

RECEIVED CONFIDENTIAL

Form 3160-3  
(August 2007)

Operator Copy DEC 13 2010

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

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

|   |   |   |
|---|---|---|
| 1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER  |   | 5. Lease Serial No.<br>BL: NMNM002862 / SL: NMNM030452            |
| 1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone |   | 6. If Indian, Allottee or Tribe Name                              |
| 2. Name of Operator<br>CHESAPEAKE AGENT FOR BORCO ATTN: LINDA GOOD (147179)   |   | 7. If Unit or CA Agreement, Name and No.                          |
| 3a. Address<br>P.O. BOX 18496<br>OKLAHOMA CITY, OK 73154-0496   | 3b. Phone No. (include area code)<br>405-935-4275 | 8. Lease Name and Well No.<br>PLU BIG SINKS 27 FEDERAL TH (38425) |
| 4. Location of Well (Report location clearly and in accordance with any State requirements*)<br>At surface 215 FSL 400 FEL, SESE (P)<br>At proposed prod. zone 330 FNL 400 FEL, NENE                        |   | 9. API Well No.<br>30-015-38319                                   |
| 14. Distance in miles and direction from nearest town or post office*<br>15.5 MILES EAST OF MALAGA, NEW MEXICO  |   | 10. Field and Pool, or Exploratory<br>WILDCAT; BONE SPRING 97798  |
| 15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)   |   | 11. Sec., T. R. M. or Blk. and Survey or Area<br>27-24S-30E       |
| 16. No. of acres in lease<br>BL NMNM02862 - 1920 AC<br>SL NMNM030452 - 1200 AC  |   | 12. County or Parish<br>EDDY                                      |
| 17. Spacing Unit dedicated to this well<br>160 ACRES  |   | 13. State<br>NM   |
| 18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.  |   | 20. BLM/BIA Bond No. on file<br>NM2634                            |
| 19. Proposed Depth<br>Pilot: 9400' MD/9400' TVD<br>BHL: 13,466' MD/8917' TVD  |   | 23. Estimated duration  |
| 21. Elevations (Show whether DF, KDB, RT, GL, etc.)<br>3352 GL  |   | 22. Approximate date work will start*                             |

24. Attachments

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

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

|                                    |                                    |                    |
|------------------------------------|------------------------------------|--------------------|
| 25. Signature<br><i>Linda Good</i> | Name (Printed/Typed)<br>LINDA GOOD | Date<br>11/17/2010 |
|------------------------------------|------------------------------------|--------------------|

Title  
SR. REGULATORY COMPLIANCE SPECIALIST

|  |  |                 |
|--|--|-----------------|
| Approved by (Signature)<br><i>James A. Jones Jr.</i> | Name (Printed/Typed)<br>James A. Jones | Date<br>12-3-10 |
|--|--|-----------------|

|                        |                                 |
|------------------------|---------------------------------|
| Title<br>FIELD MANAGER | Office<br>CARLSBAD FIELD OFFICE |
|------------------------|---------------------------------|

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

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

(Continued on page 2)

\*(Instructions on page 2)

Carlsbad Controlled Water Basin

KZ 12/21/10

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

APPROVAL SUBJECT TO  
GENERAL REQUIREMENTS  
AND SPECIAL STIPULATIONS  
ATTACHED

DISTRICT I  
1425 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  
1223 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy, Minerals and Natural Resources Department

Form C-102  
Revised October 16, 2009

Submit one copy to appropriate  
District Office

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

|                                   |  |   |
|-----------------------------------|--|---|
| API Number<br><b>30-015-38319</b> | Pool Code<br><b>97798</b>                              | Pool Name<br><b>WILDCAT 5-06 524-3026AA</b> |
| Property Code<br><b>38425</b>     | Property Name<br><b>PLU BIG SINKS "27" FEDERAL COM</b> | Well Number<br><b>1H</b>                    |
| OCRID No.<br><b>147179</b>        | Operator Name<br><b>CHESAPEAKE OPERATING CO.</b>       | Elevation<br><b>3352'</b>                   |

Surface Location

| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| P             | 27      | 24 S     | 30 E  |         | 215           | SOUTH            | 400           | EAST           | EDDY   |

Bottom Hole Location If Different From Surface

| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| A             | 27      | 24 S     | 30 E  |         | 330           | NORTH            | 400           | EAST           | EDDY   |

|                               |                 |                    |           |
|-------------------------------|-----------------|--------------------|-----------|
| Dedicated Acres<br><b>160</b> | Joint or Infill | Consolidation Code | Order No. |
|-------------------------------|-----------------|--------------------|-----------|

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

|  |  |
|--|--|
|  | <b>PROPOSED BOTTOM HOLE LOCATION</b><br>Lat - N 32.19521340<br>Long - W 103.86159598<br>NMSPC - E 687260.490<br>(NAD-83)           |
|  | <b>PENETRATION POINT &amp; SURFACE LOCATION</b><br>Lat - N 32.18222657<br>Long - W 103.8615761<br>NMSPC - E 687287.366<br>(NAD-83) |

**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 **5/24/2010**

Bryan Arrant  
Printed Name

**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.

Date Surveyed **May 10, 2010**  
Signature of Professional Surveyor   
Certificate No. **Garry L. Jones 7977**

Certificate No. **Garry L. Jones 7977**

**ELITE SURVEYS**

EXHIBIT A-1

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

**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.*

FORM APPROVED  
OMB NO. 1004-0135  
Expires: July 31, 2010

|  |   |   |
|--|---|---|
| <b>SUBMIT IN TRIPLICATE - Other instructions on reverse side.</b>  |   | 5. Lease Serial No.<br>NMNM02862                    |
| 1. Type of Well<br><input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other |   | 6. If Indian, Allottee or Tribe Name                |
| 2. Name of Operator<br>CHESAPEAKE OPERATING INC  |   | 7. If Unit or CA/Agreement, Name and/or No.         |
| Contact: LINDA GOOD<br>E-Mail: linda.good@chk.com  |   | 8. Well Name and No.<br>PLU BIG SINKS 27 FEDERAL 1H |
| 3a. Address<br>OKLAHOMA CITY, OK 73154-0496  | 3b. Phone No. (include area code)<br>Ph: 405-935-4275 | 9. API Well No.                                     |
| 4. Location of Well (Footage, Sec., T., R., M., or Survey Description)<br>Sec 27 T24S R30E SESE 215FSL 400FEL                    |   | 10. Field and Pool, or Exploratory<br>WILDCAT       |
|  |   | 11. County or Parish, and State<br>EDDY COUNTY, NM  |

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

| TYPE OF SUBMISSION                                   | TYPE OF ACTION                                |  |  |   |
|--|---|--|--|---|
| <input checked="" type="checkbox"/> Notice of Intent | <input type="checkbox"/> Acidize              | <input type="checkbox"/> Deepen                      | <input type="checkbox"/> Production (Start/Resume) | <input type="checkbox"/> Water Shut-Off |
| <input type="checkbox"/> Subsequent Report           | <input type="checkbox"/> Alter Casing         | <input type="checkbox"/> Fracture Treat              | <input type="checkbox"/> Reclamation               | <input type="checkbox"/> Well Integrity |
| <input type="checkbox"/> Final Abandonment Notice    | <input type="checkbox"/> Casing Repair        | <input checked="" type="checkbox"/> New Construction | <input type="checkbox"/> Recomplete                | <input type="checkbox"/> Other          |
|  | <input type="checkbox"/> Change Plans         | <input type="checkbox"/> Plug and Abandon            | <input type="checkbox"/> Temporarily Abandon       |   |
|  | <input type="checkbox"/> Convert to Injection | <input type="checkbox"/> Plug Back                   | <input type="checkbox"/> 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 shall 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 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Chesapeake Agent for BOPCO LP, respectfully, requests permission to build this location while waiting on APD approval.

(CHK PN 632047)

|   |                                      |
|---|--------------------------------------|
| 14. I hereby certify that the foregoing is true and correct.<br>Electronic Submission #95880 verified by the BLM Well Information System<br>For CHESAPEAKE OPERATING INC, sent to the Carlsbad<br>Committed to AFMSS for processing by KURT SIMMONS on 11/01/2010 (11KMS0084SE) |                                      |
| Name (Printed/Typed) LINDA GOOD   | Title SR. REGULATORY COMPLIANCE SPEC |
| Signature (Electronic Submission)   | Date 10/27/2010                      |

**THIS SPACE FOR FEDERAL OR STATE OFFICE USE**

|   |                              |                 |
|---|------------------------------|-----------------|
| Approved By DON PETERSON  | Title AFM LANDS AND MINERALS | Date 11/02/20   |
| 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 Carlsbad |

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.

**\*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\***

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

**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.*

FORM APPROVED  
OMB NO. 1004-0135  
Expires: July 31, 2010

5. Lease Serial No.  
NMNM02862

6. If Indian, Allottee or Tribe Name

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

8. Well Name and No.  
PLU BIG SINKS 27 FEDERAL 1H

9. API Well No.

10. Field and Pool, or Exploratory  
UNDES.

11. County or Parish, and State  
EDDY COUNTY, NM

**SUBMIT IN TRIPLICATE - Other instructions on reverse side.**

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator

CHESAPEAKE AGENT FOR BOPCO Contact: LINDA GOOD  
Email: linda.good@chk.com

3a. Address

P.O. BOX 18498  
OKLAHOMA CITY, OK 73154-0498

3b. Phone No. (include area code)

Ph: 405-935-4275

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 27 T24S R30E SESE 215FSL 400FEL

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

| TYPE OF SUBMISSION                                   | TYPE OF ACTION                                |   |  |   |
|--|---|---|--|---|
| <input checked="" type="checkbox"/> Notice of Intent | <input type="checkbox"/> Acidize              | <input type="checkbox"/> Deepen           | <input type="checkbox"/> Production (Start/Resume) | <input type="checkbox"/> Water Shut-Off   |
| <input type="checkbox"/> Subsequent Report           | <input type="checkbox"/> Alter Casing         | <input type="checkbox"/> Fracture Treat   | <input type="checkbox"/> Reclamation               | <input type="checkbox"/> Well Integrity   |
| <input type="checkbox"/> Final Abandonment Notice    | <input type="checkbox"/> Casing Repair        | <input type="checkbox"/> New Construction | <input type="checkbox"/> Recomplete                | <input checked="" type="checkbox"/> Other |
|  | <input type="checkbox"/> Change Plans         | <input type="checkbox"/> Plug and Abandon | <input type="checkbox"/> Temporarily Abandon       | Change to Original PD                     |
|  | <input type="checkbox"/> Convert to Injection | <input type="checkbox"/> Plug Back        | <input type="checkbox"/> 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 recompleat 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 shall 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 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

This change has been verbally approved by Don Peterson and Owen Loftin with the Carlsbad BLM.

Due to a Power Line being installed by BOPCO LP we need to extend the pad 50' North and 100' west. V-Door Northwest. The extended pad will be reclaimed 100%.

Attached is the revised rig plat.

(CHK PN 631298)

|   |                                       |
|---|---------------------------------------|
| 14. I hereby certify that the foregoing is true and correct.<br>Electronic Submission #98462 verified by the BLM Well Information System<br>For CHESAPEAKE AGENT FOR BOPCO LP, sent to the Carlsbad |                                       |
| Name (Printed/Typed) LINDA GOOD   | Title SR. REGULATORY COMPLIANCE SPEC. |
| Signature (Electronic Submission)   | Date 12/02/2010                       |

**THIS SPACE FOR FEDERAL OR STATE OFFICE USE**

|   |                   |   |
|---|-------------------|---|
| Approved By <u>James R. Ames</u>  | Title <u>SEAS</u> | Date <u>12-3-10</u>                     |
| 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 <u>BLM Carlsbad Field Office</u> |

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.

**\*\* OPERATOR-SUBMITTED \*\* OPERATOR-SUBMITTED \*\* OPERATOR-SUBMITTED \*\***

**Additional Operator Remarks:**

SL LEASE: NMNM30452, 1200 ACRES.

Chesapeake Operating, Inc. respectfully requests permission to drill a well to 12,823' to test the Bone Spring formation. If productive, casing will be run and the well completed. If dry, the well will be plugged and abandoned as per BLM and New Mexico Oil Conservation Division requirements.

Please find the Surface Use Plan and Drilling Program as required by Onshore Order No. 1.

Attached are the Exhibit A-1 to A-4 Survey plats, Exhibit B 1 mile radius plat, Exhibit C Production facility, Exhibit D Cactus Rig #116 layout, Exhibit F-1 to F-2 BOP & Choke Manifold, Exhibit G Directional Drill Plan and Wellbore Schematic.

Exhibit E Archeological Survey will be delivered to the BLM when completed.

Chesapeake Operating, Inc. has an agreement with the grazing lessee.

Please be advised that Chesapeake Operating, Inc. is the Designated Agent for BOPCO, the Operator of this unit. Chesapeake Operating, Inc. agrees to be responsible under the terms and conditions of the lease for the operations conducted upon the lease lands.

(CHK PN 632407)

ONSHORE ORDER NO. 1  
Chesapeake Agent for BOPCO  
PLU Big Sinks 27 Federal 1H  
SL: 215' FSL & 400' FEL  
BL: 330' FNL & 400' FEL  
Section 27-24S-30E  
Eddy County, NM

CONFIDENTIAL – TIGHT HOLE  
OPERATOR CERTIFICATION

SL: Lease No. NMNM 30452  
BL: Lease No. NMNM 02862

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 will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

Executed this 9th day of September, 2010

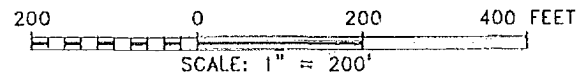
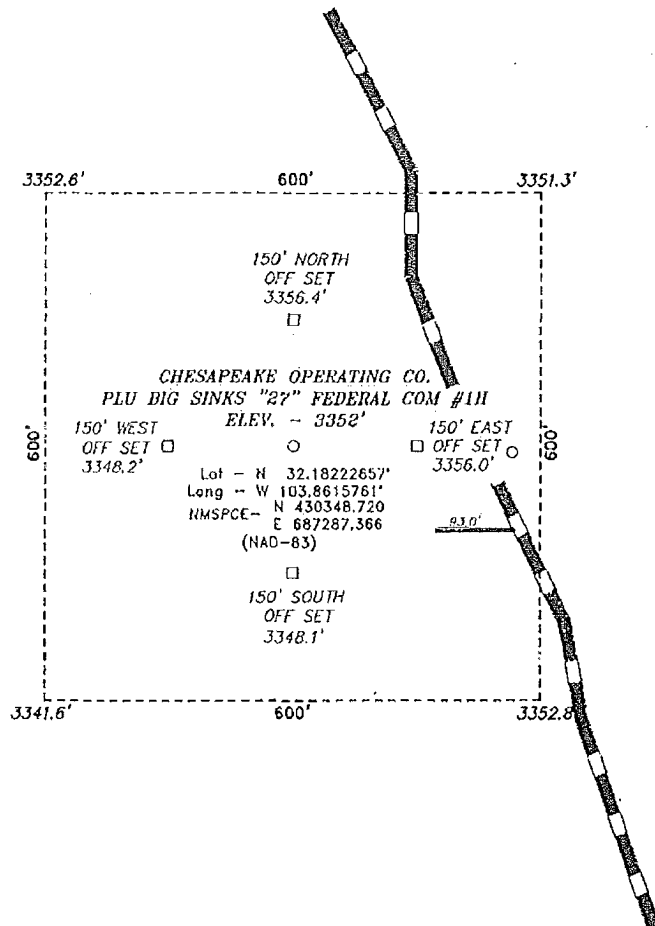
Name:   
Bud Cravey, Sr. Field Representative

Address: 2010 Rankin Highway, Midland, TX 79701

Telephone: 432-238-7293

E-mail: bud.cravey@chk.com

SECTION 27, TOWNSHIP 24 SOUTH, RANGE 30 EAST, N.M.P.M.,  
EDDY COUNTY, NEW MEXICO.



