587.26	9.39	9.39	0.00	98.71	
12181.70	88.49	98.71	8160.00	-663.69	4331.52	0.00	0.00	0.00	0.00	PBHL

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	MapN ft	MapE ft	Comment
7400.00	0.00	98.71	7400.00	0.00	0.00	0.00	0.00	585401.95	622633.82	
7450.00	0.00	98.71	7450.00	0.00	0.00	0.00	0.00	585401.95	622633.82	KOP
7500.00	4.69	98.71	7499.94	-0.31	2.02	2.05	9.39	585401.64	622635.84	
7550.00	9.39	98.71	7549.55	-1.24	8.08	8.18	9.39	585400.71	622641.90	
7600.00	14.08	98.71	7598.49	-2.78	18.13	18.34	9.39	585399.17	622651.95	
7650.00	18.78	98.71	7646.44	-4.92	32.11	32.48	9.39	585397.03	622665.93	
7700.00	23.47	98.71	7693.06	-7.65	49.92	50.50	9.39	585394.30	622683.74	
7750.00	28.17	98.71	7738.06	-10.95	71.44	72.27	9.39	585391.00	622705.26	
7800.00	32.86	98.71	7781.12	-14.79	96.53	97.65	9.39	585387.16	622730.35	
7850.00	37.56	98.71	7821.96	-19.16	125.02	126.47	9.39	585382.79	622758.84	
7900.00	42.25	98.71	7860.31	-24.01	156.71	158.54	9.39	585377.94	622790.53	
7950.00	46.95	98.71	7895.90	-29.33	191.41	193.64	9.39	585372.62	622825.23	
8000.00	51.64	98.71	7928.50	-35.07	228.86	231.53	9.39	585366.88	622862.68	
8050.00	56.34	98.71	7957.89	-41.19	268.83	271.97	9.39	585360.76	622902.65	
8100.00	61.03	98.71	7983.87	-47.66	311.04	314.67	9.39	585354.29	622944.86	
8150.00	65.73	98.71	8006.27	-54.43	355.21	359.36	9.39	585347.52	622989.03	
8200.00	70.42	98.71	8024.93	-61.45	401.05	405.73	9.39	585340.50	623034.87	

Weatherford

WFT Plan Report - X & Y's

Weatherford

Company:	Manzano LLC	**Date:** 12/14/2012 **Time:** 08:35:34	**Page:** 2
Field:	Eddy Co., NM (NAD 83)	**Co-ordinate(NE) Reference:**	Well: Meridian Federal Com #2H
Site:	Meridian Federal Com #2H	**Vertical (TVD) Reference:**	SITE 3362.0
Well:	Meridian Federal Com #2H	**Section (VS) Reference:**	Well (0.00N,0.00E,98.71Azi)
Wellpath:	1	**Survey Calculation Method:**	Minimum Curvature **Db:** Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	MapN ft	MapE ft	Comment
8250.00	75.12	98.71	8039.74	-68.68	448.24	453.47	9.39	585333.27	623082.06	
8300.00	79.81	98.71	8050.59	-76.07	496.47	502.26	9.39	585325.88	623130.29	
8350.00	84.51	98.71	8057.41	-83.57	545.42	551.78	9.39	585318.38	623179.24	
8392.42	88.49	98.71	8060.00	-89.98	587.26	594.11	9.39	585311.97	623221.08	Csg
8400.00	88.49	98.71	8060.20	-91.13	594.75	601.69	0.00	585310.82	623228.57	
8500.00	88.49	98.71	8062.84	-106.27	693.56	701.66	0.00	585295.68	623327.38	
8600.00	88.49	98.71	8065.48	-121.41	792.37	801.62	0.00	585280.54	623426.19	
8700.00	88.49	98.71	8068.12	-136.55	891.19	901.59	0.00	585265.40	623525.01	
8800.00	88.49	98.71	8070.76	-151.69	990.00	1001.55	0.00	585250.26	623623.82	
8900.00	88.49	98.71	8073.40	-166.83	1088.81	1101.52	0.00	585235.12	623722.63	
9000.00	88.49	98.71	8076.03	-181.97	1187.62	1201.48	0.00	585219.98	623821.44	
9100.00	88.49	98.71	8078.67	-197.11	1286.43	1301.45	0.00	585204.84	623920.25	
9200.00	88.49	98.71	8081.31	-212.25	1385.25	1401.41	0.00	585189.70	624019.07	
9300.00	88.49	98.71	8083.95	-227.39	1484.06	1501.38	0.00	585174.56	624117.88	
9400.00	88.49	98.71	8086.59	-242.53	1582.87	1601.34	0.00	585159.42	624216.69	
9500.00	88.49	98.71	8089.23	-257.67	1681.68	1701.31	0.00	585144.28	624315.50	
9600.00	88.49	98.71	8091.87	-272.81	1780.49	1801.27	0.00	585129.14	624414.31	
9700.00	88.49	98.71	8094.51	-287.95	1879.31	1901.24	0.00	585114.00	624513.13	
9800.00	88.49	98.71	8097.15	-303.09	1978.12	2001.20	0.00	585098.86	624611.94	
9900.00	88.49	98.71	8099.79	-318.23	2076.93	2101.17	0.00	585083.72	624710.75	
10000.00	88.49	98.71	8102.42	-333.37	2175.74	2201.13	0.00	585068.58	624809.56	
10100.00	88.49	98.71	8105.06	-348.51	2274.55	2301.10	0.00	585053.44	624908.37	
10200.00	88.49	98.71	8107.70	-363.66	2373.37	2401.06	0.00	585038.29	625007.19	
10300.00	88.49	98.71	8110.34	-378.80	2472.18	2501.03	0.00	585023.15	625106.00	
10400.00	88.49	98.71	8112.98	-393.94	2570.99	2601.00	0.00	585008.01	625204.81	
10500.00	88.49	98.71	8115.62	-409.08	2669.80	2700.96	0.00	584992.87	625303.62	
10600.00	88.49	98.71	8118.26	-424.22	2768.61	2800.93	0.00	584977.73	625402.43	
10700.00	88.49	98.71	8120.90	-439.36	2867.43	2900.89	0.00	584962.59	625501.25	
10800.00	88.49	98.71	8123.54	-454.50	2966.24	3000.86	0.00	584947.45	625600.06	
10900.00	88.49	98.71	8126.18	-469.64	3065.05	3100.82	0.00	584932.31	625698.87	
11000.00	88.49	98.71	8128.81	-484.78	3163.86	3200.79	0.00	584917.17	625797.68	
11100.00	88.49	98.71	8131.45	-499.92	3262.67	3300.75	0.00	584902.03	625896.49	
11200.00	88.49	98.71	8134.09	-515.06	3361.49	3400.72	0.00	584886.89	625995.31	
11300.00	88.49	98.71	8136.73	-530.20	3460.30	3500.68	0.00	584871.75	626094.12	
11400.00	88.49	98.71	8139.37	-545.34	3559.11	3600.65	0.00	584856.61	626192.93	
11500.00	88.49	98.71	8142.01	-560.48	3657.92	3700.61	0.00	584841.47	626291.74	
11600.00	88.49	98.71	8144.65	-575.62	3756.73	3800.58	0.00	584826.33	626390.55	
11700.00	88.49	98.71	8147.29	-590.76	3855.55	3900.54	0.00	584811.19	626489.37	
11800.00	88.49	98.71	8149.93	-605.90	3954.36	4000.51	0.00	584796.05	626588.18	
11900.00	88.49	98.71	8152.57	-621.04	4053.17	4100.47	0.00	584780.91	626686.99	
12000.00	88.49	98.71	8155.21	-636.18	4151.98	4200.44	0.00	584765.77	626785.80	
12100.00	88.49	98.71	8157.84	-651.32	4250.79	4300.40	0.00	584750.63	626884.61	
12181.70	88.49	98.71	8160.00	-663.69	4331.52	4382.07	0.00	584738.26	626965.34	PBHL

