Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE *– Other instructions on page 2.*

5. Lease Serial No.
NMLC-068282b

6. If Indian, Allottee or Tribe Name

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

1. Type of Well
☑ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
GOLDEN SPUR FED #1 Y

2. Name of Operator
MANZANO, LLC

9. API Well No.
30-015-~~39235~~ 39649

3a. Address
P.O. BOX 2017, ROSWELL, NM 88202-2107

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

10. Field and Pool or Exploratory Area
WILDCAT-BONESPRINGS

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
SURF: 330 FSL & 1873 FWL, SEC 25-T26S-R31E

11. Country or Parish, State
EDDY,NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☑ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
	☐ After Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Subsequent Report	☐ Casing Repair	☐ New Construction	☐ Recomplete	☑ Other SKID RIG
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
☐ Final Abandonment Notice	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

Notice of Intent to skid rig. After the #1H has been plugged and abandoned. Skid the rig 107' to the west.
A revised Drilling plan and plat are attached.

SURFACE: 50 FT pad expansion to the west, approved by Jim Amos 11/17/11. Onsite conducted by Randy Rust 11/17/11. ✓

Accepted for record
NMOCD
1/31/2012

RECEIVED
JAN 31 2012
NMOCD ARTESIA

14 I hereby certify that the foregoing is true and correct.
Name *(Printed/Typed)* Paul Ragsdale — Title Engineer

Signature Paul Ragsdale — Date 11/17/2011

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by — Title AFM — Date 11/18/11

Conditions of approval, if any, are attached. Approval of this notice 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 — Office

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.

(Instructions on page 2)

RECEIVED
JAN 31 2012
NMOCD ARTESIA

Form 3160-3
(April 2004)

FORM APPROVED
OMB No. 1004-0137
Expires March 31, 2007

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: **NMLC-068282b**
6. If Indian, Allotee or Tribe Name:
7. If Unit or CA Agreement, Name and No.:
8. Lease Name and Well No.: **Golden Spur Federal #1 -Y**
9. API Well No.:
10. Field and Pool, or Exploratory: **Wildcat- Bonesprings**
11. Sec., T., R., M., or Blk. and Survey or Area: **Sec. 25,T26S,R31E**
12. County or Parish: **Eddy County**
13. State: **NM**

1a. Type of work: ☑ DRILL ☐ REENTER

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

2. Name of Operator: **Manzano, LLC**

3a. Address: **PO BOX 2107, Roswell, NM 88202**

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

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface: **330' FSL & 1873' FWL, Sec 25,T26S,R31E**
At proposed prod. zone: **330'FNL & 1980' FWL, Sec 25,T26S,R31E (BHL)**

14. Distance in miles and direction from nearest town or post office*: **26 miles southwest from Jal, NM**

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

16. No. of acres in lease: **940**

17. Spacing Unit dedicated to this well: **160**

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft: **107'**

19. Proposed Depth: **MD-13327' TVD- 9000'**

20. BLM/BIA Bond No. on file: **NM-2567 ~~0360~~**

21. Elevations (Show whether DF, KDB, RT, GL, etc.): **3135'**

22. Approximate date work will start*: **11/21/2011**

23. Estimated duration: **35 Days**

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, shall 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 shall 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 authorized officer

25. Signature: Paul Ragsdale — Name *(Printed/Typed)*: **Paul Ragsdale** — Date: **11/18/2011**

Title: **Operations Manager**

Approved by *(Signature)*: — Name *(Printed/Typed)*: — Date: 1/18/12

Title: — Office: AFM

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

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.