Directions to Location:

FROM THE JUNCTION OF TWIN WELLS AND McDONALD,  
GO SOUTH ON TWIN WELLS FOR 0.3 MILES TO  
PROPOSED LOCATION.

**CHESAPEAKE OPERATING CO.**

REF: PLU BIG SINKS "27" FEDERAL COM #1H / WELL-PAD TOPO

THE PLU BIG SINKS "27" FEDERAL COM #1H LOCATED 215'

FROM THE SOUTH LINE AND 400' FROM THE EAST LINE OF

SECTION 27, TOWNSHIP 24 SOUTH, RANGE 30 EAST,

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

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

W.O. Number: 22704

Drawn By: J. SMALL

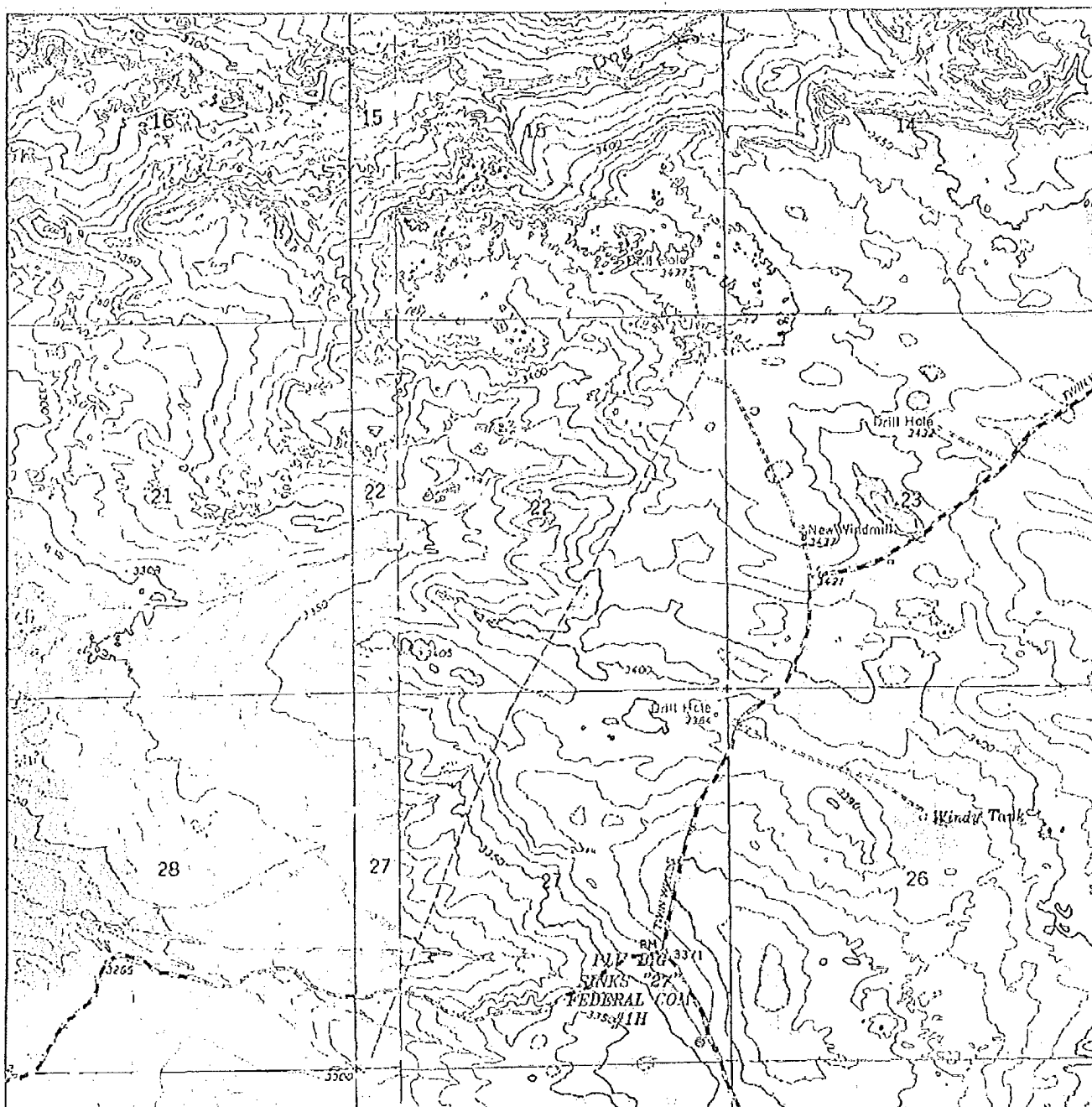
Date: 05-20-2010

Disk: JMS 22704

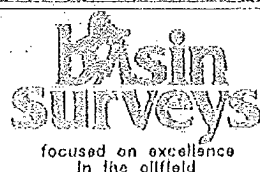
Survey Date: 05-18-2010

Sheet 1 of 1 Sheets

EXHIBIT A-2



PLU BIG SINKS "27" FEDERAL COM #1H  
 Located 215' FSL and 400' FEL  
 Section 27, Township 24 South, Range 30 East,  
 N.M.P.M., Eddy County, New Mexico.

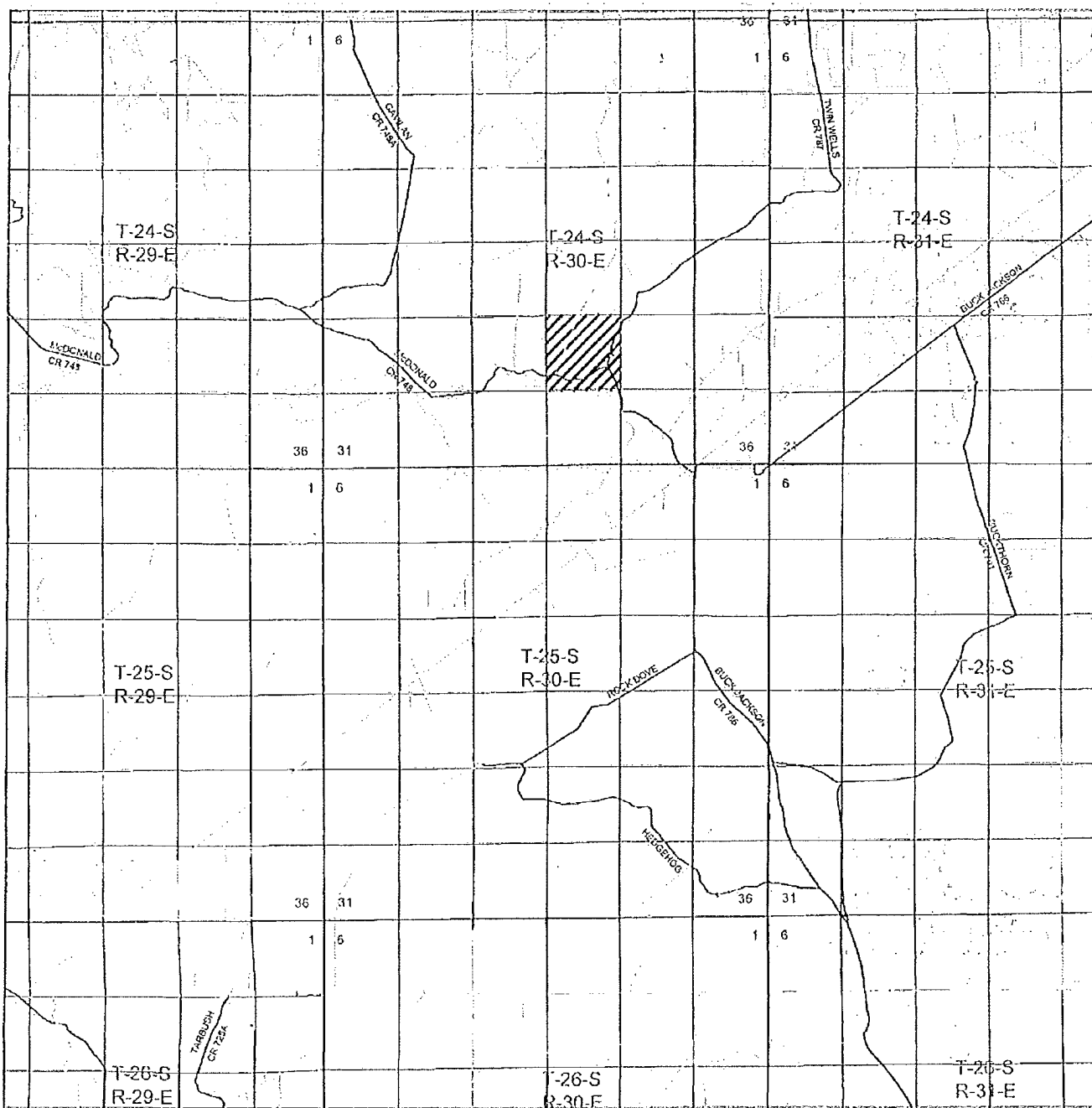


P.O. Box 1786  
 1120 N. West County Rd.  
 Hobbs, New Mexico 88241  
 (575) 393-7316 - Office  
 (575) 392-2206 - Fax  
 basin-surveys.com

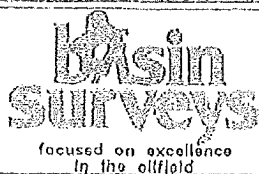
W.O. Number: JMS 22704  
 Survey Date: 05-18-2010  
 Scale: 1" = 2000'  
 Date: 05-20-2010

CHESAPEAKE  
 OPERATING CO.

EXHIBIT A-3



PLU BIG SINKS "27" FEDERAL COM #1H  
 Located 215' FSL and 400' FEL  
 Section 27, Township 24 South, Range 30 East,  
 N.M.P.M., Eddy County, New Mexico.



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

W.O. Number: JMS 22704

Survey Date: 05-18-2010

Scale: 1" = 2 Miles

Date: 05-20-2010

CHESAPEAKE  
 OPERATING CO.

EXHIBIT A-4



PLU BIG SINKS "27" FEDERAL COM #1H  
 Located 215' FSL and 400' FEL  
 Section 27, Township 24 South, Range 30 East,  
 N.M.P.M., Eddy County, New Mexico.

**basin**  
**surveys**  
 focused on excellence  
 in the oilfield

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

W.O. Number: JMS 22704

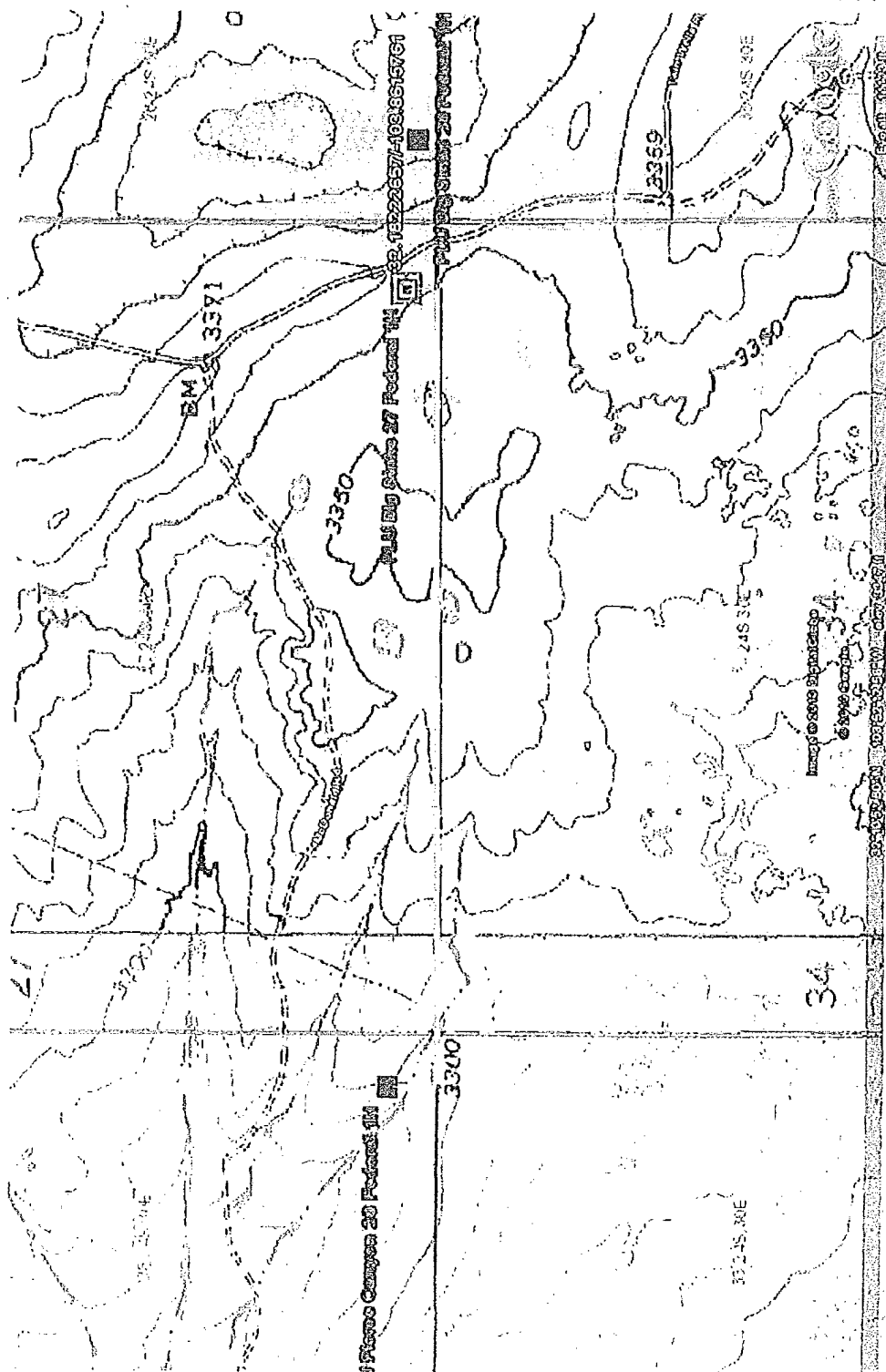
Scale: 1" = 2000'

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

**CHESAPEAKE**  
**OPERATING CO.**

EXHIBIT A-5





EXHIBIT

ONSHORE ORDER NO. 1  
Chesapeake Agent for BOPCO  
PLU Big Sinks 27 Federal Com 1H  
SL: 215' FSL & 400' FEL  
BL: 330' FNL & 400' FEL  
Section 27-24S-29E  
Eddy County, New Mexico

CONFIDENTIAL – TIGHT HOLE  
REVISED DRILLING PROGRAM 11/17/2010

SL: Lease No. NMNM 30452  
BL: Lease No. NMNM 02862

Page 1

ONSHORE OIL & GAS ORDER NO. 1  
Approval of Operations on Onshore  
Federal and Indian Oil and Gas Leases

All lease and/or unit operations are to be conducted in such a manner that full compliance is made with the applicable laws, regulations (CFR 43, Part 3160) and the approved Application for Permit to Drill. The operator is considered fully responsible for the actions of his subcontractors. A copy of the approved APD must be on location during construction, drilling and completion operations.