Targets

Name	Description Dip.	Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<---- Latitude ----> Deg	Min	Sec	<--- Longitude ---> Deg	Min	Sec
PBHL			8160.00	-663.69	4331.52	584738.26	626965.34	32	36	25.870 N	104	3	18.937 W

Weatherford
WFT Plan Report - X & Y's

Weatherford

Company:	Manzano LLC	**Date:** 12/14/2012 **Time:** 08:35:34	**Page:** 3
Field:	Eddy Co., NM (NAD 83)	**Co-ordinate(NE) Reference:**	Well: Meridian Federal Com #2H
Site:	Meridian Federal Com #2H	**Vertical (TVD) Reference:**	SITE 3362.0
Well:	Meridian Federal Com #2H	**Section (VS) Reference:**	Well (0.00N,0.00E,98.71Azi)
Wellpath:	1	**Survey Calculation Method:**	Minimum Curvature **Db:** Sybase

Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
8392.42	8060.00	0.000	0.000	Csg

Annotation

MD ft	TVD ft	
7450.00	7450.00	KOP
8392.42	8060.00	LP
12181.69	8160.00	PBHL

Formations

MD	TVD	Formations	Lithology	Dip Angle	Dip Direction

Weatherford

Weatherford Drilling Services

GeoDec v5.03

Report Date:	December 14, 2012
Job Number:	
Customer:	Manzano, LLC
Well Name:	Meridian Federal Com #2H
API Number:	
Rig Name:	
Location:	Lea County, New Mexico
Block:	
Engineer:	RWJ

US State Plane 1983	Geodetic Latitude / Longitude
System: New Mexico Eastern Zone	System: Latitude / Longitude
Projection: Transverse Mercator/Gauss Kruger	Projection: Geodetic Latitude and Longitude
Datum: North American Datum 1983	Datum: North American Datum 1983
Ellipsoid: GRS 1980	Ellipsoid: GRS 1980
North/South 585401.950 USFT	Latitude 32.6090441 DEG
East/West 622633.820 USFT	Longitude -104.0693173 DEG
Grid Convergence: .14°	
Total Correction: +7.49°	

Geodetic Location WGS84	Elevation = 0.0 Meters	
Latitude =	32.60904° N	32° 36 min 32.559 sec
Longitude =	104.06932° W	104° 4 min 9.542 sec

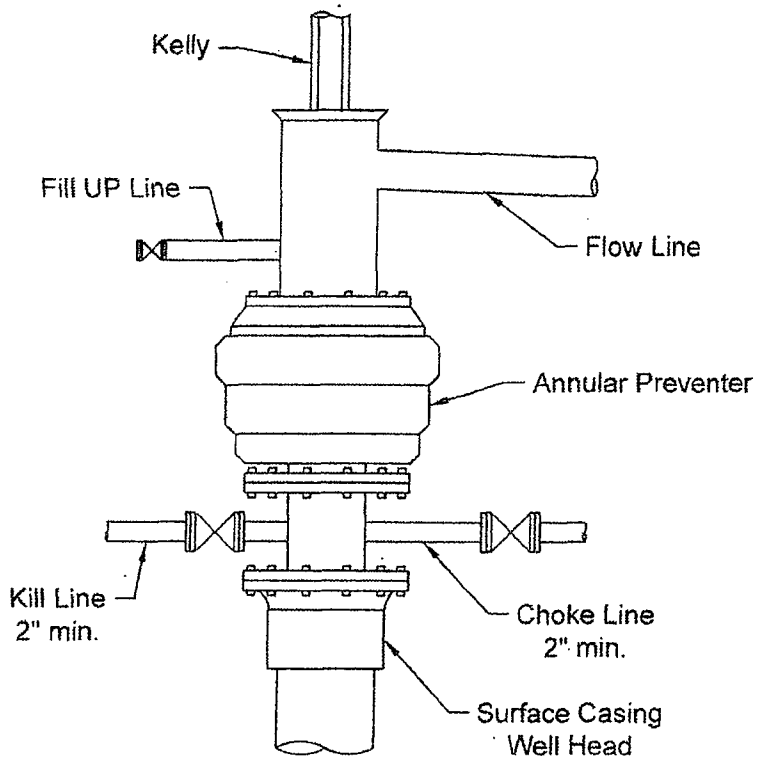
Magnetic Declination =	7.63°	[True North Offset]	
Local Gravity =	.9988 g	CheckSum =	6589
Local Field Strength =	48640 nT	Magnetic Vector X =	23802 nT
Magnetic Dip =	60.41°	Magnetic Vector Y =	3189 nT
Magnetic Model =	IGRF-2010g11	Magnetic Vector Z =	42298 nT
Spud Date =	Mar 15, 2013	Magnetic Vector H =	24015 nT

Signed:_____ Date:_____

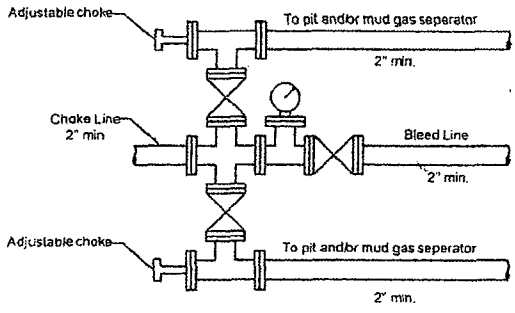
GREEN FROG CAFE FED #1
CASING DESIGN FACTORS

HOLE SIZE	HOLE INTERVAL	CASING INTERVAL	CASING OD	NEW	WT	COLLAR	GRADE	Collapse Design Factor	Burst Design Factor	Tension Design Factor
26"	0-250'	0-250	20"	new	94#	BT&C	H-40	1.125	1.125	1.6
17 ½"	250'-1200'	0-1200'	13 3/8"	new	48#	ST & C	H-40	1.125	1.125	1.6
12 ¼"	1200'-3200'	0'-3200'	9 5/8"	new	36#	LT&C	J-55/K-55	1.125	1.125	1.6
8 ¾"	3200'-8060'	0'-7450'	7"	new	26#	LT&C	P-110	1.125	1.125	1.6
8 ¾"		7450'-8060'	7"	new	26#	BT&C	P-110	1.125	1.125	1.6
6 1/8"	8060'-12,182'	7900'-12,182'	4 ½"	new	11.6#	LT&C	P-110	1.125	1.125	1.6