*(Instructions on page 2)

CARLSBAD CONTROLLED WATER BASIN

WITNESS SURFACE CASING

SEE ATTACHED FOR CONDITIONS OF APPROVAL

APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
DISTRICT II
1301 W. Grand Avenue, Artesia, NM 88210
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410
DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

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

Form C-102
Revised July 16, 2010

Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name

Property Code	Property Name	Well Number
	GOLDEN SPUR FEDERAL	1Y
OGRID No.	**Operator Name**	**Elevation**
	MANZANO, LLC	3135

Surface Location

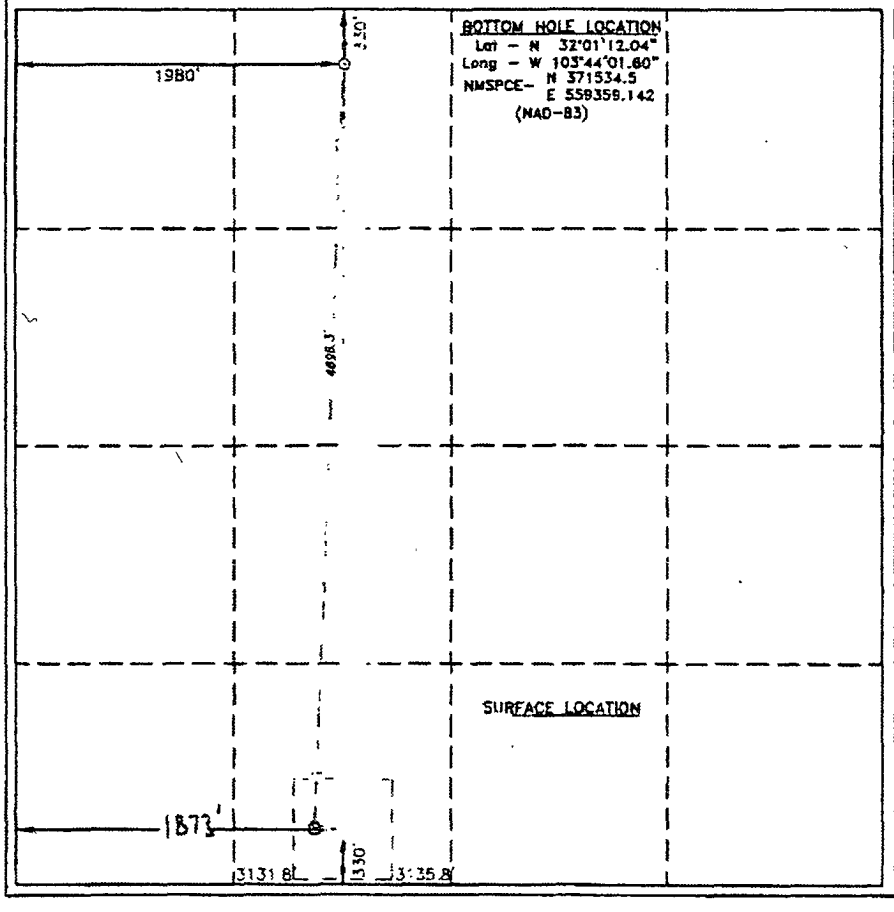
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	25	26 S	31 E		330	SOUTH	1873	WEST	EDDY

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
C	25	26 S	31 E		330	NORTH	1980	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			

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 Date

PAUL RAGSDALE
Printed Name

Paul@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 supervision, and that the same is true and correct to the best of my belief

JANUARY 1, 2011

Date Surveyed

Signature & Seal of Professional Surveyor

NEW MEXICO

W.O. Num. 24378

Certificate No. Gary L. Jones 7977

BASIN SURVEYS 24378

Manzano, LLC
DRILLING AND OPERATIONS PROGRAM

Golden Spur Federal #1H
Surface Location:
330' FSL & 1873' FWL
Section 25, T26S, R31E
Bottom Hole Location
330' FNL & 1980' FWL
Section 25, T26S, R31E
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:**

Rustler	1010'
Top of Salt	2300'
Base of the Salt	3890'
*Delaware	4100'
*Bone Spring	8170'
Avalon Shale	U Avalon Shale 8270-8720
	L. Avalon Shale 8850-9080
	First Bone Springs 9120'
	Total depth of Pilot Hole 9400'
	TVD lateral-----9000'

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

A lease map of the surrounding wells is included as Exhibit 2D

Water: Fresh water will be protected by setting surface casing at 1350' and cementing to surface. Fresh water is generally not found in this area but would be at a depth from 150 to 250 feet if it is present.

