NM OIL CONSERVATION
ARTESIA DISTRICT
MAR 08 2016
RECEIVED

15-282

# Carlsbad Field Office
# OCD Artesia

Form 3160-3
(March 2012)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

## APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
SHLABHL: NMNM132062

6. If Indian, Allotee or Tribe Name

1a. Type of Work: [X] DRILL [ ] REENTER

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

1b. Type of Well: [X] Oil Well [ ] Gas Well [ ] Other [X] Single Zone [ ] Multiple Zone

8. Lease Name and Well No.
Black River 25 Fed #4H

2. Name of Operator
Cimarex Energy Co. (215099)

9. API Well No.
30 015 43675

3a. Address
202 S. Cheyenne Ave., Ste 1000, Tulsa, OK 74103

3b. Phone No. *(include area code)*
918-585-1100

10. Field and Pool, or Exploratory (96415)
WILLOW LAKE, BS, WEST

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At Surface: 50 FSL & 544 FEL
At proposed prod. Zone: 330 FNL & 660 FEL — Bone Spring

11. Sec., T. R. M. or Blk. and Survey and Area
25, 24S, 26E

14. Distance in miles and direction from nearest town or post office*
Carlsbad, NM is 16.5 miles northerly

12. County or Parish: Eddy

13. State: NM

closed loop system

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line if any): 1095 to the #3

16. No of acres in lease: NMNM132062=480.00 acres

17. Spacing Unit dedicated to this well: 160.00

18. Distance from proposed* location to nearest well, drilling, completed, applied for, on this lease, ft.: 50

19. Proposed Depth
Pilot Hole TD: N/A
11,999 MD 7,291 TVD

20. BLM/BIA Bond No. on File: NMB001188

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3391 GR

22. Approximate date work will start*: 1/19/15

23. Estimated duration: 35 days

### 24. Attachments

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

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

25. Signature: Aricka Easterling — Name *(Printed/Typed)*: Aricka Easterling — Date: 12/8/14

Title: Regulatory Compliance

Approved By *(Signature)*: Steve Caffey — Name (Printed/Typed) — Date: FEB 29 2016

Title: FIELD MANAGER — Office: CARLSBAD FIELD OFFICE

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

APPROVAL FOR TWO YEARS

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

*(Continued on page 2)*

*(Instructions on page 2)*

Carlsbad Controlled Water Basin

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ AMENDED REPORT

# WELL LOCATION AND ACREAGE DEDICATION PLAT

| [1] API Number | [2] Pool Code | [3] Pool Name |
|---|---|---|
| 30-015-43675 | 96415 | WILLOW LAKE; BONE SPRING, WEST |

| [4] Property Code | [5] Property Name | [6] Well Number |
|---|---|---|
| 316025 | BLACK RIVER 25 FEDERAL | 4H |

| [7] OGRID No. | [8] Operator Name | [9] Elevation |
|---|---|---|
| 215099 | CIMAREX ENERGY CO. | 3391.2' |

## [10] Surface Location

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| P | 25 | 24 S | 26 E | | 50 | SOUTH | 544 | EAST | EDDY |

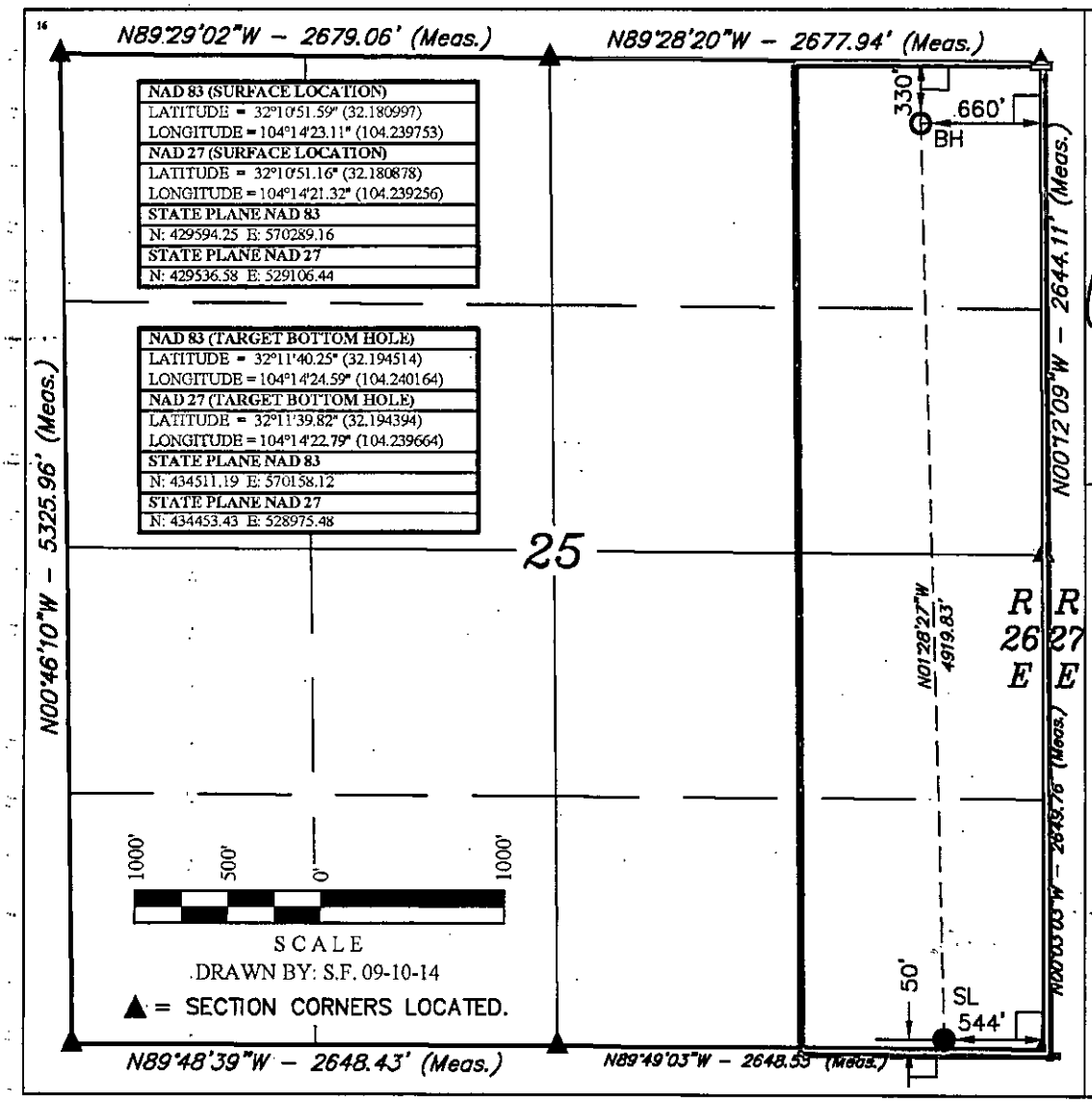
## [11] Bottom Hole Location If Different From Surface

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| A | 25 | 24 S | 26 E | | 330 | NORTH | 660 | EAST | EDDY |

| [12] Dedicated Acres | [13] Joint or Infill | [14] Consolidation Code | [15] Order No. |
|---|---|---|---|
| 160 | | | NSL Pending |

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.

[16]




## [17] 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 12/8/14 Date

Ariclka Easterling

Ariclka Easterling
Printed Name

aeasterling@cimarex.com
E-mail Address

## [18] SURVEYOR CERTIFICATION

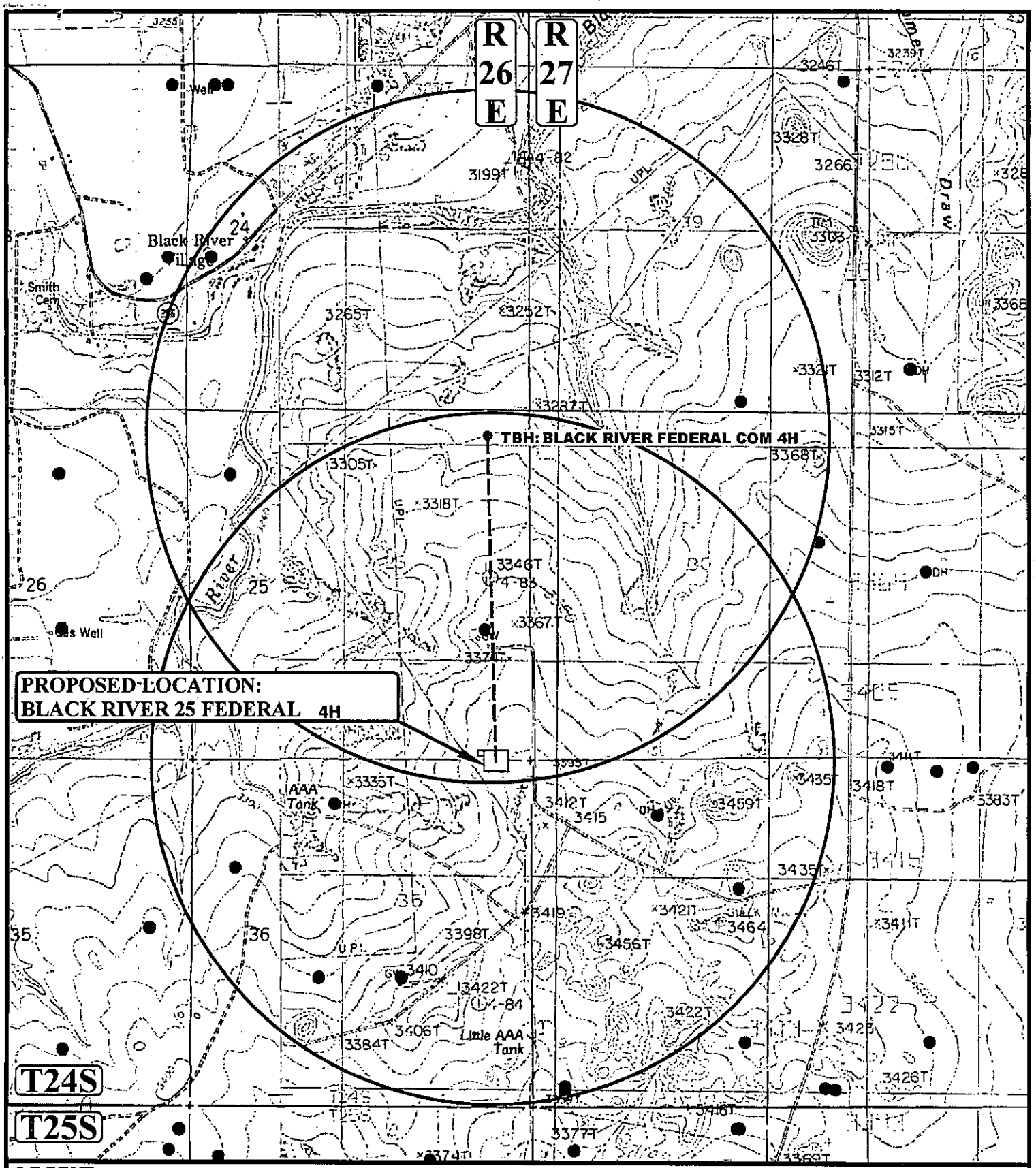
*I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.*

August 22, 2014
Date of Survey

Signature and Seal of Professional Surveyor:

PROFESSIONAL SURVEYOR
NEW MEXICO
12446
NELSON J. MARSHALL
08-30-14

Certificate Number:




LEGEND:

