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OCD-ARTESIA

Form 3160-3  
(August 2007)

MAR 14 2012

NMOCD ARTESIA

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

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

5. Lease Serial No.  
NM-114356

6. If Indian, Allottee or Tribe Name

7. If Unit or CA Agreement, Name and No

8. Lease Name and Well No  
SANDY FEDERAL #3

9. API Well No

10. Field and Pool, or Exploratory  
FORTY NINER RIDGE DELAWARE

11. Sec., T. R. M. or Blk. and Survey or Area  
SEC. 24, T23S-R30E

12. County or Parish  
EDDY

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 STRATA PRODUCTION COMPANY

3a. Address PO DRAWER 1030  
ROSWELL, NM 88201-2

3b. Phone No. (include area code)  
575-622-1127

4. Location of Well (Report location clearly and in accordance with any State requirements\*)

At surface 330' FSL & 330' FWL

At proposed prod. zone 510' FSL & 330' FEL

14. Distance in miles and direction from nearest town or post office\*  
~14 MILES EAST OF LOVING, NM

15. Distance from proposed\*  
location to nearest  
property or lease line, ft.  
(Also to nearest dng. unit line, if any)

16. No. of acres in lease  
640

17. Spacing Unit dedicated to this well  
160

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

19. Proposed Depth  
7742' TVD  
12226 MD

20. BLM/BIA Bond No. on file

068-0870 NM 1538

21. Elevations (Show whether DF, KDB, RT, GL, etc.)  
3288' GL

22. Approximate date work will start\*  
01/01/2012

23. Estimated duration  
30 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

*Frank Morgan*

Name (Printed/Typed)  
FRANK MORGAN

Date

09/28/2011

Title

VICE PRESIDENT

Approved by (Signature)

*Isi Felicia J. Probert*

Name (Printed/Typed)

*Isi Felicia J. Probert*

Date

3/2/12

Title

for STATE DIRECTOR

Office

NM STATE 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)

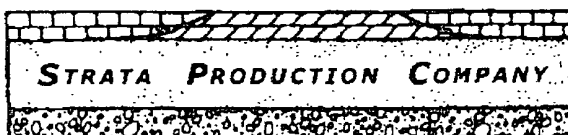
\*(Instructions on page 2)

CARLSBAD CONTROLLED WATER BASIN

APPROVAL SUBJECT TO  
GENERAL REQUIREMENTS  
AND SPECIAL STIPULATIONS  
ATTACHED

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

POST OFFICE DRAWER 1030  
ROSWELL, NM 88202-1030



TELEPHONE (575) 622-1127  
FACSIMILE (575) 623-3533

1301 NORTH SYCAMORE AVENUE  
ROSWELL, NEW MEXICO 88201  
www.stratanm.com

### OPERATOR CERTIFICATION

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or Strata Production Company, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

EXECUTED THIS 28<sup>th</sup> DAY OF Sept., 2011

BY: \_\_\_\_\_

TITLE: Vice - Pres

ADDRESS: Strata Production Company  
PO Drawer 1030  
Roswell, NM 88202-1030  
575-622-1127

FIELD REPRESENTATIVE (If not above signatory) \_\_\_\_\_

ADDRESS (If different than above) \_\_\_\_\_

TELEPHONE (If different than above) \_\_\_\_\_

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

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 &amp; Natural Resources Department

## OIL CONSERVATION DIVISION

1220 South St. Francis Dr.

Santa Fe, NM 87505

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NMOC DART

Form C-102

Revised July 16, 2010

4. Submit one copy to appropriate

District Office

AMENDED REPORT

# WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> API Number 30-015-40055	<sup>2</sup> Pool Code 24750	<sup>3</sup> Pool Name FORTY NINER RIDGE DELAWARE
<sup>4</sup> Property Code 39123	<sup>5</sup> Property Name Sandy Federal	<sup>6</sup> Well Number 3
<sup>7</sup> OGRID No. 21712	<sup>8</sup> Operator Name Strata Production Company	<sup>9</sup> Elevation 3288

## 10 Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
<b>M</b>	<b>24</b>	<b>23 S</b>	<b>30 E</b>		<b>330</b>	<b>South</b>	<b>330</b>	<b>West</b>	<b>Eddy</b>

## Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot ldn	Feet from the	North/South line	Feet from the	East/West line	County
P	24	23 S	30 E		510	South	330	East	Eddy

<sup>12</sup> Dedicated Acres 160	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.
--------------------------------------	-------------------------------	----------------------------------	-------------------------

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

<div data-bbox="107 1008 574 1489" data-label="Diagram"></div>	<div data-bbox="574 1008 1044 1489" data-label="Text"><p>Lat: 32deg 17' 1.61" N Long: 103deg 50' 29" W</p></div>	<div data-bbox="1044 1008 1495 1489" data-label="Form"><p>16</p><p><b>OPERATOR CERTIFICATION</b></p><p>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.</p><p>Signature: <u>[Signature]</u> Date: <u>09/28/2011</u></p><p>Printed Name: <u>Frankie S. Morgan</u></p><p>E-mail Address: <u>Fmorgan@stratman.com</u></p></div>
<div data-bbox="107 1489 574 1949" data-label="Diagram"></div>	<div data-bbox="574 1489 1044 1949" data-label="Text"><p>Lat: 32deg 17' 1.61" N Long: 103deg 50' 29" W</p></div>	<div data-bbox="1044 1489 1495 1949" data-label="Form"><p>17</p><p><b>SURVEYOR CERTIFICATION</b></p><p>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.</p><p>Date of Survey: <u>April 13, 2011</u></p><p>Signature and Seal of Professional Surveyor: <u>[Signature]</u></p><p>Certificate Number: <u>8112</u></p></div>

Attachment to Exhibit "C"

STATUS OF WELLS WITHIN ONE MILE RADIUS

SANDY FEDERAL #3  
Section 24-23S-30E  
330' FSL & 330' FWL  
Eddy County, NM

<u>Operator</u>	<u>Well</u>	<u>Location</u>	<u>Status/Formation</u>
Strata Production Co	Sandy #1	Sec 24, 23S-30E 1980' FNL & 660' FWL	Producing/Delaware
Strata Production Co	Sandy Federal #2	Sec 24, 23S-30E 1979' FNL & 585' FWL	<b>Proposed</b> /Delaware
Strata Production Co	Roadrunner Federal #1	Sec 25, 23S-30E 460' FNL & 330' FWL	<b>Proposed</b> /Delaware

HOLE PROGNOSIS  
FORM 3160-3 APPLICATION FOR PERMIT TO DRILL  
STRATA PRODUCTION COMPANY  
Sandy Federal #3  
330' FSL & 330' FWL  
SECTION 24-23S-30E  
EDDY COUNTY, NEW MEXICO

In conjunction with Form 3160-3, Application for Permit to Drill, Deepen, or Plug Back, Strata Production Company submits the following items in accordance with Onshore Oil and Gas Order Numbers 1 and 2, and all other applicable federal and state regulations.

1. Geologic Name of Surface Formation:

Permian

2. Estimated Tops:

	<u>TVD</u>	<u>MD</u>
Rustler	Surface	Surface
Top of Salt	700'	700'
Base of Salt	3380'	3380'
Delaware	3900'	3900'
KOP - curve	7234'	7234'
EOC	7711'	7980'
TD	7742'	12225'
Bone Spring	7753'	

3. Estimated Depths of Anticipated Fresh Water, Oil or Gas & Drilling Plan:

Surface	150'	Fresh Water
Delaware	3900' - TD	Oil or Gas

No other formations are expected to produce oil, gas or fresh water in measurable quantities. The surface fresh water sands will be protected by setting 13 3/8" casing at ~330' and circulating cement back to surface. Potash will be protected by setting 9 5/8" casing at ~3860' and circulating cement back to surface. The Delaware pay intervals will be isolated by setting 7" casing at the EOC at ~7980' and cementing back to surface. A 6 1/8" lateral hole will be drilled to TD and a 4 1/2" liner will be run for completion and cemented through the Delaware. The top of the 4 1/2" liner will be set approximately 100' above the KOP of the curve at ~7134'.

4. Casing Program:

<u>Hole Size</u>	<u>Depth</u>	<u>OD Csg</u>	<u>Weight, Grade, Collars, New/Used</u>
17 1/2"	330'	13 3/8"	48#, H-40, STC, New
12 1/4"	3860'	9 5/8"	40#, J-55, STC, New
8 3/4"	7980'	7 "	26#, HCP-110, LTC/BTC, New
6 1/8"	12225'	4 1/2"	11.6#, HCP-110, BTC, New

On the 7" casing BTC will be run through the curve from 7234' - 7980'.  
Minimum Casing Design Factors: Collapse 1.125, Burst 1.0, Joint Strength 1.8

Cementing Program:

Surface Casing:

13 3/8" casing will be set at ~330' and cemented with 341 sacks Class C + .005 lbs/sack Static Free + 2% bwoc Calcium Cl + 1 gal/100 sack FP-6L + 56.3% Fresh Water. 14.8 density, 1.34 yield, 6.34 gal/sk H2O. Calculated with 100% excess. Cement in sufficient quantity to circulate to surface will be utilized.

Intermediate Casing: 9 5/8" casing will be set at ~3860' and cemented with 901 sacks lead of (35:65) Poz (Fly Ash):Class C Cement + 4% bwoc Bentonite + 0.125 lbs/sack Cello Flake + 0.005 lbs/sack Static Free + 1 gals/100 sack FP-6L+ 0.1% bwoc FL-52 + 1% bwoc Sodium Metasilicate + 5 lbs/sack LCM-1 + 5% bwoc MPA-5 + 101.4% Fresh Water. 12.5 density, 2.02 yield, 10.58 gal/sk H2O. 400 sacks tail of Class C Cement + 0.005 lbs/sack Static Free + 1 gals/100 sack FP-6L + 56% Fresh Water. 14.8 density, 1.33 yield, 6.32 gal/sk H2P. Calculated with 100% excess. Cement in sufficient quantity to circulate to surface will be utilized.