Hydrocarbons: Oil and gas are anticipated in the above (*) formations. These zones will be protected by casing if necessary.
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 13 3/8" casing at 1350' and circulating cement back to surface. Potash/ water sands will be protected by setting 9 5/8" casing at 4100'+/- and circulating cement back to surface.

4. **Well Design Summary** We will set 13 3/8" into the Rustler & 9 5/8" into the top of the Delaware. We then plan to drill a 8.75" pilot hole to 9400', run open hole logs, and set a cement kickoff plug to 8000'. We will then dress off the plug & drill a curve @ 10deg/100' build rate into the lower Avalon Shale to 9266'MD (9000'TVD) & then run 7" casing thru the curve. We will then drill a 4050' lateral to 13327'MD/9000'TVD & run a 20 stage packer system into the lateral. Our plans are to frac the well with a hybrid frac using ~2,000,000# sand & to install a gas lift system when the well quits flowing.

5. **Proposed Casing Program:**

Hole Size	Interval	OD Casing	New or Used	Wt	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17.5"	0'-1350'	13 3/8"	New	48#	STC	J55	1.125	1.125	1.6
12.25"	0'-4100'	9 5/8"	New	40	STC	N80	1.125	1.125	1.6
8.75"	0'-9266'md	7"	New	26#	LTC	P-110	1.125	1.125	1.6
6.125	9266'-13,327'	4.5" liner	New	11.6#	LTC	P-110	1.125	1.125	1.6

Proposed Cement Program:

a. **13 3/8" Surface**:950 sks BJ Lite Class "C" (35:65:4) w/ 5% Salt, 2.5 SMS, 5% MPA5,1/8#/sk Cello Flake & 5#/sk LCM1 (yd @2.15 cuft/sk @12.5 PPG). Tail w/ 200 sks Class "C" w/ 2% CaCl2 (yd @1.34 cuft/sk @ 14.8 PPG) Using 100 % excess.
Cement will be circulated to surface.

b. **9 5/8" Intermediate**:1200 sks BJ 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, cement will be circulated to surface.

c. **7" Production:** 400 sks BJ Lite Class "H" (35:65:6 w/ 5% salt, 5#/sk LCM1, 5% MPA5, .2% FL52, & .4% SMS (yield @ 2.47 cuft/sk @12 PPG). Tail w/ 400 sks Class"H" w/ 1% Salt & .2 % FL52 (yield @ 1.18 cuft/sk @ 15.6 PPPG)
Using 100% excess, top of cement will be an estimated 3000' inside the intermediate casing.

d. **4 ½" Liner:** The 4 ½" liner will be run with an anticipated 20 stages of packers/ports system to total depth of the horizontal lateral. The liner will be hung inside the 7" with approximately 200' of overlap. The packers will be set by hydraulic pressure and the rig will be moved off.
NO CEMENT WILL BE RUN ON THE LINER.

The above cement volumes could be revised pending the caliper measurement from the open hole logs.
All casing is new and API approved.

6. **Minimum Specifications for Pressure Control:**

Depth (feet)	Mud Weight (lb/gal)	Anticipated BHP (psig)		Bottom hole temp (deg F)
1350'	**8.4**	**210**		**70**
4100'	**10.0**	**1750**		**80**
7900'	**8.8**	**2600**	**top of Bone Springs**	**95**
9362' TVD	**8.8**	**3000**	**Total depth**	**115**

Plan to nipple up on 13 3/8" with a 2M annular system and test to 1000 psig with a 3rd party tester. Nipple up on 9 5/8 with a11" X 3000 psi system and test to 3000 psig with independent tester.

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. A 2"kill line and a 3" choke line will be included in the drilling spool located below the ram-type BOP. 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.