● EXISTING WELLS

N

## CIMAREX ENERGY CO.

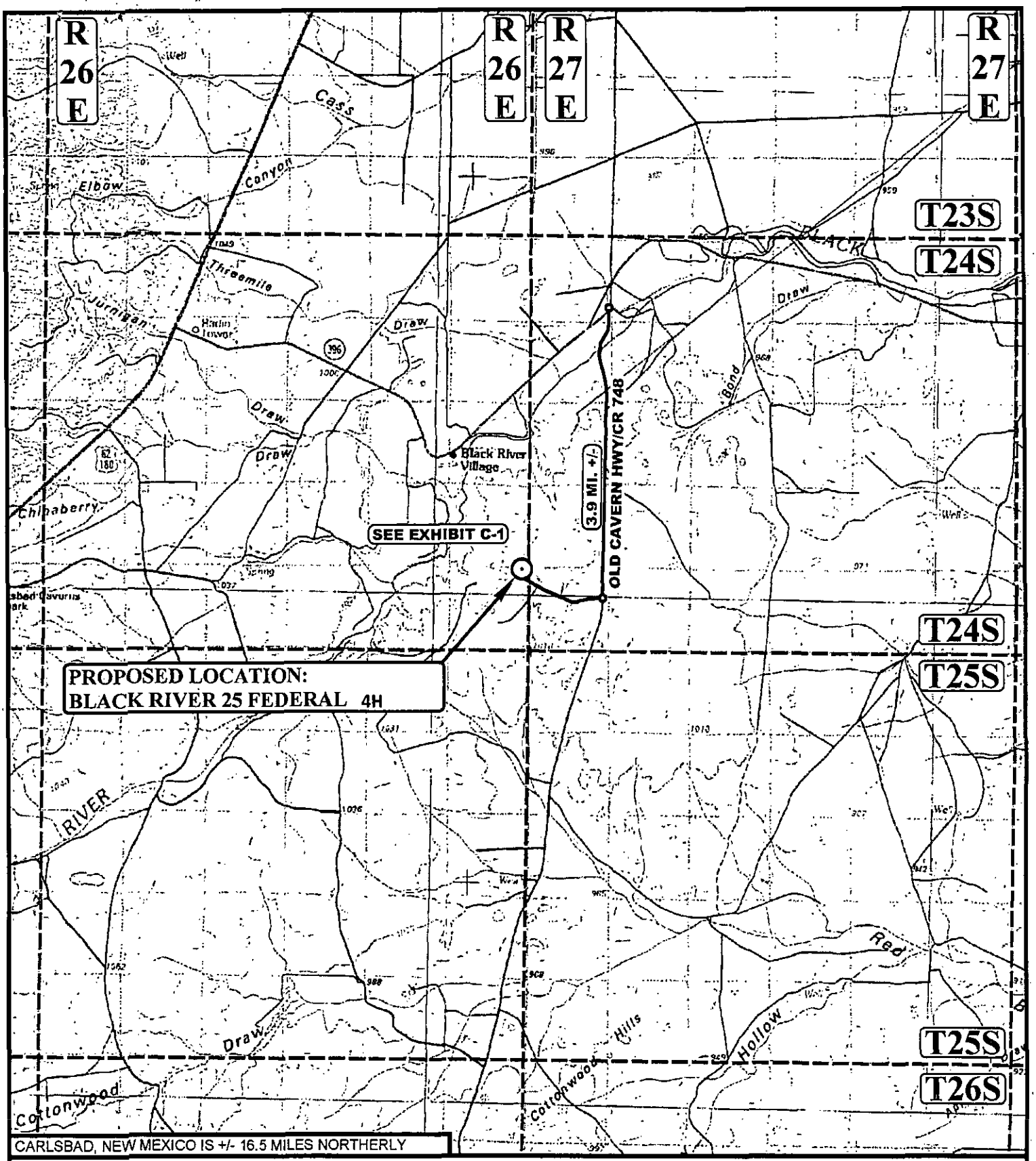
BLACK RIVER 25 FEDERAL 4H
SECTION 25, T24S, R26E, N.M.P.M.
50' FSL 544' FEL

| | |
|---|---|
| DRAWN BY: M.M. | DATE DRAWN: 09-15-14 |
| SCALE: 1" = 2000' | REV: 00-00-00 |

**ONE MILE RADIUS PLAT** **EXHIBIT A**


UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017




LEGEND:

⊙ PROPOSED LOCATION

N

**CIMAREX ENERGY CO.**

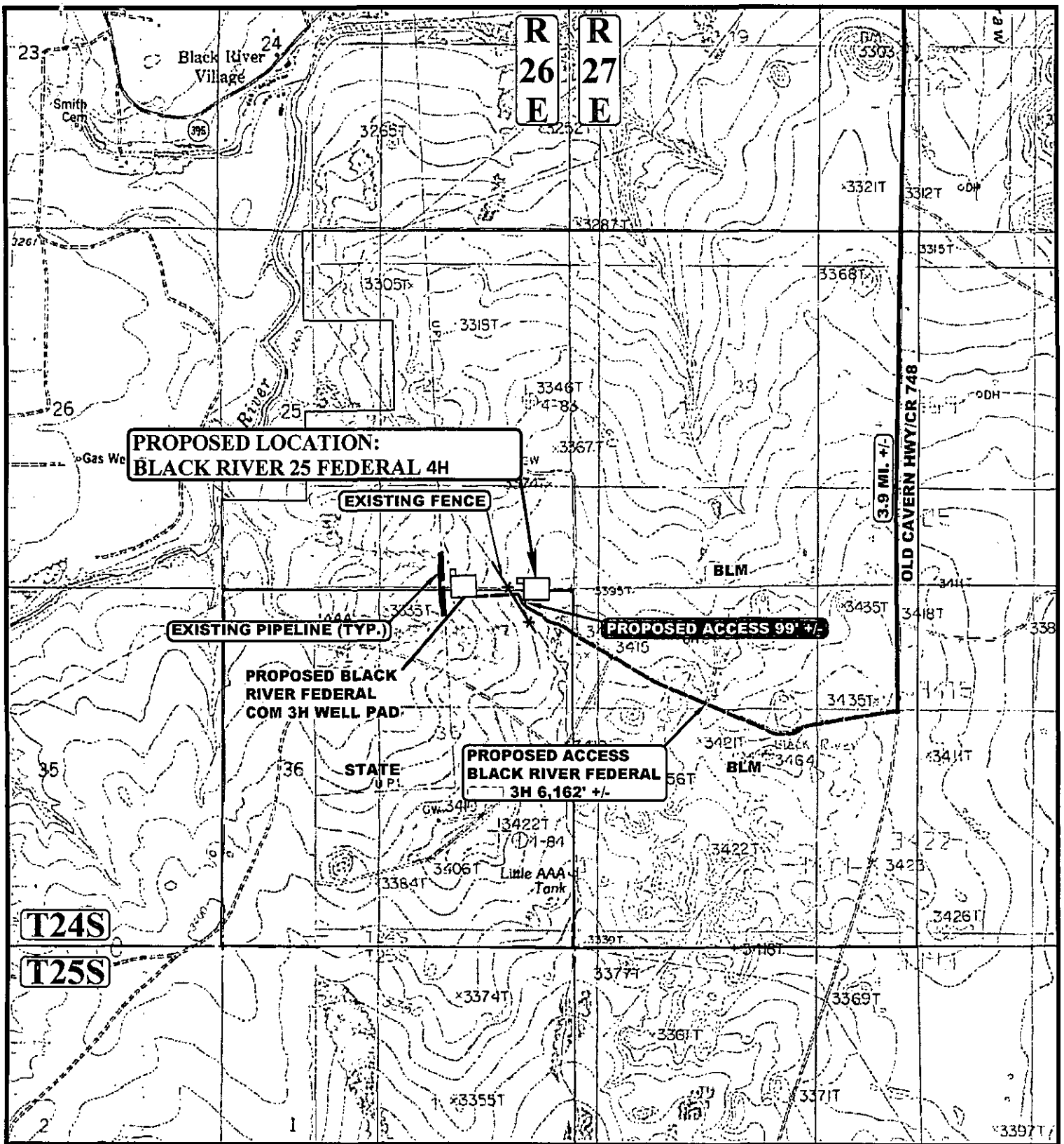
BLACK RIVER 25 FEDERAL 4H
SECTION 25, T24S, R26E, N.M.P.M.
50' FSL 544' FEL

| | |
|---|---|
| DRAWN BY: M.M. | DATE DRAWN: 09-15-14 |
| SCALE: 1:100,000 | REV: 00-00-00 |

**PUBLIC ACCESS ROAD MAP** | **EXHIBIT B**


UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017




NOTE: PARCEL DATA SHOWN HAS BEEN OBTAINED FROM VARIOUS SOURCES AND SHOULD BE USED FOR MAPPING, GRAPHIC AND PLANNING PURPOSES ONLY. NO WARRANTY IS MADE BY UINTAH ENGINEERING AND LAND SURVEYING (UELS) FOR ACCURACY OF THE PARCEL DATA.

**LEGEND:**

- EXISTING ROAD
- PROPOSED ROAD
- EXISTING PIPELINE
- EXISTING FENCE

N

## CIMAREX ENERGY CO.

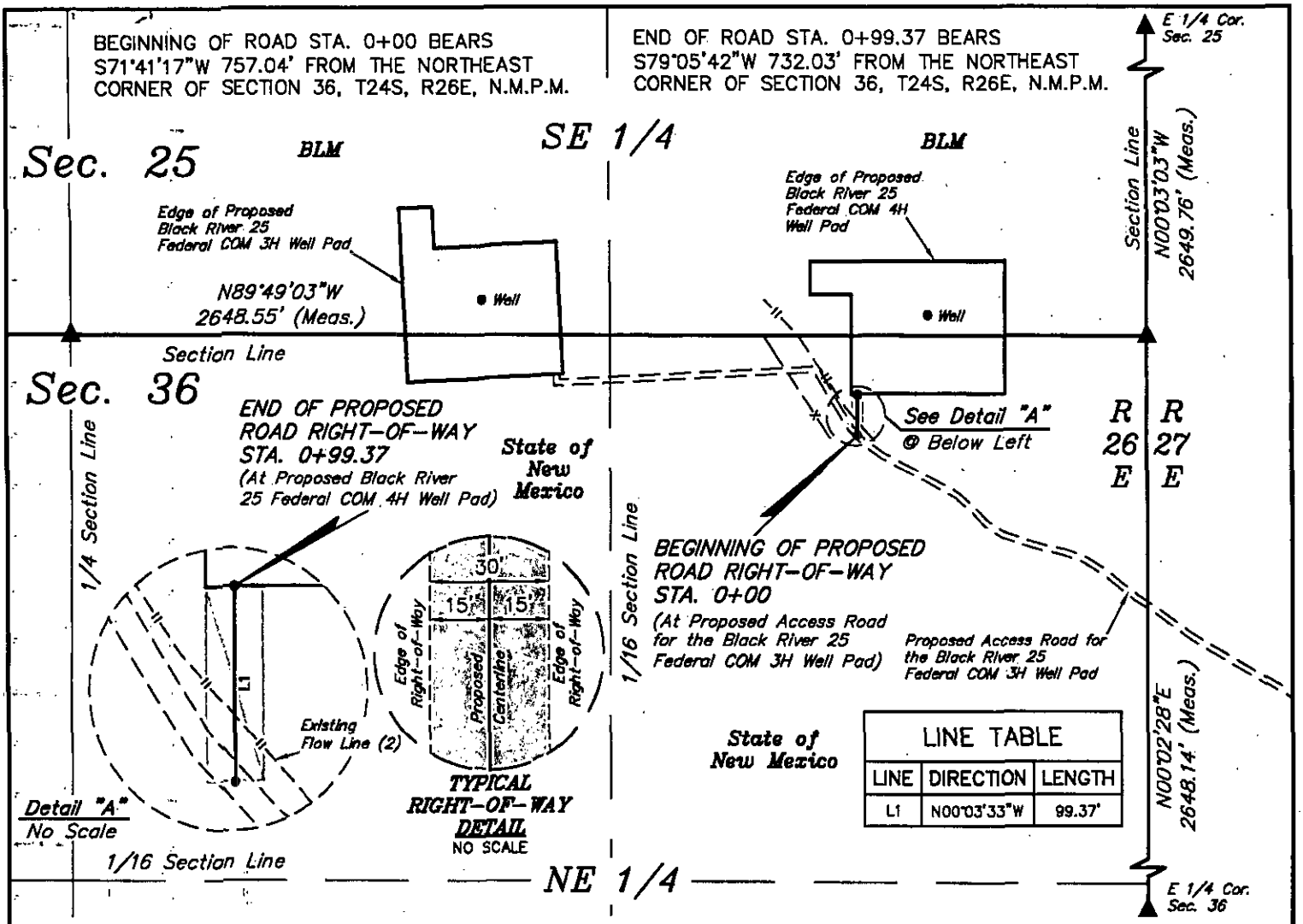
BLACK RIVER 25 FEDERAL 4H
SECTION 25, T24S, R26E, N.M.P.M.
50' FSL 544' FEL

| | |
|---|---|
| DRAWN BY: M.M. | DATE DRAWN: 09-15-14 |
| SCALE: 1" = 2000' | REV: 00-00-00 |

**ACCESS ROAD MAP** | **EXHIBIT C-1**


UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017




## ROAD RIGHT-OF-WAY DESCRIPTION

A 30' WIDE RIGHT-OF-WAY 15' ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE.

BEGINNING AT A POINT IN THE NE 1/4 NE 1/4 OF SECTION 36, T24S, R26E, N.M.P.M., WHICH BEARS S71°41'17"W 757.04' FROM THE NORTHEAST CORNER OF SAID SECTION 36, THENCE N00°03'33"W 99.37' TO A POINT IN THE NE 1/4 NE 1/4 OF SAID SECTION 36, WHICH BEARS S79°05'42"W 732.03' FROM THE NORTHEAST CORNER OF SAID SECTION 36. THE SIDE LINES OF SAID DESCRIBED RIGHT-OF-WAY BEING SHORTENED OR ELONGATED TO MEET THE GRANTOR'S PROPERTY LINES. BASIS OF BEARINGS IS A G.P.S. OBSERVATION. CONTAINS 0.068 ACRES MORE OR LESS.

| *RIGHT-OF-WAY LENGTHS* | | | |
|---|---|---|---|
| PROPERTY OWNER | FEET | ACRES | RODS |
| STATE OF NEW MEXICO | 99.37 | 0.068 | 6.02 |

400' 200' 0' 400'

▲ = SECTION CORNERS LOCATED.

CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

NEW MEXICO PROFESSIONAL SURVEYOR 12446 NELSON J. MARSHALL

REGISTERED LAND SURVEYOR
REGISTRATION NO. 12446
STATE OF NEW MEXICO

09-30-14

NOTES:
- The maximum grade of existing ground for the proposed access road is ±1.3%.