Alternate design if hole conditions warrant: 9 5/8" casing will be set at ~3860' with a DV tool at 2000' and cemented with 1<sup>st</sup> stage of 454 sacks (35:65) Poz:Class C Cement + 4% bwoc Bentonite + .125 lb/sk Cello Flake + .005 lb/sk Static Free + 1 gal/100sk FP-6L + 1% bwoc Sodium Metasilicate + 5 lb/sk LCM-1 + .1% bwoc FL-52 + 5% bwoc MPA-5 + 101.4% Fresh Water. Density 12.5, yield 2.02, 10.58 gal/sk H2O. 2<sup>nd</sup> stage of 200 sacks Class C Cement + .005 lb/sk Static Free + 1 gal/100sk FP-6L + 56% Fresh Water. Density 14.8, yield 1.33, 6.32 gal/sk H2O. Calculated with 100% excess. Cement in sufficient quantity to circulate to surface will be utilized.

Intermediate Casing:

7" casing will be set through the curve at ~7980' and cemented with 621 sacks lead (35:65) Poz (Fly Ash):Class H Cement + 4% bwoc Bentonite + 5% bwoc MPA-5 + 0.2% bwoc FL-52 + 0.3% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride + 5 lbs/sack CM-1 + 0.125 lbs/sack Cello Flake + 1 gals/100 sack FP-6L. 12.5 density, 2.12 yield, 11.1 gal/sk H2O. 200 sacks tail of Class H Cement + 0.3% bwoc FL-52 + 0.005 lbs/sack Static Free + 1 gals/100 sack FP-6L + 46.2% Fresh Water. 15.6 density, 1.18

See  
COA

yield, 5.21 gal/sk H<sub>2</sub>O. Calculated with 50% excess. Cement in sufficient quantity to circulate to surface will be utilized.

Production Casing:

4 1/2" casing will be run from 7134' to TD and cemented with 216 sacks lead (35:65) Poz (Fly Ash):Class H Cement + 4% bwoc Bentonite + 5% bwoc MPA-5 + 0.2% bwoc FL-52 + 0.3% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride + 5 lbs/sack LCM-1 + 0.005 lbs/sack Static Free + 1 gals/100 sack FP-6L + 0.125 lbs/sack Cello Flake + 106.5% Fresh Water. 12.5 density, 2.12 yield, 11.1 gal/sk H<sub>2</sub>O. 200 sacks tail Class H Cement + 0.3% bwoc FL-52 + 0.005 lbs/sack Static Free + 1 gals/100 sack FP-6L + 46.2% Fresh Water. 15.6 density, 1.18 yield, 5.21 gal/sk H<sub>2</sub>O. Calculated with 50% excess.

5. Minimum Specifications for Pressure Control:

The blowout preventer equipment (BOP) shown in Exhibit "A" will consist of a double ram-type (3000 psi WP) preventer and a bag-type (hydril) preventer (3000 psi WP). Both units will be hydraulically operated and the ram-type preventer will be equipped with blind rams on top and 4 1/2" drill pipe rams on bottom. Both BOP's will be nipped up on the 13 3/8" surface casing and used continuously until TD is reached. All BOP's and accessory equipment will be tested to 3000 psi before drilling out of surface casing. Before drilling out of intermediate casing, the ram-type BOP and accessory equipment will be tested to 3000 psi and the hydril to 70% of rated working pressure (2100 psi).

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 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 and floor safety valve (inside BOP) and choke lines and choke manifold with 3000 psi WP rating.

6. Proposed Mud System:

See Attached Detailed Summary

7. Auxiliary Well Control and Monitoring Equipment:

- A. A kelly cock will be kept in the drill string at all times.
- B. A full opening drill pipe stabbing valve (inside BOP)

with proper drill pipe connections will be on the rig floor at all times.

8. Testing, Logging and Coring Program:

Two man mudlogging unit from 9 5/8" intermediate casing to TD and DLL-MSFL, CNL-Density, Gamma Ray, Caliper.

Mudlogging unit will be employed from approximately 3860' to TD. The Dual Laterolog will be run from TD back to the intermediate casing and the Compensated Neutron/Density and Gamma Ray logs will be run from TD back to surface. In some cases, Strata elects to run rotary sidewall cores from selected intervals dependent upon logging results.

9. Abnormal Conditions, Pressures, Temperatures and Potential Hazards:

No abnormal pressures or temperatures are anticipated. BHT should not exceed 150 F and BHP should not exceed 3500 psi.

Loss of circulation is possible in the Delaware section of the hole, however, no major loss circulation zones have been reported in offsetting wells. Strata has drilled and completed eighteen (18) wells in the immediate area. To date, Hydrogen Sulfide has not been encountered. However, if Hydrogen Sulfide is encountered, a Hydrogen Sulfide alarm on the drilling rig would be activated. All personnel have had Hydrogen Sulfide training and appropriate breathing apparatus is located on site. If necessary, the well can be shut in utilizing the blowout preventer and other equipment to prevent the migration of Hydrogen Sulfide to the surface.

10. Anticipated Starting Date and Duration of Operations:

Work will not begin until approval has been received from the BLM. The anticipated spud date is January 1, 2012. Once commenced, the drilling operation should be finished in approximately 30 days. If the well is productive, an additional 15 days will be required for completion and testing before a decision is made to install permanent facilities.



# Drilling Fluid Summary

Strata Production Company  
Sandy Federal #3

Hole Size	Depth (feet)	Density (lb/gal)	Viscosity (sec/qt)	YP (lb/100ft <sup>2</sup> )	API FL (ml/30min)	CI (mg/L)	pH	Solids (% vol)
17 1/2"	0' - 330'	8.5 - 8.7	30 - 34	4 - 6	NC	< 6,000	9.0 - 10.0	< 5
Set 13 3/8" Surface Casing								
12 1/4"	330' - 3860'	9.7 - 10.1	29 - 32	1 - 2	NC	160 - 180 K	10.0 - 10.5	< 5
Set 9 5/8" Casing								
8 3/4"	3860' - 7980'	8.8 - 9.2	28 - 30	1 - 2	NC	60 - 110 K	10.0 - 10.5	< 5
Set 7" Casing								
6 1/8"	7980' - 12225'	9.1 - 9.5	34 - 38	6 - 10	8 - 10	80 - 120 K	10.0 - 10.5	< 5
Set 4 1/2" Production Liner								

1. Spud in with fresh water spud mud to 250' containing **Anco Gel** with a viscosity of 30 - 34 sec/qt. Add 1 sack **Drill Paper** every connection. Mix **Lime** for a 9.0 - 10.0 pH. At TD, sweep the hole with 100 bbls of premixed **Anco Gel** with a 45 - 50 sec/qt viscosity prior to tripping out of the hole, to ensure a clean well bore before running casing.
2. After setting 13 3/8" surface casing, drill out with native brine. Mix **Lime** to control the pH at 10.0 - 10.5. Add 1 gallon **Anco Drill N** at the flow line every 90' drilled. Add 1 sack **Drill Paper** every other connection for added hole cleaning and seepage control. Sweep the hole with 50 bbl **Anco Salt Gel** sweeps with a viscosity of 40 - 60 sec/qt every 250' drilled for hole cleaning. At interval TD, sweep the hole with 100 bbl **Anco Salt Gel** with viscosity of 60 - 80 sec/qt prior to POH to ensure a clean well bore to run intermediate casing.
3. After setting 9 5/8" intermediate casing, drill out with cut brine. Mix **Lime** for 10.0 - 10.5 pH. Add 1 gallon **Anco Drill N** at flow line every 90' drilled. Add 1 sack **Drill Paper** every other connection for seepage control. Sweep the hole with 50 bbl **Anco Salt Gel** sweeps with a viscosity of 40 - 60 sec/qt every 250' drilled. At interval TD, circulate a 100 bbls **Anco Salt Gel** sweep with viscosity of 60 - 80 sec/qt to ensure a clean well bore prior to running casing.
4. After setting 7" casing and prior to drilling the lateral interval, build 9.1 - 9.5 lb/gal **Anco Zan / Starch** system in steel pits with cut brine, **Anco Zan**, **Anco Starch White**, and **Caustic Soda**. Mix **Anco Zan** for a viscosity of 34 - 38 sec/qt and Yield Point of 6 - 10 lb/100ft<sup>2</sup>. Mix **Anco Starch White** API filtrate control of 8 - 10 ml/30 min. Mix **Caustic Soda** to control pH at 10.0 - 10.5. Add **WT-22** at 5 gallons per 100 bbls active drilling fluid for control of bacteria. Sweep the hole every 250' drilled with 50 bbls active fluid containing 10 - 15 lb/bbl **Walnut Hulls (M)** or 25 gallons **Tork Buster Plus**. Jet the **Shale Pit** every 4 hours or as needed to control solids concentration and fluid density. Circulate to move cuttings above BHA prior to connections to reduce packing off and/or stuck pipe. Prior to trips, circulate at least bottoms up to clean hole.
5. At TD, pump a low viscosity sweep, followed by a high viscosity sweep, and circulate for minimum of three hours prior to tripping out of the hole for logging and casing operations.

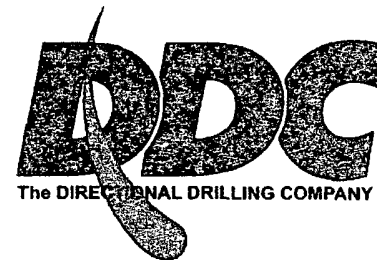
Mud weights for guidelines only, allow hole conditions to dictate actual mud weights



Anchor Drilling  
Fluids USA, Inc.