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

B. Minimum working pressure of the blowout preventer (BOP) and related equipment required for drilling below the surface casing shoe shall be 2000 (2m) psi.
See Exhibit 3
C. Minimum working pressure of the blowout preventer (BOP) and related equipment required for drilling below the intermediate casing shoe shall be 3000 (5m) psi.
See Exhibit 3A
Exhibit 3B is a schematic of the choke manifold system.
Exhibit 3C is a layout of the drilling rig on location.
D. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the test

a. The test shall be done by an independent service company.
b. The results of the test shall be reported to the appropriate BLM office.
c. 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.
d. 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

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

Depth	Type System	Mud Weight	Viscosity (sec)	Waterloss (cc)
0' – 1350'	Fresh Water Gel	8.4 – 8.9	32-34	N.C.
1350 – 4100'	Brine	10.0 – 10.0	34-36	N.C
4100'-9700'	Fresh Water Gel	8.4-8.9	32-34	N.C.
9700'-13,600'	Fresh Water Gel	8.4-9.2	32-34	4-10

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

8. Auxiliary Well Control and Monitoring Equipment:

a. A Kelly cock will be in the drill string at all times.
b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times.
c. Hydrogen Sulfide detection equipment will be in operation after drilling out the 13 3/8" casing shoe until total depth is reached and isolated from surface. Breathing equipment will be on location upon drilling the 13 3/8" shoe until total depth is reached.

9. Testing, Logging and Coring Program:

a. No drill stem test are planned
b. The open hole electrical logging program will be:
   i. Total Depth to Intermediate Casing: Dual Laterolog-Micro Laterolog and Gamma Ray. Compensated Neutron – Z Density log with Gamma Ray and Caliper.
   ii. Total Depth to Surface: Compensated Neutron with Gamma Ray
   iii. No coring program is planned
   iv. Additional testing will be initiated subsequent to setting the 4 ½" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows and drill stem tests.

10. Potential Hazards:

a. No abnormal pressures or temperatures are expected. There is no known presence of H2S in this area. 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. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. No H2S is anticipated to be encountered.

HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

1. All company and Contract personnel admitted on location must be trained by a qualified H2S safety instructor to the following:
   a. Characteristics of H2S
   b. Physical effects and hazards

c. Proper use of safety equipment and life support systems
d. Principle and operations of H2S detectors, warning system and briefing areas
e. Evacuation procedures, routes and first aid
f. Proper use of 30-minute pressure demand air pack

2. H2S Detection and alarm System
   a. H2S detectors and audio alarm system to be located at bell nipple, end of blooie line (mud pit) and on derrick floor or doghouse.

3. Windsock and/or wind streamers
   a. Windsock at mud pit area should be high enough to be visible
   b. Windsock at briefing area should be high enough to be visible
   c. There should be a windsock at entrance to location

4. Condition Flags and Signs
   a. Warning Sign on access road to location
   b. Flags to be displayed on sign at entrance to location. Green flag, normal safe condition. Yellow flag indicates potential pressure or danger. Red flag, danger, H2S present in Dangerous concentration. Only emergency personnel admitted to location.

5. Well Control Equipment
   a. See Exhibit 3, 3A, and 3B

6. Communication
   a. While working under masks chalkboards will be used for communication.
   b. Hand signals will be used where chalk board is inappropriate
   c. Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at most drilling foreman's trailer or living quarters

7. Drilling contractor supervisor will be required to be familiar with the effects H2S has on tubular goods and other mechanical equipment

   If H2S is encountered, mud system will be altered if necessary to maintain control of formation.

   A mud gas separator will be brought into service along with H2S scavengers if necessary,

Emergency Procedures

In the case of a release of gas containing H2S, the first responders must isolate the area and prevent entry by other persons into the 100 ppm ROE. Additionally the responders must evacuate any public places encompassed by the 100 ppm ROE. First responders must take care not to injure themselves during this operation. Company and/or local officials must be contacted to aid in this operation. Evacuation of the public should be beyond the 100 ppm ROE.