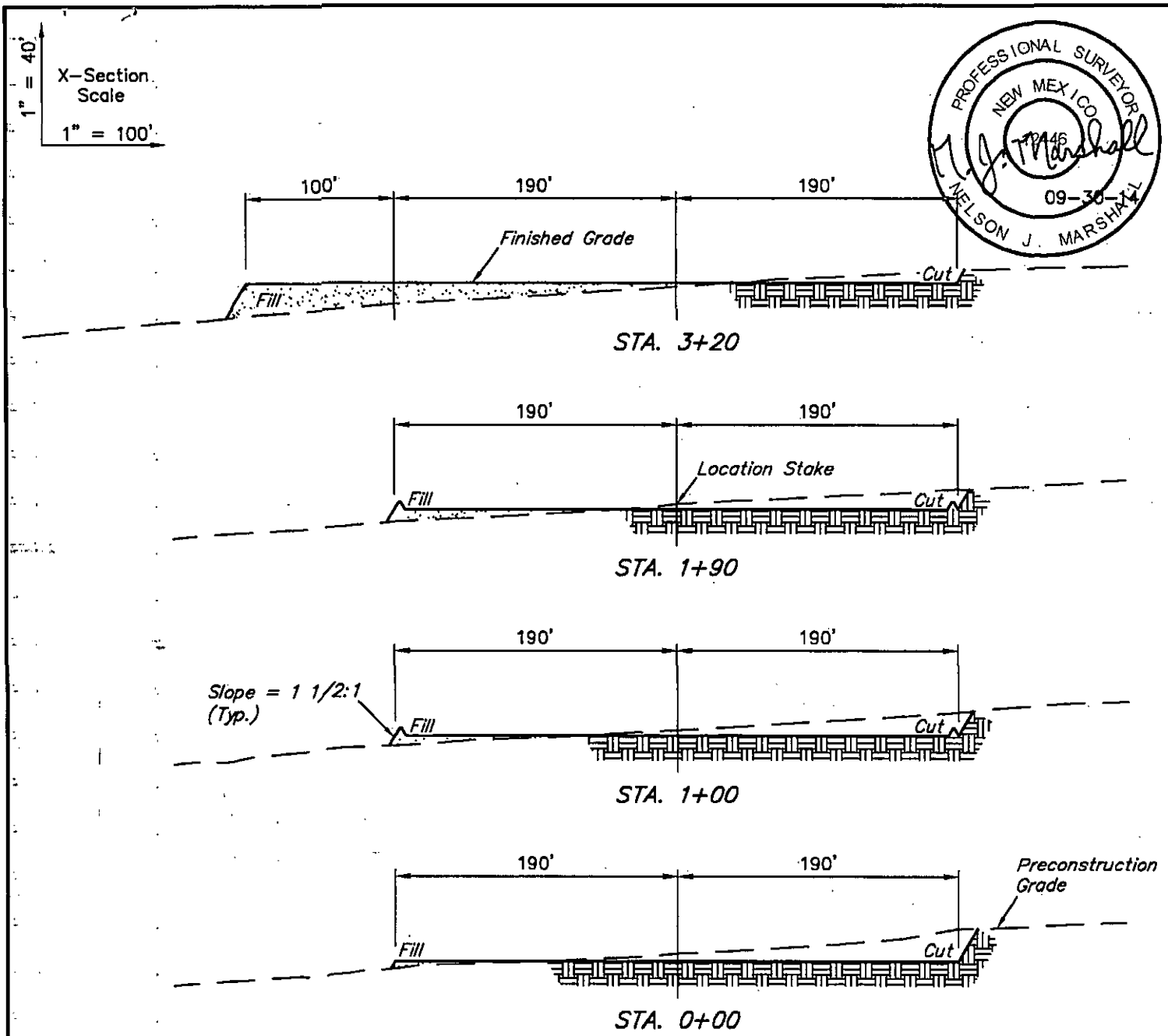
N

**CIMAREX ENERGY CO.**

**BLACK RIVER 25 FEDERAL 4H**
**SECTION 25, T24S, R26E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

| DRAWN BY: S.F. | DATE DRAWN: 09-03-14 |
|---|---|
| SCALE: 1" = 400' | REVISED: 00-00-00 |
| **ACCESS ROAD R-O-W** | **EXHIBIT C-2** |

UINTAH ENGINEERING & LAND SURVEYING
UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017




PROFESSIONAL SURVEYOR NEW MEXICO 17946 NELSON J. MARSHALL 09-30-14

| APPROXIMATE EARTHWORK QUANTITIES | |
|---|---|
| (4") TOPSOIL STRIPPING | 1,720 Cu. Yds. |
| REMAINING LOCATION | 7,030 Cu. Yds. |
| **TOTAL CUT** | **8,750 Cu. Yds.** |
| **FILL** | **7,030 Cu. Yds.** |
| EXCESS MATERIAL | 1,720 Cu. Yds. |
| TOPSOIL | 1,720 Cu. Yds. |
| EXCESS UNBALANCE (After Interim Rehabilitation) | **0 Cu. Yds.** |

| APPROXIMATE SURFACE DISTURBANCE AREAS | | |
|---|---|---|
| | DISTANCE | ACRES |
| WELL SITE DISTURBANCE | NA | ±3.413 |
| 30' WIDE ACCESS ROAD R-O-W DISTURBANCE | ±99.37' | ±0.068 |
| 30' WIDE FLOW LINE R-O-W DISTURBANCE | ±761.33' | ±0.524 |
| TOTAL SURFACE USE AREA | | ±4.005 |

NOTES:
- Fill quantity includes 5% for compaction.
- Topsoil should not be stripped below finished grade on substructure area.

## CIMAREX ENERGY CO.

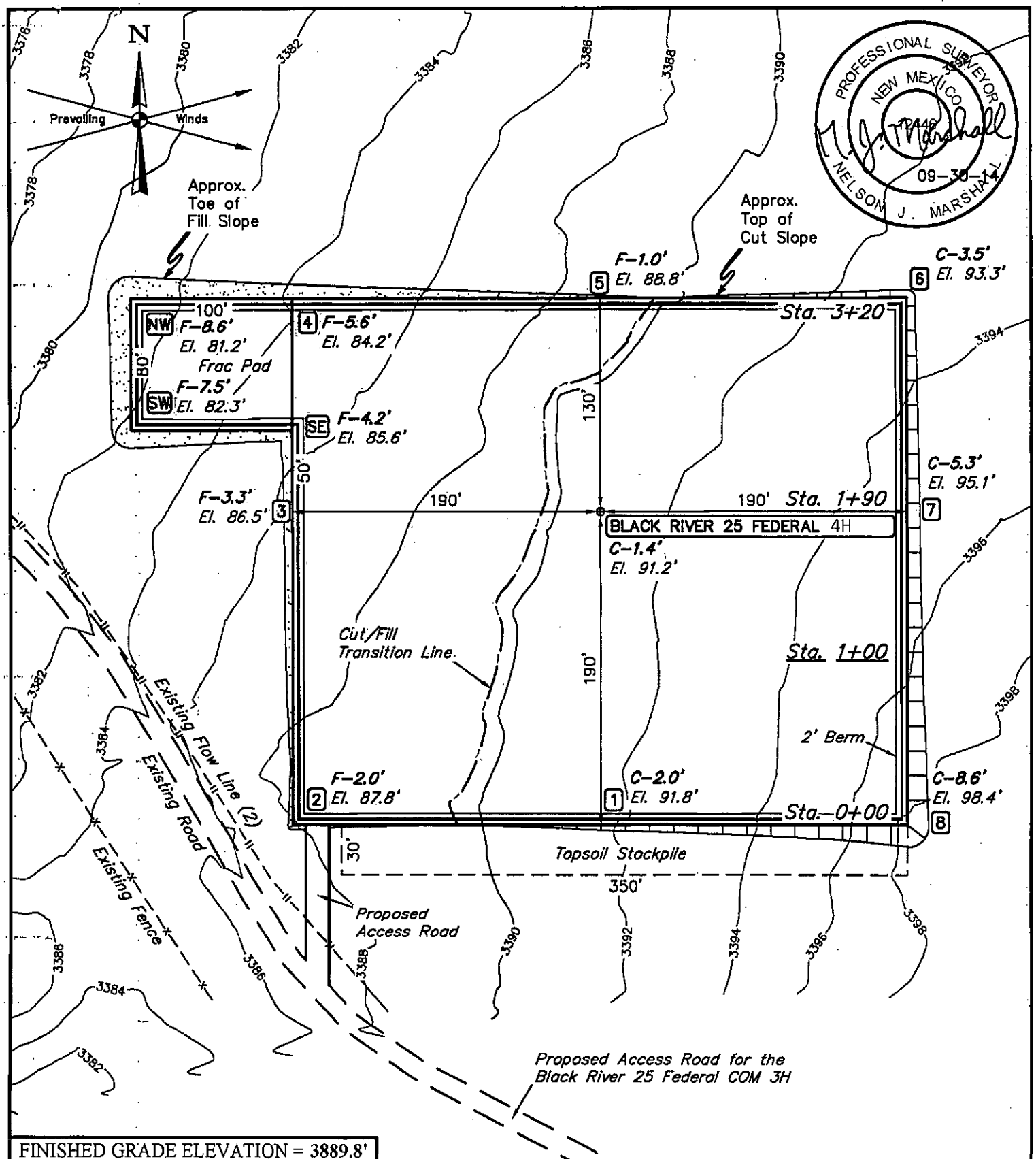
BLACK RIVER 25 FEDERAL 4H
SECTION 25, T24S, R26E, N.M.P.M.
50' FSL 544' FEL

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

| DRAWN BY: S.F. | DATE DRAWN: 09-03-14 |
|---|---|
| SCALE: AS SHOWN | REVISED: 00-00-00 |

**TYPICAL CROSS SECTIONS** | **EXHIBIT D**




FINISHED GRADE ELEVATION = 3889.8'

NOTES:

- Flare pit is to be located a min. of 100' from the wellhead.
- Construct 2' high berm around pad location.
- Construct diversion ditches as needed.
- Contours shown at 2' intervals.
- Underground utilities shown on this sheet are for visualization purposes only, actual locations to be determined prior to construction.

**CIMAREX ENERGY CO.**

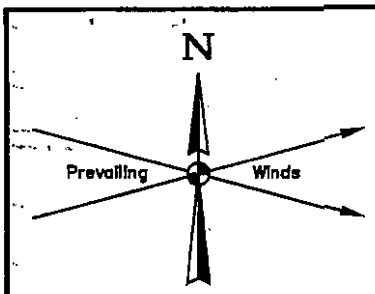
**BLACK RIVER 25 FEDERAL 4H**
**SECTION 25, T24S, R26E, N.M.P.M.**
**50' FSL 544' FEL**

UINTAH ENGINEERING & LAND SURVEYING

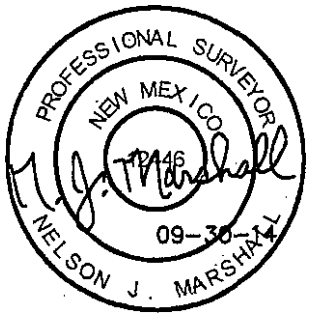

**UELS, LLC**
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

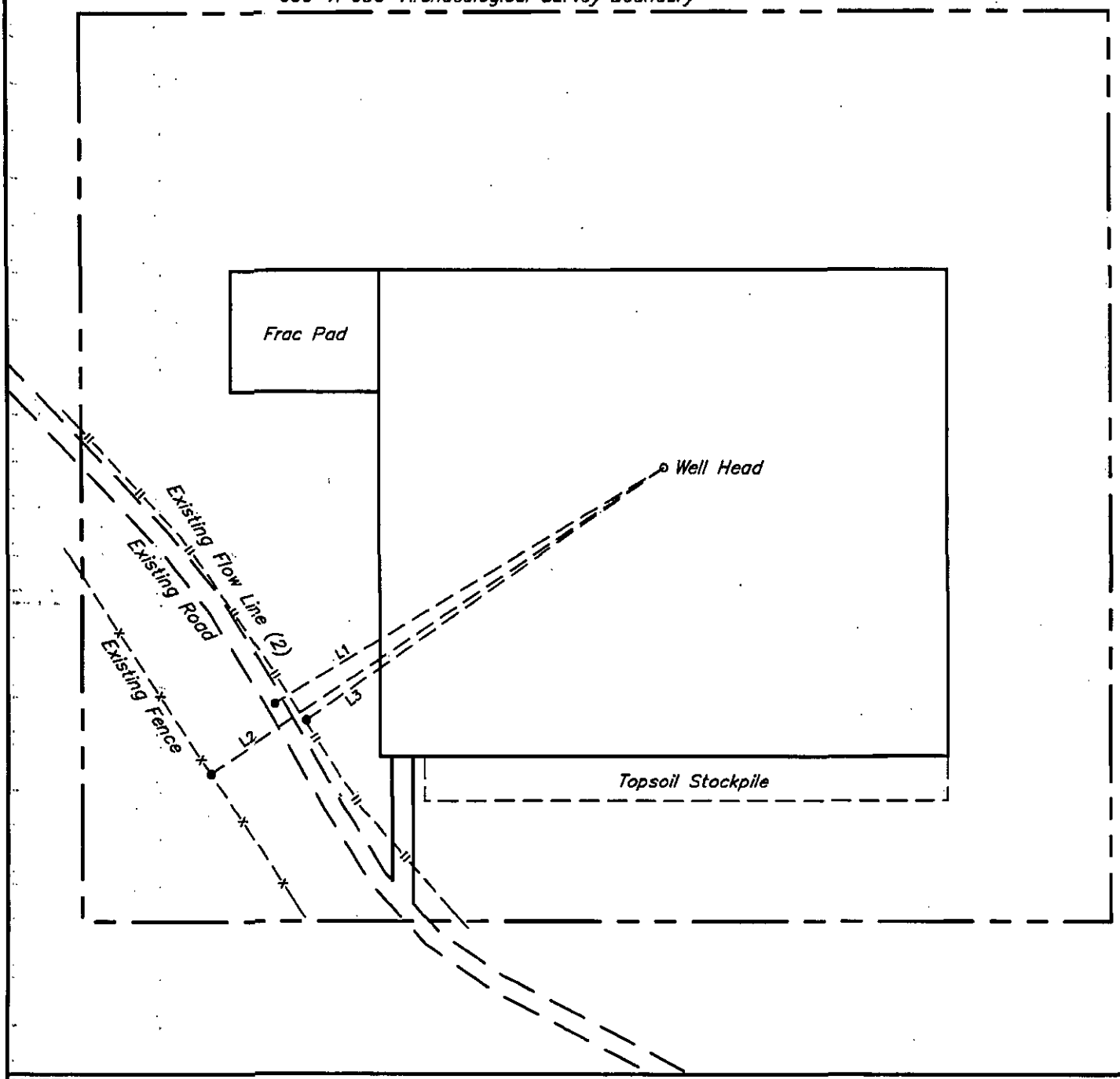

| | |
|---|---|
| DRAWN BY: S.F. | DATE DRAWN: 09-03-14 |
| SCALE: 1" = 80' | REVISED: 00-00-00 |

**LOCATION LAYOUT** | **EXHIBIT D**




| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L1 | S59°W | 304' |
| L2 | S56°W | 365' |
| L3 | S55°W | 291' |