Approval of this application 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.

1. FORMATION TOPS

The estimated tops of important geologic markers are as follows:

| <u>Formation</u>        | <u>SUBSEA</u> | <u>KBTVD</u> | <u>MD</u> |
|-------------------------|---------------|--------------|-----------|
| Rustler                 | 2160'         | 1180'        |           |
| Top of Salt             | 2015'         | 1315'        |           |
| Base of Salt            | 1100'         | 2230'        |           |
| Bell Canyon             | -609'         | 3939'        |           |
| Cherry Canyon           | -1340'        | 4670'        |           |
| Brushy Canyon           | -2900'        | 6230'        |           |
| Bone Spring*            | -4390'        | 7643'        |           |
| Avalon*                 | -4455'        | 7785'        |           |
| First Bone Spring Sand* | -5240'        | 8570'        |           |
| First Bone Spring*      | -5532'        | 8862'        |           |
| Pilot Hole TD           |               | 9400'        | 9400      |
| Lateral TD              |               | 8917'        | 13466'    |

2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS

The estimated depths at which the top and bottom of the anticipated water, oil, gas or other mineral bearing formations are expected to be encountered are as follows:

| <u>Substance</u> | <u>Formation</u> | <u>Depth</u> |
|------------------|------------------|--------------|
| Oil/Gas          | Brushy Canyon    | 6230'        |
| Oil/Gas          | Bone Spring      | 7643'        |

All shows of fresh water and minerals will be reported and protected.

ONSHORE ORDER NO. 1  
Chesapeake Agent for BOPCO  
PLU Big Sinks 27 Federal Com 1H  
SL: 215' FSL & 400' FEL  
BL: 330' FNL & 400' FEL  
Section 27-24S-29E  
Eddy County, New Mexico  
3. BOP EQUIPMENT:

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Will have a 5000 psi rig stack (see proposed schematic) for drill out below surface casing, but this system will be tested to 3000 psi working pressure and 3000 psi working pressure for the annular preventer; therefore, no shoe tests will be conducted.

Chesapeake Operating, Inc.'s minimum specifications for pressure control equipment are as follows:

I. BOP, Annular, Choke Manifold, Pressure Test - See Exhibit F-1 to F-2.

A. Equipment

1. The equipment to be tested includes all of the following that is installed on the well:
  - (a) Ram-type and annular preventers,
  - (b) Choke manifolds and valves,
  - (c) Kill lines and valves, and
  - (d) Upper and lower kelly cock valves, inside BOP's and safety valves.

B. Test Frequency

1. All tests should be performed with clear water,
  - (a) when installed,
  - (b) before drilling out each casing string,
  - (c) at any time that there is a repair requiring a pressure seal to be broken in the assembly, and
  - (d) at least once every 30 days while drilling.

C. Test Pressure

1. In some drilling operations, the pressures to be used for low and high-pressure testing of preventers and casing may be different from those given below due to governmental regulations, or approved local practices.
2. If an individual component does not test at the low pressure, **do not**, test to the high pressure and then drop back down to the low pressure.
3. All valves located downstream of a valve being tested must be placed in the open position.
4. All equipment will be tested with an initial "low pressure" test at 250 psi.
5. The subsequent "high pressure" test will be conducted at the rated working pressure of the equipment for all equipment except the annular preventer.
6. The "high pressure" test for the annular preventer will be conducted at 70% of the rated working pressure.
7. A record of all pressures will be made on a pressure-recording chart.

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D. Test Duration

1. In each case, the individual components should be monitored for leaks for 10 minutes, with no observable pressure decline, once the test pressure has been applied.

II. Accumulator Performance Test

A. Scope

1. The purpose of this test is to check the capabilities of the BOP control systems, and to detect deficiencies in the hydraulic oil volume and recharge time.

B. Test Frequency

1. The accumulator is to be tested each time the BOP's are tested, or any time a major repair is performed.

C. Minimum Requirements

1. The accumulator should be of sufficient volume to supply 1.5 times the volume to close and hold all BOP equipment in sequence, without recharging and the pump turned off, and have remaining pressures of 200 PSI above the precharge pressure.

2. Minimum precharge pressures for the various accumulator systems per manufacturers recommended specifications are as follows:

3.

System Operating Pressures

Precharge Pressure

1500 PSI

750 PSI

2000 PSI

1,000 PSI

3000 PSI

1,000 PSI

3. Closing times for the Hydril should be less than 20 seconds, and for the ram-type preventers less than 10 seconds.

4. System Recharge time should not exceed 10 minutes.

D. Test Procedure

1. Shut accumulator pumps off and record accumulator pressure.
2. In sequence, close the annular and one set of properly sized pipe rams, and open the HCR valve.
3. Record time to close or open each element and the remaining accumulator pressure after each operation.

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4. Record the remaining accumulator pressure at the end of the test sequence. Per the previous requirement, this pressure should not be less than the following pressures:

| <u>System Pressure</u> | <u>Remaining Pressure At Conclusion of Test</u> |
|------------------------|---|
| 1,500 PSI              | 950 PSI   |
| 2,000 PSI              | 1,200 PSI                                       |
| 3,000 PSI              | 1,200 PSI                                       |

5. Turn the accumulator pumps on and record the recharge time. This time should not exceed 10 minutes.

6. Open annular and ram-type preventers. Close HCR valve.

7. Place all 4-way control valves in full open or full closed position. Do not leave in neutral position.

#### 4. CASING PROGRAM

- a. The proposed casing program will be as follows:

*See COA*

| <u>Purpose</u> | <u>Interval</u>   | <u>Hole Size</u> | <u>Casing Size</u> | <u>Weight</u> | <u>Grade</u> | <u>Thread</u> | <u>Condition</u> |
|----------------|-------------------|------------------|--------------------|---------------|--------------|---------------|------------------|
| Surface        | Surface – 850'    | 17-1/2"          | 13-3/8"            | 48.0#         | H-40         | STC           | New              |
| Intermediate   | Surface – 3900'   | 11"              | 8-5/8"             | 32.0#         | J-55         | LTC           | New              |
| Production     | Surface – 13,466' | 7-7/8"           | 5-1/2"             | 20.0#         | L-80         | LTC           | New              |

*See COA*

- b. Casing design subject to revision based on geologic conditions encountered.

- c. Casing Safety Factors:

13-3/8" Surface Casing: SFb = 1.44, SFc = 2.0 and SFt = 1.48

8-5/8" Intermediate Casing: SFb = 2.12, SFc = 1.50 and SFt = 1.82

5-1/2" Production Casing: SFb = 1.29, SFc = 2.19 and SFt = 1.65

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d. The cementing program will be as follows:

5. Cementing Program

| <u>Interval</u>                  | <u>Type</u>                       | <u>Weight</u> | <u>Amount</u> | <u>Yield</u> | <u>Top Of Cement</u> | <u>Excess</u> |
|----------------------------------|-----------------------------------|---------------|---------------|--------------|----------------------|---------------|
| Surface                          | C+ 4% Gel                         | 13.5 ppg      | 874 sks       | 1.73         | Surface              | 150%          |
| Inter-mediate                    | Lead: TXL                         | 12.0 ppg      | 903 sks       | 1.82         | Surface              | 150%          |
|                                  | Tail: 50/50 C/Poz +2%Gel, 5% Salt | 14.2 ppg      | 510 sks       | 1.37         | 2,800'               | 150%          |
| Production 1 <sup>st</sup> Stage | Lead: TXL + 1% Salt               | 12.0 ppg      | 364 sks       | 1.83         | 4,600'(DV)           | 60%           |
|                                  | Tail: 50/50 C/Poz +6%Gel, 5% Salt | 13.2 ppg      | 1030sks       | 1.74         | 7,000'               | 60%           |
| Production 2 <sup>nd</sup> Stage | Lead: TXL                         | 12.0 ppg      | 176 sks       | 1.83         | 3,400'               | 200%          |
|                                  | Tail: C                           | 14.8 ppg      | 100 sks       | 1.33         | 4,350'               | 200%          |

Final cement volumes will be determined by caliper.

Surface casing shall have at least one centralizer installed on each of the bottom three joints starting with the shoe joint.



Pilot Hole Plugging Plan:

*See COA*

Pilot Hole will TD in the Bone Spring formation and will be plugged back with one cement plug. Plug will be placed from 9400' to 9000'. Plug will be 200 sx (40% excess) Class H 17.5 ppg 0.96 yield cement.

*Pilot TD = 9400'*

6. MUD PROGRAM

*See COA*

a. The proposed circulating mediums to be used in drilling are as follows:

| <u>Interval</u>       | <u>Mud Type</u> | <u>Mud Weight</u> | <u>Viscosity</u> | <u>Fluid Loss</u> |
|-----------------------|-----------------|-------------------|------------------|-------------------|
| 0' - 850' 1355        | FW/Gel          | 8.4 - 8.7         | 28-32            | NC                |
| 850' - 3,900'         | Brine           | 8.7 - 10.1        | 28-30            | NC                |
| 3,900' - 8,508' (KOP) | KCL Water       | 8.5 - 9.0         | 28-29            | NC                |
| 8,508'-Pilot TD       | FW/Cut Brine    | 9.0-9.5           | 34-38            | 12-20             |
| 8,508'- Lateral TD    | FW/Cut Brine    | 9.0-9.5           | 34-38            | 12-20             |

A closed system will be utilized consisting of above ground steel tanks. All wastes accumulated during drilling operations will be contained in a portable trash cage and removed from location and deposited in an approved sanitary landfill. Sanitary wastes

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will be contained in a chemical porta-toilet and then hauled to an approved sanitary landfill.

All fluids and cuttings will be disposed of in accordance with New Mexico Oil Conservation Division rules and regulations.

A mud test shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.

*\* see COA*  
7. TESTING, LOGGING AND CORING

The anticipated type and amount of testing, logging and coring are as follows:

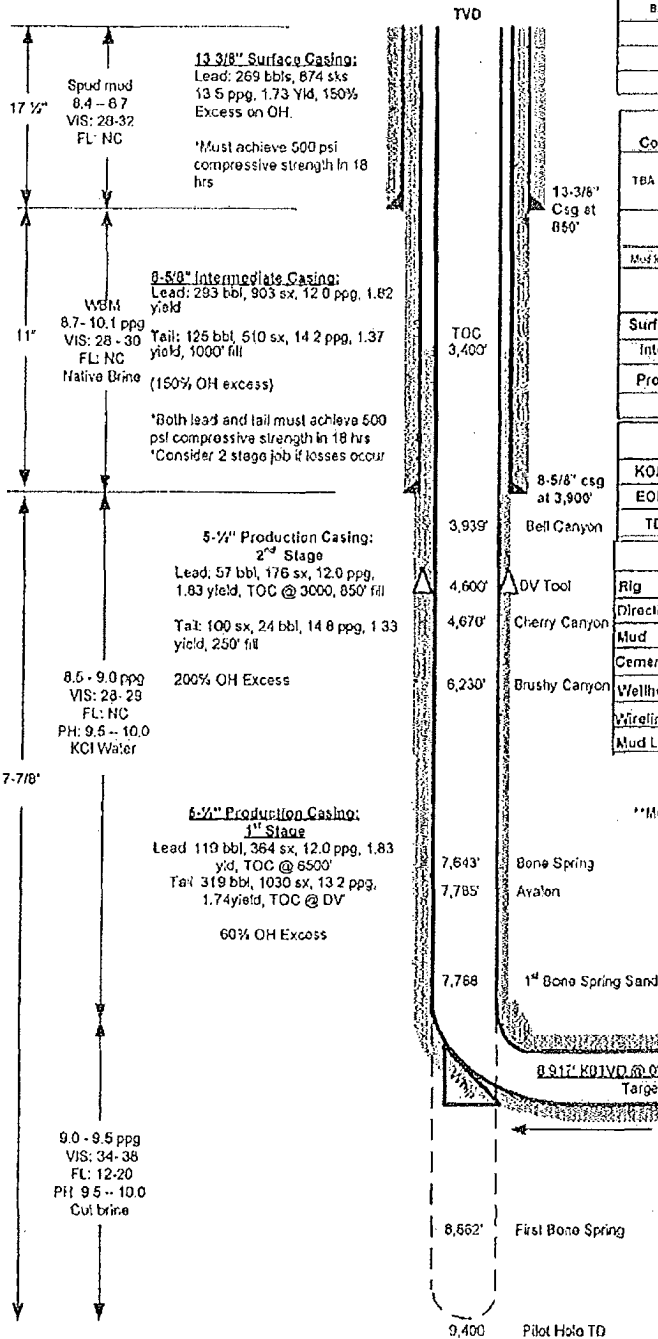
- a. Drill stem tests are not planned.
- b. The logging program will consist of Spectral Gamma, Induction, Laterolog, Neutron, Density from pilot hole TD to intermediate casing; Neutron-GR intermediate casing to surface. GR in lateral.
- c. Cores samples are not planned.

8. ABNORMAL PRESSURES AND HYDROGEN SULFIDE

- a. The estimated bottom hole pressure is 3800 psi.
- b. No abnormal pressures or temperatures are anticipated.