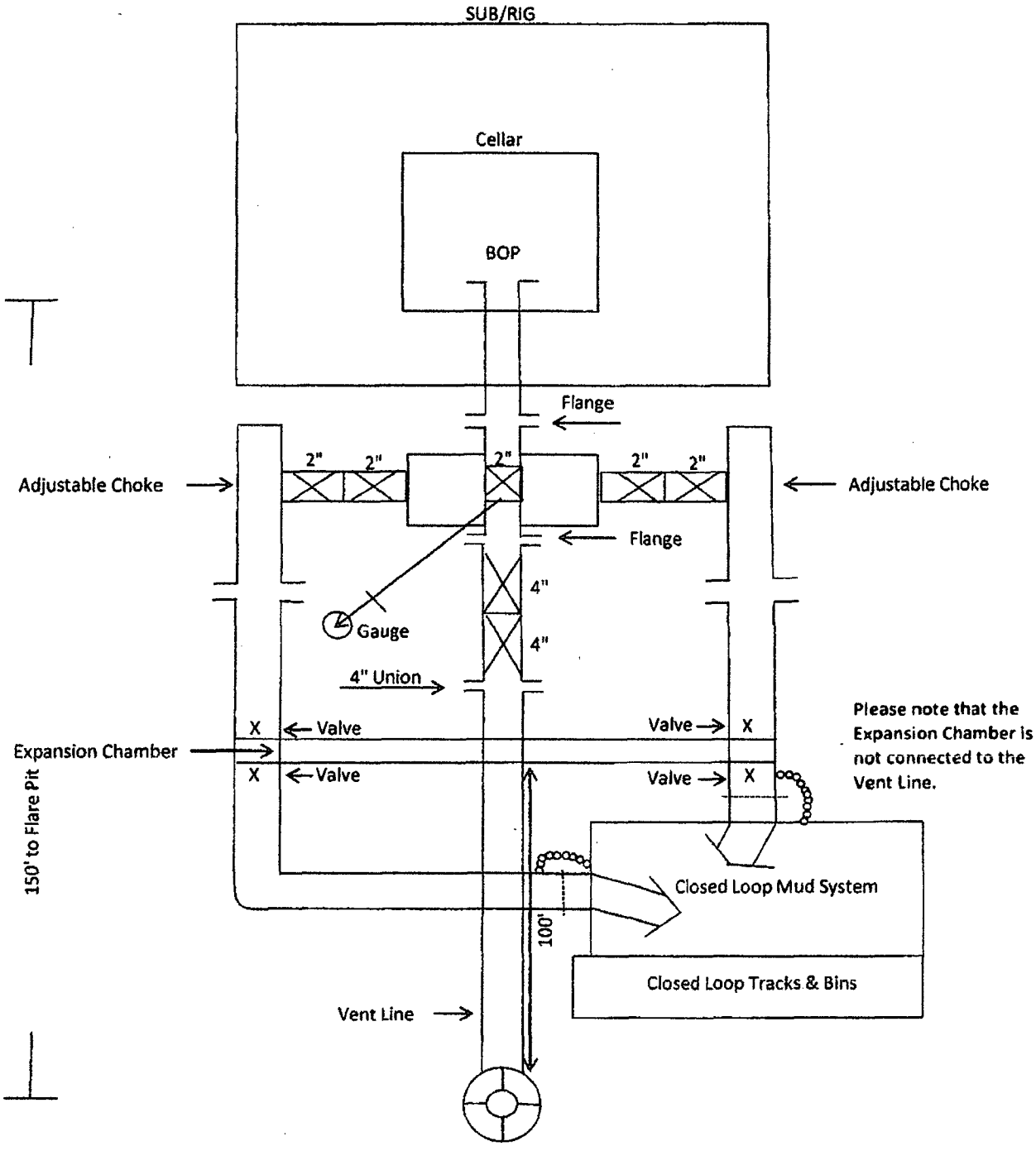
Typical low Pressure System
Schematic
Annular Preventer 2,000psi



Typical 2,000 psi choke manifold assembly with at least these minimum features



2M Choke Manifold Equipment



13 5/8" 2M BOPE & Closed Loop Equipment Schematic

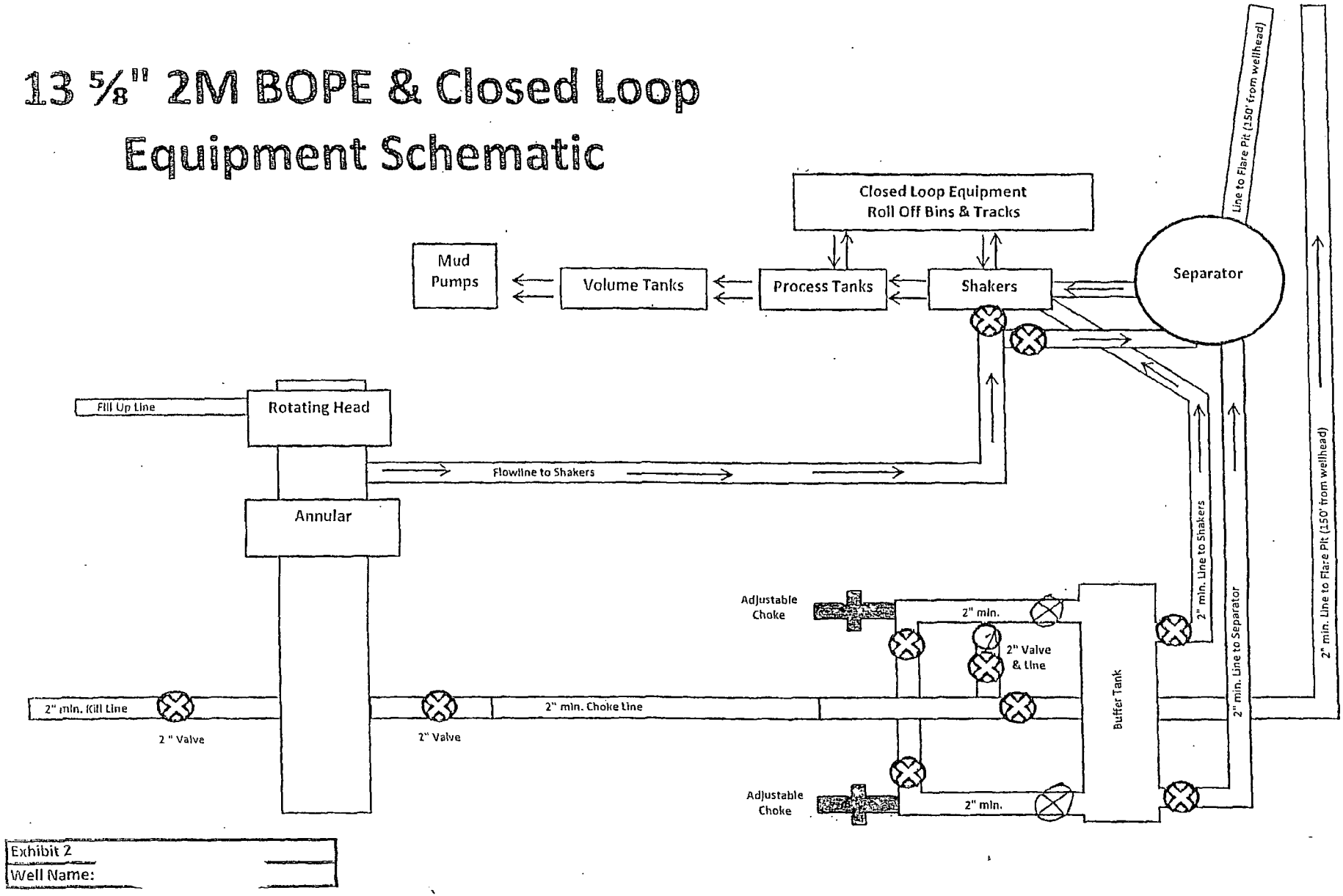


Exhibit 2

Well Name:

11" 3M BOPE & Closed Loop Equipment Schematic

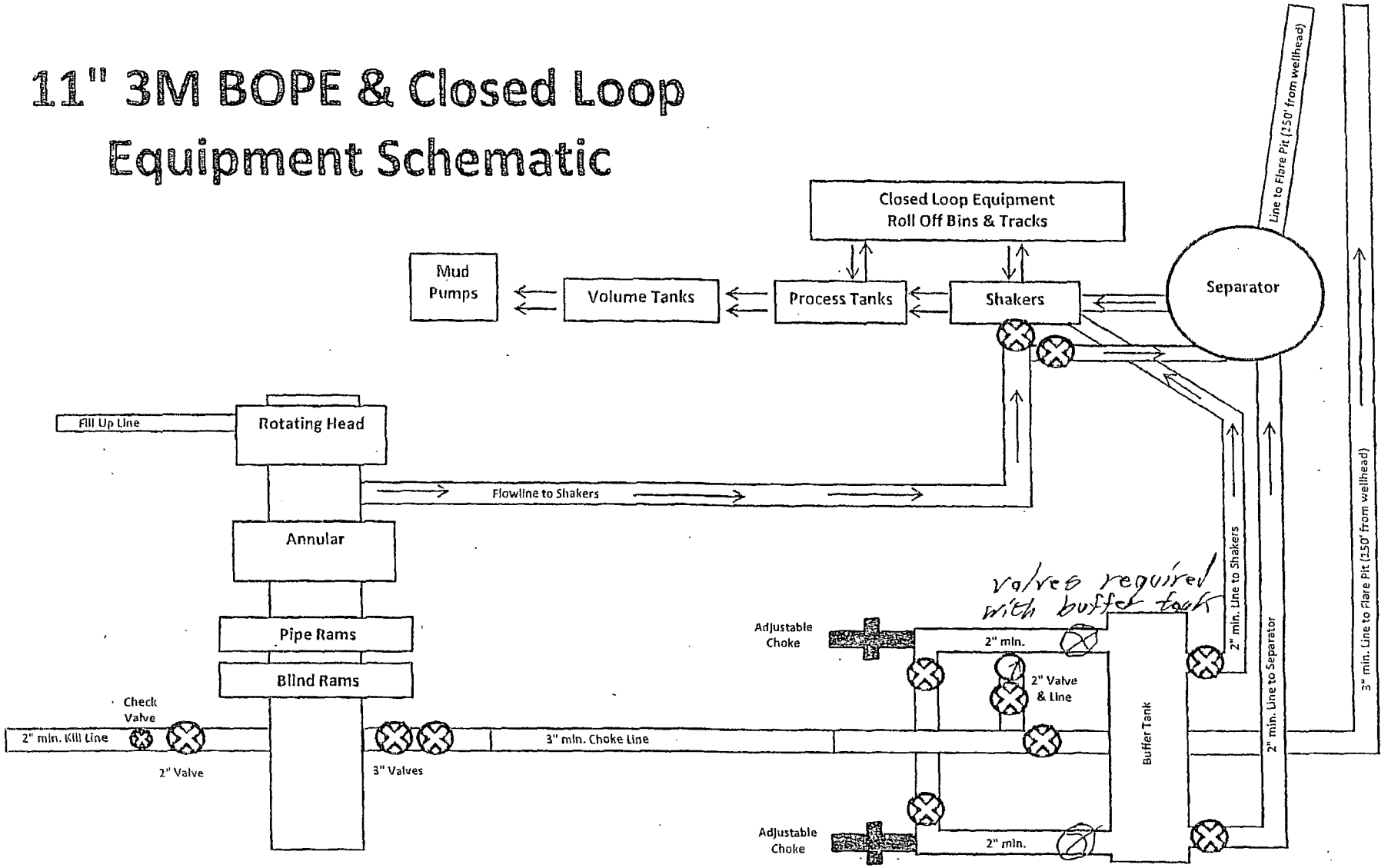
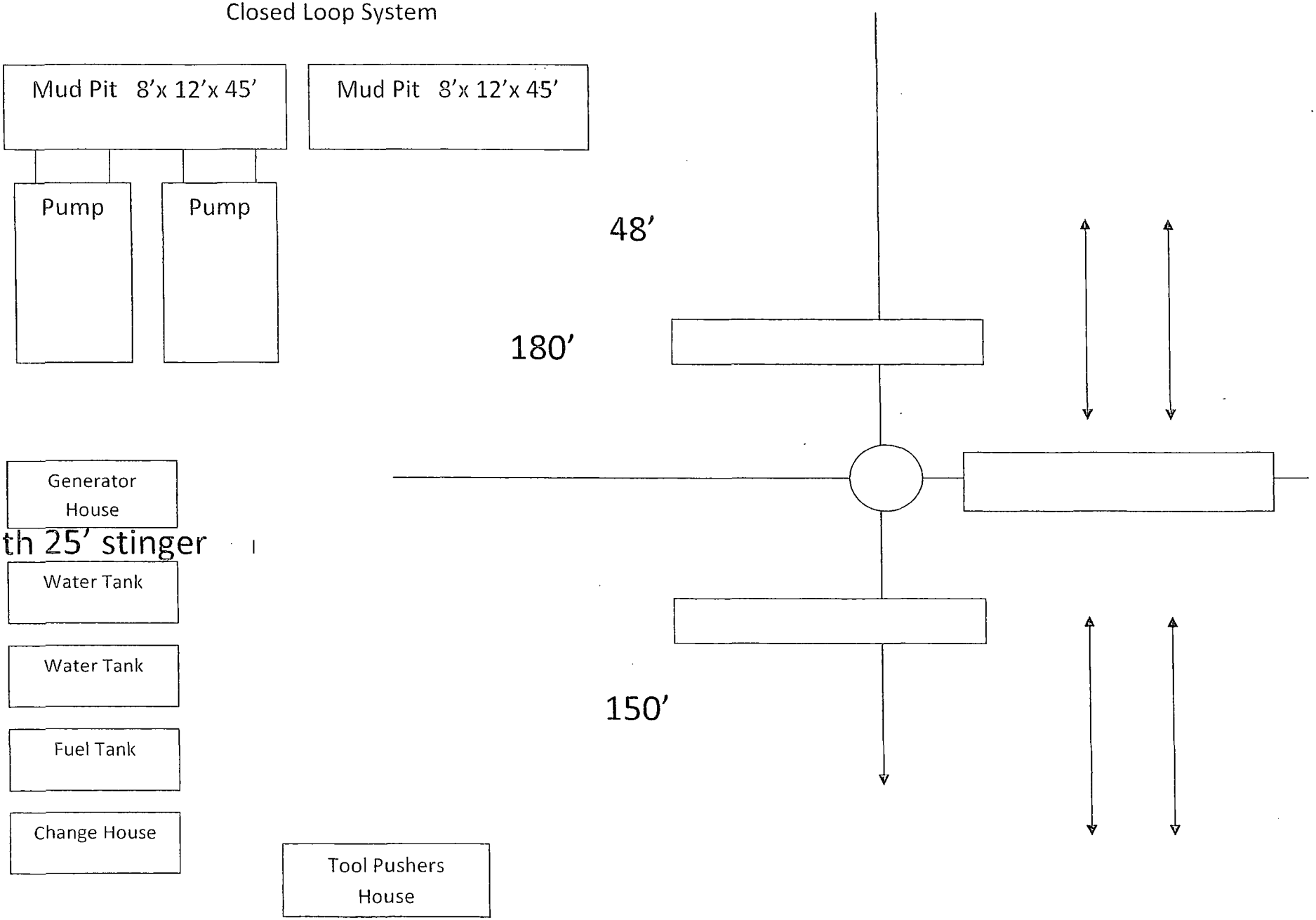