NOTES:

**CIMAREX ENERGY CO.**

**BLACK RIVER 25 FEDERAL 4H**
**SECTION 25, T24S, R26E, N.M.P.M.**
**50' FSL 544' FEL**

UINTAH ENGINEERING & LAND SURVEYING

**UELS, LLC**
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

| | |
|---|---|
| DRAWN BY: S.F. | DATE DRAWN: 09-03-14 |
| SCALE: 1" = 80' | REVISED: 00-00-00 |
| ARCHAEOLOGICAL SURVEY BOUNDARY | EXHIBIT D |

## 1. Geological Formations

TVD of target 7,291 Pilot Hole TD N/A
MD at TD 11,999 Deepest expected fresh water

| Formation | Depth (TVD) from KB | Water/Mineral Bearing/Target Zone | Hazards |
|---|---|---|---|
| Rustler | 0 | N/A | |
| OSE Groundwater | 50 | N/A | |
| Salado | 1362 | N/A | |
| Castille | 1927 | N/A | |
| Bell Canyon | 2136 | N/A | |
| Cherry Canyon | 3063 | N/A | |
| Brushy Canyon | 4089 | N/A | |
| Brushy Canyon Lower | 5468 | N/A | |
| Bone Spring | 5649 | Hydrocarbons | |
| Bone Spring A Shale | 5733 | Hydrocarbons | |
| Bone Spring C Shale | 6064 | Hydrocarbons | |
| 1st Bone Spring Ss | 6615 | Hydrocarbons | |
| 2nd Bone Spring Ss | 7063 | Hydrocarbons | |
| 2nd BS Ss Horz Target | 7321 | Hydrocarbons | |
| 3rd BS Limestone | 7407 | Hydrocarbons | |

## 2. Casing Program

| Hole Size | Casing Depth From | Casing Depth To | Casing Size | Weight (lb/ft) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| 17 1/2 | 0 | 450 | 13-3/8" | 48.00 | H-40/J-55 Hybrid | ST&C | 3.59 | 8.40 | 14.91 |
| 12 1/4 | 0 | 2116 | 9-5/8" | 36.00 | J-55 | LT&C | 1.80 | 3.14 | 5.95 |
| 8 3/4 | 0 | 6800 | 5-1/2" | 17.00 | L-80 | LT&C | 1.93 | 2.38 | 2.73 |
| 8 3/4 | 6800 | 11999 | 5-1/2" | 17.00 | L-80 | BT&C | 1.80 | 2.22 | 47.56 |
| | | | | BLM Minimum Safety Factor | | | 1.125 | 1 | 1.6 Dry<br>1.8 Wet |

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

| | Y or N |
|---|---|
| Is casing new? If used, attach certification as required in Onshore Order #1 | Y |
| Does casing meet API specifications? If no, attach casing specification sheet. | N |
| Is premium or uncommon casing planned? If yes attach casing specification sheet. | N |
| Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria). | Y |
| Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing? | Y |
| Is well located within Capitan Reef? | N |
| If yes, does production casing cement tie back a minimum of 50' above the Reef? | N |
| Is well within the designated 4 string boundary. | N |
| Is well located in SOPA but not in R-111-P? | N |
| If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing? | N |
| Is well located in R-111-P and SOPA? | N |
| If yes, are the first three strings cemented to surface? | N |
| Is 2nd string set 100' to 600' below the base of salt? | N |
| Is well located in high Cave/Karst? | Y |
| If yes, are there two strings cemented to surface? | Y |
| (For 2 string wells) If yes, is there a contingency casing if lost circulation occurs? | N |
| Is well located in critical Cave/Karst? | N |
| If yes, are there three strings cemented to surface? | N |

### 3. Cementing Program

| Casing | # Sks | Wt. lb/gal | Yld ft3/sack | H2O gal/sk | 500# Comp. Strength (hours) | Slurry Description |
|---|---|---|---|---|---|---|
| Surface | 91 | 13.50 | 1.72 | 9.15 | 15.5 | Lead: Class C + Bentonite |
| | 195 | 14.80 | 1.34 | 6.32 | 9.5 | Tail: Class C + LCM |
| | | | | | | |
| Intermediate | 401 | 12.90 | 1.88 | 9.65 | 30 | Lead: 35:65 (Poz:C) + Salt + Bentonite |
| | 124 | 14.80 | 1.34 | 6.32 | 9.5 | Tail: Class C + LCM |
| | | | | | | |
| Production | 653 | 10.80 | 2.35 | 9.60 | 17:43 | Lead: Tuned Light I Class H |
| | 1112 | 14.20 | 1.30 | 5.86 | 14:30 | Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS |
| | | | | | | |

| Casing String | TOC | % Excess |
|---|---|---|
| Surface | 0 | 33 |
| Surface | 0 | 33 |
| Intermediate | 0 | 44 |
| Intermediate | 0 | 44 |
| Production | 1916 | 17 |
| Production | 1916 | 17 |

Sec 10R

## 4. Pressure Control Equipment

| | |
|---|---|
| | A variance is requested for the use of a diverter on the surface casing. See attached for schematic. |

| BOP installed and tested before drilling which hole? | Size | Min Required WP | Type | | Tested To |
|---|---|---|---|---|---|
| 12 1/4 | 13 5/8 | 2M | Annular | X | 50% of working pressure |
| | | | Blind Ram | X | 2M |
| | | | Pipe Ram | | |
| | | | Double Ram | X | |
| | | | Other | | |
| 8 3/4 | 13 5/8 | 3M | Annular | X | 50% of working pressure |
| | | | Blind Ram | X | 3M |
| | | | Pipe Ram | | |
| | | | Double Ram | X | |
| | | | Other | | |

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

| | | |
|---|---|---|
| | Formation integrity test will be performed per Onshore Order #2.<br>On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i. | |
| X | A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart. | |
| | N | Are anchors required by manufacturer? |

## 5. Mud Program

| Depth | Type | Weight (ppg) | Viscosity | Water Loss |
|---|---|---|---|---|
| 0' to 450' | FW Spud Mud | 8.30 - 8.80 | 28 | N/C |
| 450' to 2116' | Brine Water | 9.70 - 10.20 | 30-32 | N/C |
| 2116' to 11999' | FW/Cut Brine | 8.70 - 9.20 | 30-32 | N/C |

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

| | |
|---|---|
| What will be used to monitor the loss or gain of fluid? | PVT/Pason/Visual Monitoring |

## 6. Logging and Testing Procedures

| | Logging, Coring and Testing |
|---|---|
| X | Will run GR/CNL fromTD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM. |
| | No logs are planned based on well control or offset log information. |
| | Drill stem test? |
| | Coring? |

| Additional Logs Planned | Interval |
|---|---|

## 7. Drilling Conditions

| Condition | |
|---|---|
| BH Pressure at deepest TVD | 3281 psi |
| Abnormal Temperature | No |

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.

| | |
|---|---|
| X | H2S is present |
| X | H2S plan is attached |

## 8. Other Facets of Operation

CIMAREX

# Cimarex Rev1

PATHFINDER
A Schlumberger Company

| Borehole: | Well: | Field: | Structure: |
|---|---|---|---|
| Original Borehole | Black River 25 Fed Com 4H | Eddy County, NM | Rig TBD |

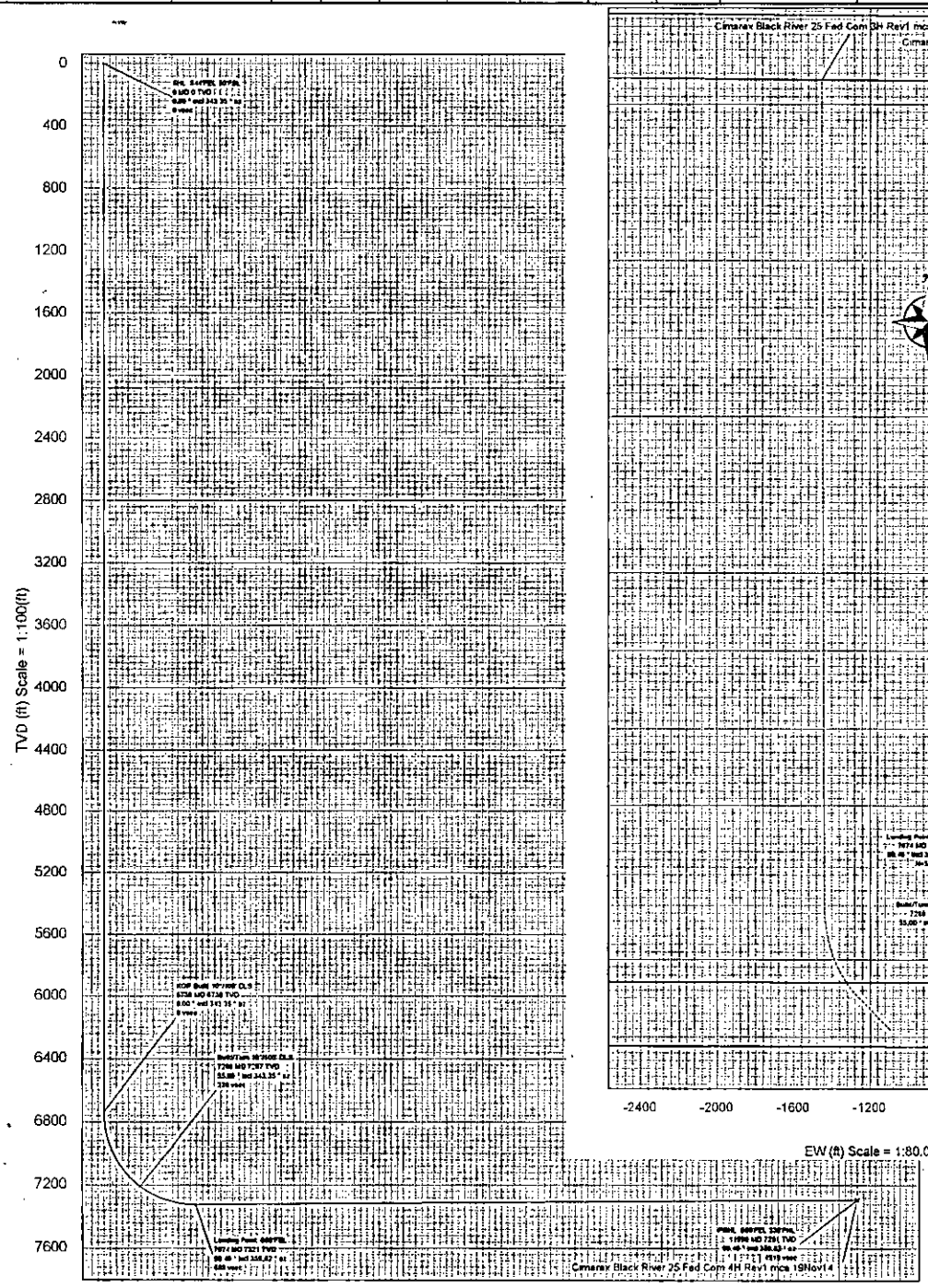
Gravity & Magnetic Parameters
Model: HDGM 2014 Dip: 59.973° Date: 25-Nov-2014
Mag Dec: 7.717° FS: 48278.083nT GravityFS: 998.434mgn (9.80665 Based)