### Proposed Drilling Program

Well : PLU Big Sinks 27 Fed 1H  
Field : Delaware Basin North  
County : Eddy State : NM  
Surf Locat : Section 27-24S-30E, 215' FSL & 400' FEL Lat: N32.182227° Long: W103.861676° (NAD83)  
BH Locat : Section 27-24S-30E, 330' FNL & 400' FEL Lat: N32.195213° Long: W103.861596° (NAD83)  
KB Elev : 3,374' (Latshaw 6) Grd Elev : 3,352'



| Wellhead Equipment |                          |
|--------------------|--------------------------|
| Tree Connection    |                          |
| Backpressure Valve |                          |
| Tubing Spool       | 11" 5M x 7' 1/16" 12K    |
| Casing Spool       | 13-5/8" 5M x 11' 5M      |
| Bradenhead         | 13-3/8" 50W/v 13-5/8" 5M |

| Logging Program   |               |       |      |                    |       |            |
|---|---------------|-------|------|--------------------|-------|------------|
| Company   | Log Type      |       |      | Interval           |       |            |
| TBA   |               |       |      |                    |       |            |
|   | MWD-GR on BHA |       |      | Curve and Interval |       |            |
| Most logging personnel at intermediate testing site is TD |               |       |      |                    |       |            |
| Tubular Detail  |               |       |      |                    |       |            |
|   | Size          | Wt    | Grd  | Conn.              | From: | To:        |
| Surface   | 13-3/8"       | 438   | H-43 | 6TC                | 0'    | 850'       |
| Inter   | 8-5/8"        | 328   | J-55 | LTC                | 0'    | 3,900'     |
| Prod  | 5 1/2"        | 20-09 | L-63 | LTC                | 0'    | Lateral TD |

| Lateral Directional Plan |         |      |        |        |      |      |
|--------------------------|---------|------|--------|--------|------|------|
|                          | MO      | INC  | AZM    | TVD    | BUR  | DLS  |
| KOP                      | 8,508'  | 0    | 0      | 8,508' | 0    | 0    |
| EOB                      | 9,151'  | 99.0 | 359.67 | 8,917' | 14.0 | 14.0 |
| TD                       | 13,456' | 99.0 | 359.67 | 8,917' | 0    | 0    |

| Vendors          |           |
|------------------|-----------|
| Rig              | Lalshaw G |
| Directional      |           |
| Mud              |           |
| Cement           |           |
| Wellhead         |           |
| Wireline Logging |           |
| Mud Logging      |           |

\*Mud logging at intermediate casing shoe

|           |                  |         |              |                    |                          |               |
|-----------|------------------|---------|--------------|--------------------|--------------------------|---------------|
| Drawn by: | Date:            | AFE No: | Property No: | Drilling Engineer: | Drilling Superintendent: | Geologist:    |
| CG        | Rev #0: 12/11/10 | 153033  | 832407       | Chris Gray         | Cecil Luttrull           | Robert Marlin |

## **Permian District**

Poker Lake

PLU Big Sinks 27 Fed 1H

PLU Big Sinks 27 Fed 1H

PLU Big Sinks 27 Fed 1H

Plan: Plat

## **Standard Planning Report**

16 November, 2010

# Chesapeake Energy Corporation Planning Report

|           |                         |                              |                              |
|-----------|-------------------------|------------------------------|------------------------------|
| Database: | Drilling Database       | Local Co-ordinate Reference: | Well PLU Big Sinks 27 Fed 1H |
| Company:  | Permian District        | TVD Reference:               | Well2 @ 3374.0ft             |
| Project:  | Poker Lake              | MD Reference:                | Well2 @ 3374.0ft             |
| Site:     | PLU Big Sinks 27 Fed 1H | North Reference:             | Grid                         |
| Well:     | PLU Big Sinks 27 Fed 1H | Survey Calculation Method:   | Minimum Curvature            |
| Wellbore: | PLU Big Sinks 27 Fed 1H |                              |                              |
| Design:   | Plat                    |                              |                              |

|             |                             |               |              |
|-------------|-----------------------------|---------------|--------------|
| Project:    | Poker Lake, Eddy County, NM | System Datum: | Ground Level |
| Map System: | US State Plane 1983         |               |              |
| Geo Datum:  | North American Datum 1983   |               |              |
| Map Zone:   | New Mexico Eastern Zone     |               |              |

|                       |                         |              |                 |                   |               |
|-----------------------|-------------------------|--------------|-----------------|-------------------|---------------|
| Site:                 | PLU Big Sinks 27 Fed 1H |              |                 |                   |               |
| Site Position:        |                         | Northing:    | 430,348.72 usft | Latitude:         | 32.18222658   |
| From:                 | Map                     | Easting:     | 687,287.36 usft | Longitude:        | -103.86157609 |
| Position Uncertainty: | 0.0 ft                  | Slot Radius: | 0.000 in        | Grid Convergence: | 0.2512885 °   |

|                       |                         |                     |            |                 |            |
|-----------------------|-------------------------|---------------------|------------|-----------------|------------|
| Well:                 | PLU Big Sinks 27 Fed 1H |                     |            |                 |            |
| Well Position:        | +N-S                    | 0.0 ft              | Northing:  | 430,348.72 usft | Latitude:  |
|                       | +E-W                    | 0.0 ft              | Easting:   | 687,287.36 usft | Longitude: |
| Position Uncertainty: | 0.0 ft                  | Wellhead Elevation: | 3,352.0 ft | Ground Level:   | 3,352.0 ft |

|            |                         |             |                 |               |                     |
|------------|-------------------------|-------------|-----------------|---------------|---------------------|
| Wellbore:  | PLU Big Sinks 27 Fed 1H |             |                 |               |                     |
| Magnetics: | Model Name              | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (mT) |
|            | IGRF200510              | 4/13/2010   | 7.8431138       | 60.1452509    | 48.685              |

|                   |                  |           |               |           |  |
|-------------------|------------------|-----------|---------------|-----------|--|
| Design:           | Plat             |           |               |           |  |
| Audit Notes:      |                  |           |               |           |  |
| Version:          |                  |           |               |           |  |
| Vertical Section: | Phase:           | PROTOTYPE | Tie On Depth: | 0.0       |  |
|                   | Depth From (TVD) | +N-S      | +E-W          | Direction |  |
|                   | (ft)             | (ft)      | (ft)          | (°)       |  |
|                   | 0.0              | 0.0       | 0.0           | 359.67    |  |

| Plan Sections       |                 |             |                     |           |           |                       |                      |                     |             |            |
|---------------------|-----------------|-------------|---------------------|-----------|-----------|-----------------------|----------------------|---------------------|-------------|------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N-S (ft) | +E-W (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°)     | Target     |
| 0.0                 | 0.00            | 0.00        | 0.0                 | 0.0       | 0.0       | 0.00                  | 0.00                 | 0.00                | 0.0000000   |            |
| 8,507.7             | 0.00            | 0.00        | 8,507.7             | 0.0       | 0.0       | 0.00                  | 0.00                 | 0.00                | 0.0000000   |            |
| 9,150.8             | 90.00           | 359.67      | 8,917.0             | 409.2     | -2.3      | 14.00                 | 14.00                | 0.00                | 359.6740598 |            |
| 13,485.8            | 90.00           | 359.67      | 8,917.0             | 4,724.4   | -26.9     | 0.00                  | 0.00                 | 0.00                | 0.0000000   | BS 27- BHL |

# Chesapeake Energy Corporation

## Planning Report

|           |                         |                              |                              |
|-----------|-------------------------|------------------------------|------------------------------|
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| Company:  | Permian District        | TVD Reference:               | well2 @ 3374.0ft             |
| Project:  | Poker Lake              | MD Reference:                | well2 @ 3374.0ft             |
| Site:     | PLU Big Sinks 27 Fed 1H | North Reference:             | Grid                         |
| Well:     | PLU Big Sinks 27 Fed 1H | Survey Calculation Method:   | Minimum Curvature            |
| Wellbore: | PLU Big Sinks 27 Fed 1H |                              |                              |
| Design:   | Plat                    |                              |                              |

| Planned Survey      |                 |             |                     |            |            |                       |                       |                      |                     |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
| 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                |

# Chesapeake Energy Corporation

## Planning Report

|           |                         |                              |                              |
|-----------|-------------------------|------------------------------|------------------------------|
| Database: | Drilling Database       | Local Co-ordinate Reference: | Well PLU Big Sinks 27 Fed 1H |
| Company:  | Permian District        | TVD Reference:               | well2 @ 3374.0ft             |
| Project:  | Poker Lake              | MD Reference:                | well2 @ 3374.0ft             |
| Site:     | PLU Big Sinks 27 Fed 1H | North Reference:             | Grid                         |
| Well:     | PLU Big Sinks 27 Fed 1H | Survey Calculation Method:   | Minimum Curvature            |
| Wellbore: | PLU Big Sinks 27 Fed 1H |                              |                              |
| Design:   | Plat                    |                              |                              |

| Planned Survey      |                 |             |                     |            |            |                       |                       |                      |                     |  |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|--|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |  |
| 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                |  |
| 7,300.0             | 0.00            | 0.00        | 7,300.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | 0.00                |  |
| 7,400.0             | 0.00            | 0.00        | 7,400.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | 0.00                |  |
| 7,500.0             | 0.00            | 0.00        | 7,500.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | 0.00                |  |
| 7,600.0             | 0.00            | 0.00        | 7,600.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | 0.00                |  |
| 7,700.0             | 0.00            | 0.00        | 7,700.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | 0.00                |  |
| 7,800.0             | 0.00            | 0.00        | 7,800.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | 0.00                |  |
| 7,900.0             | 0.00            | 0.00        | 7,900.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | 0.00                |  |
| 8,000.0             | 0.00            | 0.00        | 8,000.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | 0.00                |  |
| 8,100.0             | 0.00            | 0.00        | 8,100.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | 0.00                |  |
| 8,200.0             | 0.00            | 0.00        | 8,200.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | 0.00                |  |
| 8,300.0             | 0.00            | 0.00        | 8,300.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | 0.00                |  |
| 8,400.0             | 0.00            | 0.00        | 8,400.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | 0.00                |  |
| 8,500.0             | 0.00            | 0.00        | 8,500.0             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | 0.00                |  |
| 8,507.7             | 0.00            | 0.00        | 8,507.7             | 0.0        | 0.0        | 0.0                   | 0.00                  | 0.00                 | 0.00                |  |
| 8,500.0             | 12.02           | 359.67      | 8,599.2             | 10.4       | -0.1       | 10.4                  | 14.00                 | 14.00                | 0.00                |  |
| 8,700.0             | 26.92           | 359.67      | 8,693.0             | 44.3       | -0.3       | 44.3                  | 14.00                 | 14.00                | 0.00                |  |
| 8,800.0             | 40.92           | 359.67      | 8,775.8             | 100.0      | -0.6       | 100.0                 | 14.00                 | 14.00                | 0.00                |  |
| 8,900.0             | 54.92           | 359.67      | 8,842.7             | 174.0      | -1.0       | 174.0                 | 14.00                 | 14.00                | 0.00                |  |
| 9,000.0             | 68.92           | 359.67      | 8,889.6             | 262.0      | -1.5       | 262.0                 | 14.00                 | 14.00                | 0.00                |  |
| 9,100.0             | 82.92           | 359.67      | 8,913.9             | 358.8      | -2.0       | 358.8                 | 14.00                 | 14.00                | 0.00                |  |
| 9,150.6             | 90.00           | 359.67      | 8,917.0             | 408.2      | -2.3       | 408.3                 | 14.01                 | 14.01                | 0.00                |  |
| 9,200.0             | 90.00           | 359.67      | 8,917.0             | 458.7      | -2.6       | 458.7                 | 0.00                  | 0.00                 | 0.00                |  |
| 9,300.0             | 90.00           | 359.67      | 8,917.0             | 558.7      | -3.2       | 558.7                 | 0.00                  | 0.00                 | 0.00                |  |
| 9,400.0             | 90.00           | 359.67      | 8,917.0             | 658.7      | -3.7       | 658.7                 | 0.00                  | 0.00                 | 0.00                |  |
| 9,500.0             | 90.00           | 359.67      | 8,917.0             | 758.7      | -4.3       | 758.7                 | 0.00                  | 0.00                 | 0.00                |  |
| 9,600.0             | 90.00           | 359.67      | 8,917.0             | 858.7      | -4.9       | 858.7                 | 0.00                  | 0.00                 | 0.00                |  |
| 9,700.0             | 90.00           | 359.67      | 8,917.0             | 958.7      | -5.5       | 958.7                 | 0.00                  | 0.00                 | 0.00                |  |
| 9,800.0             | 90.00           | 359.67      | 8,917.0             | 1,058.7    | -6.0       | 1,058.7               | 0.00                  | 0.00                 | 0.00                |  |
| 9,900.0             | 90.00           | 359.67      | 8,917.0             | 1,158.7    | -6.6       | 1,158.7               | 0.00                  | 0.00                 | 0.00                |  |
| 10,000.0            | 90.00           | 359.67      | 8,917.0             | 1,258.7    | -7.2       | 1,258.7               | 0.00                  | 0.00                 | 0.00                |  |
| 10,100.0            | 90.00           | 359.67      | 8,917.0             | 1,358.7    | -7.7       | 1,358.7               | 0.00                  | 0.00                 | 0.00                |  |
| 10,200.0            | 90.00           | 359.67      | 8,917.0             | 1,458.7    | -8.3       | 1,458.7               | 0.00                  | 0.00                 | 0.00                |  |
| 10,300.0            | 90.00           | 359.67      | 8,917.0             | 1,558.6    | -8.9       | 1,558.7               | 0.00                  | 0.00                 | 0.00                |  |
| 10,400.0            | 90.00           | 359.67      | 8,917.0             | 1,658.6    | -9.4       | 1,658.7               | 0.00                  | 0.00                 | 0.00                |  |
| 10,500.0            | 90.00           | 359.67      | 8,917.0             | 1,758.6    | -10.0      | 1,758.7               | 0.00                  | 0.00                 | 0.00                |  |