P. O. Box 61310  
Midland, Texas 79711-1310

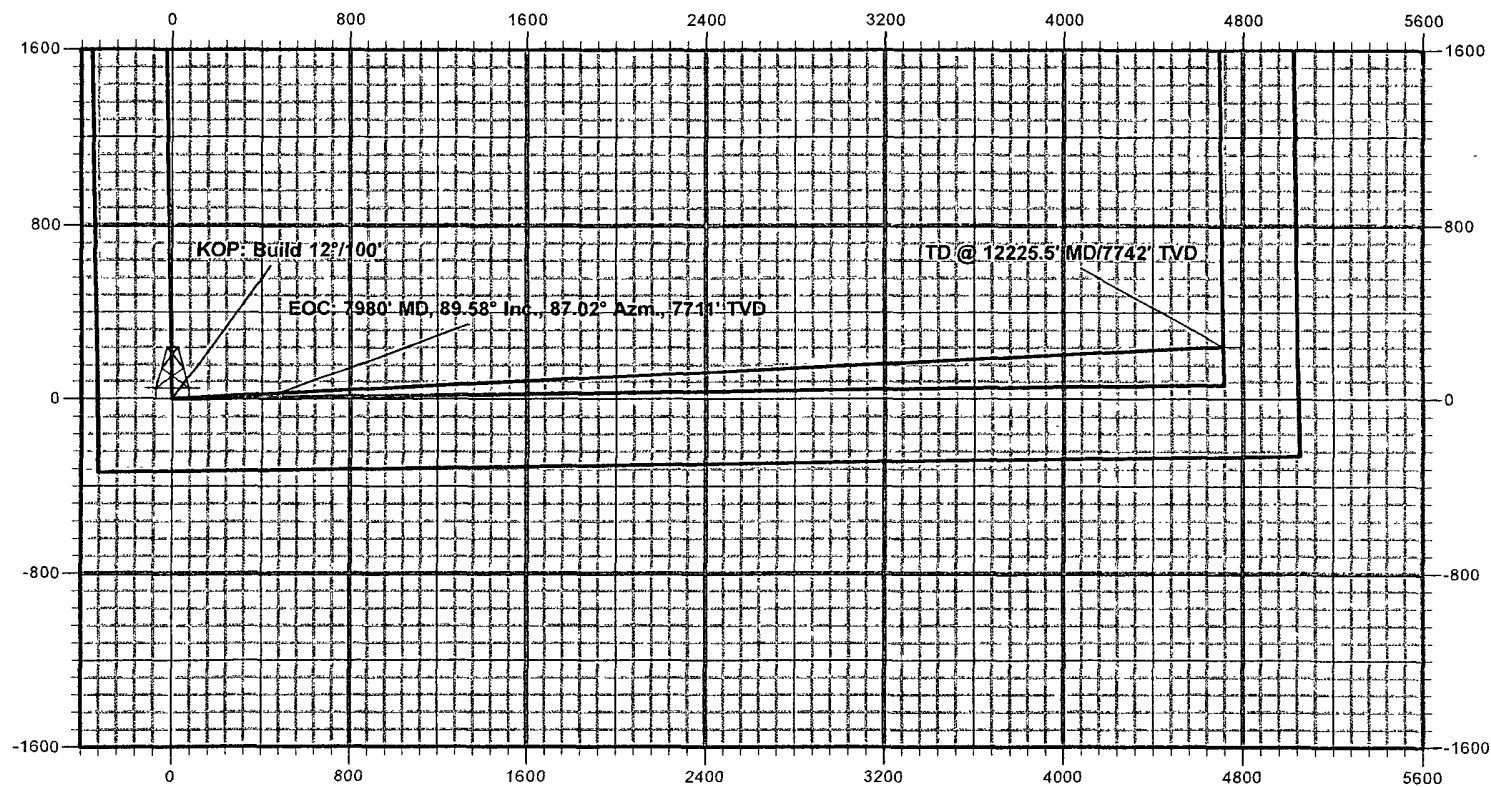
# Strata Production Co.



Eddy County New Mexico

Sandy Federal #3H

Design #1



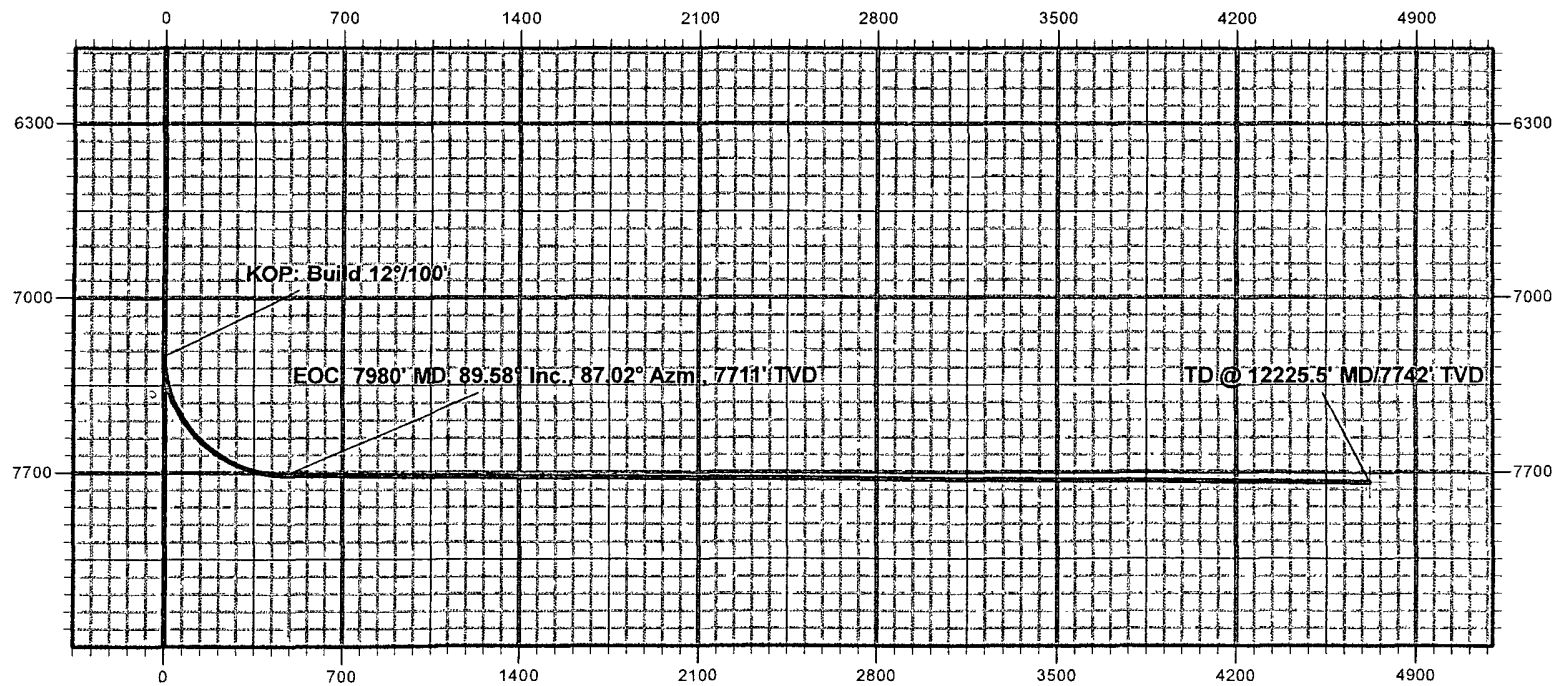
# Strata Production Co.



Eddy County New Mexico

Sandy Federal #3H

Design #1



Vertical Section at 87.02° (700 usft/in)

# **Strata Production Co.**

**Eddy County New Mexico**

**Sec 24, T23S,R30E**

**Sandy Federal #3H**

**Wellbore #1**

**Plan: Design #1**

## **DDC Well Planning Report**

**01 September, 2011**



**DDC**  
Well Planning Report



<b>Database:</b>	EDM 5000 1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Sandy Federal #3H
<b>Company:</b>	Strata Production Co	<b>TVD Reference:</b>	WELL @ 3305 0usft (Original Well Elev)
<b>Project:</b>	Eddy County New Mexico	<b>MD Reference:</b>	WELL @ 3305 0usft (Original Well Elev)
<b>Site:</b>	Sec 24, T23S,R30E	<b>North Reference:</b>	Grid
<b>Well:</b>	Sandy Federal #3H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

<b>Project:</b>	Eddy County New Mexico		
<b>Map System:</b>	US State Plane 1927 (Exact solution)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	New Mexico East 3001		

<b>Site:</b>	Sec 24, T23S,R30E		
<b>Site Position:</b>	<b>Northing:</b>	470,350.69 usft	<b>Latitude:</b> 32° 17' 31.740 N
<b>From:</b>	<b>Easting:</b>	652,191.26 usft	<b>Longitude:</b> 103° 50' 26.952 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b> 13-3/16 "	<b>Grid Convergence:</b> 0.26 °

<b>Well:</b>	Sandy Federal #3H		
<b>Well Position</b>	<b>+N/-S</b>	-2,982.7 usft	<b>Northing:</b> 467,368.00 usft
	<b>+E/-W</b>	-172.3 usft	<b>Easting:</b> 652,019.00 usft
<b>Position Uncertainty</b>	0.0 usft	<b>Wellhead Elevation:</b>	<b>Latitude:</b> 32° 17' 2.231 N
			<b>Longitude:</b> 103° 50' 29.118 W
			<b>Ground Level:</b> 3,288.0 usft

<b>Wellbore:</b>	Wellbore #1		
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b>
	IGRF2010	9/1/2011	(°) 7.69
			<b>Dip Angle</b> (°) 60.19
			<b>Field Strength</b> (nT) 48,602

<b>Design:</b>	Design #1		
<b>Audit Notes:</b>			
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b> 0.0
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			<b>Direction</b> (°) 87.02

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
7,233.5	0.00	0.00	7,233.5	0.0	0.0	0.00	0.00	0.00	0.00	
7,980.0	89.58	87.02	7,711.0	24.6	473.3	12.00	12.00	11.66	87.02	
12,225.5	89.58	87.02	7,742.0	245.0	4,713.0	0.00	0.00	0.00	0.00	PBHL-Sandy Federal

# DDC Well Planning Report



Database: EDM 5000 1 Single User Db  
Company: Strata Production Co  
Project: Eddy County New Mexico  
Site: Sec 24, T23S, R30E  
Well: Sandy Federal #3H  
Wellbore: Wellbore #1  
Design: Design #1

Local Co-ordinate Reference: Well Sandy Federal #3H  
TVD Reference: WELL @ 3305.0usft (Original Well Elev)  
MD Reference: WELL @ 3305.0usft (Original Well Elev)  
North Reference: Grd  
Survey Calculation Method: Minimum Curvature