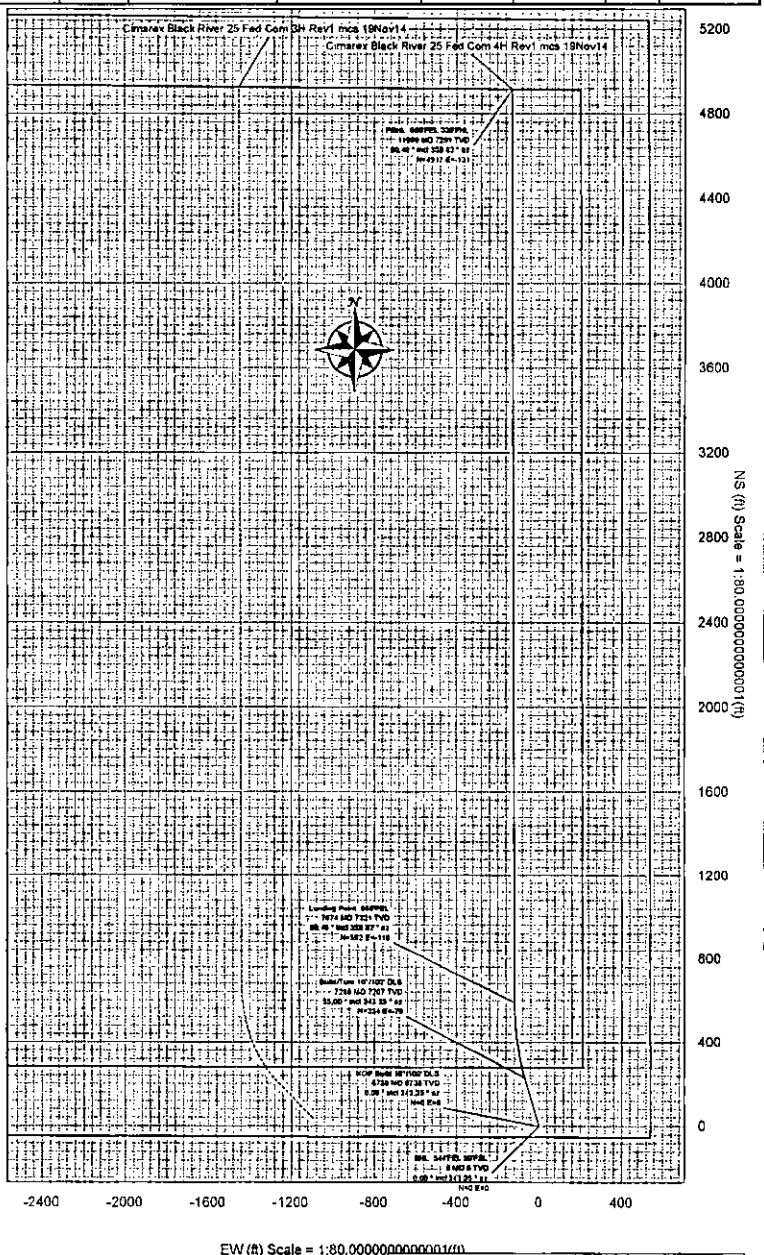
Surface Location NAD83 New Mexico State Plane, Eastern Zone, US Feet
Lat: N 32 10 51.53 Northing: 429584.25ftUS Grid Conv: 0.0498°
Lon: W 104 14 23.11 Easting: 570289.16ftUS Scale Fact: 0.99991005

Vertical Section
Slot: Black River 25 Fed Com 4H TVD Ref: Ground Elevation(3391.2ft above )
Plan: Rev1 mcs 19Nov14

## Critical Points

| Comments | Survey MD | Inc | Azim | TVD | SSTVD | VS | NS | EW | Longitude | Latitude | Easting | Northing | DLS | Tool Face |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SHL: 544'FEL 50'FSL | 0.00 | 0.00 | 343.35 | 0.00 | -3391.20 | 0.00 | 0.00 | 0.00 | W 104 14 23.111 | N 32 10 51.592 | 570289.16 | 429594.25 | | 343.35 |
| KOP Build 10°/100' DLS | 6738.00 | 0.00 | 343.35 | 6738.00 | 3346.80 | 0.00 | 0.00 | 0.00 | W 104 14 23.111 | N 32 10 51.592 | 570289.16 | 429594.25 | 0.00 | 343.35 |
| Build/Turn 10°/100' DLS | 7288.00 | 55.00 | 343.35 | 7207.34 | 3816.14 | 235.86 | 234.08 | -70.00 | W 104 14 23.923 | N 32 10 53.909 | 570219.16 | 429828.31 | 10.00 | 27.03 |
| Landing Point: 660'FEL | 7673.99 | 90.40 | 359.82 | 7321.03 | 3929.83 | 595.11 | 592.18 | -117.72 | W 104 14 24.474 | N 32 10 57.453 | 570171.46 | 430186.38 | 10.00 | 0.00 |
| PBHL: 660'FEL 330'FNL | 11999.33 | 90.40 | 359.82 | 7291.00 | 3899.80 | 4919.14 | 4917.39 | -131.05 | W 104 14 24.586 | N 32 11 40.251 | 570158.12 | 434511.19 | 0.00 | |




Vertical Section (ft) Azim = 358.473° Scale = 1:100(ft) Origin = 0N/-S, 0E/-W

- Cimarex Black River 25 Fed Com 4H Rev1 mcs 19Nov14
- Cimarex Black River 25 Fed Com 3H Rev1 mcs 19Nov14
- Cimarex Black River 25 Fed Com 2H Rev1 mcs 20Nov14
- Cimarex Black River 25 Fed Com 1H Rev1 mcs 20Nov14
- Cimarex Black River 25 Fed Com 4H - Leaseline
- Cimarex Black River 25 Fed Com 4H - 330ft Hard Line
- Cimarex Black River 25 Fed Com 4H - PBHL

# Cimarex Black River 25 Fed Com 4H Rev1 mcs 19Nov14 Proposal Geodetic Report

(Non-Def Plan)