Exhibit 2

Well Name:

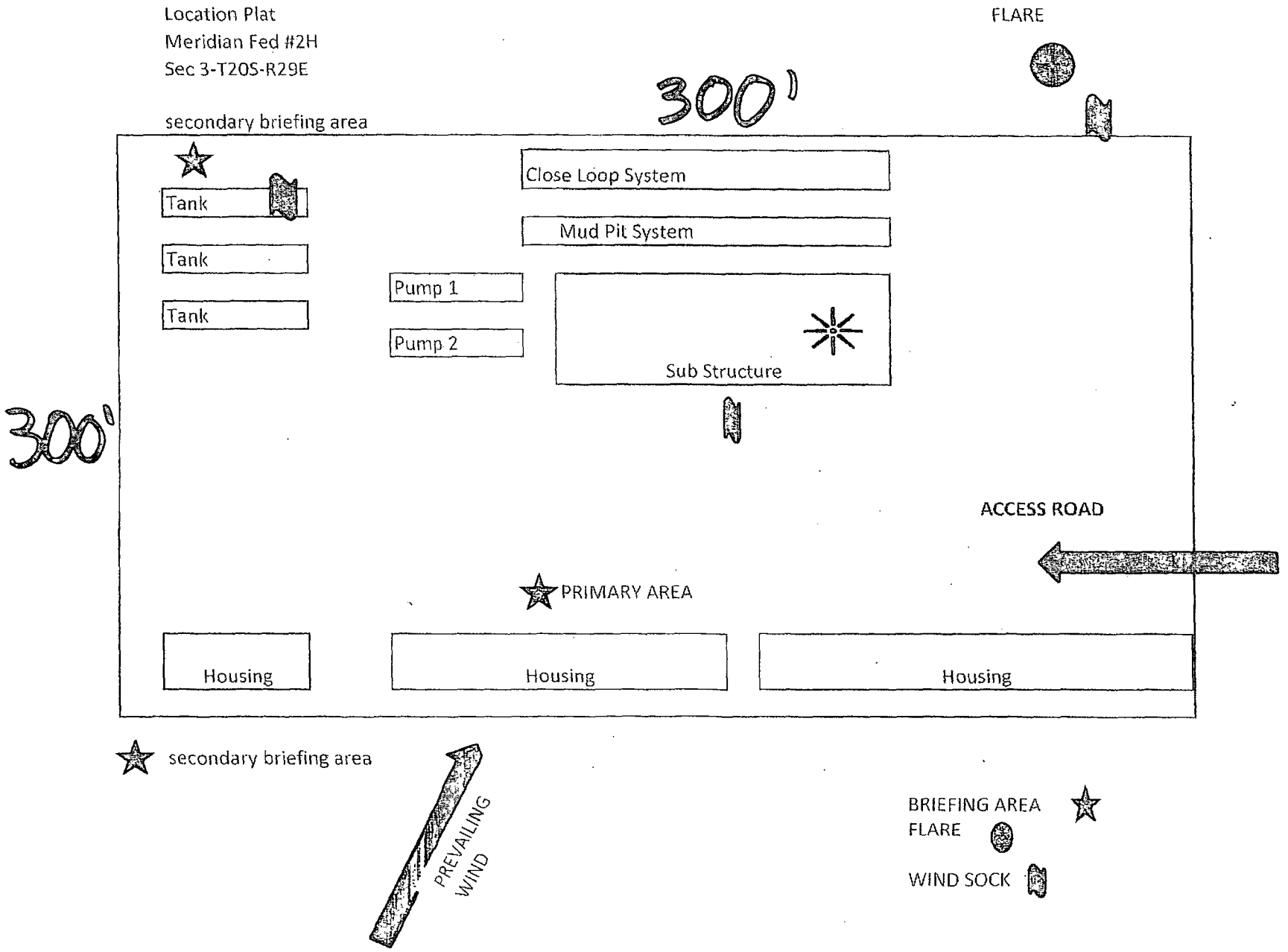
Note: All valves & lines on choke manifold are 3" unless otherwise noted. Exact manifold configuration may vary.

Closed Loop System



H2S WELL SITE DIAGRAM
DRILL RIG ORIENTATION

Manzano, LLC
Location Plat
Meridian Fed #2H
Sec 3-T20S-R29E



Manzano, LLC

HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

I. HYDROGEN SULFIDE TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

A. The hazards and characteristics of hydrogen sulfide (H_2S).

B. The proper use and maintenance of personal protective equipment and life support systems.

C. The proper use of H_2S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.

D. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

A. The effects of H_2S on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.

B. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.

C. The contents and requirements of the H_2S Drilling Operations Plan and the Public Protection Plan.

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

II. H_2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H_2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H_2S.

A. Well Control Equipment:
All BOP and BOP equipment is shown in the attachments.
Flare line.
Choke manifold **and remotely operated chokes.**
Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
Auxiliary equipment to include: annular preventer, mud-gas separator, rotating head.

B. Protective equipment for essential personnel:
Mark II Surviveair 30-minute units located in the dog house and at briefing areas.

C. H_2S detection and monitoring equipment:

2 - Portable H_2S monitor positioned on location for best coverage and response. These units have warning lights and audible sirens when H_2S levels of 20 ppm are reached.

D. Visual warning systems:

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.

E. Mud Program: The mud program has been designed to minimize the volume of H_2S circulated to the surface

F. Metallurgy:

All drill strings, casings, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H_2S service.

G. Communication:

Company vehicles equipped with cellular telephone.

WARNING

YOU ARE ENTERING AN H_2S AREA
AUTHORIZED PERSONNEL ONLY

1. ***BEARDS OR CONTACT LENSES NOT ALLOWED***
2. ***HARD HATS REQUIRED***
3. ***SMOKING IN DESIGNATED AREAS ONLY***
4. ***BE WIND CONSCIOUS AT ALL TIMES***
5. ***CK WITH MANZANO FOREMAN AT MAIN OFFICE***