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0 0	0.00	0 00	0 0	0 0	0.0	0 0	0 00	0 00	0 00	
100 0	0.00	0 00	100 0	0 0	0 0	0 0	0 00	0 00	0 00	
200 0	0.00	0 00	200 0	0 0	0 0	0 0	0 00	0 00	0 00	
300 0	0.00	0 00	300 0	0 0	0 0	0 0	0 00	0 00	0 00	
400 0	0.00	0 00	400 0	0 0	0 0	0 0	0 00	0 00	0 00	
500 0	0.00	0 00	500 0	0 0	0 0	0 0	0 00	0 00	0 00	
600 0	0.00	0 00	600 0	0 0	0 0	0 0	0 00	0 00	0 00	
700 0	0.00	0 00	700 0	0 0	0 0	0 0	0 00	0 00	0 00	
800 0	0.00	0 00	800 0	0 0	0 0	0 0	0 00	0 00	0 00	
900 0	0.00	0 00	900 0	0 0	0 0	0 0	0 00	0 00	0 00	
1,000 0	0.00	0 00	1,000 0	0 0	0 0	0 0	0 00	0 00	0 00	
1,100 0	0.00	0 00	1,100 0	0 0	0 0	0 0	0 00	0 00	0 00	
1,200 0	0.00	0 00	1,200 0	0 0	0 0	0 0	0 00	0 00	0 00	
1,300 0	0.00	0 00	1,300 0	0 0	0 0	0 0	0 00	0 00	0 00	
1,400 0	0.00	0 00	1,400 0	0 0	0 0	0 0	0 00	0 00	0 00	
1,500 0	0.00	0 00	1,500 0	0 0	0 0	0 0	0 00	0 00	0 00	
1,600 0	0.00	0 00	1,600 0	0 0	0 0	0 0	0 00	0 00	0 00	
1,700 0	0.00	0 00	1,700 0	0 0	0 0	0 0	0 00	0 00	0 00	
1,800 0	0.00	0 00	1,800 0	0 0	0 0	0 0	0 00	0 00	0 00	
1,900 0	0.00	0 00	1,900 0	0 0	0 0	0 0	0 00	0 00	0 00	
2,000 0	0.00	0 00	2,000 0	0 0	0 0	0 0	0 00	0 00	0 00	
2,100 0	0.00	0 00	2,100 0	0 0	0 0	0 0	0 00	0 00	0 00	
2,200 0	0.00	0 00	2,200 0	0 0	0 0	0 0	0 00	0 00	0 00	
2,300 0	0.00	0 00	2,300 0	0 0	0 0	0 0	0 00	0 00	0 00	
2,400 0	0.00	0 00	2,400 0	0 0	0 0	0 0	0 00	0 00	0 00	
2,500 0	0.00	0 00	2,500 0	0 0	0 0	0 0	0 00	0 00	0 00	
2,600 0	0.00	0 00	2,600 0	0 0	0 0	0 0	0 00	0 00	0 00	
2,700 0	0.00	0 00	2,700 0	0 0	0 0	0 0	0 00	0 00	0 00	
2,800 0	0.00	0 00	2,800 0	0 0	0 0	0 0	0 00	0 00	0 00	
2,900 0	0.00	0 00	2,900 0	0 0	0 0	0 0	0 00	0 00	0 00	
3,000 0	0.00	0 00	3,000 0	0 0	0 0	0 0	0 00	0 00	0 00	
3,100 0	0.00	0 00	3,100 0	0 0	0 0	0 0	0 00	0 00	0 00	
3,200 0	0.00	0 00	3,200 0	0 0	0 0	0 0	0 00	0 00	0 00	
3,300 0	0.00	0 00	3,300 0	0 0	0 0	0 0	0 00	0 00	0 00	
3,400 0	0.00	0 00	3,400 0	0 0	0 0	0 0	0 00	0 00	0 00	
3,500 0	0.00	0 00	3,500 0	0 0	0 0	0 0	0 00	0 00	0 00	
3,600 0	0.00	0 00	3,600 0	0 0	0 0	0 0	0 00	0 00	0 00	
3,700 0	0.00	0 00	3,700 0	0 0	0 0	0 0	0 00	0 00	0 00	
3,800 0	0.00	0 00	3,800 0	0 0	0 0	0 0	0 00	0 00	0 00	
3,900 0	0.00	0 00	3,900 0	0 0	0 0	0 0	0 00	0 00	0 00	
4,000 0	0.00	0 00	4,000 0	0 0	0 0	0 0	0 00	0 00	0 00	
4,100 0	0.00	0 00	4,100 0	0 0	0 0	0 0	0 00	0 00	0 00	
4,200 0	0.00	0 00	4,200 0	0 0	0 0	0 0	0 00	0 00	0 00	
4,300 0	0.00	0 00	4,300 0	0 0	0 0	0 0	0 00	0 00	0 00	
4,400 0	0.00	0 00	4,400 0	0 0	0 0	0 0	0 00	0 00	0 00	
4,500 0	0.00	0 00	4,500 0	0 0	0 0	0 0	0 00	0 00	0 00	
4,600 0	0.00	0 00	4,600 0	0 0	0 0	0 0	0 00	0 00	0 00	
4,700 0	0.00	0 00	4,700 0	0 0	0 0	0 0	0 00	0 00	0 00	
4,800 0	0.00	0 00	4,800 0	0 0	0 0	0 0	0 00	0 00	0 00	
4,900 0	0.00	0 00	4,900 0	0 0	0 0	0 0	0 00	0 00	0 00	
5,000 0	0.00	0 00	5,000 0	0 0	0 0	0 0	0 00	0 00	0 00	
5,100 0	0.00	0 00	5,100 0	0 0	0 0	0 0	0 00	0 00	0 00	
5,200 0	0.00	0 00	5,200 0	0 0	0 0	0 0	0 00	0 00	0 00	
5,300 0	0.00	0 00	5,300 0	0 0	0 0	0 0	0 00	0 00	0 00	

# DDC Well Planning Report



Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Well Sandy Federal #3H
Company:	Strata Production Co	TVD Reference:	WELL @ 3305.0usft (Original Well Elev)
Project:	Eddy County New Mexico	MD Reference:	WELL @ 3305.0usft (Original Well Elev)
Site:	Sec 24, T23S, R30E	North Reference:	Grid
Well:	Sandy Federal #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
KOP: Build 12°/100'										
7,233.5	0.00	0.00	7,233.5	0.0	0.0	0.0	0.00	0.00	0.00	
7,250.0	1.98	87.02	7,250.0	0.0	0.3	0.3	12.00	12.00	0.00	
7,275.0	4.98	87.02	7,274.9	0.1	1.8	1.8	12.00	12.00	0.00	
7,300.0	7.98	87.02	7,299.8	0.2	4.6	4.6	12.00	12.00	0.00	
7,325.0	10.98	87.02	7,324.4	0.5	8.7	8.7	12.00	12.00	0.00	
7,350.0	13.98	87.02	7,348.8	0.7	14.1	14.1	12.00	12.00	0.00	
7,375.0	16.98	87.02	7,372.9	1.1	20.8	20.8	12.00	12.00	0.00	
7,400.0	19.98	87.02	7,396.6	1.5	28.7	28.7	12.00	12.00	0.00	
7,425.0	22.98	87.02	7,419.9	2.0	37.8	37.9	12.00	12.00	0.00	
7,450.0	25.98	87.02	7,442.7	2.5	48.2	48.2	12.00	12.00	0.00	
7,475.0	28.98	87.02	7,464.8	3.1	59.7	59.8	12.00	12.00	0.00	
7,500.0	31.98	87.02	7,486.4	3.8	72.4	72.5	12.00	12.00	0.00	
7,525.0	34.98	87.02	7,507.2	4.5	86.1	86.3	12.00	12.00	0.00	
7,550.0	37.98	87.02	7,527.3	5.2	101.0	101.1	12.00	12.00	0.00	
7,575.0	40.98	87.02	7,546.6	6.1	116.9	117.0	12.00	12.00	0.00	
7,600.0	43.98	87.02	7,565.1	7.0	133.7	133.9	12.00	12.00	0.00	
7,625.0	46.98	87.02	7,582.6	7.9	151.5	151.7	12.00	12.00	0.00	
7,650.0	49.98	87.02	7,599.2	8.8	170.2	170.4	12.00	12.00	0.00	
7,675.0	52.98	87.02	7,614.7	9.9	189.7	190.0	12.00	12.00	0.00	
7,700.0	55.98	87.02	7,629.2	10.9	210.0	210.3	12.00	12.00	0.00	
7,725.0	58.98	87.02	7,642.7	12.0	231.1	231.4	12.00	12.00	0.00	
7,750.0	61.98	87.02	7,655.0	13.1	252.8	253.2	12.00	12.00	0.00	
7,775.0	64.98	87.02	7,666.2	14.3	275.2	275.5	12.00	12.00	0.00	
7,800.0	67.98	87.02	7,676.1	15.5	298.0	298.4	12.00	12.00	0.00	
7,825.0	70.98	87.02	7,684.9	16.7	321.4	321.9	12.00	12.00	0.00	
7,850.0	73.98	87.02	7,692.4	17.9	345.2	345.7	12.00	12.00	0.00	
7,875.0	76.98	87.02	7,698.7	19.2	369.4	369.9	12.00	12.00	0.00	
7,900.0	79.98	87.02	7,703.7	20.5	393.9	394.4	12.00	12.00	0.00	
7,925.0	82.98	87.02	7,707.4	21.8	418.5	419.1	12.00	12.00	0.00	
7,950.0	85.98	87.02	7,709.8	23.0	443.4	444.0	12.00	12.00	0.00	
7,975.0	88.98	87.02	7,710.9	24.3	468.3	469.0	12.00	12.00	0.00	
EOC: 7980' MD, 89.58° Inc., 87.02° Azm., 7711' TVD										
7,980.0	89.58	87.02	7,711.0	24.6	473.3	474.0	12.00	12.00	0.00	