| | | | |
|---|---|---|---|
| **Report Date:** | November 20, 2014 - 12:42 PM | **Survey / DLS Computation:** | Minimum Curvature / Lubinski |
| **Client:** | Cimarex | **Vertical Section Azimuth:** | 358.473 ° (Grid North) |
| **Field:** | NM Eddy County (NAD 83) | **Vertical Section Origin:** | 0.000 ft, 0.000 ft |
| **Structure / Slot:** | Cimarex Black River 25 Fed Com 4H / Cimarex Black River 25 Fed Com 4H | **TVD Reference Datum:** | Ground Elevation |
| **Well:** | Cimarex Black River 25 Fed Com 4H | **TVD Reference Elevation:** | 3391.200 ft above |
| **Borehole:** | Original Borehole | **Seabed / Ground Elevation:** | 3391.200 ft above |
| **UWI / API#:** | Unknown / Unknown | **Magnetic Declination:** | 7.717 ° |
| **Survey Name:** | Cimarex Black River 25 Fed Com 4H Rev1 mcs 19Nov14 | **Total Gravity Field Strength:** | 998.4335mgn (9.80665 Based) |
| **Survey Date:** | October 13, 2014 | **Gravity Model:** | GARM |
| **Tort / AHD / DDI / ERD Ratio:** | 93.599 ° / 4932.004 ft / 5.879 / 0.674 | **Total Magnetic Field Strength:** | 48279.093 nT |
| **Coordinate Reference System:** | NAD83 New Mexico State Plane, Eastern Zone, US Feet | **Magnetic Dip Angle:** | 59.973 ° |
| **Location Lat / Long:** | N 32° 10' 51.59173", W 104° 14' 23.11081" | **Declination Date:** | November 20, 2014 |
| **Location Grid N/E Y/X:** | N 429594.250 ftUS, E 570289.160 ftUS | **Magnetic Declination Model:** | HDGM 2014 |
| **CRS Grid Convergence Angle:** | 0.0498 ° | **North Reference:** | Grid North |
| **Grid Scale Factor:** | 0.99991005 | **Grid Convergence Used:** | 0.0498 ° |
| **Version / Patch:** | 2.7.1043.0 | **Total Corr Mag North->Grid North:** | 7.6675 ° |
| | | **Local Coord Referenced To:** | Structure Reference Point |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | TVDSS (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Closure Azimuth (°) | Closure (ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SHL: 544'FEL 50'FSL | 0.00 | 0.00 | 343.35 | 0.00 | -3391.20 | 0.00 | 0.00 | 0.00 | N/A | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 100.00 | 0.00 | 343.35 | 100.00 | -3291.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 200.00 | 0.00 | 343.35 | 200.00 | -3191.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 300.00 | 0.00 | 343.35 | 300.00 | -3091.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 400.00 | 0.00 | 343.35 | 400.00 | -2991.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 500.00 | 0.00 | 343.35 | 500.00 | -2891.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 600.00 | 0.00 | 343.35 | 600.00 | -2791.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 700.00 | 0.00 | 343.35 | 700.00 | -2691.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 800.00 | 0.00 | 343.35 | 800.00 | -2591.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 900.00 | 0.00 | 343.35 | 900.00 | -2491.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 1000.00 | 0.00 | 343.35 | 1000.00 | -2391.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 1100.00 | 0.00 | 343.35 | 1100.00 | -2291.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 1200.00 | 0.00 | 343.35 | 1200.00 | -2191.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 1300.00 | 0.00 | 343.35 | 1300.00 | -2091.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 1400.00 | 0.00 | 343.35 | 1400.00 | -1991.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 1500.00 | 0.00 | 343.35 | 1500.00 | -1891.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 1600.00 | 0.00 | 343.35 | 1600.00 | -1791.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 1700.00 | 0.00 | 343.35 | 1700.00 | -1691.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 1800.00 | 0.00 | 343.35 | 1800.00 | -1591.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 1900.00 | 0.00 | 343.35 | 1900.00 | -1491.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 2000.00 | 0.00 | 343.35 | 2000.00 | -1391.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 2100.00 | 0.00 | 343.35 | 2100.00 | -1291.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 2200.00 | 0.00 | 343.35 | 2200.00 | -1191.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 2300.00 | 0.00 | 343.35 | 2300.00 | -1091.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 2400.00 | 0.00 | 343.35 | 2400.00 | -991.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 2500.00 | 0.00 | 343.35 | 2500.00 | -891.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 2600.00 | 0.00 | 343.35 | 2600.00 | -791.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 2700.00 | 0.00 | 343.35 | 2700.00 | -691.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 2800.00 | 0.00 | 343.35 | 2800.00 | -591.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 2900.00 | 0.00 | 343.35 | 2900.00 | -491.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 3000.00 | 0.00 | 343.35 | 3000.00 | -391.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 3100.00 | 0.00 | 343.35 | 3100.00 | -291.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | TVDSS (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Closure Azimuth (°) | Closure (ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3200.00 | 0.00 | 343.35 | 3200.00 | -191.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 3300.00 | 0.00 | 343.35 | 3300.00 | -91.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 3400.00 | 0.00 | 343.35 | 3400.00 | 8.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 3500.00 | 0.00 | 343.35 | 3500.00 | 108.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 3600.00 | 0.00 | 343.35 | 3600.00 | 208.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 3700.00 | 0.00 | 343.35 | 3700.00 | 308.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 3800.00 | 0.00 | 343.35 | 3800.00 | 408.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 3900.00 | 0.00 | 343.35 | 3900.00 | 508.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 4000.00 | 0.00 | 343.35 | 4000.00 | 608.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 4100.00 | 0.00 | 343.35 | 4100.00 | 708.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 4200.00 | 0.00 | 343.35 | 4200.00 | 808.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 4300.00 | 0.00 | 343.35 | 4300.00 | 908.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 4400.00 | 0.00 | 343.35 | 4400.00 | 1008.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 4500.00 | 0.00 | 343.35 | 4500.00 | 1108.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 4600.00 | 0.00 | 343.35 | 4600.00 | 1208.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 4700.00 | 0.00 | 343.35 | 4700.00 | 1308.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 4800.00 | 0.00 | 343.35 | 4800.00 | 1408.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 4900.00 | 0.00 | 343.35 | 4900.00 | 1508.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 5000.00 | 0.00 | 343.35 | 5000.00 | 1608.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 5100.00 | 0.00 | 343.35 | 5100.00 | 1708.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 5200.00 | 0.00 | 343.35 | 5200.00 | 1808.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 5300.00 | 0.00 | 343.35 | 5300.00 | 1908.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 5400.00 | 0.00 | 343.35 | 5400.00 | 2008.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 5500.00 | 0.00 | 343.35 | 5500.00 | 2108.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 5600.00 | 0.00 | 343.35 | 5600.00 | 2208.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 5700.00 | 0.00 | 343.35 | 5700.00 | 2308.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 5800.00 | 0.00 | 343.35 | 5800.00 | 2408.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 5900.00 | 0.00 | 343.35 | 5900.00 | 2508.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 6000.00 | 0.00 | 343.35 | 6000.00 | 2608.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 6100.00 | 0.00 | 343.35 | 6100.00 | 2708.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 6200.00 | 0.00 | 343.35 | 6200.00 | 2808.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 6300.00 | 0.00 | 343.35 | 6300.00 | 2908.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 6400.00 | 0.00 | 343.35 | 6400.00 | 3008.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 6500.00 | 0.00 | 343.35 | 6500.00 | 3108.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 6600.00 | 0.00 | 343.35 | 6600.00 | 3208.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 6700.00 | 0.00 | 343.35 | 6700.00 | 3308.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| KOP Build 10°/100' DLS | 6738.00 | 0.00 | 343.35 | 6738.00 | 3346.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 429594.25 | 570289.16 | N 32 10 51.59 | W 104 14 23.11 |
| | 6800.00 | 6.20 | 343.35 | 6799.88 | 3408.68 | 3.24 | 3.21 | -0.96 | 10.00 | 343.35 | 3.35 | 429597.46 | 570288.20 | N 32 10 51.62 | W 104 14 23.12 |
| | 6900.00 | 16.20 | 343.35 | 6897.85 | 3506.65 | 21.98 | 21.80 | -6.52 | 10.00 | 343.35 | 22.75 | 429616.04 | 570282.64 | N 32 10 51.81 | W 104 14 23.19 |
| | 7000.00 | 26.20 | 343.35 | 6990.96 | 3599.76 | 56.83 | 56.40 | -16.87 | 10.00 | 343.35 | 58.87 | 429650.64 | 570272.29 | N 32 10 52.15 | W 104 14 23.31 |
| | 7100.00 | 36.20 | 343.35 | 7076.39 | 3685.19 | 106.77 | 105.97 | -31.69 | 10.00 | 343.35 | 110.60 | 429700.21 | 570257.47 | N 32 10 52.64 | W 104 14 23.48 |
| | 7200.00 | 46.20 | 343.35 | 7151.54 | 3760.34 | 170.28 | 168.99 | -50.54 | 10.00 | 343.35 | 176.39 | 429763.23 | 570238.62 | N 32 10 53.26 | W 104 14 23.70 |
| Build/Turn 10°/100' DLS | 7288.00 | 55.00 | 343.35 | 7207.34 | 3816.14 | 235.86 | 234.08 | -70.00 | 10.00 | 343.35 | 244.32 | 429828.31 | 570219.16 | N 32 10 53.91 | W 104 14 23.92 |
| | 7300.00 | 56.07 | 344.01 | 7214.13 | 3822.93 | 245.43 | 243.57 | -72.78 | 10.00 | 343.36 | 254.22 | 429837.80 | 570216.38 | N 32 10 54.00 | W 104 14 23.96 |
| | 7400.00 | 65.11 | 348.94 | 7263.21 | 3872.01 | 330.54 | 328.18 | -92.97 | 10.00 | 344.18 | 341.10 | 429922.40 | 570196.20 | N 32 10 54.84 | W 104 14 24.19 |
| | 7500.00 | 74.28 | 353.18 | 7297.89 | 3906.69 | 423.43 | 420.72 | -107.43 | 10.00 | 345.68 | 434.22 | 430014.93 | 570181.74 | N 32 10 55.76 | W 104 14 24.36 |
| | 7600.00 | 83.53 | 357.06 | 7317.12 | 3925.92 | 521.27 | 518.37 | -115.71 | 10.00 | 347.42 | 531.13 | 430112.57 | 570173.46 | N 32 10 56.72 | W 104 14 24.45 |
| Landing Point. 660'FEL | 7673.99 | 90.40 | 359.82 | 7321.03 | 3929.83 | 595.11 | 592.18 | -117.72 | 10.00 | 348.76 | 603.77 | 430186.38 | 570171.46 | N 32 10 57.45 | W 104 14 24.47 |
| | 7700.00 | 90.40 | 359.82 | 7320.85 | 3929.65 | 621.11 | 618.19 | -117.80 | 0.00 | 349.21 | 629.31 | 430212.38 | 570171.37 | N 32 10 57.71 | W 104 14 24.48 |
| | 7800.00 | 90.40 | 359.82 | 7320.16 | 3928.96 | 721.08 | 718.19 | -118.10 | 0.00 | 350.66 | 727.83 | 430312.37 | 570171.07 | N 32 10 58.70 | W 104 14 24.48 |
| | 7900.00 | 90.40 | 359.82 | 7319.46 | 3928.26 | 821.05 | 818.18 | -118.41 | 0.00 | 351.78 | 826.71 | 430412.36 | 570170.76 | N 32 10 59.69 | W 104 14 24.48 |
| | 8000.00 | 90.40 | 359.82 | 7318.77 | 3927.57 | 921.02 | 918.18 | -118.72 | 0.00 | 352.63 | 925.82 | 430512.35 | 570170.45 | N 32 11 0.68 | W 104 14 24.48 |
| | 8100.00 | 90.40 | 359.82 | 7318.07 | 3926.87 | 1020.99 | 1018.18 | -119.03 | 0.00 | 353.33 | 1025.11 | 430612.33 | 570170.14 | N 32 11 1.67 | W 104 14 24.49 |
| | 8200.00 | 90.40 | 359.82 | 7317.38 | 3926.18 | 1120.96 | 1118.17 | -119.34 | 0.00 | 353.91 | 1124.52 | 430712.32 | 570169.83 | N 32 11 2.66 | W 104 14 24.49 |
| | 8300.00 | 90.40 | 359.82 | 7316.68 | 3925.48 | 1220.93 | 1218.17 | -119.65 | 0.00 | 354.39 | 1224.03 | 430812.31 | 570169.53 | N 32 11 3.65 | W 104 14 24.49 |
| | 8400.00 | 90.40 | 359.82 | 7315.99 | 3924.79 | 1320.90 | 1318.17 | -119.95 | 0.00 | 354.80 | 1323.62 | 430912.30 | 570169.22 | N 32 11 4.64 | W 104 14 24.49 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | TVDSS (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Closure Azimuth (°) | Closure (ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8500.00 | 90.40 | 359.82 | 7315.30 | 3924.10 | 1420.87 | 1418.17 | -120.26 | 0.00 | 355.15 | 1423.26 | 431012.29 | 570168.91 | N 32 11 5.63 | W 104 14 24.50 |
| | 8600.00 | 90.40 | 359.82 | 7314.60 | 3923.40 | 1520.84 | 1518.16 | -120.57 | 0.00 | 355.46 | 1522.94 | 431112.27 | 570168.60 | N 32 11 6.62 | W 104 14 24.50 |
| | 8700.00 | 90.40 | 359.82 | 7313.91 | 3922.71 | 1620.81 | 1618.16 | -120.88 | 0.00 | 355.73 | 1622.67 | 431212.26 | 570168.29 | N 32 11 7.60 | W 104 14 24.50 |
| | 8800.00 | 90.40 | 359.82 | 7313.21 | 3922.01 | 1720.78 | 1718.16 | -121.19 | 0.00 | 355.97 | 1722.43 | 431312.25 | 570167.98 | N 32 11 8.59 | W 104 14 24.50 |
| | 8900.00 | 90.40 | 359.82 | 7312.52 | 3921.32 | 1820.75 | 1818.15 | -121.50 | 0.00 | 356.18 | 1822.21 | 431412.24 | 570167.68 | N 32 11 9.58 | W 104 14 24.51 |
| | 9000.00 | 90.40 | 359.82 | 7311.82 | 3920.62 | 1920.72 | 1918.15 | -121.80 | 0.00 | 356.37 | 1922.01 | 431512.22 | 570167.37 | N 32 11 10.57 | W 104 14 24.51 |
| | 9100.00 | 90.40 | 359.82 | 7311.13 | 3919.93 | 2020.69 | 2018.15 | -122.11 | 0.00 | 356.54 | 2021.84 | 431612.21 | 570167.06 | N 32 11 11.56 | W 104 14 24.51 |
| | 9200.00 | 90.40 | 359.82 | 7310.44 | 3919.24 | 2120.65 | 2118.15 | -122.42 | 0.00 | 356.69 | 2121.68 | 431712.20 | 570166.75 | N 32 11 12.55 | W 104 14 24.51 |
| | 9300.00 | 90.40 | 359.82 | 7309.74 | 3918.54 | 2220.62 | 2218.14 | -122.73 | 0.00 | 356.83 | 2221.54 | 431812.19 | 570166.44 | N 32 11 13.54 | W 104 14 24.52 |
| | 9400.00 | 90.40 | 359.82 | 7309.05 | 3917.85 | 2320.59 | 2318.14 | -123.04 | 0.00 | 356.96 | 2321.40 | 431912.18 | 570166.13 | N 32 11 14.53 | W 104 14 24.52 |
| | 9500.00 | 90.40 | 359.82 | 7308.35 | 3917.15 | 2420.56 | 2418.14 | -123.35 | 0.00 | 357.08 | 2421.28 | 432012.16 | 570165.83 | N 32 11 15.52 | W 104 14 24.52 |
| | 9600.00 | 90.40 | 359.82 | 7307.66 | 3916.46 | 2520.53 | 2518.13 | -123.65 | 0.00 | 357.19 | 2521.17 | 432112.15 | 570165.52 | N 32 11 16.51 | W 104 14 24.52 |
| | 9700.00 | 90.40 | 359.82 | 7306.96 | 3915.76 | 2620.50 | 2618.13 | -123.96 | 0.00 | 357.29 | 2621.06 | 432212.14 | 570165.21 | N 32 11 17.50 | W 104 14 24.53 |
| | 9800.00 | 90.40 | 359.82 | 7306.27 | 3915.07 | 2720.47 | 2718.13 | -124.27 | 0.00 | 357.38 | 2720.97 | 432312.13 | 570164.90 | N 32 11 18.49 | W 104 14 24.53 |
| | 9900.00 | 90.40 | 359.82 | 7305.58 | 3914.38 | 2820.44 | 2818.13 | -124.58 | 0.00 | 357.47 | 2820.88 | 432412.12 | 570164.59 | N 32 11 19.48 | W 104 14 24.53 |
| | 10000.00 | 90.40 | 359.82 | 7304.88 | 3913.68 | 2920.41 | 2918.12 | -124.89 | 0.00 | 357.55 | 2920.79 | 432512.10 | 570164.28 | N 32 11 20.47 | W 104 14 24.53 |
| | 10100.00 | 90.40 | 359.82 | 7304.19 | 3912.99 | 3020.38 | 3018.12 | -125.20 | 0.00 | 357.62 | 3020.71 | 432612.09 | 570163.98 | N 32 11 21.46 | W 104 14 24.54 |
| | 10200.00 | 90.40 | 359.82 | 7303.49 | 3912.29 | 3120.35 | 3118.12 | -125.50 | 0.00 | 357.70 | 3120.64 | 432712.08 | 570163.67 | N 32 11 22.45 | W 104 14 24.54 |
| | 10300.00 | 90.40 | 359.82 | 7302.80 | 3911.60 | 3220.32 | 3218.11 | -125.81 | 0.00 | 357.76 | 3220.57 | 432812.07 | 570163.36 | N 32 11 23.44 | W 104 14 24.54 |
| | 10400.00 | 90.40 | 359.82 | 7302.10 | 3910.90 | 3320.29 | 3318.11 | -126.12 | 0.00 | 357.82 | 3320.51 | 432912.06 | 570163.05 | N 32 11 24.43 | W 104 14 24.54 |
| | 10500.00 | 90.40 | 359.82 | 7301.41 | 3910.21 | 3420.26 | 3418.11 | -126.43 | 0.00 | 357.88 | 3420.45 | 433012.04 | 570162.74 | N 32 11 25.42 | W 104 14 24.55 |
| | 10600.00 | 90.40 | 359.82 | 7300.72 | 3909.52 | 3520.23 | 3518.10 | -126.74 | 0.00 | 357.94 | 3520.39 | 433112.03 | 570162.43 | N 32 11 26.41 | W 104 14 24.55 |
| | 10700.00 | 90.40 | 359.82 | 7300.02 | 3908.82 | 3620.20 | 3618.10 | -127.05 | 0.00 | 357.99 | 3620.33 | 433212.02 | 570162.13 | N 32 11 27.39 | W 104 14 24.55 |
| | 10800.00 | 90.40 | 359.82 | 7299.33 | 3908.13 | 3720.17 | 3718.10 | -127.35 | 0.00 | 358.04 | 3720.28 | 433312.01 | 570161.82 | N 32 11 28.38 | W 104 14 24.56 |
| | 10900.00 | 90.40 | 359.82 | 7298.63 | 3907.43 | 3820.14 | 3818.10 | -127.66 | 0.00 | 358.08 | 3820.23 | 433412.00 | 570161.51 | N 32 11 29.37 | W 104 14 24.56 |
| | 11000.00 | 90.40 | 359.82 | 7297.94 | 3906.74 | 3920.11 | 3918.09 | -127.97 | 0.00 | 358.13 | 3920.18 | 433511.98 | 570161.20 | N 32 11 30.36 | W 104 14 24.56 |
| | 11100.00 | 90.40 | 359.82 | 7297.24 | 3906.04 | 4020.08 | 4018.09 | -128.28 | 0.00 | 358.17 | 4020.14 | 433611.97 | 570160.89 | N 32 11 31.35 | W 104 14 24.56 |
| | 11200.00 | 90.40 | 359.82 | 7296.55 | 3905.35 | 4120.05 | 4118.09 | -128.59 | 0.00 | 358.21 | 4120.09 | 433711.96 | 570160.58 | N 32 11 32.34 | W 104 14 24.57 |
| | 11300.00 | 90.40 | 359.82 | 7295.86 | 3904.66 | 4220.02 | 4218.08 | -128.90 | 0.00 | 358.25 | 4220.05 | 433811.95 | 570160.28 | N 32 11 33.33 | W 104 14 24.57 |
| | 11400.00 | 90.40 | 359.82 | 7295.16 | 3903.96 | 4319.99 | 4318.08 | -129.20 | 0.00 | 358.29 | 4320.01 | 433911.93 | 570159.97 | N 32 11 34.32 | W 104 14 24.57 |
| | 11500.00 | 90.40 | 359.82 | 7294.47 | 3903.27 | 4419.96 | 4418.08 | -129.51 | 0.00 | 358.32 | 4419.98 | 434011.92 | 570159.66 | N 32 11 35.31 | W 104 14 24.57 |
| | 11600.00 | 90.40 | 359.82 | 7293.77 | 3902.57 | 4519.93 | 4518.08 | -129.82 | 0.00 | 358.35 | 4519.94 | 434111.91 | 570159.35 | N 32 11 36.30 | W 104 14 24.58 |
| | 11700.00 | 90.40 | 359.82 | 7293.08 | 3901.88 | 4619.90 | 4618.07 | -130.13 | 0.00 | 358.39 | 4619.91 | 434211.90 | 570159.04 | N 32 11 37.29 | W 104 14 24.58 |
| | 11800.00 | 90.40 | 359.82 | 7292.38 | 3901.18 | 4719.87 | 4718.07 | -130.44 | 0.00 | 358.42 | 4719.87 | 434311.89 | 570158.73 | N 32 11 38.28 | W 104 14 24.58 |
| | 11900.00 | 90.40 | 359.82 | 7291.69 | 3900.49 | 4819.84 | 4818.07 | -130.75 | 0.00 | 358.45 | 4819.84 | 434411.87 | 570158.43 | N 32 11 39.27 | W 104 14 24.58 |
| PBHL: 660'FEL 330'FNL | 11999.33 | 90.40 | 359.82 | 7291.00 | 3899.80 | 4919.14 | 4917.39 | -131.05 | 0.00 | 358.47 | 4919.14 | 434511.19 | 570158.12 | N 32 11 40.25 | W 104 14 24.59 |