# Chesapeake Energy Corporation

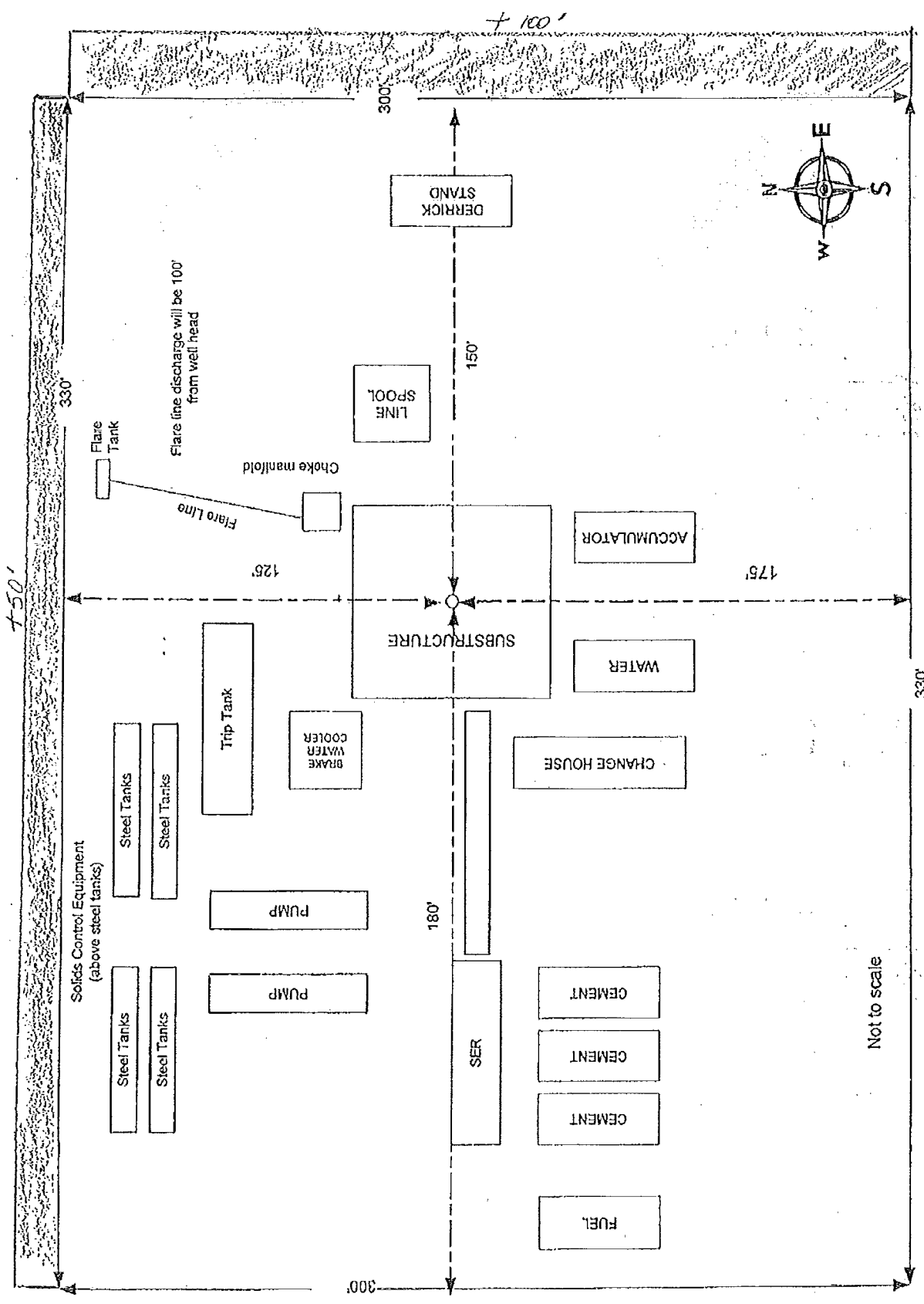
## Planning Report

|           |                         |                              |                              |
|-----------|-------------------------|------------------------------|------------------------------|
| Database: | Drilling Database       | Local Co-ordinate Reference: | Well PLU Big Sinks 27 Fed 1H |
| Company:  | Permian District        | TVD Reference:               | well2 @ 3374.0ft             |
| Project:  | Poker Lake              | MD Reference:                | well2 @ 3374.0ft             |
| Site:     | PLU Big Sinks 27 Fed 1H | North Reference:             | Grid                         |
| Well:     | PLU Big Sinks 27 Fed 1H | Survey Calculation Method:   | Minimum Curvature            |
| Wellbore: | PLU Big Sinks 27 Fed 1H |                              |                              |
| Design:   | Plat                    |                              |                              |

| Planned Survey      |                 |             |                     |            |            |                       |                       |                      |                     |  |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|--|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |  |
| 10,800.0            | 90.00           | 359.67      | 8,917.0             | 1,858.6    | -10.6      | 1,858.7               | 0.00                  | 0.00                 | 0.00                |  |
| 10,700.0            | 90.00           | 359.67      | 8,917.0             | 1,958.6    | -11.1      | 1,958.7               | 0.00                  | 0.00                 | 0.00                |  |
| 10,600.0            | 90.00           | 359.67      | 8,917.0             | 2,058.6    | -11.7      | 2,058.7               | 0.00                  | 0.00                 | 0.00                |  |
| 10,500.0            | 90.00           | 359.67      | 8,917.0             | 2,158.6    | -12.3      | 2,158.7               | 0.00                  | 0.00                 | 0.00                |  |
| 11,000.0            | 90.00           | 359.67      | 8,917.0             | 2,258.6    | -12.8      | 2,258.7               | 0.00                  | 0.00                 | 0.00                |  |
| 11,100.0            | 90.00           | 359.67      | 8,917.0             | 2,358.6    | -13.4      | 2,358.7               | 0.00                  | 0.00                 | 0.00                |  |
| 11,200.0            | 90.00           | 359.67      | 8,917.0             | 2,458.6    | -14.0      | 2,458.7               | 0.00                  | 0.00                 | 0.00                |  |
| 11,300.0            | 90.00           | 359.67      | 8,917.0             | 2,558.6    | -14.6      | 2,558.7               | 0.00                  | 0.00                 | 0.00                |  |
| 11,400.0            | 90.00           | 359.67      | 8,917.0             | 2,658.6    | -15.1      | 2,658.7               | 0.00                  | 0.00                 | 0.00                |  |
| 11,500.0            | 90.00           | 359.67      | 8,917.0             | 2,758.6    | -15.7      | 2,758.7               | 0.00                  | 0.00                 | 0.00                |  |
| 11,600.0            | 90.00           | 359.67      | 8,917.0             | 2,858.6    | -16.3      | 2,858.7               | 0.00                  | 0.00                 | 0.00                |  |
| 11,700.0            | 90.00           | 359.67      | 8,917.0             | 2,958.6    | -16.8      | 2,958.7               | 0.00                  | 0.00                 | 0.00                |  |
| 11,800.0            | 90.00           | 359.67      | 8,917.0             | 3,058.6    | -17.4      | 3,058.7               | 0.00                  | 0.00                 | 0.00                |  |
| 11,900.0            | 90.00           | 359.67      | 8,917.0             | 3,158.6    | -18.0      | 3,158.7               | 0.00                  | 0.00                 | 0.00                |  |
| 12,000.0            | 90.00           | 359.67      | 8,917.0             | 3,258.6    | -18.5      | 3,258.7               | 0.00                  | 0.00                 | 0.00                |  |
| 12,100.0            | 90.00           | 359.67      | 8,917.0             | 3,358.6    | -19.1      | 3,358.7               | 0.00                  | 0.00                 | 0.00                |  |
| 12,200.0            | 90.00           | 359.67      | 8,917.0             | 3,458.6    | -19.7      | 3,458.7               | 0.00                  | 0.00                 | 0.00                |  |
| 12,300.0            | 90.00           | 359.67      | 8,917.0             | 3,558.6    | -20.2      | 3,558.7               | 0.00                  | 0.00                 | 0.00                |  |
| 12,400.0            | 90.00           | 359.67      | 8,917.0             | 3,658.6    | -20.8      | 3,658.7               | 0.00                  | 0.00                 | 0.00                |  |
| 12,500.0            | 90.00           | 359.67      | 8,917.0             | 3,758.6    | -21.4      | 3,758.7               | 0.00                  | 0.00                 | 0.00                |  |
| 12,600.0            | 90.00           | 359.67      | 8,917.0             | 3,858.6    | -22.0      | 3,858.7               | 0.00                  | 0.00                 | 0.00                |  |
| 12,700.0            | 90.00           | 359.67      | 8,917.0             | 3,958.6    | -22.5      | 3,958.7               | 0.00                  | 0.00                 | 0.00                |  |
| 12,800.0            | 90.00           | 359.67      | 8,917.0             | 4,058.6    | -23.1      | 4,058.7               | 0.00                  | 0.00                 | 0.00                |  |
| 12,900.0            | 90.00           | 359.67      | 8,917.0             | 4,158.6    | -23.7      | 4,158.7               | 0.00                  | 0.00                 | 0.00                |  |
| 13,000.0            | 90.00           | 359.67      | 8,917.0             | 4,258.6    | -24.2      | 4,258.7               | 0.00                  | 0.00                 | 0.00                |  |
| 13,100.0            | 90.00           | 359.67      | 8,917.0             | 4,358.6    | -24.8      | 4,358.7               | 0.00                  | 0.00                 | 0.00                |  |
| 13,200.0            | 90.00           | 359.67      | 8,917.0             | 4,458.6    | -25.4      | 4,458.7               | 0.00                  | 0.00                 | 0.00                |  |
| 13,300.0            | 90.00           | 359.67      | 8,917.0             | 4,558.6    | -25.9      | 4,558.7               | 0.00                  | 0.00                 | 0.00                |  |
| 13,400.0            | 90.00           | 359.67      | 8,917.0             | 4,658.6    | -26.5      | 4,658.7               | 0.00                  | 0.00                 | 0.00                |  |
| 13,465.8            | 90.00           | 359.67      | 8,917.0             | 4,724.4    | -26.9      | 4,724.5               | 0.00                  | 0.00                 | 0.00                |  |

| Design Targets            |               |              |          |            |            |                 |               |             |               |
|---------------------------|---------------|--------------|----------|------------|------------|-----------------|---------------|-------------|---------------|
| Target Name               | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (usft) | Eastng (usft) | Latitude    | Longitude     |
| BS 27- BHL                | 0.00          | 0.00         | 8,917.0  | 4,724.4    | -26.9      | 435,073.10      | 687,260.40    | 32.19521339 | -103.88159598 |
| - plan hits target center |               |              |          |            |            |                 |               |             |               |
| - Point                   |               |              |          |            |            |                 |               |             |               |

| Casing Points       |                     |                            |                      |                    |  |
|---------------------|---------------------|----------------------------|----------------------|--------------------|--|
| Measured Depth (ft) | Vertical Depth (ft) | Name                       | Casing Diameter (in) | Hole Diameter (in) |  |
| 850.0               | 850.0               | 13 3/8" Surface Casing     | 13.375               | 17.500             |  |
| 3,900.0             | 3,900.0             | 8 5/8" Intermediate Casing | 8.625                | 11.000             |  |
| 13,465.8            | 8,917.0             | 5 1/2" Production Casing   | 5.500                | 7.875              |  |



LATSHAW #6

Prevailing Winds from the North in Winter and from the South in Summer.

## Property Name: PLU Pierce Canyon 28 Federal #1H

Property Number: 624840

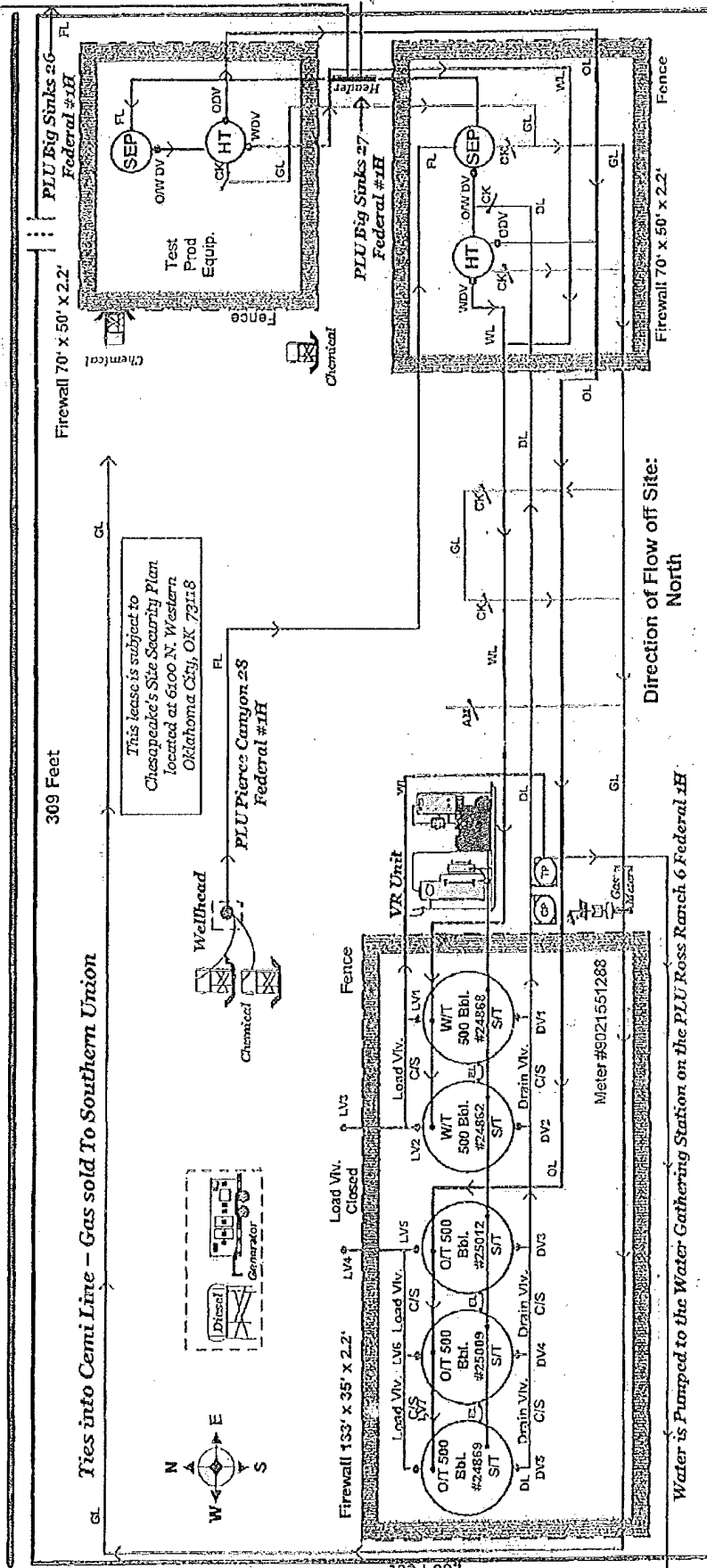
Inspected By: Rodney Acosta

Date: 7-21-2010

CHESAPEAKE OPERATING, INC.

General sealing of valves and sales by tank gauging.