**DDC**  
Well Planning Report



<b>Database:</b>	EDM 5000 1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Sandy Federal #3H
<b>Company:</b>	Strata Production Co	<b>TVD Reference:</b>	WELL @ 3305.0usft (Original Well Elev)
<b>Project:</b>	Eddy County New Mexico	<b>MD Reference:</b>	WELL @ 3305.0usft (Original Well Elev)
<b>Site:</b>	Sec 24, T23S, R30E	<b>North Reference:</b>	Grid
<b>Well:</b>	Sandy Federal #3H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,000.0	89.58	87.02	7,711.1	25.6	493.3	494.0	0.00	0.00	0.00	
8,100.0	89.58	87.02	7,711.8	30.8	593.2	594.0	0.00	0.00	0.00	
8,200.0	89.58	87.02	7,712.6	36.0	693.0	694.0	0.00	0.00	0.00	
8,300.0	89.58	87.02	7,713.3	41.2	792.9	794.0	0.00	0.00	0.00	
8,400.0	89.58	87.02	7,714.0	46.4	892.7	894.0	0.00	0.00	0.00	
8,500.0	89.58	87.02	7,714.8	51.6	992.6	994.0	0.00	0.00	0.00	
8,600.0	89.58	87.02	7,715.5	56.8	1,092.5	1,093.9	0.00	0.00	0.00	
8,700.0	89.58	87.02	7,716.2	62.0	1,192.3	1,193.9	0.00	0.00	0.00	
8,800.0	89.58	87.02	7,716.9	67.2	1,292.2	1,293.9	0.00	0.00	0.00	
8,900.0	89.58	87.02	7,717.7	72.4	1,392.1	1,393.9	0.00	0.00	0.00	
9,000.0	89.58	87.02	7,718.4	77.6	1,491.9	1,493.9	0.00	0.00	0.00	
9,100.0	89.58	87.02	7,719.1	82.7	1,591.8	1,593.9	0.00	0.00	0.00	
9,200.0	89.58	87.02	7,719.9	87.9	1,691.6	1,693.9	0.00	0.00	0.00	
9,300.0	89.58	87.02	7,720.6	93.1	1,791.5	1,793.9	0.00	0.00	0.00	
9,400.0	89.58	87.02	7,721.3	98.3	1,891.4	1,893.9	0.00	0.00	0.00	
9,500.0	89.58	87.02	7,722.1	103.5	1,991.2	1,993.9	0.00	0.00	0.00	
9,600.0	89.58	87.02	7,722.8	108.7	2,091.1	2,093.9	0.00	0.00	0.00	
9,700.0	89.58	87.02	7,723.5	113.9	2,191.0	2,193.9	0.00	0.00	0.00	
9,800.0	89.58	87.02	7,724.3	119.1	2,290.8	2,293.9	0.00	0.00	0.00	
9,900.0	89.58	87.02	7,725.0	124.3	2,390.7	2,393.9	0.00	0.00	0.00	
10,000.0	89.58	87.02	7,725.7	129.5	2,490.5	2,493.9	0.00	0.00	0.00	
10,100.0	89.58	87.02	7,726.5	134.7	2,590.4	2,593.9	0.00	0.00	0.00	
10,200.0	89.58	87.02	7,727.2	139.9	2,690.3	2,693.9	0.00	0.00	0.00	
10,300.0	89.58	87.02	7,727.9	145.0	2,790.1	2,793.9	0.00	0.00	0.00	
10,400.0	89.58	87.02	7,728.6	150.2	2,890.0	2,893.9	0.00	0.00	0.00	
10,500.0	89.58	87.02	7,729.4	155.4	2,989.9	2,993.9	0.00	0.00	0.00	
10,600.0	89.58	87.02	7,730.1	160.6	3,089.7	3,093.9	0.00	0.00	0.00	
10,700.0	89.58	87.02	7,730.8	165.8	3,189.6	3,193.9	0.00	0.00	0.00	
10,800.0	89.58	87.02	7,731.6	171.0	3,289.4	3,293.9	0.00	0.00	0.00	
10,900.0	89.58	87.02	7,732.3	176.2	3,389.3	3,393.9	0.00	0.00	0.00	
11,000.0	89.58	87.02	7,733.0	181.4	3,489.2	3,493.9	0.00	0.00	0.00	
11,100.0	89.58	87.02	7,733.8	186.6	3,589.0	3,593.9	0.00	0.00	0.00	
11,200.0	89.58	87.02	7,734.5	191.8	3,688.9	3,693.9	0.00	0.00	0.00	
11,300.0	89.58	87.02	7,735.2	197.0	3,788.8	3,793.9	0.00	0.00	0.00	
11,400.0	89.58	87.02	7,736.0	202.1	3,888.6	3,893.9	0.00	0.00	0.00	
11,500.0	89.58	87.02	7,736.7	207.3	3,988.5	3,993.9	0.00	0.00	0.00	
11,600.0	89.58	87.02	7,737.4	212.5	4,088.3	4,093.9	0.00	0.00	0.00	
11,700.0	89.58	87.02	7,738.2	217.7	4,188.2	4,193.9	0.00	0.00	0.00	
11,800.0	89.58	87.02	7,738.9	222.9	4,288.1	4,293.9	0.00	0.00	0.00	
11,900.0	89.58	87.02	7,739.6	228.1	4,387.9	4,393.9	0.00	0.00	0.00	
12,000.0	89.58	87.02	7,740.4	233.3	4,487.8	4,493.9	0.00	0.00	0.00	
12,100.0	89.58	87.02	7,741.1	238.5	4,587.7	4,593.9	0.00	0.00	0.00	
12,200.0	89.58	87.02	7,741.8	243.7	4,687.5	4,693.9	0.00	0.00	0.00	
<b>TD @ 12225.5' MD/7742' TVD - PBHL-Sandy Federal #3H</b>										
12,225.5	89.58	87.02	7,742.0	245.0	4,713.0	4,719.4	0.00	0.00	0.00	



**DDC**  
Well Planning Report



<b>Database:</b>	EDM 5000 1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well Sandy Federal #3H
<b>Company:</b>	Strata Production Co	<b>TVD Reference:</b>	WELL @ 3305 0usft (Original Well Elev)
<b>Project:</b>	Eddy County New Mexico	<b>MD Reference:</b>	WELL @ 3305 0usft (Original Well Elev)
<b>Site:</b>	Sec 24, T23S,R30E	<b>North Reference:</b>	Grid
<b>Well:</b>	Sandy Federal #3H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Design Targets									
Target Name	hit/miss target Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N-S (usft)	+E-W (usft)	Northing (usft)	Easting (usft)	Latitude Longitude
PBHL-Sandy Federal #3	- plan hits target center - Point	0 00	0 00	7,742 0	245 0	4,713 0	467,613 00	656,732 00	32° 17' 4 439 N 103° 49' 34 204 W

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
7,233 5	7,233 5	0 0	0 0	KOP. Build 12°/100'
7,980 0	7,711 0	24 6	473 3	EOC 7980' MD, 89 58° Inc , 87 02° Azm , 7711' TVD
12,225 5	7,742 0	245 0	4,713 0	TD @ 12225 5' MD/7742' TVD

## EXHIBIT "A"

### BLOWOUT PREVENTER EQUIPMENT DESCRIPTION

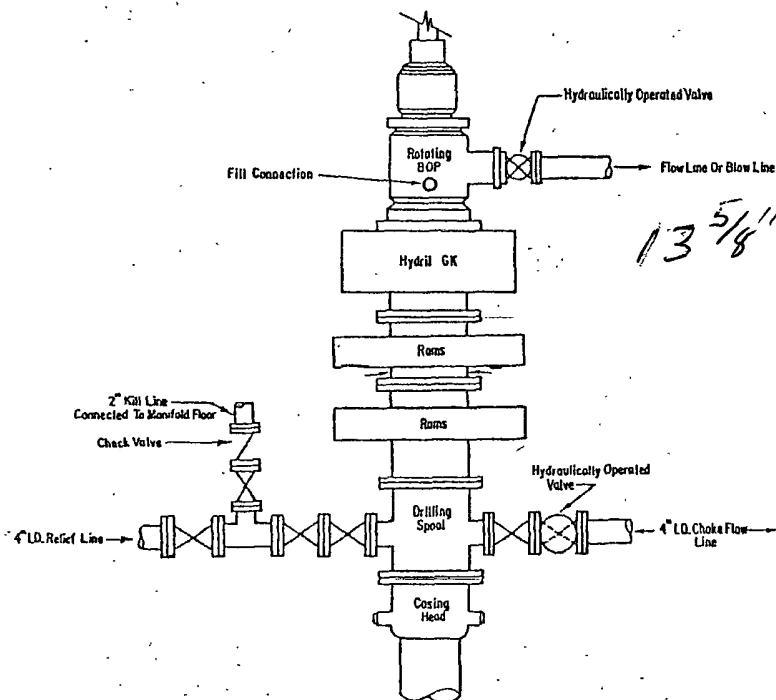
All equipment should be at least 3,000 psi WP or higher unless otherwise specified.

1. Bell nipple
2. Hydril bag type preventer
3. Ram type pressure operated blowout preventer with blind rams.
4. Flanged spool with one 3" and one 2" (minimum) outlet.
5. 2" (minimum) flanged plug or gate valve.
6. 2" x 2" x 2" (minimum) flanged.
7. 3" gate valve.
8. Ram type pressure operated blowout preventer with pipe rams.
9. Flanged type casing head with one side outlet.
10. 2" threaded (or flanged) plug or gate valve. Flanged on 5000# WP, threaded on 3000# WP or less.
11. 3" flanged spacer spool.
12. 3" x 2" x 2" x 2" flanged cross.
13. 2" flanged plug or gate valve.
14. 2" flanged adjustable choke.
15. 2" threaded flange.
16. 2" XXH nipple.
17. 2" forged steel 90° Ell.
18. Cameron (or equal) threaded pressure gauge.
19. Threaded flange.
20. 2" flanged tee.
21. 2" flanged plug or gate valve.
22. 2 1/2" pipe, 300' to pit, anchored.
23. 2 1/2" SE valve.
24. 2 1/2" line to steel pit or separator.

#### NOTES:

- 1). Items 3, 4 and 8 may be replaced with double ram type preventer with side outlets between the rams.
- 2). The two valves next to the stack on the fill and kill line to be closed unless drill string is being pulled.
- 3). Kill line is for emergency use only. This connection shall not be used for filling.
- 4). Replacement pipe rams and blind rams shall be on location at all times.
- 5). Only type U, LSW and QRC ram type preventers with secondary seals are acceptable for 5000 psi WP and higher BOP stacks.
- 6). Type E ram-type BOP's with factory modified side outlets may be used on 3000 psi or lower WP BOP stacks.

# EXHIBIT A-1



13 5/8" API emul  
11/8" 15 GWT

3000# PSI WORKING PRESSURE  
BLOWOUT PREVENTER HOOK-UP

The blowout preventer assembly shall consist of one single type blind ram preventer and one single type pipe ram preventer, both hydraulically operated; a Hydril "GK" preventer; a rotating blowout preventer; valves; chokes and connections, as illustrated. If a tapered drill string is used, a ram preventer must be provided for each size of drill pipe. Casing and tubing rams to fit the preventers are to be available as needed. If correct in size, the flanged outlets of the ram preventer may be used for connecting to the 4-inch I.D. choke flow line and 4-inch I.D. relief line, except when air or gas drilling. All preventer connections are to be open-face flanged.