Section 25, T26S, R31E
Bottom Hole Location
330' FNL & 1980' FWL
Section 25, T26S, R31E
Eddy County, New Mexico

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.

1. EXISTING ROADS:

a. The well site and elevation plat for the proposed well are reflected on the well site layout; Form C-102. The well was staked by Basin Surveys Company.
b. *Exhibit 2C* is a portion of a aerial map showing the well and roads in the vicinity of the proposed location. The proposed wellsite and the access route to the location are indicated in blue on *Exhibit 2.*
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.

DIRECTIONS:

From the Junction of HWY County rd.1 (Orla HWY) and Battle Axe road Go Southwest on Orla for 2.2 miles to lease road (State line road), on lease road go west 1.2 miles to Proposed Golden Spur Fed 1H

2. PLANNED ACCESS ROAD:

The proposed access road is shown in *Exhibit 2.*

A. The well site and elevation plat for the proposed well are reflected on the well site Layout; Form C-102. The well was staked by Basin Surveys.
B. All roads into the location are depicted on *Exhibit 2A*

3. New or Reconstructed Access Roads and Location

A. The well site layout, and proposed road access is depicted in surface plats drawn out by Basin Surveys.
B. The maximum width of the ROW will be 25' with a driving surface of 14'. It will be crowned and made of 6" of rolled and compacted caliche. Water will be deflected, as necessary, to avoid accumulation and prevent surface erosion.
C. Surface material will be native caliche. This material will be obtained from a BLM approved pit

Nearest in proximity to the location. The average grade will be approximately 1%

D. No cattle guards, grates or fence cuts will be required. No turnouts are planned
E. Top soil will be stock piled on the southwest corner of the location, and 100% of this material will be used for interim reclamation

4. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES:

A. In the event the well is found productive, the Golden Spur Federal 1H tank battery would be utilized and the necessary production equipment will be installed at the well site. A proposed layout of the facilities is included on *Exhibit 4 on Page 12.*
B. All flowlines will adhere to API standards
C. If electricity is needed, power will be obtained from Xcel Electric. Xcel Electric will apply for ROW for their power lines.

5. LOCATION AND TYPES OF WATER SUPPLY:

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 in Exhibit #2. On occasion, water will be obtained from a pre-existing water well, running a pump directly to the drill rig. In these cases where a poly pipeline is used to transport water for drilling purposes, the existing and proposed road shown in Exhibit "2" will be utilized.

5. CONSTRUCTION MATERIALS:

All Caliche utilized for the drilling pad and proposed access road will be obtained from an existing BLM approved pit or from prevailing deposits found under the location. All roads will be constructed of 6" rolled and compacted caliche. Will use BLM recommended use of extra caliche from other locations close by for roads, if available.

6. 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.

7. ANCILLARY FACILITIES:

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

8. WELLSITE LAYOUT:

a. *Exhibit 3C, page 11* shows the proposed well site layout with dimensions of the pad layout.

b. This exhibit indicates proposed location of close loop and sump pits if utilized and living facilities.
c. Mud pits in the active circulating system will be steel pits and a closed loop system will be utilized.

9. PLANS FOR INTERIM RECLIMATION/ FINAL SURFACE RECLIMATION:

a. Interim reclamation will be done if the well is deemed commercially productive; caliche from areas of the pad site not required for operations will be reclaimed. The original top soil will be returned to the area of the drill pad not necessary to operate the well. These unused areas of the drill pad will be contoured, as close as possible, to match the original topography. *Exhibit 4, page 12* indicates an area on the west side of location that may be reclaimed after the frac job and production facilities have been installed.
b. After finishing drilling and/or completion operations, if the well is found non-commercial, the caliche will be removed from the pad and transported to the original caliche pit or used for other drilling locations. The road will be reclaimed as directed by the BLM. The original top soil will again be returned to the pad and contoured, as close as possible, to the original state.
c. The location and road will be rehabilitated as recommended by the BLM.