*Production phase: all drain valves ( $D_1$ - $D_3$ ) and sales valves ( $L_1$ - $L_5$ ) sealed closed. Sales phase: the tank from which sales are being made will be isolated by sealing closed the drain, fill, and any equalizer valves during sales. Draining phase: the tank being drained will be isolated by sealing closed the sales, fill, equalizer valves and drain valves on the other tanks.*



Prepared by: Jackie Reynolds  
Date: 7-21-2010

Approved by:  
Date:

# BLOWOUT PREVENTOR SCHEMATIC

CHESAPEAKE OPERATING INC

Permlan District-Minimum Requirements

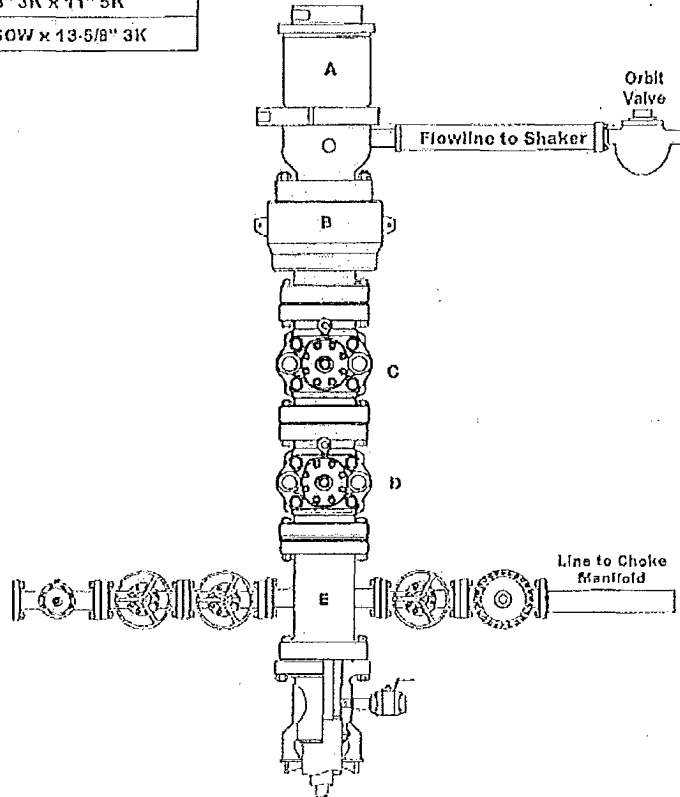
FIELD : Avalon

OPERATION: Intermediate and Production Hole Sections

| SIZE  | PRESSURE                       | DESCRIPTION   |
|-------|--------------------------------|---------------|
| A     | 500                            | Rotating Head |
| B     | 13 5/8" 5,000                  | Annular       |
| C     | 13 5/8" 5,000                  | Pipe Ram      |
| D     | 13 5/8" 5,000                  | Blind Ram     |
| E     | 13 5/8" 5,000                  | Mud Cross     |
| F     |                                |               |
| DSA   | As required for each hole size |               |
| C-Sec |                                |               |
| B-Sec | 13-5/8" 3K x 11" 5K            |               |
| A-Sec | 13-3/8" SOW x 13-5/8" 3K       |               |

## Test Notes:

- Pressure test to rating of BOP or wellhead every 21 days.
- Function test on trips
- H2S service trim required



## Kill Line

| SIZE | PRESSURE | DESCRIPTION |
|------|----------|-------------|
| 2"   | 5,000    | Check Valve |
| 2"   | 5,000    | Gate Valve  |
| 2"   | 5,000    | Gate Valve  |
|      |          |             |
|      |          |             |

## Choke Line

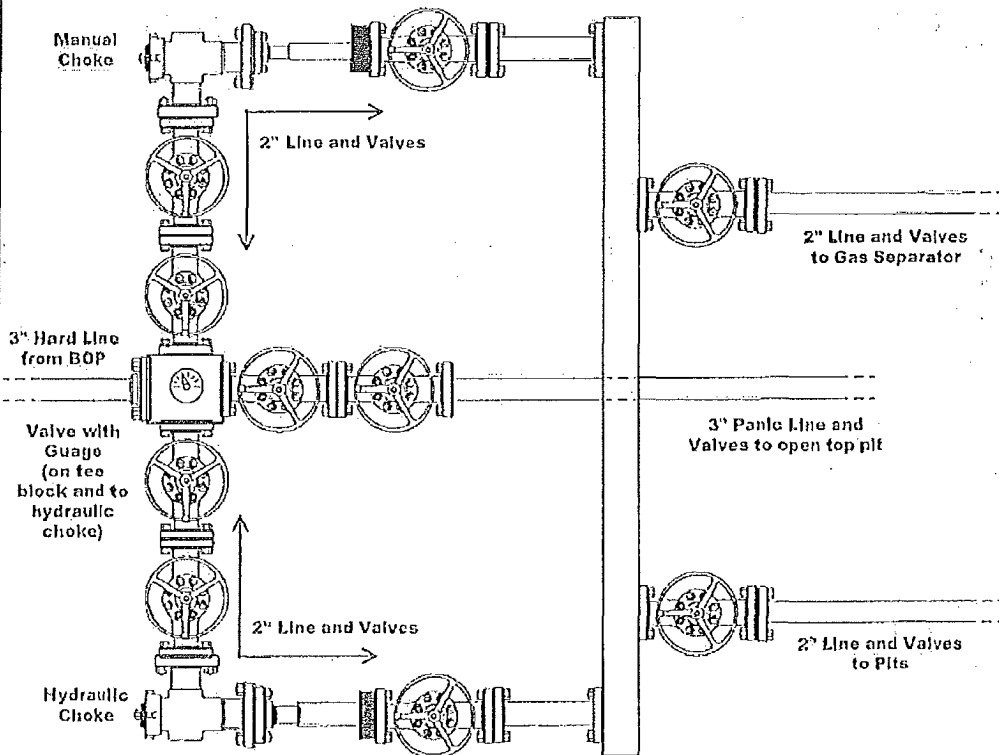
| SIZE | PRESSURE | DESCRIPTION     |
|------|----------|-----------------|
| 3"   | 5,000    | Gate Valve      |
| 3"   | 5,000    | HCR Valve       |
| 3"   | 5,000    | Steel Line Only |
|      |          |                 |
|      |          |                 |

# CHOKE MANIFOLD SCHEMATIC

CHESAPEAKE OPERATING INC

Permian District

Avalon Minimum Requirements



Choke Manifold

| SIZE     | PRESSURE | DESCRIPTION                        |
|----------|----------|------------------------------------|
| 2" or 3" | 5,000    | Gate Valves                        |
| 3'x15'   |          | Gas Separator                      |
| 8"       |          | Gas Separator vent line (anchored) |

ONSHORE ORDER NO. 1  
Chesapeake Agent for BOPCO  
PLU Big Sinks 27 Federal Com 1H  
SL: 215' FSL & 400' FEL  
BL: 330' FNL & 400' FEL  
Section 27-24S-30E  
Eddy County, NM

CONFIDENTIAL – TIGHT HOLE  
SURFACE USE PLAN REVISED 10/1/2010

SL: Lease No. NMNM 30452  
BL: Lease No. NMNM 02862

Page 1

ONSHORE OIL & GAS ORDER NO. 1  
Approval of Operations on Onshore  
Federal and Indian Oil and Gas Leases

1. EXISTING ROADS/LEASE ROADS

- a. The proposed lease road 93' in length and 16' in travel way width with a maximum disturbance area of 30' will be used, and in accordance with guidelines set forth in the BLM Onshore Orders. No turnouts are expected.
- b. Existing county and lease roads will be used to enter proposed access road.
- c. Location, access, and vicinity plats attached hereto. See Exhibits A-1 to A-4.

LOCATION

- a. In order to level the location, cut and fill will be required. Please see attached Well Location and Acreage Dedication Plat – Exhibits A-1 to A-4.
- b. A locking gate will be installed at the site entrance.
- c. Any fences cut will be repaired. Cattle guards will be installed, if needed.
- d. Surface disturbance and vehicular travel will be limited to the approved location and approved access route. Any additional area needed will be approved in advance.
- e. Driving directions are from the junction of Twin Wells and McDonald. Go South on Twin Wells for 0.3 miles to proposed location.

2. LOCATION OF EXISTING WELLS WITHIN A 1-MILE RADIUS OF THE PROPOSED LOCATION – see Exhibit B.

3. LOCATION OF PRODUCTION FACILITIES

It is anticipated that the flow line will run from the PLU Big Sinks 27 Fed 1H well pad to the PLU Pierce Canyon 28 Fed 1H Tank Battery. – See Attached Topo Plat. The meter, separator and heater treater will also be located on the PC 28 Tank Battery. This line will be buried, and run 6000' along the existing ROW for the PLU Big Sinks 26 Fed 1H pipeline. – See Exhibit C.

ONSHORE ORDER NO. 1  
Chesapeake Agent for BOPCO  
PLU Big Sinks 27 Federal Com 1H  
SL: 215' FSL & 400' FEL  
BL: 330' FNL & 400' FEL  
Section 27-24S-30E  
Eddy County, NM

CONFIDENTIAL – TIGHT HOLE  
SURFACE USE PLAN REVISED 10/1/2010

SL: Lease No. NMNM 30452  
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4. LOCATION AND TYPE OF WATER SUPPLY  
Water will be obtained from a private water source. Chesapeake Operating, Inc. will ensure all proper notifications and filings are made with the state.
5. CONSTRUCTION MATERIALS  
No construction materials will be used from Section 27-24S-30E. All material (i.e. shale) will be acquired from private or commercial sources.
6. METHODS FOR HANDLING WASTE DISPOSAL  
A closed system will be utilized consisting of above ground steel tanks. All wastes accumulated during drilling operations will be contained in a portable trash cage and removed from location and deposited in an approved sanitary landfill.
7. ANCILLARY FACILITIES  
None
8. WELLSITE LAYOUT  
The proposed site layout plat is attached showing the Cactus Rig #116 orientation and equipment location. See Exhibit D.
9. PLANS FOR RECLAMATION OF THE SURFACE  
Interim reclamation will be delayed to allow another well to be drilled on the proposed well pad, alternate well location unknown at this time.  
  
Final Reclamation Procedure: Upon final abandonment of the well, caliche material from the well pad and access road will be removed and utilized to recontour to a final contour that blends with the surrounding topography as much as possible. Any caliche material not used will be utilized to repair roads within the lease. Topsoil will be distributed over the reclamation area and cross ripped to control erosion, the site will be seeded with an approved BLM mixture.  
  
The location will be restored to as near as original condition as possible. Reclamation of the surface shall be done in strict compliance with the existing New Mexico Oil Conservation Division regulations and BLM.

ONSHORE ORDER NO. 1  
Chesapeake Agent for BOPCO  
PLU Big Sinks 27 Federal Com 1H  
SL: 215' FSL & 400' FEL  
BL: 330' FNL & 400' FEL  
Section 27-24S-30E  
Eddy County, NM

CONFIDENTIAL – TIGHT HOLE  
SURFACE USE PLAN REVISED 10/1/2010

SL: Lease No. NMNM 30452  
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11. SURFACE & BHLOC MINERAL OWNERSHIP

United States of America  
Department of Interior  
Bureau of Land Management

GRAZING LESSEE  
Richardson Cattle Co.  
P.O. Box 487  
Carlsbad, NM 88220

(Chesapeake Operating, Inc. has an agreement with the grazing lessee)

12. ADDITIONAL INFORMATION

A Class III cultural resource inventory report was prepared by Boone Archaeological Services, Carlsbad, New Mexico for the proposed location. A copy of the report has been sent to the BLM office under separate cover and is also attached for reference. Exhibit E.

ONSHORE ORDER NO. 1  
Chesapeake Agent for BOPCO  
PLU Big Sinks 27 Federal Com 1H  
SL: 215' FSL & 400' FEL  
BL: 330' FNL & 400' FEL  
Section 27-24S-30E  
Eddy County, NM

CONFIDENTIAL – TIGHT HOLE  
SURFACE USE PLAN REVISED

SL: Lease No. NMNM 30452  
BL: Lease No. NMNM 02862

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### Drilling and Completion Operations

**District Manager**

Rob Jones  
P.O. Box 18496  
Oklahoma City, OK 73154  
405-935-2694 (Office)  
405-623-5880 (Cell)  
[rob.jones@chk.com](mailto:rob.jones@chk.com)

**Sr. Drilling Engineer**

Yemi Ajijolaiya  
P.O. Box 14896  
Oklahoma City, OK 73154  
405-935-6802 (Office)  
405-625-5468 (Cell)  
[yemi.ajijolaiya@chk.com](mailto:yemi.ajijolaiya@chk.com)

**Sr. Field Representative**

Bud Cravey  
2010 Rankin Hwy  
Midland, TX  
432-687-2992, x 86151 (Office)  
432-575-238-7293 (Cell)  
[bud.cravey@chk.com](mailto:bud.cravey@chk.com)

**Sr. Assett Manager**

Jeff Finnell  
P.O. Box 18496  
Oklahoma City, OK 73154  
405-935-4347 (Office)  
405-919-3305 (Cell)  
[jeff.finnell@chk.com](mailto:jeff.finnell@chk.com)

**Sr. Geologist**

Robert Martin  
P.O. Box 18496  
Oklahoma City, OK 73154  
405-935-4985 (Office)  
405-849-4985 (Cell)  
[robert.martin@chk.com](mailto:robert.martin@chk.com)

**Geoscience Coordinator**

David Godsey  
P.O. Box 14896  
Oklahoma City, OK 73154  
405-935-7995 (Office)  
405-618-0474 (Cell)  
[david.godsey@chk.com](mailto:david.godsey@chk.com)

**District Land Coordinator**

Craig Barnard  
P.O. Box 18496  
Oklahoma City, OK 73154  
405-879-8401 (Office)  
[craig.barnard@chk.com](mailto:craig.barnard@chk.com)

**Associate Landman**

Justin Zerkle  
P.O. Box 18496  
Oklahoma City, OK 73154  
405-767-4925 Office  
[justin.zerkle@chk.com](mailto:justin.zerkle@chk.com)

**Sr. Regulatory Compliance Specialist**

Linda Good  
P.O. Box 18496  
Oklahoma City, OK 73154  
405-935-4275 (Office)  
405-849-4275 (Fax)  
[linda.good@chk.com](mailto:linda.good@chk.com)

# **NMCRIS INVESTIGATION ABSTRACT FORM (NIAF)**

|  |   |  |  |
|--|---|--|--|
| 1. NMCRIS Activity No.: 117,784  | 2a. Lead (Sponsoring) Agency: Bureau of Land Management | 2b. Other Permitting Agencies: State of New Mexico | 3. Lead Agency Report No.:   |
| 4. Title of Report: Class III Archaeological Survey for Chesapeake Operating Corporation's Proposed Access Road and Well Pad to Serve the PLU Big Sinks "27" Federal Com No. 1H Well   |   |  | 5. Type of Report<br>X Negative <input type="checkbox"/> Positive              |
| Author: Stephen Smith  |   |  |  |
| 6. Investigation Type<br><input type="checkbox"/> Research Design    X Survey/Inventory <input type="checkbox"/> Test Excavation <input type="checkbox"/> Excavation <input type="checkbox"/> Collections/Non-Field Study<br><input type="checkbox"/> Overview/Lit Review <input type="checkbox"/> Monitoring <input type="checkbox"/> Ethnographic study <input type="checkbox"/> Site specific visit <input type="checkbox"/> Other  |   |  |  |
| 7. Description of undertaking (what does the project entail?): Chesapeake Operating Corporation's plans to construct an access road and well pad to serve the PLU Big Sinks "27" Federal Com No. 1H well. On June 8, 2010, Stephen Smith with Boone Archaeological Services conducted an intensive pedestrian cultural survey for the proposed access road and well pad. The proposed access road begins at Twin Wells Road and travels west 93 ft, ending in the southeast corner of the proposed well pad. Because the proposed access road is entirely within the proposed well pad, no cultural survey was required. The well pad is staked at 600 ft by 600 ft (8.26 acres). A total of 8.26 acres was surveyed, all of which is on Federal land administered by the BLM-CFO. |   |  | 8. Date of Investigation: June 8, 2010   |
|  |   |  | 9. Report Date: June 9, 2010   |
| 10. Performing Agency/Consultant:<br>Boone Archaeological Services, LLC<br>Principal Investigator: Danny Boone<br>Field Supervisor: Stephen Smith<br>Field Personnel Name: Stephen Smith   |   |  | 11. Performing Consultant Report No.: BAS 05-10-28                             |
|  |   |  | 12. Cultural Resource Permit No's:<br>BLM: 190-2920-09-L<br>State: NM-10-157-S |
| 13. Client/Customer: Chesapeake Operating, Inc.<br>Contact: Linda Good<br>Address: P.O. Box 18496<br>Oklahoma City, OK 73154-0496<br>Phone: (405) 848-8000   |   |  | 14. Client Project No.: N/A  |
| 15. Land Ownership Status ( <u>Must</u> be indicated on project map):  |   |  |  |
| Land Owner   |   | Acres Surveyed                                     | Acres in APE   |
| Private land with Federal Minerals   |   | 8.26   | 2.07   |
| TOTALS   |   | 8.26   | 2.07   |
| 16. Records Search:  |   |  |  |
| Date of ARMS File Review: 6-7-10   |   | Name of Reviewer: Stephen Smith                    | Online search / Mapserver  |
| Date of NR/SR File Review:   |   | Name of Reviewer:                                  |  |
| Date of Other Agency File Review : 6-7-10  |   | Name of Reviewer: Stephen Smith                    | Agency: BLM-CFO  |
| Findings: During the course of the pre-field research for this project it was learned that two previously recorded sites are plotted within ¼ mile of the project area, LA 147446 & LA 147447. No previously recorded sites are plotted within 500 ft of the proposed pipeline.  |   |  |  |
| 17. Survey Data:   |   |  |  |
| a. Source Graphics    X NAD 27 <input type="checkbox"/> NAD 83<br>X USGS 7.5' (1:24,000) topo map <input type="checkbox"/> Other topo map, Scale:<br>X GPS Unit    Accuracy <input type="checkbox"/> <1.0m    X 1-10m <input type="checkbox"/> 10-100m <input type="checkbox"/> >100m  |   |  |  |
| b. USGS 7.5' Topographic Map Name  |   | USGS Quad Code                                     |  |
| Big Sinks, NM (1968)   |   | 33103-B7   |  |
| c. County: Eddy  |   |  |  |