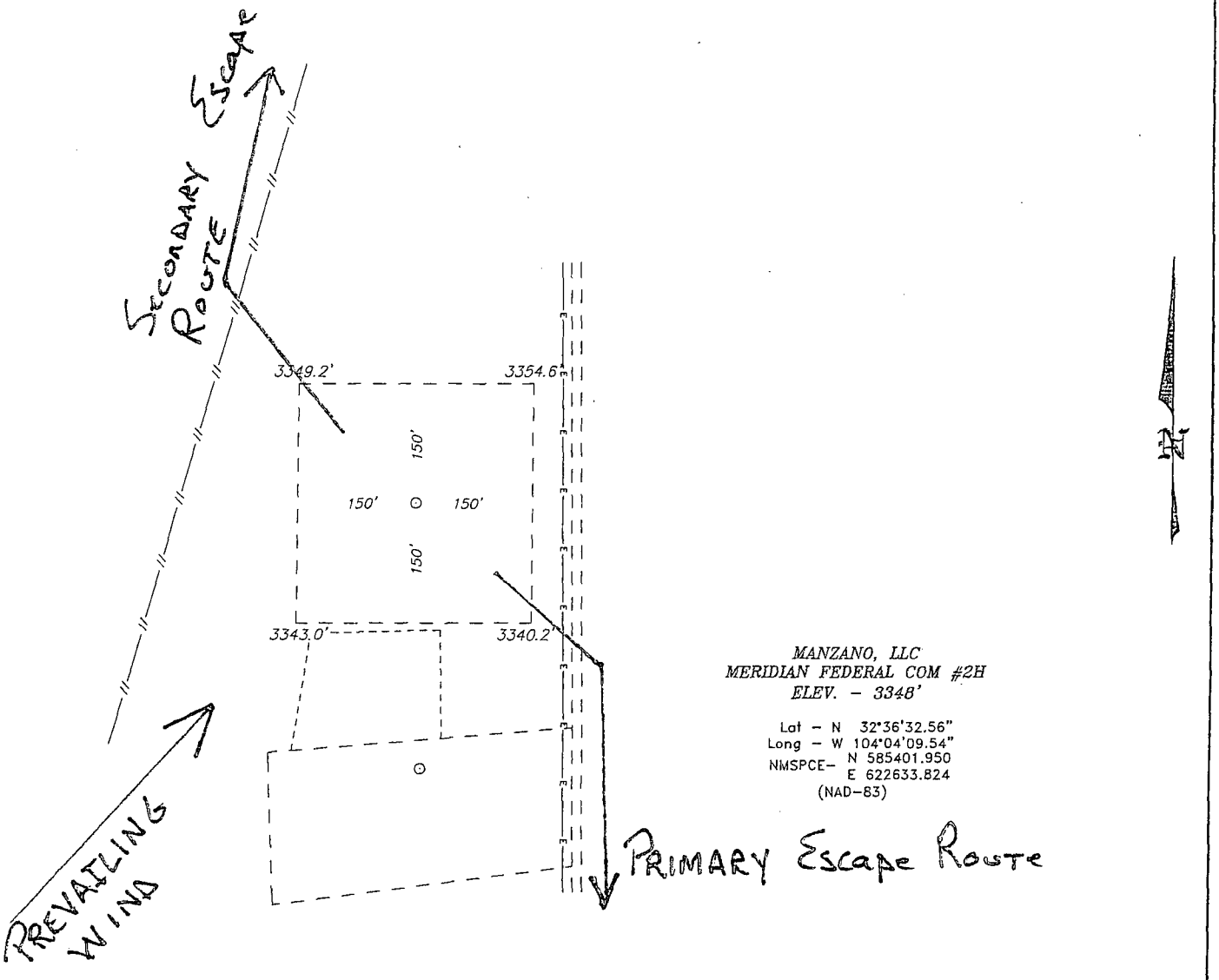
Manzano, LLC

575-623-1996

H2S ESCAPE ROUTES

SECTION 3, TOWNSHIP 20 SOUTH, RANGE 29 EAST, N.M.P.M.,

EDDY COUNTY, NEW MEXICO.



200 0 200 400 FEET

SCALE: 1" = 200'

Directions to Location:

FROM THE JUNCTION OF HWY 62-180 AND BURTON FLAT, GO NORTH 2.0 MILES ON BURTON FLATS TURNING WEST THENCE NORTH AGAIN 3.7 MILES TO LEASE ROAD, GO WEST 0.5 MILES TURNING SOUTH 0.1 MILES TO PROPOSED LEASE ROAD.

MANZANO, LLC

REF: MERIDIAN FEDERAL COM #2H / WELL PAD TOPO

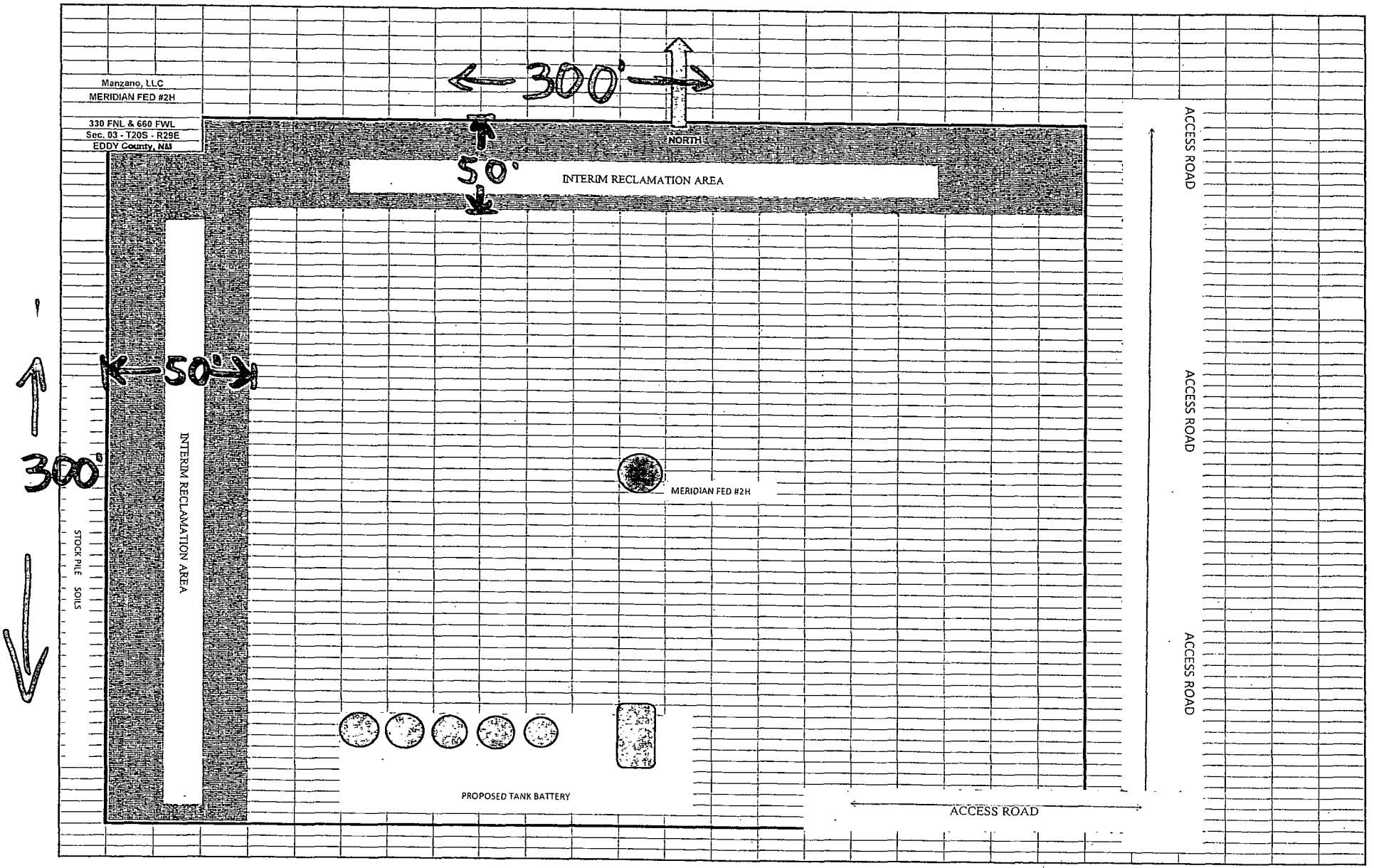
THE MERIDIAN FEDERAL COM #2H LOCATED 330' FROM THE NORTH LINE AND 660' FROM THE WEST LINE OF SECTION 3, TOWNSHIP 20 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

BASIN SURVEYS P.O. BOX 1786 - HOBBS, NEW MEXICO

W.O. Number: 27713	Drawn By: J. SMALL		
Date: 12-12-2011	Disk: JMS 27713	Survey Date: 12-03-2012	Sheet 1 of 1 Sheets

MANZANO, LLC

INTERIM RECLAMATION PLAN FOR MERIDIAN FED #2H



Manzano, LLC
MULTI-POINT SURFACE USE AND OPERATIONS PLAN

MERIDIAN FED #2H
Surface Location
330 FNL & 660 FWL
Section 3-T20S- R29E

This plan is submitted with Form 3160-3, Application for Permit to Drill, covering the above described well. The purpose of this plan is to describe the location of the proposed well, the proposed construction activities and operations plan, the magnitude of the surface disturbance involved and the procedures to be followed in rehabilitating the surface after completion of the operations, so that a complete appraisal can be made of the environmental effect associated with the operations.