**Survey Type:** Non-Def Plan

**Survey Error Model:** ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

**Survey Program:**

| Description | Part | MD From (ft) | MD To (ft) | EOU Freq (ft) | Hole Size (in) | Casing Diameter (in) | Survey Tool Type | Borehole / Survey |
|---|---|---|---|---|---|---|---|---|
| | 1 | 0.000 | 11999.328 | 1/100.000 | 30.000 | 30.000 | SLB_MWD-STD | Original Borehole / Cimarex Black River 25 Fed Com 4H Rev1 mcs |

# Drilling 12-1/4" hole below 13 3/8" Casing

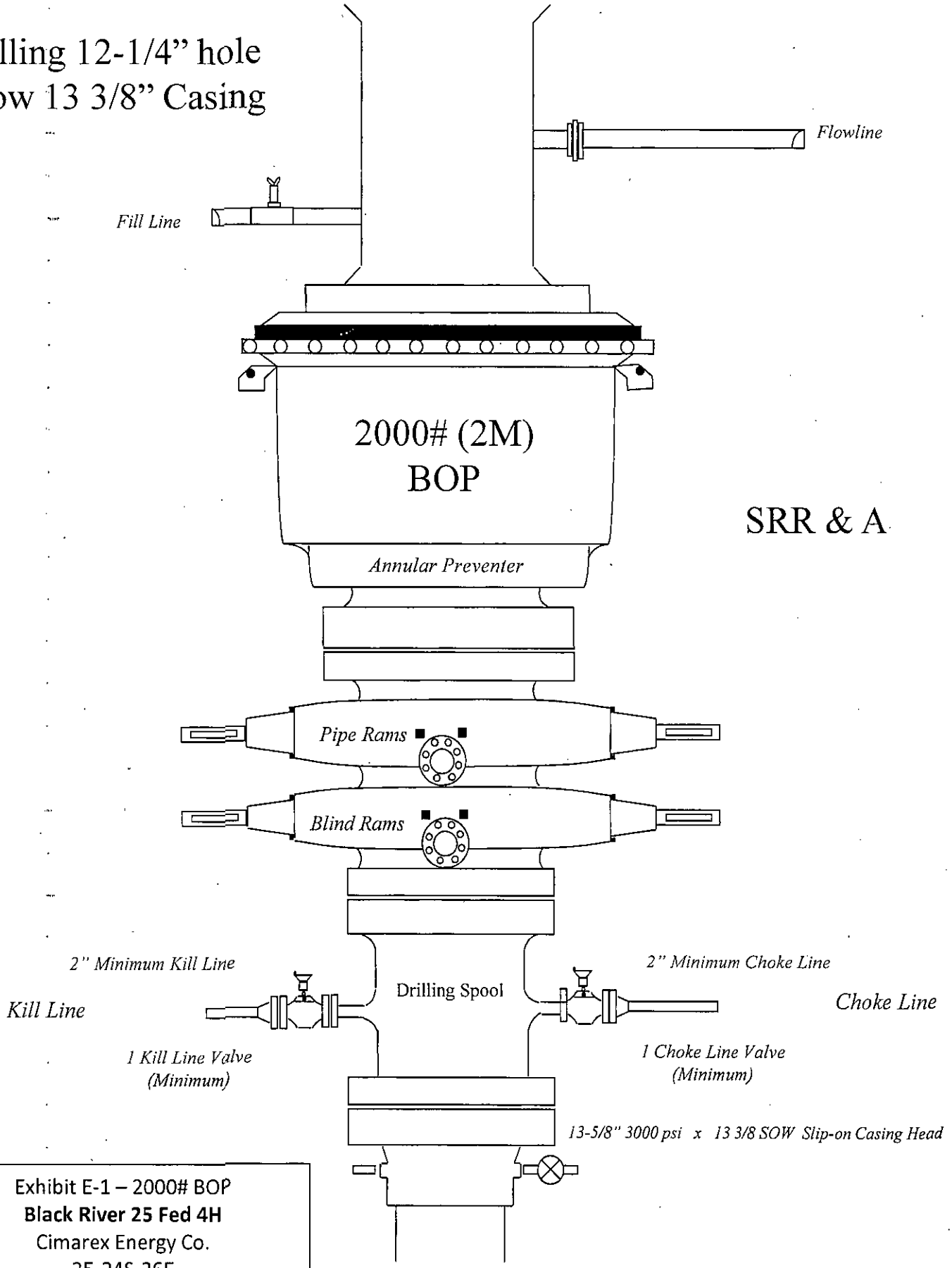
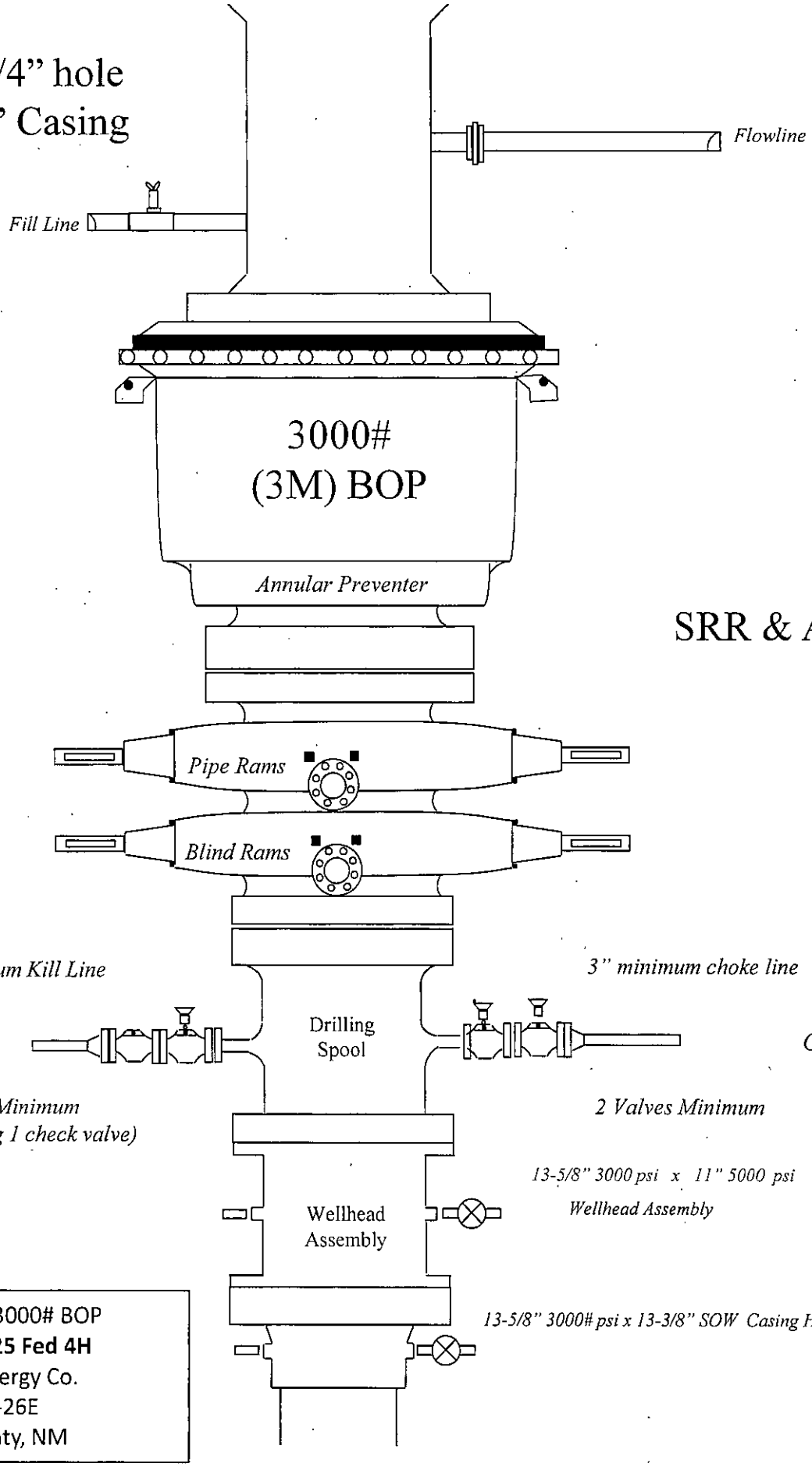


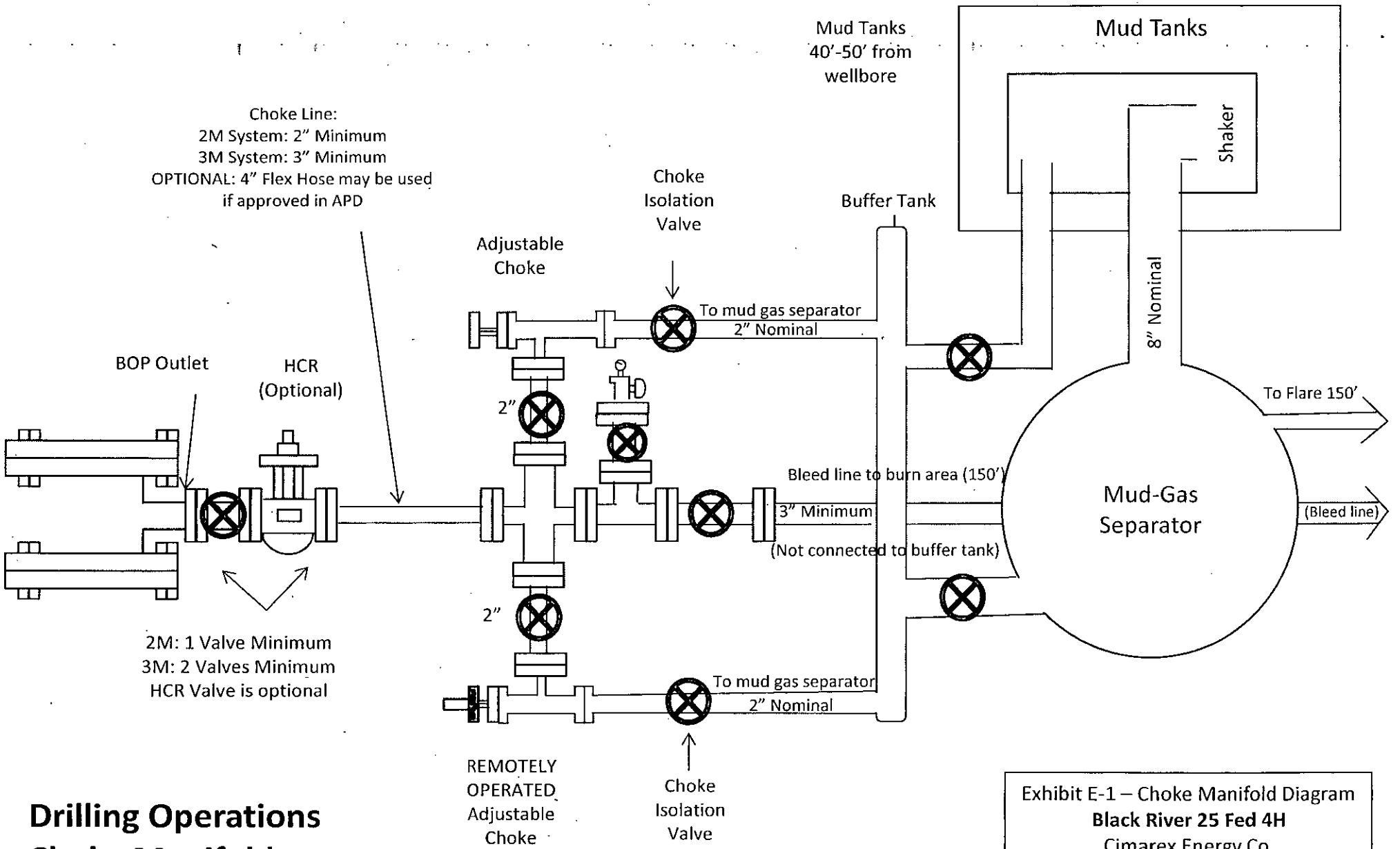

Exhibit E-1 – 2000# BOP
**Black River 25 Fed 4H**
Cimarex Energy Co.
25-24S-26E
Eddy County, NM

# Drilling 8-3/4" hole below 9 5/8" Casing




SRR & A

Exhibit E-1 – 3000# BOP
**Black River 25 Fed 4H**
Cimarex Energy Co.
25-24S-26E
Eddy County, NM




# Drilling Operations
# Choke Manifold
# 2M/3M Service

Exhibit E-1 – Choke Manifold Diagram
**Black River 25 Fed 4H**
Cimarex Energy Co.
25-24S-26E
Eddy County, NM

Exhibit F – Co-Flex Hose

**Black River 25 Fed 4H**

Cimarex Energy Co.