EXHIBIT E

17. Survey Data (continued):

d. Nearest City or Town: Malaga, NM

e. Legal Description:

| Township (N/S) | Range (E/W) | Section | 1/4                  | 1/4 | 1/4 |
|----------------|-------------|---------|----------------------|-----|-----|
| 24 South       | 30 East     | 27      | SE 1/4 SE 1/4 SE 1/4 |     |     |
|                |             | 34      | NE 1/4 NE 1/4 NE 1/4 |     |     |

Projected legal description? Yes ☐, No ☒ Unplatted ☐

f. Other Description (e.g. well pad footages, mile markers, plats, land grant name, etc.): 215 ft FSL; 400 ft FEL

18. Survey Field Methods:

Intensity: X 100% coverage ☐ <100% coverage

Configuration: X block survey units (600 ft by 600 ft) X linear survey units (l x w): ☐ other survey units (specify):

Scope: N/A non-selective (all sites recorded) N/A selective/thematic (selected sites recorded)

Coverage Method: X systematic pedestrian coverage ☐ other method (describe)

Survey Interval (m): 15 meters Crew Size: 1 Fieldwork Date: June 8, 2010

Survey Person Hours: 2.75 hours Recording Person Hours: N/A Total Hours: 2.75 hours

Additional Narrative: None

19. Environmental Setting (NRCS soil designation; vegetative community; elevation; etc.):

Topography: Sandy soil, shallow to caliche, small rolling hills, with caliche clasts, approximately 7 miles east of the Pecos River

Elevation: 3,352 ft

Vegetation: Mesquite, pencil cholla, prickly pear, & various grasses

Visibility: 55-65 percent due to vegetative cover

NRCS: Simona-Pajarito association: Sand, deep soils and dols that are shallow to caliche; from wind-worked deposits

20.a. Percent Ground Visibility: 55-65 percent due to vegetative cover

b. Condition of Survey Area (grazed, bladed, undisturbed, etc.): The project area has been disturbed by a maintained road, a fairly recent pipeline right-of-way, and cattle grazing.

21. CULTURAL RESOURCE FINDINGS ☐ Yes, See Page 3 X No, Discuss Why: No cultural resources were observed possibly because no lithic sources or natural resources were available in the immediate area.

22. Required Attachments (check all appropriate boxes):

X USGS 7.5 Topographic Map with sites, isolates, and survey area clearly drawn

X Copy of NMCRIS Mapserver Map Check

☐ LA Site Forms - new sites (with sketch map & topographic map)

☐ LA Site Forms (update) - previously recorded & un-relocated sites (first 2 pages minimum)

☐ Historic Cultural Property Inventory Forms

☐ List and Description of isolates, if applicable

☐ List and Description of Collections, if applicable

23. Other Attachments:

☐ Photographs and Log

☐ Other Attachments

(Describe):

24. I certify the information provided above is correct and accurate and meets all applicable agency standards.

Principal Investigator/Responsible Archaeologist: Stephen Smith

Signature: Stephen Smith

Date: 6-11-10 Title: Field Supervisor

25. Reviewing Agency:

Reviewer's Name/Date

Accepted ( ) Rejected ( )

Tribal Consultation (if applicable): ☐ Yes ☐ No

26. SHPO

Reviewer's Name/Date:

HPD Log #:

SHPO File Location:

Date sent to ARMS:

## CULTURAL RESOURCE FINDINGS

*[fill in appropriate section(s)]*

|                         |  |                            |
|-------------------------|--|----------------------------|
| 1. NMCRIS Activity No.: | 2. Lead (Sponsoring) Agency:<br><b>BLM-RFO</b> | 3. Lead Agency Report No.: |
|-------------------------|--|----------------------------|

**SURVEY RESULTS:**

Sites discovered and registered: 0  
 Sites discovered and NOT registered: 0  
 Previously recorded sites revisited *(site update form required)*: 0  
 Previously recorded sites not relocated *(site update form required)*: 0  
 TOTAL SITES VISITED: 0  
 Total isolates recorded: 0      Non-selective isolate recording? 0  
 Total structures recorded *(new and previously recorded, including acequias)*: 0

MANAGEMENT SUMMARY: Because no cultural resources were encountered during this survey, Chesapeake Operating Corporation's proposed access road and well pad to serve the PLU Big Sinks "27" Federal Com No. 1H well is recommended as presently staked. If cultural resources are encountered during any construction related activity, construction should cease and an archaeologist with the BLM-CFO be immediately notified.

IF REPORT IS NEGATIVE YOU ARE DONE AT THIS POINT.

**SURVEY LA NUMBER LOG**

Sites Discovered:

| LA No. | Field/Agency No. | Eligible? (Y/N, applicable criteria) |
|--------|------------------|--------------------------------------|
|        |                  |                                      |

Previously recorded revisited sites:

| LA No. | Field/Agency No. | Eligible? (Y/N, applicable criteria) |
|--------|------------------|--------------------------------------|
|        |                  |                                      |

**MONITORING LA NUMBER LOG** *(site form required)*

Sites Discovered *(site form required)*:      Previously recorded sites *(Site update form required)*:

| LA No. | Field/Agency No. | LA No. | Field/Agency No. |
|--------|------------------|--------|------------------|
|        |                  |        |                  |

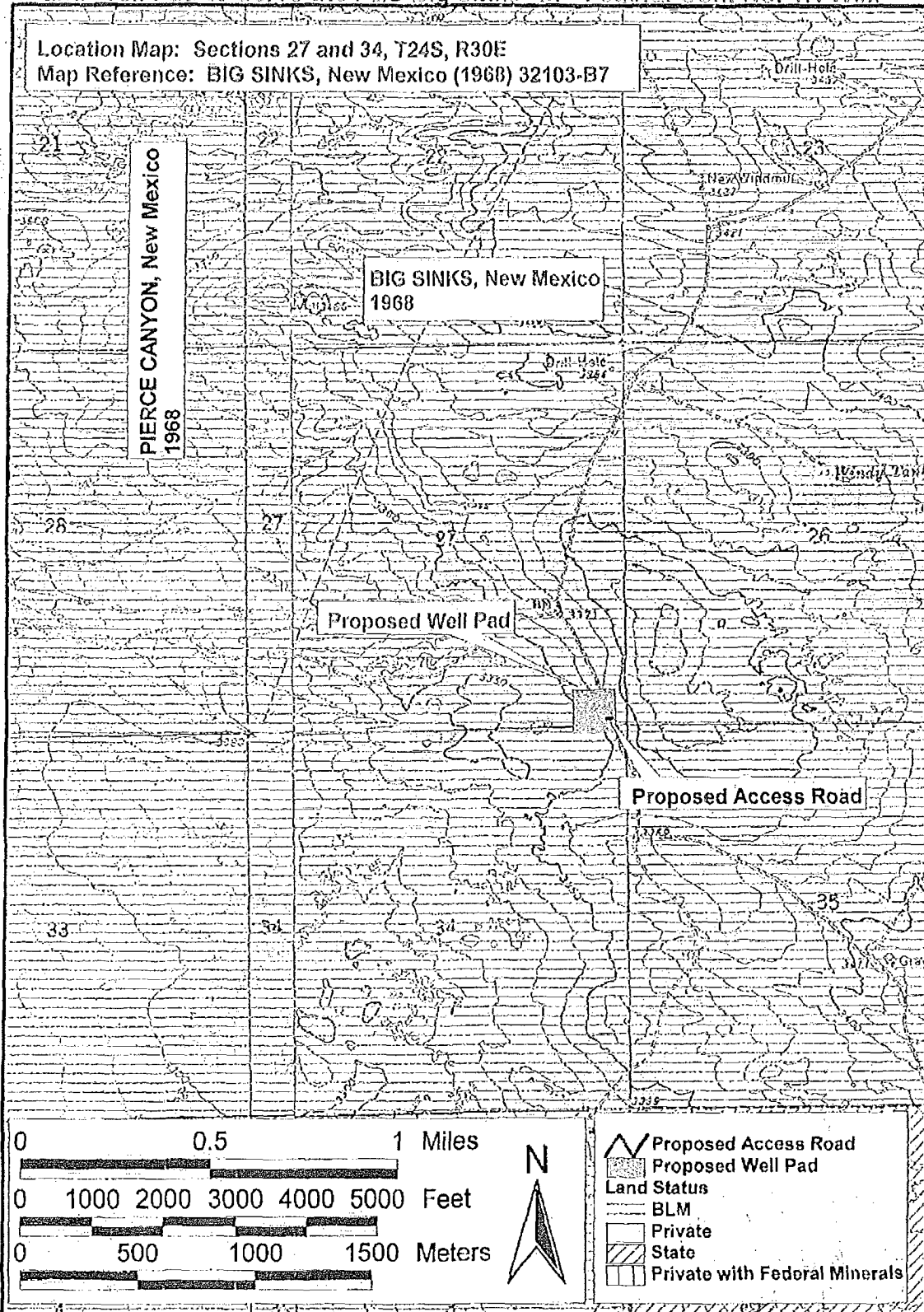
Areas outside known nearby site boundaries monitored? Yes ☐, No ☐ If no explain why:

**TESTING & EXCAVATION LA NUMBER LOG** *(site form required)*

| Tested LA number(s) | Excavated LA number(s) |
|---------------------|------------------------|
|                     |                        |

Survey for Chosapeake Operating Corporation's Proposed Access Road  
and Well Pad to Serve the PLU Big Sinks "27" Federal Com No. 1H Well

Location Map: Sections 27 and 34, T24S, R30E  
Map Reference: BIG SINKS, New Mexico (1968) 32103-B7



BAS 05-10-28

# BLOWOUT PREVENTOR SCHEMATIC

## CHESAPEAKE OPERATING INC

WELL : PLU Big Sinks 27 Federal 1H

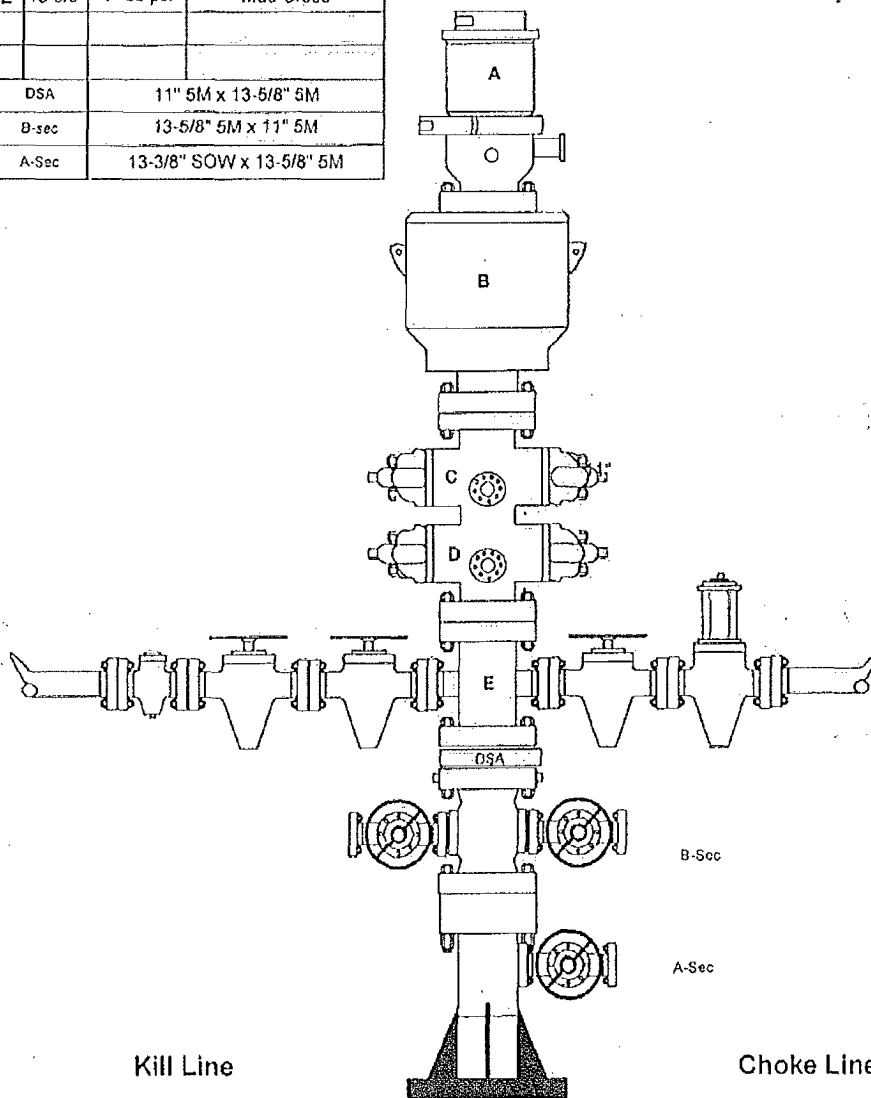
RIG : Latshaw 6

COUNTY : Eddy

STATE: New Mexico

OPERATION: Drillo ut below Surface Casing to TD

|   | SIZE    | PRESSURE                 | DESCRIPTION |
|---|---------|--------------------------|-------------|
| A | 13-5/8" | 5000 psi                 | Rot Head    |
| B | 13-5/8" | 5000 psi                 | Annular     |
| C | 13-5/8" | 5000 psi                 | Pipe Rams   |
| D | 13-5/8" | 5000 psi                 | Blind Rams  |
| E | 13-5/8" | 5000 psi                 | Mud Cross   |
|   |         |                          |             |
|   | DSA     | 11" 5M x 13-5/8" 5M      |             |
|   | B-sec   | 13-5/8" 5M x 11" 5M      |             |
|   | A-Sec   | 13-3/8" SOW x 13-5/8" 5M |             |