Minimum operating equipment for the preventers and hydraulically operated valves shall be as follows: (1) Multiple pumps, driven by a continuous source of power, capable of fluid charging the total accumulator volume from the nitrogen precharge pressure to its rated pressure within \_\_\_\_\_ minutes. Also, the pumps are to be connected to the nitrogen precharge pressure to its rated pressure within \_\_\_\_\_ minutes. (2) Accumulators with a precharge of nitrogen of not less than 750 PSI and connected so as to receive the aforementioned fluid charge. With the charging pumps shut down, the pressurized fluid volume stored in the accumulators must be sufficient to close all the pressure-operated devices simultaneously, within \_\_\_\_\_ seconds; after closure, the remaining accumulator pressure shall be not less than 1000 PSI with the remaining accumulator fluid volume at least \_\_\_\_\_ percent of the original. (3) When requested, an additional source of power, remote and equivalent, is to be available to operate the above pumps; or there shall be additional pumps operated by separate power and equal in performance capabilities.

hydraulic operating system which is to be a closed system. (2) Accumulators with a precharge of nitrogen of not less than 750 PSI and connected so as to receive the aforementioned fluid charge. With the charging pumps shut down, the pressurized fluid volume stored in the accumulators must be sufficient to close all the pressure-operated devices simultaneously, within \_\_\_\_\_ seconds; after closure, the remaining accumulator pressure shall be not less than 1000 PSI with the remaining accumulator fluid volume at least \_\_\_\_\_ percent of the original. (3) When requested, an additional source of power, remote and equivalent, is to be available to operate the above pumps; or there shall be additional pumps operated by separate power and equal in performance capabilities.

The closing manifold and remote closing manifold shall have a separate control for each pressure-operated device. Controls are to be labeled, with control handles indicating open and closed positions. A pressure reducer and regulator must be provided for operating the Hydril preventer. When requested, a second pressure reducer shall be available to limit operating fluid pressures to ram preventers. Gulf Legion No. 38 hydraulic oil, an equivalent or better, is to be used as the fluid to operate the hydraulic equipment.

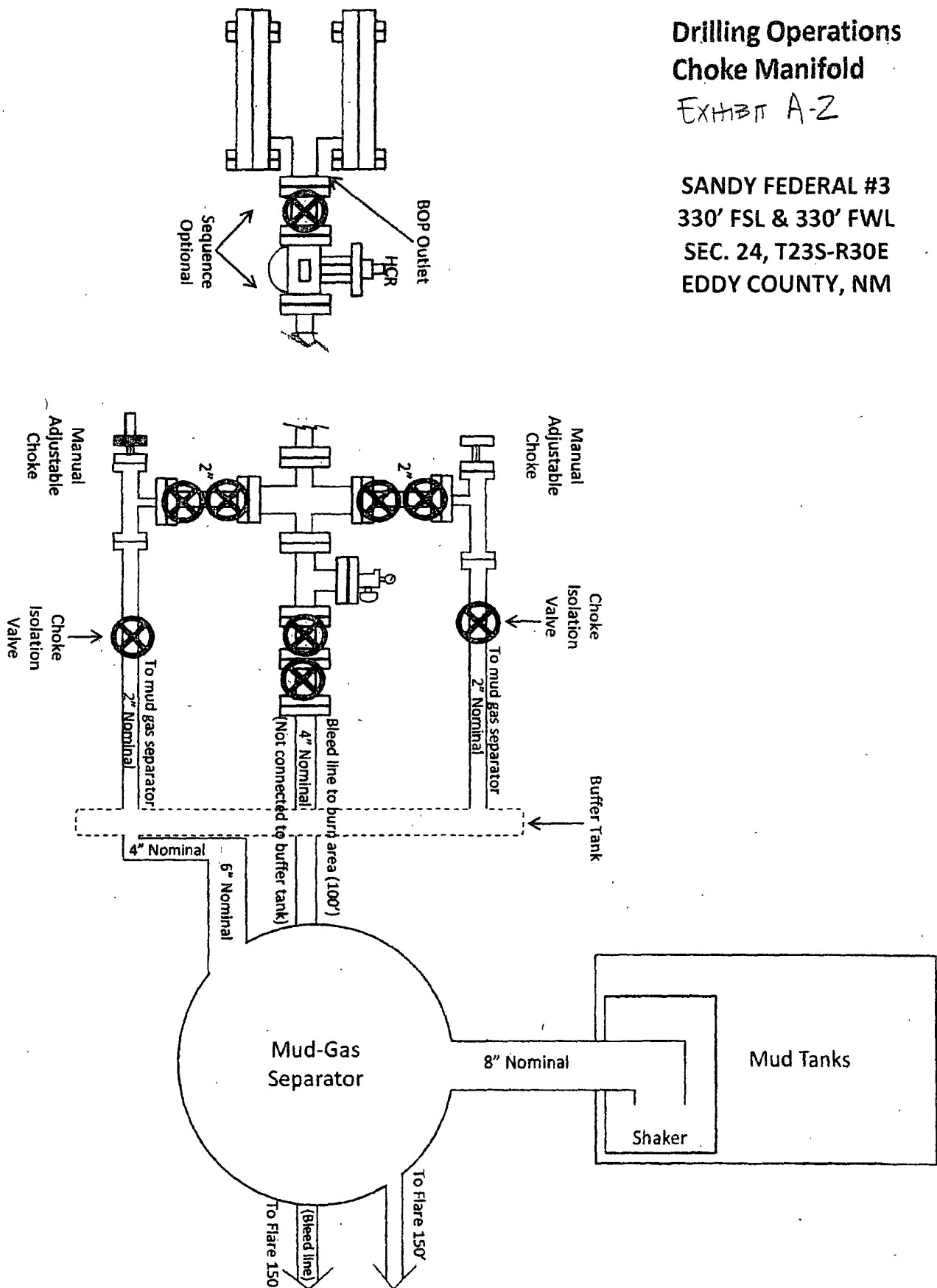
The choke manifold, choke flow line, relief line, and choke lines are to be supported by metal stands and adequately anchored. The choke flow line, relief line, and choke lines shall be constructed as straight as possible and without sharp bends. Easy and safe access is to be maintained to the choke manifold. If deemed necessary, walkways and stairways shall be erected in and around the choke manifold. All valves are to be selected for operation in the presence of oil, gas, and drilling fluids. The choke flow line valves and relief line valves connected to the drilling spool and all ram type preventers must be equipped with stem extensions, universal joints if needed, and hand wheels which are to extend beyond the edge of the derrick substructure. All other valves are to be equipped with handles.

\* To include derrick floor mounted controls.

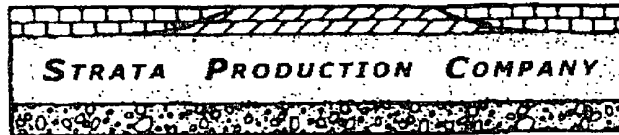
# Drilling Operations Choke Manifold

EXHIBIT A-2

SANDY FEDERAL #3  
330' FSL & 330' FWL  
SEC. 24, T23S-R30E  
EDDY COUNTY, NM



POST OFFICE DRAWER 1030  
ROSWELL, NM 88202-1030



TELEPHONE (575) 622-1127  
FACSIMILE (575) 623-3533

1301 NORTH SYCAMORE AVENUE  
ROSWELL, NEW MEXICO 88201  
www.stratanm.com

September 29, 2011

Mr. Dan Morehouse  
Mine Engineering Superintendent  
Mosaic Potash Carlsbad, Inc  
PO Box 71  
Carlsbad, NM 88220

Re: Application to Drill in Potash Area  
Sandy Federal #3  
Section 24-23S-30E  
Eddy County, NM

Dear Mr. Morehouse,

In accordance with the State of New Mexico Oil Conservation Division Rule R-111-P, enclosed herewith please find the following for your review and further action:

1. Form 3160-3 Application For Permit To Drill
2. Form C-102 Well Location and Acreage Dedication Plat

State of New Mexico Public Land records reflect Mosaic Potash Carlsbad, Inc ("Mosaic") as potash lessee in the area of the captioned lands. Strata Production Company ("Strata"), a New Mexico Corporation, hereby advises you of its intention to drill the subject well at a location of 330' FSL & 330' FWL of Section 24, T23S-R30E, Eddy County, New Mexico.

We have already met and discussed this location and if you are in agreement that drilling at the proposed location will not interfere with potash operations, please sign and return one copy of this letter within 30 days of receipt.

Please contact me if you have any questions or require additional information.

Regards,

A handwritten signature in black ink, appearing to read "Mitch Krakauskas", is written over a horizontal line.