DIRECTIONS:
Take US 62-180 from Carlsbad east about 13 miles to the intersection of Eddy County Road 238, (Burton Flats Road) and US 62-180. Turn north on CR 238 2 miles to the end of the blacktop. Continue traveling Northwest on the caliche road approximately 4 miles to an intersection with a Manzano Meridian lease sign. Turn left go ¾ miles west to intersection. Turn south 1/8 mile to location on west side of road.

1. **EXISTING ROADS:**

a. The well site and elevation plat for the proposed well are reflected on the well site layout; Form C-102, page 1. The well was staked by Basin Surveys, Inc from Hobbs, NM.
b. Page 2 is a Vicinity map showing the well and roads in the vicinity of the proposed location. The proposed well site and the access route to the location are indicated on page 3.
c. Routine grading and maintenance of existing roads will be conducted as necessary to maintain their condition as long as any operations continue on this lease.

2. **PLANNED ACCESS ROAD:**

a. The proposed access road is shown in on page 3 of the Well Location package. There are existing roads that provide access to other wells in the area that will be utilized for access to this new location. These roads are in good condition and should not need a lot of work to be able to bring a rig in and drill the well. Pot holes will be filled with caliche and the road will be watered, packed and bladed.

b. The well site layout is a plat of the location required for Patriot Rig #4 when utilizing a closed loop system. This well will be drilled with a closed loop system so no reserve pits will be constructed.

c. The average width of the ROW for road will be 25' with a driving surface of 14'. It is an existing lease road into the Meridian Fed #1. The road will be rebladed and caliche will be placed into the holes and then the entire road will be watered and compacted.

d. Surface material will be native caliche. This material will be obtained from a BLM, Fee or State approved pit nearest in proximity to the location. The average grade will be approximately 1%

e. Top soil will be stock piled on the location, and 100% of this material will be used for the reclamation after the well is completed and production facilities are installed..

3. PLANNED ACCESS ROAD: The planned access roads are all existing lease roads. No new road construction will be needed for this well.

4. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES:

a. The location will require "cut and fill" from the north to the south.

b. In the event the well is found productive, a tank battery will be constructed with four 500 bbl oil storage tanks, two 500 bbl water tanks, a separator, a heater treater and a gas sales meter.

c. The well should be a producing oil well and will be produced with conventional rods and pump or with a submersible pump.

d. All flowlines will adhere to API standards

e. Electricity is close to the location and will be supplied by XCEL Energy.

5. INTERIM RECLAMATION:

a. If the well is productive, Interim Reclamation plans will be to reduce the pad size by removing the caliche on the west side and north side of location. A strip of caliche 50 feet wide and ~~100~~ 100 ws feet long will be removed from both sides and used on the road. The original top soil will be returned to the location. Then this area will be ripped and seeded.

b. A plat indicating the Interim Reclamation plan is included with this plan.

c. If the well is not productive, a dry hole marker will be installed, the caliche will be removed from the location, the top soil returned to the location and spread out evenly and then the location will be ripped and seeded, ~~if it ever rains.~~

6. LOCATION AND TYPES OF WATER SUPPLY:

a. This location will be drilled using a combination of water mud systems (outlined in the Drilling Program). The water will be obtained from commercial water stations in the area and hauled to location by transport truck using the existing and proposed roads shown. On occasion, water will be obtained from a pre-existing water well, running a pump directly to the drill rig.

7. METHODS OF HANDLING WASTE MATERIAL:

a. All trash, junk and other waste material will be removed from the wellsite within 30 days after finishing drilling and/or completion operations. All waste material will be contained in trash cages or trash bins to prevent scattering. When the job is completed, all contents will be removed and disposed of in an approved sanitary landfill.

b. The supplier, including broken sacks, will pick up slats remaining after completion of well.

c. A Porto-john will be provided for the rig crews. This equipment will be properly maintained during the drilling and completion operations and will be removed when all operations are complete.

d. Disposal of fluids to be transported by an approved disposal company.

8. ANCILLARY FACILITIES:

a. No campsite or other facilities will be constructed as a result of this well.

9. WELLSITE LAYOUT:

a. Exhibit 1 shows the proposed well site layout with dimensions of the pad layout.

b. Mud pits in the active circulating system will be steel pits and a closed loop system will be utilized.

10. SURFACE OWNERSHIP:

a. The surface is owned by the BLM and is administered by the BLM. The surface is multiple use with the primary uses of the region for the grazing of livestock and the production of oil and gas.

11. OTHER INFORMATION:

a. The area surrounding the well site is grassland. The topsoil is packed soils and caliches. The vegetation is moderately sparse with native prairie grass, some mesquite bushes and shinnery oak. No wildlife was observed but it is likely that deer, rabbits, coyotes, and rodents traverse the area.

b. There is no permanent or live water in the general proximity of the location.

c. There are no dwellings within 2 miles of location.

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Manzano, LLC**
LEASE NO.:	**NMNM-27801**
WELL NAME & NO.:	**Meridian Fed Com 2H**
SURFACE HOLE FOOTAGE:	**0330' FNL & 0660' FWL**
BOTTOM HOLE FOOTAGE	**0990' FNL & 0330' FEL**
LOCATION:	**Section 3, T. 20 S., R 29 E., NMPM**
COUNTY:	**Eddy County, New Mexico**

TABLE OF CONTENTS

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

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

IV. NOXIOUS WEEDS

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

V. SPECIAL REQUIREMENT(S)

Obtain Road Right-of-Way from well location to county road.

Cave and Karst

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

Cave/Karst Surface Mitigation

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

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

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

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

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

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

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

Cave/Karst Subsurface Mitigation

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

Rotary Drilling with Fresh Water:

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

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

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

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

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

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

Drilling:

Communitization Agreement
A Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the BLM. The effective date of the agreement shall be prior to any sales. In addition, the well sign shall include the surface and bottom hole lease numbers. If the Communitization Agreement number is known, it shall also be on the sign. If not, it shall be placed on the sign when the sign is replaced.

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 stockpile the topsoil in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 3 inches in depth. The topsoil will be used 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. 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.