10. SURFACE OWNERSHIP:

The surface is owned by the US Government and is administered by the Bureau of Land Management. The surface is multiple use with the primary uses of the region for the grazing of livestock and the production of oil and gas. The proposed road routes and the surface location will be restored as directed by the BLM.

11. OTHER INFORMATION:

a. The area surrounding the well site is grassland. The topsoil is very sandy in nature. 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.

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

_____ _____

Date

Paul Ragsdale
Operations Manager
Manzano, LLC

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	MANZANO LLC
LEASE NO.:	NMLC068282B
WELL NAME & NO.:	1H GOLDEN SPUR FEDERAL
SURFACE HOLE FOOTAGE:	330' FSL & 1873' FWL
BOTTOM HOLE FOOTAGE	330' FNL & 1980' FWL
LOCATION:	Section 25, T. 26 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.

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)

Stipulations/Condition of Approval for Phantom Banks Heronries: Surface disturbance will not be allowed within up to 200 meters of active heronries or by delaying activity for up to 120 days, or a combination of both. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

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) 234-5972 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 4 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 (20) 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.

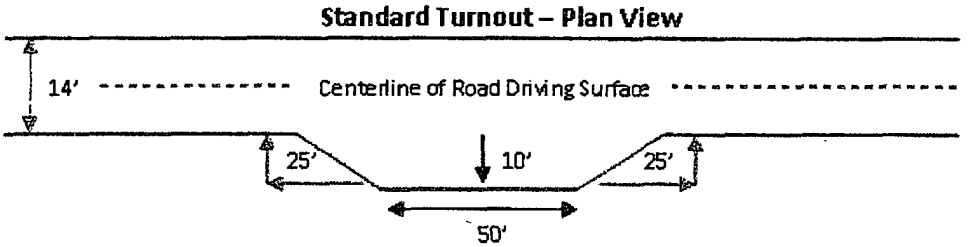
The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing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

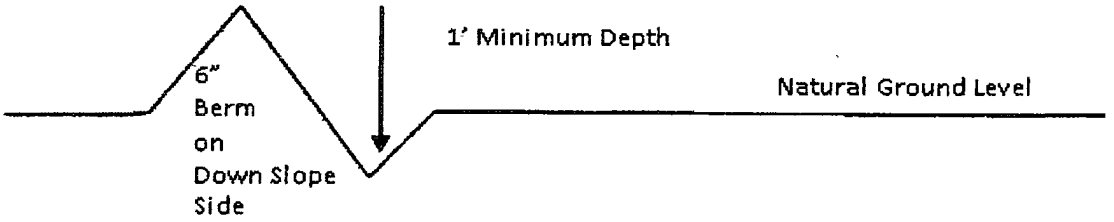
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:



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

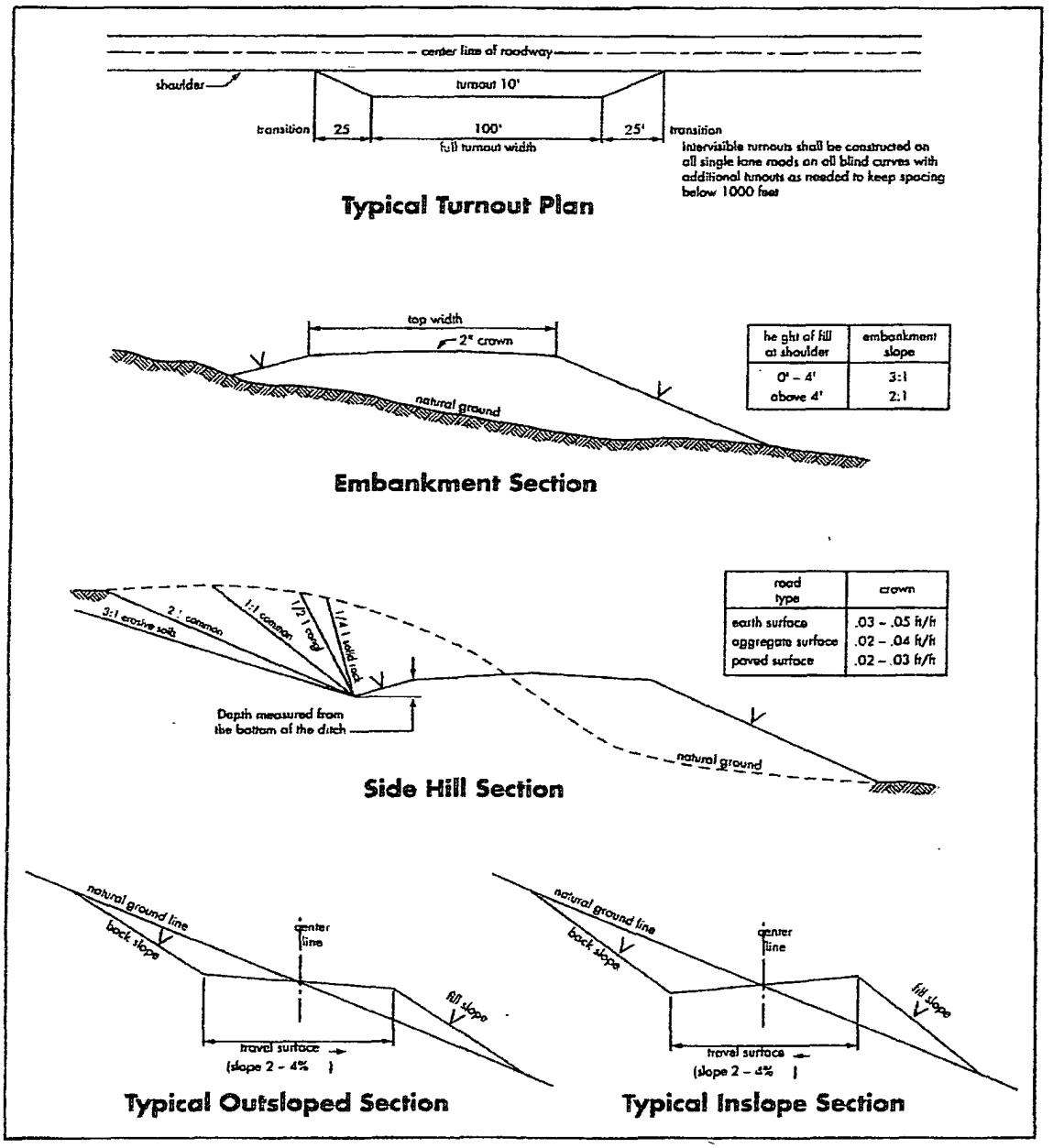
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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 should 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 are 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 and cement program require submitting a sundry and receiving approval prior to work. Failure to obtain approval prior to work will result in an Incident of Non-Compliance being issued.
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.

Possible lost circulation in the Red Beds, Delaware and Bone Spring.
Possible water flows in the Salado, Castile, Delaware and Bone Spring.

1. The **13-3/8** inch surface casing shall be set at **approximately 1350 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt)** and cemented to the surface.

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

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

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

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

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

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

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

    ☒ Cement should tie-back at least 3000 feet into previous casing string. Operator shall provide method of verification. **Excess cement calculates to be 11%.**

4. Cement not required on the **4-1/2** inch production liner. **Packer system will be utilized.**

5. 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.

    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** inch 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 or where the float does not hold, the minimum wait time before cut-off is eight hours after bumping the plug or when the cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. BOP/BOPE testing can begin after the above conditions are satisfied.

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

    d. 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.**

    e. 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.

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.

CRW 111811

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 colorShale Green, Munsell Soil Color Chart # 5Y 4/2

IX. INTERIM RECLAMATION

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

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

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

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

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

X. FINAL ABANDONMENT & RECLAMATION

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

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

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

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

Seed Mixture 1, for Loamy Sites

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

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (small/heavier seeds have a tendency to