Mitch Krakauskas  
Land Coordinator

AGREED TO AND ACCEPTED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2011

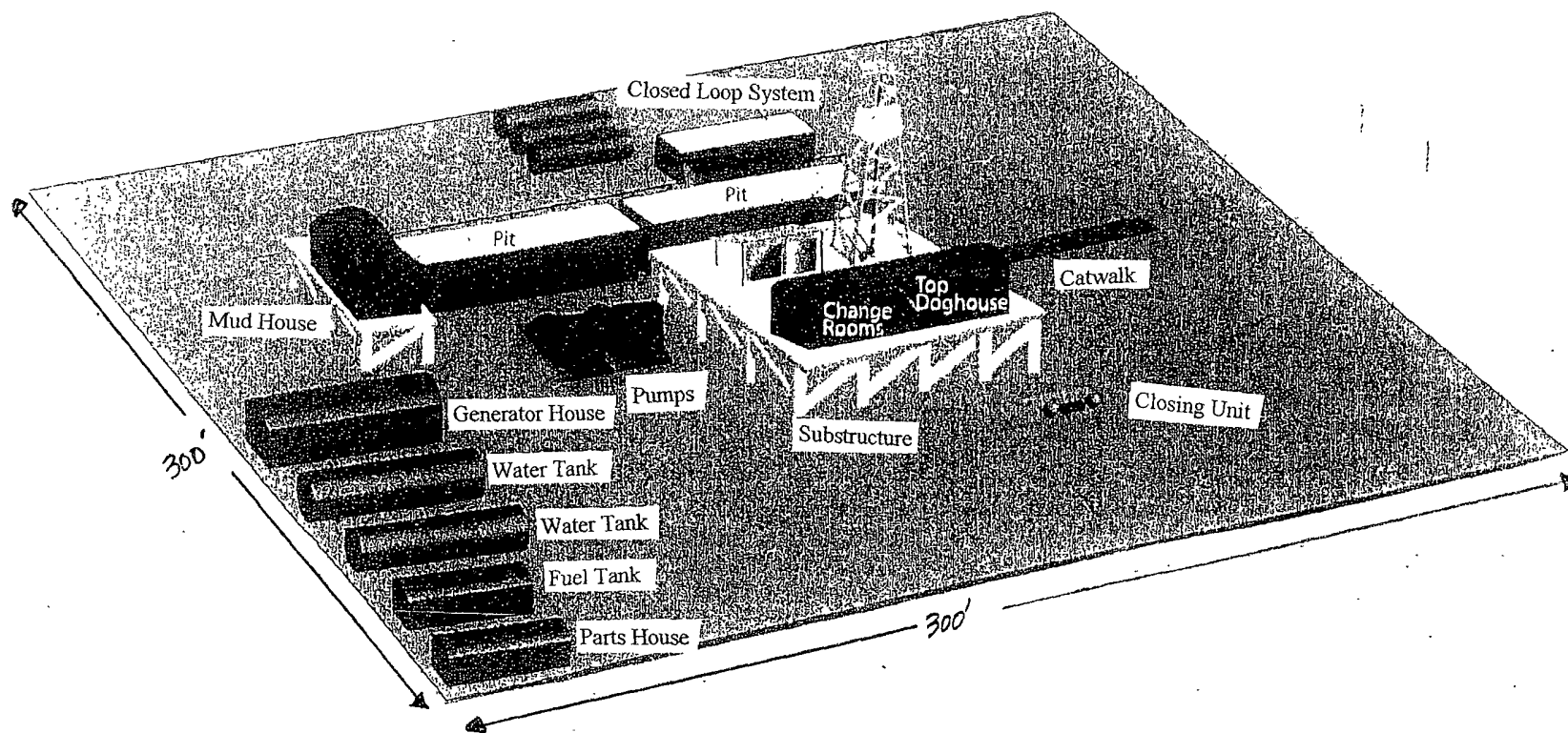
BY: \_\_\_\_\_ TITLE: \_\_\_\_\_

cc: Bureau of Land Management, Carlsbad, NM

# EXHIBIT "D"

SANDY FEDERAL #3

## TYPICAL WELL SITE LAYOUT PLAN SILVEROAK DRILLING



V-door Southeast

Location Size with Closed Loop System  
300' Deep x 300' Wide

~150' from front of location to hole

~150' from left of location to hole

# STRATA PRODUCTION COMPANY

## H<sub>2</sub>S DRILLING OPERATIONS PLAN

### I. HYDROGEN SULFIDE TRAINING

- A. All contractors and subcontractors employed by Strata Production Company will receive or have received training from a qualified instructor within the last twelve months in the following areas prior to commencing drilling operations on the well.
  - 1. The hazards and characteristics of hydrogen sulfide (H<sub>2</sub>S).
  - 2. Safety precautions.
  - 3. Operations of safety equipment and life support systems.
- B. In addition, contractor supervisory personnel will be trained or prepared in the following areas:
  - 1. The effect of H<sub>2</sub>S on metal components in the system. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
  - 2. Corrective action and shut-down procedures when drilling or reworking a well, blowout prevention and well control procedures, if the nature of work performed involves these items.
  - 3. The contents and requirements of the contingency plan when such plan is required.
- C. All personnel will be required to carry documentation of the above training on their person.

### II. H<sub>2</sub>S EQUIPMENT AND SYSTEMS

#### A. SAFETY EQUIPMENT

The following safety equipment will be on location.

- 1. Wind direction indicators as seen in attached diagram.
- 2. Automatic H<sub>2</sub>S detection alarm equipment both audio and visual.

3. Clearly visible warning signs as seen on the attached diagram. Signs will use the words "POISON GAS" and "CAUTION" with a strong color contrast.
4. Protective breathing equipment will be located in the dog house and at briefing areas as seen in the attached Diagram.

## B. WELL CONTROL SYSTEMS

### 1. Blowout Prevention Equipment

Equipment includes but is not limited to:

- a. Pipe rams to accommodate all pipe sizes.
- b. Blind rams.
- c. Choke manifold.
- d. Closing unit.

### 2. Communication

- a. The rig contractor will be required to have two-way communication capability. Strata Production Company will have either land-line or mobile telephone capabilities.

### 3. Mud Program

- a. The mud program has been designed to minimize the volume of H<sub>2</sub>S circulated to surface. Proper mud weight, safe drilling practices and the use of H<sub>2</sub>S scavengers, when appropriate, will minimize hazards when penetrating H<sub>2</sub>S bearing zones.

### 4. Drill Stem Test intervals are as follows:

- a. None planned



### III. WELLSITE DIAGRAM

A. A complete wellsite diagram including the following information is attached.

1. Rig orientation
2. Terrain
3. Briefing areas
4. Ingress and egress
5. Pits and flare lines
6. Caution and danger signs
7. Wind indicators and prevailing wind direction

**STRATA PRODUCTION COMPANY**  
**Emergency Contact List**

**Strata Personnel:**

**Numbers:**

Frank Morgan, Drilling Superintendent	575-703-8866
Virgil Smith, Production Superintendent	575-626-0528

**Sheriff's Departments:**

Eddy County	575-887-1888
Lea County	575-396-3611

<b>New Mexico State Police:</b>	<b>575-392-5588</b>
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**Fire Departments:**

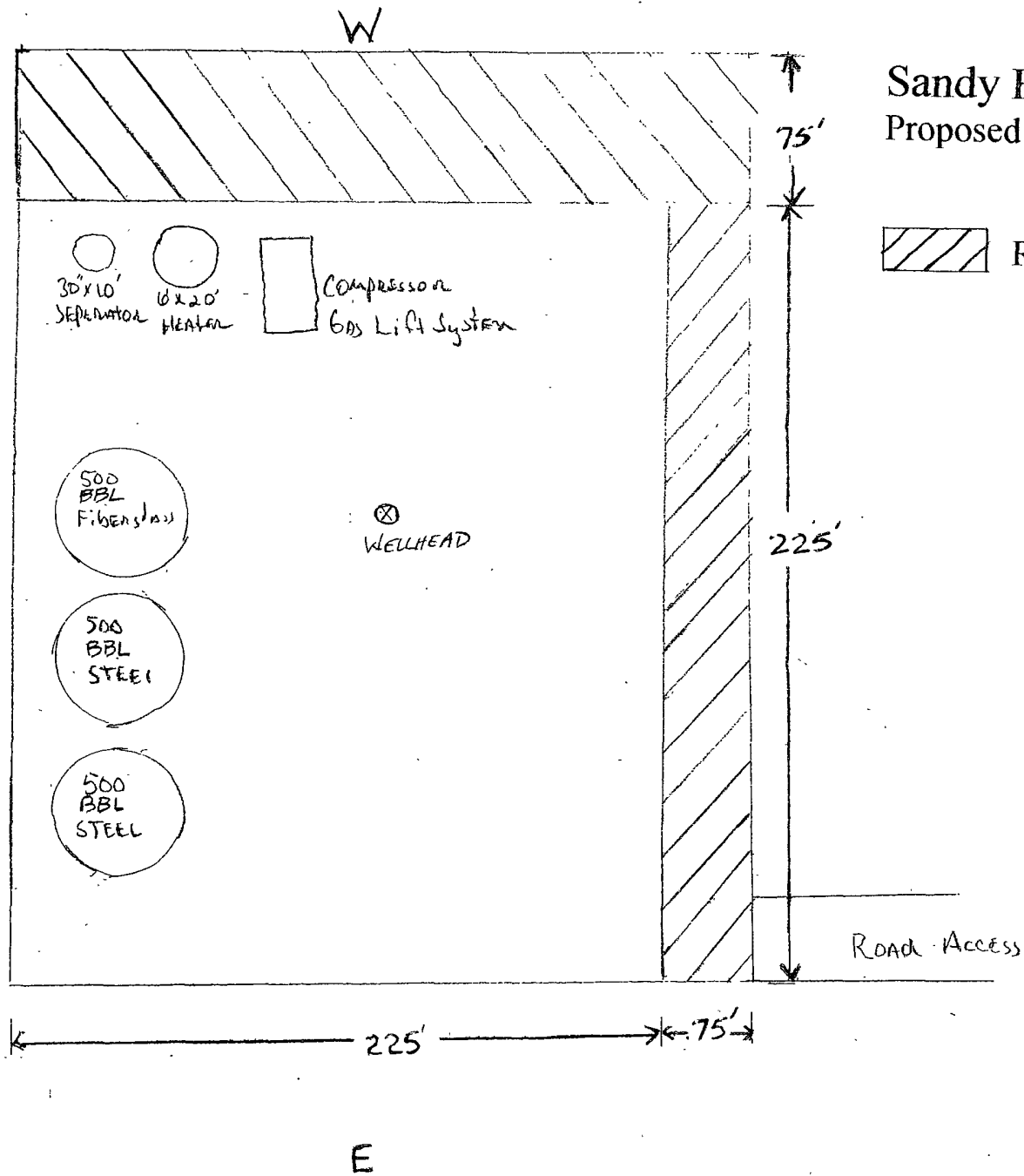
	911
Carlsbad	575-885-3125
Eunice	575-394-2111
Hobbs	575-397-9308
Jal	575-395-2221
Lovington	575-396-2359

**Hospitals:**

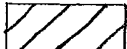
	911
Carlsbad Medical Emergency	575-887-4100
Eunice Medical Emergency	575-394-2112
Hobbs Medical Emergency	575-397-9308
Jal Medical Emergency	575-395-2221
Lovington Medical Emergency	575-396-2359

**Agent Notifications:**

Bureau of Land Management	575-393-3612
New Mexico Oil Conservation Division	575-393-6161
Mosaic Potash- Carlsbad	575-887-2871



# Sandy Federal #3 Proposed Interim Reclamation Plan

 Reclaimed Area

## PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Strata Production Company
LEASE NO.:	NM-114356
WELL NAME & NO.:	Sandy Federal #3
SURFACE HOLE FOOTAGE:	0330' FSL & 0330' FWL
BOTTOM HOLE FOOTAGE:	0510' FSL & 0330' FEL
LOCATION:	Section 24, T. 23 S., R. 30 E., NMPM
COUNTY:	Eddy County, New Mexico

### TABLE OF CONTENTS

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

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
  - V-door southeast
- ☐ **Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
  - R-111- P Potash
  - High Cave/Karst
  - Logging Requirements
  - Waste Material and Fluids
- ☐ **Production (Post Drilling)**
  - Well Structures & Facilities
  - Pipelines
  - Electric Lines
- ☒ **Interim Reclamation**
- ☒ **Final Abandonment & Reclamation**