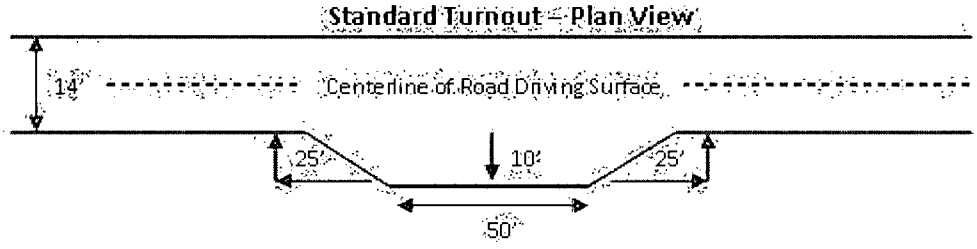
The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing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

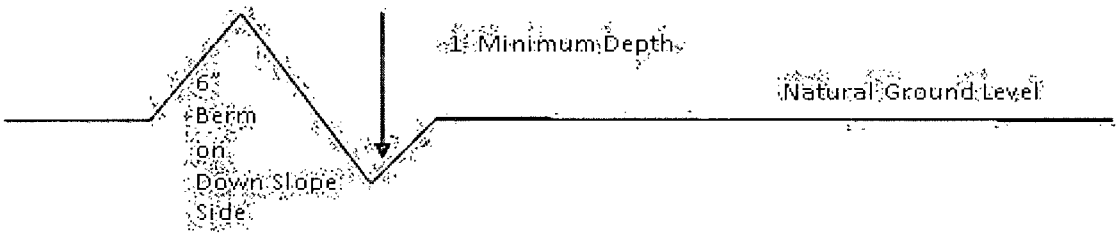
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:



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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

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

Culvert Installations

Appropriately sized culvert(s) shall be installed at the deep waterway channel flow crossing.

Cattleguards

An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road 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 cattleguard(s) that are in place and are utilized during lease operations.

A gate shall be constructed and fastened securely to H-braces.

Fence Requirement

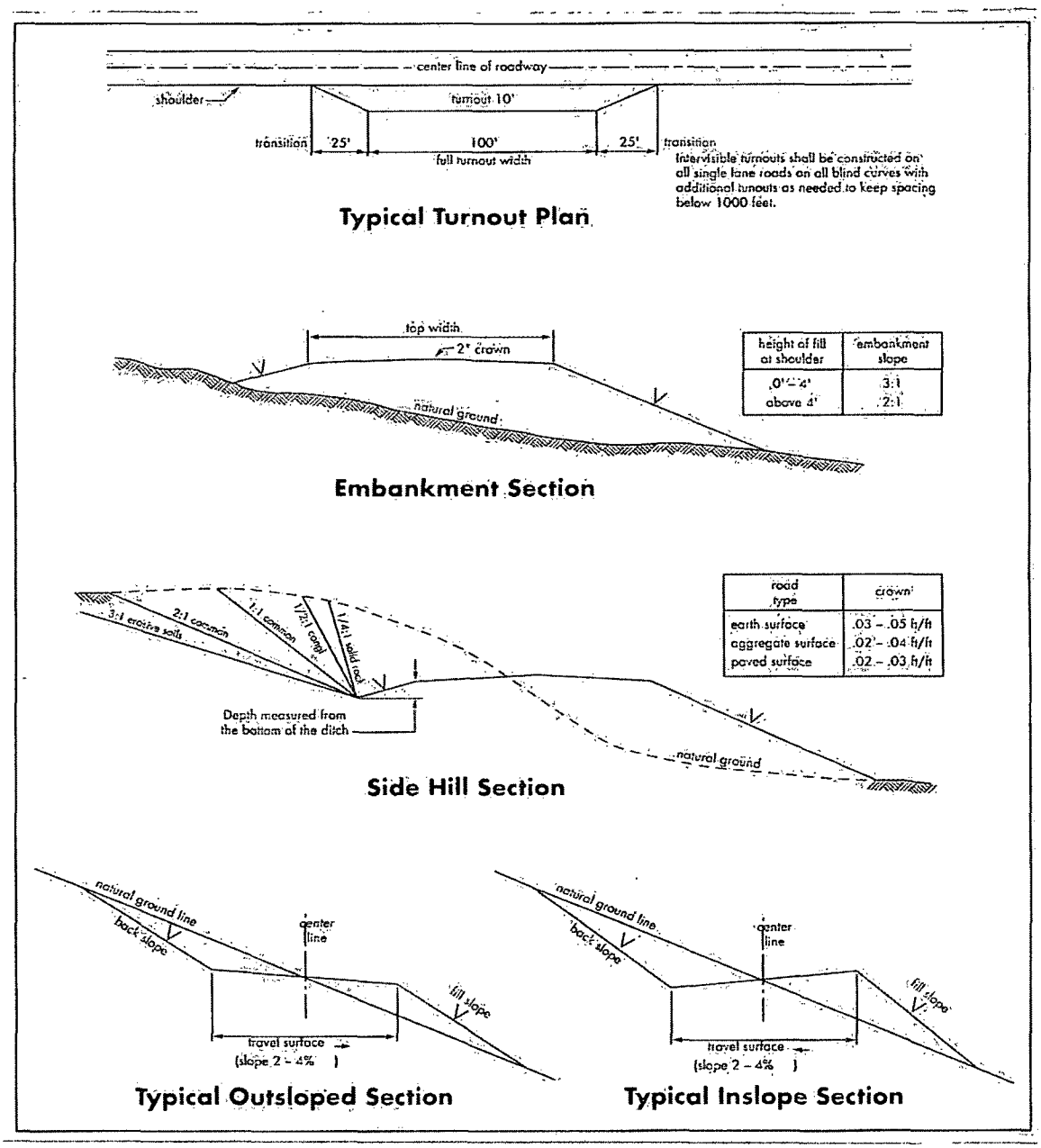
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

Public Access

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

Figure 1 – Cross Sections and Plans For Typical Road Sections



VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 4 hours in advance for a representative to witness:

a. Spudding well
b. Setting and/or Cementing of all casing strings
c. BOPE tests

☒ **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 **Delaware** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**

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

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

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (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. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

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

Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. 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.

High Cave/Karst
Possibility water flows in the Artesia and Salado Groups.
Possible lost circulation in the Capitan Reef.
Possibility of lost circulation in the Grayburg, San Andres, Delaware and Bone Springs Formations.

1. The **20** inch surface casing shall be set at approximately **250** 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 **13-3/8** inch **1st** intermediate casing, which shall be set at approximately **1600 feet,** is:

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

3. The minimum required fill of cement behind the **9-5/8** inch **2nd intermediate casing,** which shall be set at approximately **3300 feet,** is:

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

Centralizers required through the curve and a minimum of one every other joint.

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

   ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Excess calculates to 15% - Additional cement may be required.**

5. The minimum required fill of cement behind the **4-1/2** inch production Liner is:

   ☒ Cement not required – Packer/Port system to be used.

6. 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 **20** surface casing shoe shall be **2000 (2M)** psi.

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

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** intermediate casing shoe shall be **3000 (3M)** 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**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

    c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock.

    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 040213

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.

Containment Structures
The containment structure shall be constructed to hold the capacity of the entire contents of the largest tank, plus 24 hour production, unless more stringent protective requirements are deemed necessary by the Authorized Officer.

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 (not applied for in APD)

C. ELECTRIC LINES (not applied for in APD)

IX. INTERIM RECLAMATION

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

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

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

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

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

X. FINAL ABANDONMENT & RECLAMATION

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

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

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

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

Seed Mixture 4, for Gypsum 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:

Species	lb/acre
Alkali Sacaton (Sporobolus airoides)	1.0
DWS Four-wing saltbush (Atriplex canescens)	5.0

DWS: DeWinged Seed

*Pounds of pure live seed:

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