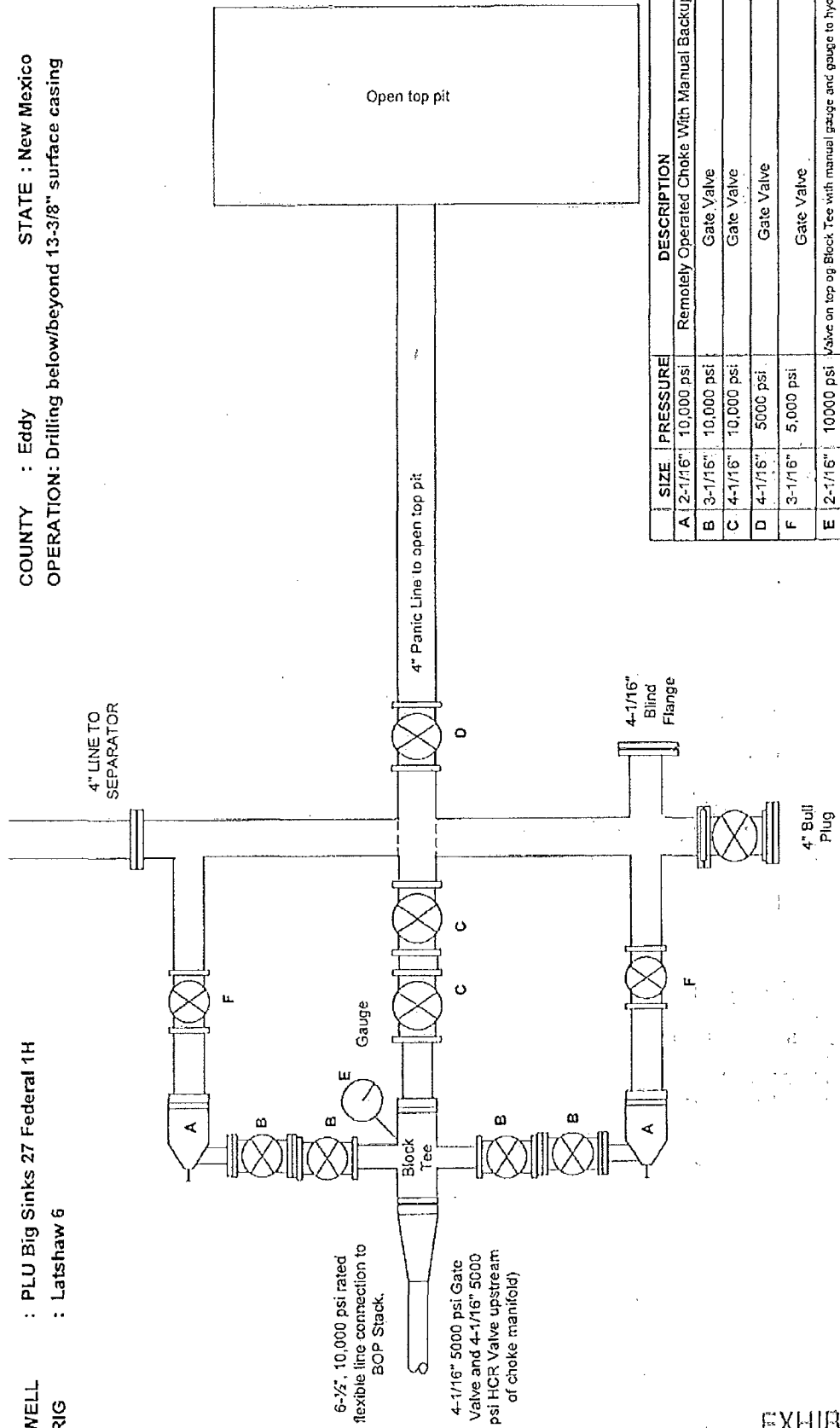
| SIZE | PRESSURE | DESCRIPTION |
|------|----------|-------------|
| 2"   | 5000 psi | Check Valve |
| 2"   | 5000 psi | Gate Valve  |
| 2"   | 5000 psi | Gate Valve  |
|      |          |             |
|      |          |             |

| SIZE | PRESSURE | DESCRIPTION |
|------|----------|-------------|
| 4"   | 5000 psi | Gate Valve  |
| 4"   | 5000 psi | HCR Valve   |
|      |          |             |
|      |          |             |

EXHIBIT F-1

# **SCHEMATIC OF CHOKE MANIFOLD SHOWING CLOSED LOOP SYSTEM**

WELL : PLU Big Sinks 27 Federal 1H  
 RIG : Latshaw 6  
 COUNTY : Eddy  
 STATE : New Mexico  
 OPERATION: Drilling below/beyond 13-3/8" surface casing



|   | SIZE    | PRESSURE   | DESCRIPTION  |
|---|---------|------------|--|
| A | 2-1/16" | 10,000 psi | Remotely Operated Choke With Manual Backup                               |
| B | 3-1/16" | 10,000 psi | Gate Valve   |
| C | 4-1/16" | 10,000 psi | Gate Valve   |
| D | 4-1/16" | 5000 psi   | Gate Valve   |
| F | 3-1/16" | 5,000 psi  | Gate Valve   |
| E | 2-1/16" | 10,000 psi | Valve on top of Block Tee with manual gauge and gauge to hydraulic choke |

## PECOS DISTRICT CONDITIONS OF APPROVAL

|                       |                                      |
|-----------------------|--------------------------------------|
| OPERATOR'S NAME:      | CHESAPEAKE AGENT FOR BOPCO           |
| LEASE NO.:            | NM02862                              |
| WELL NAME & NO.:      | 1H-PLU BIG SINKS 27 FEDERAL          |
| SURFACE HOLE FOOTAGE: | 0215' FSL & 0400' FEL                |
| BOTTOM HOLE FOOTAGE:  | 0330' FNL & 0400' FEL                |
| LOCATION:             | Section 27, T. 24 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
  - Lesser Prairie-Chicken Timing Stipulations
  - Ground-level Abandoned Well Marker
  - Pad restriction
  - Berming
  - Commercial Well Determination
- ☐ Construction
  - Notification
  - V-Door Direction
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- ☐ Road Section Diagram
- ☒ Drilling
  - Medium Cave/Karst
  - Casing/Mud Requirements
  - 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)**

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

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

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

### **Pad restriction**

The buried pipeline located approximately 170 feet to the south of the center hole shall be avoided during the construction of the pad.

### **Berming**

- The entire well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The berm shall be maintained through the life of the well and after interim reclamation has been completed.
- Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion.

### **Commercial Well Determination**

A commercial well determination will need to be submitted, after production has been established for at least six months.

## **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. V-DOOR DIRECTION: not stipulated**

### **C. 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 6 inches in depth. The topsoil will be used for interim and final reclamation.

### **D. CLOSED LOOP SYSTEM**

Tanks are required for drilling operations: No Pits.

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

### **E. 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.

### **F. 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.

## G. ON LEASE ACCESS ROADS

### Road Width

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed thirty (30) 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

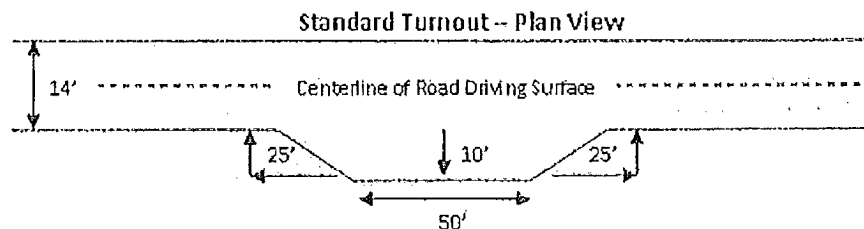
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

### Ditching

Ditching shall be required on both sides of the road.

### Turnouts

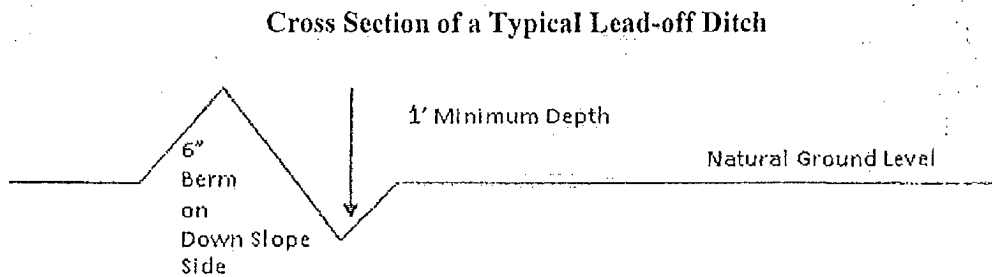
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:



### Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outslowing 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.



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**

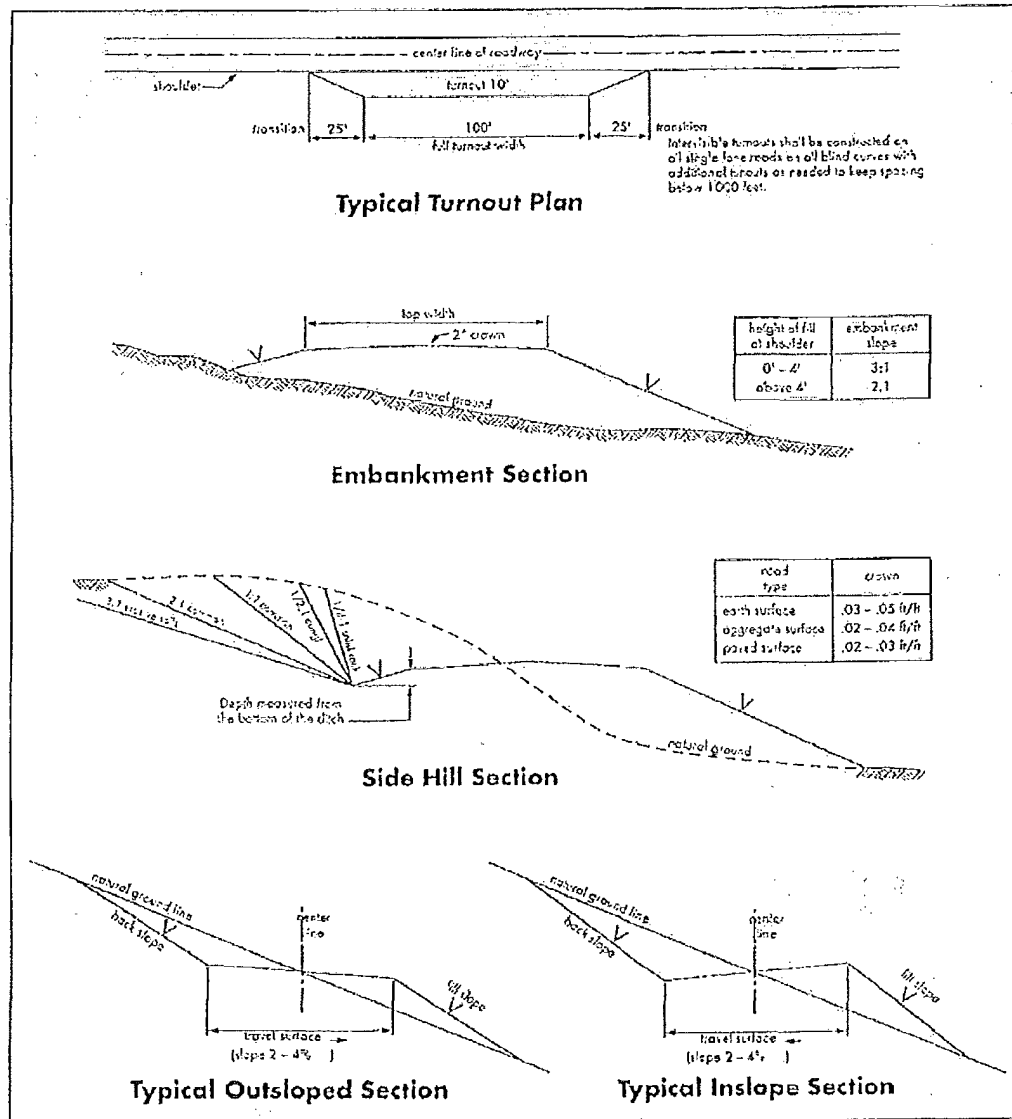
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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. Although Hydrogen Sulfide has not been reported in this section, it is always a potential hazard. If Hydrogen Sulfide is encountered, please report measured amounts 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) will 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.

**Medium cave/karst**

**Possible water flows in the Castile, Salado, Delaware and Bone Springs Groups**

**Possible lost circulation in the Delaware and Bone Spring formations**

1. The 13-3/8 inch surface casing shall be set at approximately 1355 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. If the salt is encountered at a shallower depth, the casing must be set 25 feet above the top of the salt. Fresh water mud to be used to setting depth.
  - 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 8-5/8 inch intermediate casing is:
  - ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

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

Pilot hole procedure is approved as stated. The plug is required to be tagged and the BLM is to be contacted (575) 361-2822 prior to tag of bottom plug, which shall be Class H cement. A Subsequent report is to be submitted indicating depth of plug.

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

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

a. First stage to DV tool, cement shall:

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

b. Second stage above DV tool, cement shall:

☒ Cement should tie-back at least 500 feet into previous casing string. Operator shall provide method of verification.

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

### C. PRESSURE CONTROL

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

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 3000 (3M) psi. Operator installing a 5M and testing as a 3M..

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 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) prior to initiating the test.
  - 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.

**EGF 120110**

## **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**

#### **BURIED PIPELINE STIPULATIONS**

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

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

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized right-of-way.

6. The pipeline will be buried with a minimum cover of 36 inches between the top of the pipe and ground level.

7. Blading of all vegetation in the right-of-way will not be allowed. Blading is defined as the complete removal of brush and ground vegetation. Clearing of brush species will be allowed. Clearing defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface. In areas where clearing is allowed, maximum width of these operations will not exceed 35 feet. Blading is only allowed within the width of the pipeline trench.

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

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

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

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

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

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

**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).

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

#### **Seed Mixture for LPC Sand/Shinnery Sites**

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

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

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

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

\*\*Four-winged Saltbush 5lbs/A

\* This can be used around well pads and other areas where caliche cannot be removed.

\*Pounds of pure live seed:

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