## **I. GENERAL PROVISIONS**

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

## **II. PERMIT EXPIRATION**

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

## **III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES**

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

## **IV. NOXIOUS WEEDS**

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

## V. SPECIAL REQUIREMENT(S)

### V-door southeast as shown on survey plat in order to reduce fill to northeast

#### 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.

##### **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, siting valves 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 valves, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

#### Cave/Karst Subsurface Mitigation

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

##### **Rotary Drilling with Fresh Water:**

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

**Directional Drilling:**

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

**Lost Circulation:**

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

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

**Abandonment Cementing:**

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

**Pressure Testing:**

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

## **VI. CONSTRUCTION**

### **A. NOTIFICATION**

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-6235 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**

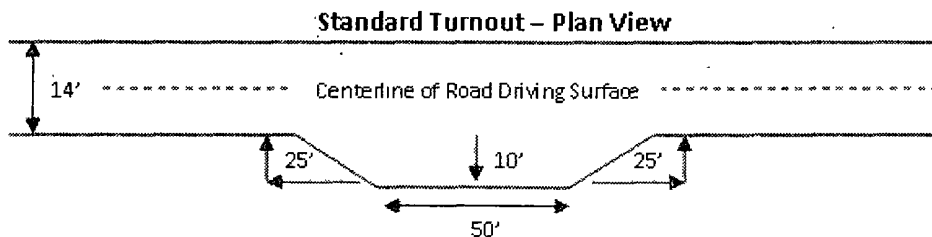
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

### **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:

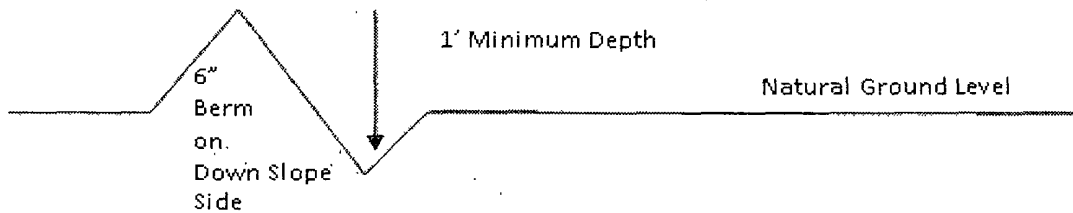


### **Drainage**

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:

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

### 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

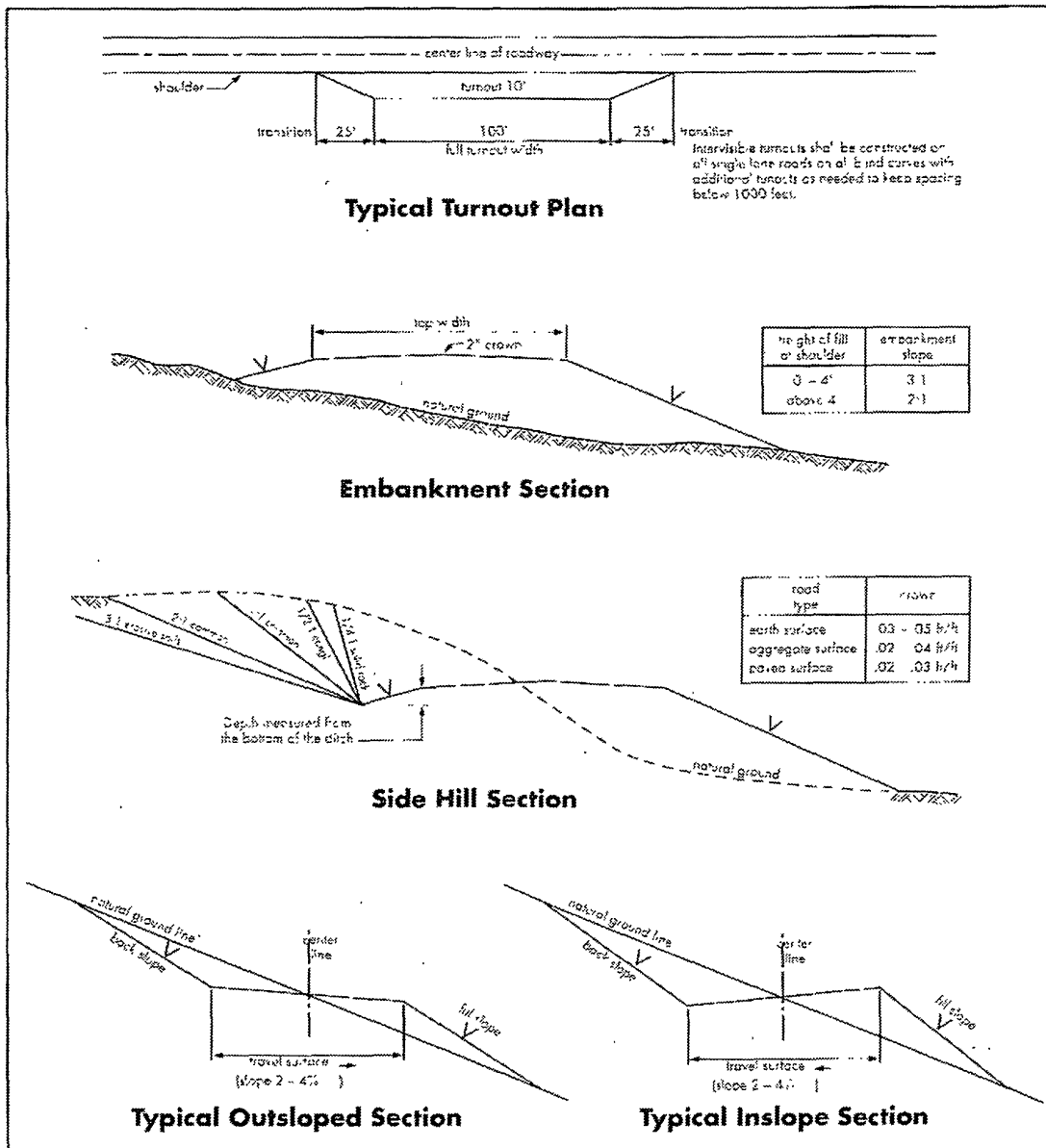
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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. **Due to recent H<sub>2</sub>S encounters in the salt formation, it is recommended that monitoring equipment be onsite for potential Hydrogen Sulfide prior to drilling out the surface shoe. If Hydrogen Sulfide is encountered, please report measurements 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 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  
R-111-POTASH AREA**

**Possible lost circulation in the Delaware Mountain Group.**

- 1. The 13-3/8 inch surface casing shall be set at approximately 300-330 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. If salt is encounter 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.**

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

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

**Contingency cement option:**

a. First stage to DV tool:

- ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to potash and cave/karst.**

b. Second stage above DV tool:

- ☒ 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 potash and cave/karst. Additional cement will be required – excess calculates to -59%.**

3. 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. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to potash.**

4. The minimum required fill of cement behind the 4-1/2 inch liner is:

- ☒ Cement to top of liner. Operator shall provide method of verification.

- 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.
- 6. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

**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 **3000 (3M)** 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. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. In potash areas, 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. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.
  - 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.
  - f. **Effective November 1, 2008, no variances will be granted on reduced pressure tests on the surface casing and BOP/BOPE. Onshore Order 2 requirements will be in effect.**

#### **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.

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## **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, Munsell Soil Color Chart # 5Y 4/2

### **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 for LPC Sand/Shinnery Sites

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

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

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

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

\*Pounds of pure live seed:

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

Operator STRATA OGRID # 21712  
Well Name & # SANDY LORRAINE #3 Surface Type (F) (S) (P)  
Location: UL M, Sect 24, Township 23 s, RNG 30 e, Sub-surface Type (F) (S) (P)

**B. 1. Check mark, Information is OK on Forms:**

2. Inactive Well list as of: 3/15/2012 # wells 53, # Inactive wells 2

a. District Grant APD but see number of inactive wells:

No letter required 1, Sent Letter to Operator \_\_\_\_\_, to Santa Fe

3. Additional Bonding as of: 3/15/2012

a. District Denial because operator needs addition bonding:

No Letter required ✓; Sent Letter to Operator       , To Santa Fe       

**b. District Denial because of Inactive well list and Financial Assurance:**

No Letter required ☒; Sent Letter to Operator ☐; To Santa Fe ☐

C. C102 YES ☒ NO ☐ Signature [Signature]

1. Pool Forty Down Ridge, Code 24750

a. Dedicated acreage 142 What Units 1

b. SUR. Location Standard \_\_\_\_\_: Non-Standard Location \_\_\_\_\_

c. Well shares acres: Yes      No      # of wells      plus this well #     

2. 2<sup>nd</sup>. Operator in same acreage, Yes \_\_\_\_\_, No \_\_\_\_\_

Agreement Letter \_\_\_\_\_, Disagreement letter \_\_\_\_\_

3. Intent to Directional Drill Yes ☒, No ☐

a. Dedicated acreage 160 What Units M-N-O-T

b. Bottomhole Location Standard ☒ Non-Standard Bottomhole

4. Downhole Commingle: Yes ☐, No ☒

a. Pool #2	Code	Acres
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Pool #3 \_\_\_\_\_, Code \_\_\_\_\_, Acres \_\_\_\_\_

Pool #4 \_\_\_\_\_, Code \_\_\_\_\_, Acres \_\_\_\_\_

5. POTASH Area Yes        No ✓

D. Blowout Preventer Yes ☒, No ☒

E. H2S Yes ☒, No ☐

F. C144 Pit Registration Yes ☒, No ☐

G. Does APD require Santa Fe Approval:

1. Non-Standard Location: Yes ☐, No ☒, NSL # \_\_\_\_\_

2. Non-Standard Proration: Yes ☐, No ☒, NSP #           

3. Simultaneous Dedication: Yes ☐, No ☒, SD # \_\_\_\_\_

Number of wells Plus # /

4. Injection order Yes ☐ No ☒; PMX # \_\_\_\_\_ or WEX # \_\_\_\_\_

5. SWD order Yes NO / : SWD #           

6. DHC from SF ; DHC-HOB : Holding

7. OCD Approval Date, 3/15/2012

API #30-015 -- 70033

8. Reviewers