25-24S-26E

Eddy County, NM

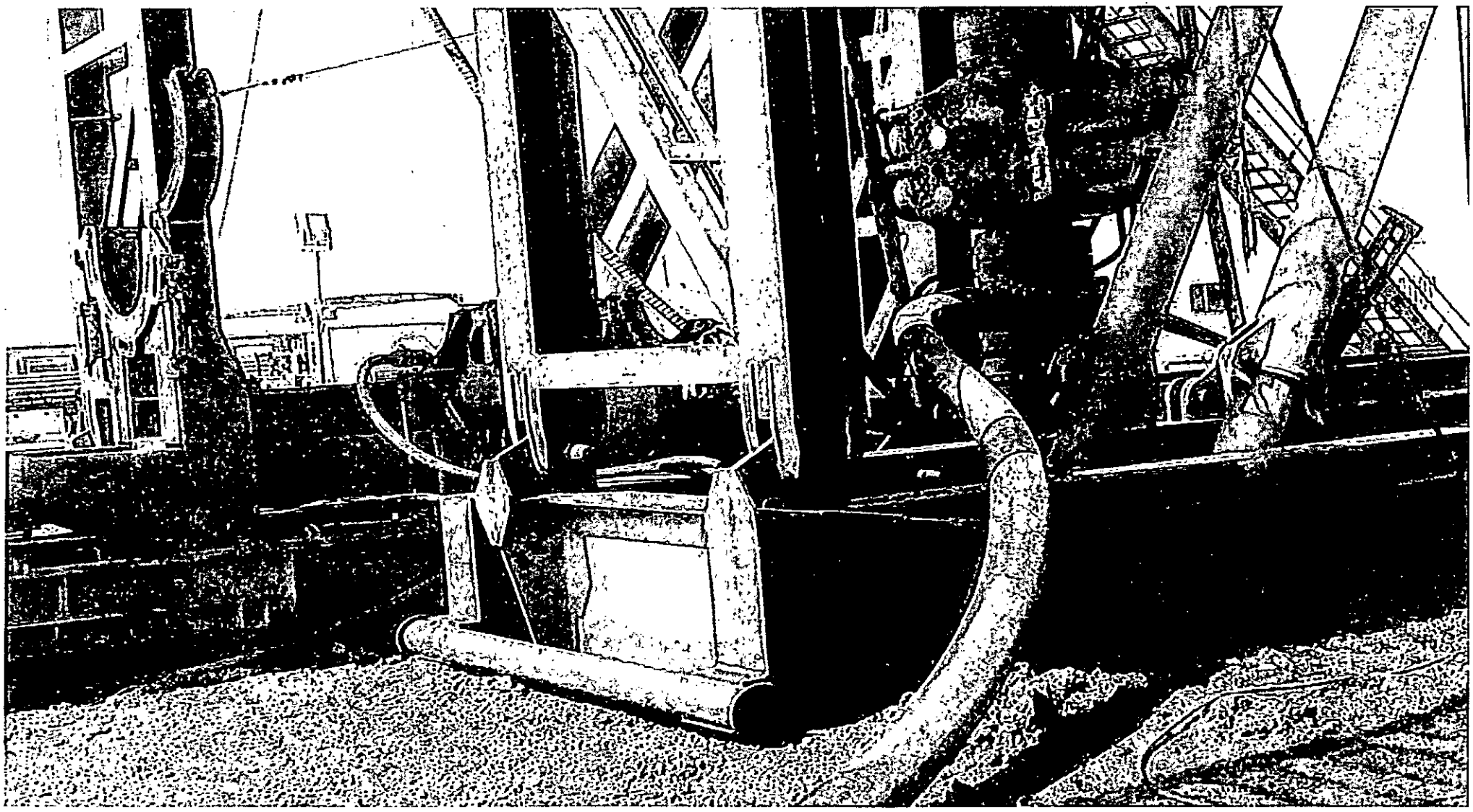


Exhibit F-1 – Co-Flex Hose Hydrostatic Test
**Black River 25 Fed 4H**
Cimarex Energy Co.
25-24S-26E
Eddy County, NM

Midwest Hose
& Specialty, Inc.

# INTERNAL HYDROSTATIC TEST REPORT

| Customer: | P.O. Number: |
|---|---|
| Oderco Inc | odyd-271 |

## HOSE SPECIFICATIONS

| Type: | Hose Length: |
|---|---|
| Stainless Steel Armor Choke & Kill Hose | 45'ft. |

| I.D. | O.D. |
|---|---|
| 4 INCHES | 9 INCHES |

| WORKING PRESSURE | TEST PRESSURE | BURST PRESSURE |
|---|---|---|
| 10,000 PSI | 15,000 PSI | 0 PSI |

## COUPLINGS

| Stem Part No. | Ferrule No. |
|---|---|
| OKC<br>OKC | OKC<br>OKC |
| **Type of Coupling:** | |
| Swage-It | |

## PROCEDURE

*Hose assembly pressure tested with water at ambient temperature.*

| TIME HELD AT TEST PRESSURE | ACTUAL BURST PRESSURE: |
|---|---|
| 15 MIN. | 0 PSI |

| Hose Assembly Serial Number: | Hose Serial Number: |
|---|---|
| 79793 | OKC |

**Comments:**

| Date: | Tested: | Approved: |
|---|---|---|
| 3/8/2011 | A. Jaime Jaime | |

Exhibit F-1 – Co-Flex Hose Hydrostatic Test

**Black River 25 Fed 4H**

Cimarex Energy Co.

25-24S-26E

Eddy County, NM

Exhibit F-2 – Co-Flex Hose
**Black River 25 Fed 4H**
Cimarex Energy Co.
25-24S-26E
Eddy County, NM

Midwest Hose
& Specialty, Inc.

## Certificate of Conformity

| Customer: | PO |
|---|---|
| DEM | ODYD-271 |

**SPECIFICATIONS**

| Sales Order | Dated: |
|---|---|
| 79793 | 3/8/2011 |

We hereby cerify that the material supplied for the referenced purchase order to be true according to the requirements of the purchase order and current industry standards

Supplier:
Midwest Hose & Specialty, Inc.
10640 Tanner Road
Houston, Texas 77041

**Comments:**

| Approved: | Date: |
|---|---|
| [signature] | 3/8/2011 |

Midwest Hose & Specialty, Inc.

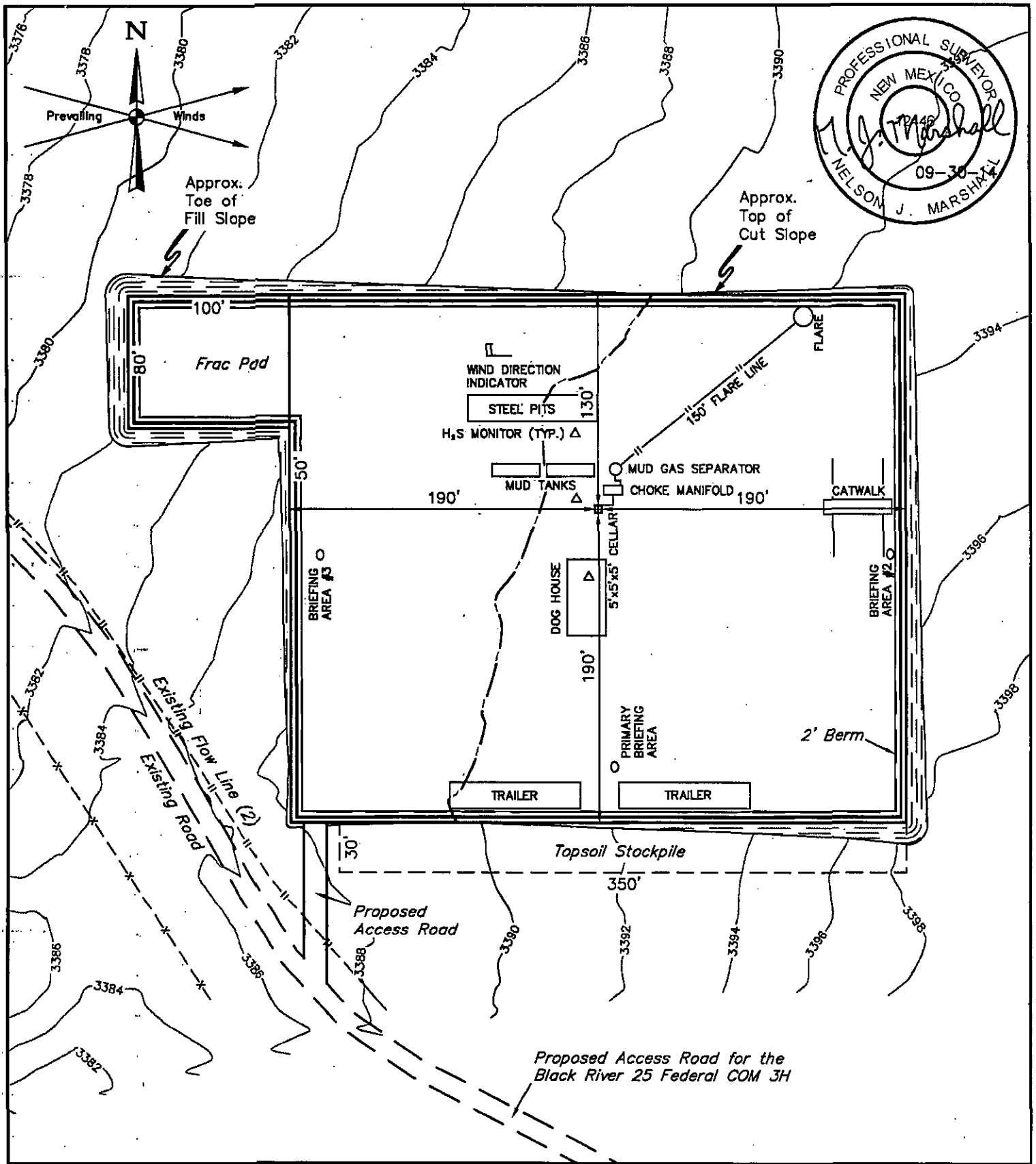
Exhibit F -3-- Co-Flex Hose
**Black River 25 Fed 4H**
Cimarex Energy Co.
25-24S-26E
Eddy County, NM

# Specification Sheet
# Choke & Kill Hose

The Midwest Hose & Specialty Choke & Kill hose is manufactured with only premium componets.The reinforcement cables, inner liner and cover are made of the highest quality material to handle the tough drilling applications of today's industry. The end connections are available with API flanges, API male threads, hubs, hammer unions or other special fittings upon request. Hose assembly is manufactured to API 7K. This assembly is wrapped with fire resistant vermculite coated fiberglass insulation, rated at 2000 degrees with stainless steel armor cover.

| | |
|---|---|
| **Working Pressure:** | 5,000 or 10,000 psi working pressure |
| **Test Pressure:** | 10,000 or 15,000 psi test pressure |
| **Reinforcement:** | Multiple steel cables |
| **Cover:** | Stainless Steel Armor |
| **Inner Tube:** | Petroleum resistant, Abrasion resistant |
| **End Fitting:** | API flanges, API male threads, threaded or butt weld hammer unions, unibolt and other special connections |
| **Maximum Length:** | 110 Feet |
| **ID:** | 2-1/2", 3", 3-1/2", 4" |
| **Operating Temperature:** | -22 deg F to +180 deg F (-30 deg C to +82 deg C) |

P.O. Box 96558 – 1421 S.E. 29th St. Oklahoma City, OK 73143 * (405) 670-6718 * Fax: (405) 670-6816




NOTES:

- Flare pit is to be located a min. of 160' from the wellhead.
- Construct 2' high berm around pad location.
- Contours shown at 2' intervals.

## CIMAREX ENERGY

**BLACK RIVER 25 FEDERAL 4H**
**SECTION 25, T24S, R26E, N.M.P.M.**
**50' FSL 544' FEL**


UINTAH ENGINEERING & LAND SURVEYING

**UELS, LLC**
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017


| | |
|---|---|
| DRAWN BY: S.F. | DATE DRAWN: 09-03-14 |
| SCALE: 1" = 80' | REVISED: 00-00-00 |

**TYPICAL RIG LAYOUT** | **EXHIBIT D**

Hydrogen Sulfide Drilling Operations Plan
**Black River 25 Federal 4H**
Cimarex Energy Co.
UL: P, Sec. 25, 24S, 26E
Eddy Co., NM

1 All Company and Contract personnel admitted on location must be trained by a qualified H2S safety instructor to the following:
   A. Characteristics of $H_2S$
   B. Physical effects and hazards
   C. Principal and operation of H2S detectors, warning system and briefing areas.
   D. Evacuation procedure, routes and first aid.
   E. Proper use of safety equipment & life support systems
   F. Essential personnel meeting Medical Evaluation criteria will receive additional training on the proper use of 30 minute pressure demand air packs.

2 $H_2S$ Detection and Alarm Systems:
   A. H2S sensors/detectors to be located on the drilling rig floor, in the base of the sub structure/cellar area, on the mud pits in the shale shaker area. Additional H2S detectors may play placed as deemed necessary.
   B. An audio alarm system will be installed on the derrick floor and in the top doghouse.

3 Windsock and/or wind streamers:
   A. Windsock at mudpit area should be high enough to be visible.
   B. Windsock on the rig floor and / or top doghouse should be high enough to be visible.

4 Condition Flags and Signs
   A. Warning sign on access road to location.
   B. Flags to be displayed on sign at entrance to location. Green flag indicates normal safe condition. Yellow flag indicates potential pressure and danger. Red flag indicates danger ($H_2S$ present in dangerous concentration). Only H2S trained and certified personnel admitted to location.

5 Well control equipment:
   A. See exhibit "E-1"

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

7 Drillstem Testing:
No DSTs r cores are planned at this time.

8 Drilling contractor supervisor will be required to be familiar with the effects $H_2S$ has on tubular goods and other mechanical equipment.

9 If H2S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H2S scavengers if necessary.

$H_2S$ Contingency Plan
**Black River 25 Federal 4H**
Cimarex Energy Co.
UL: P, Sec. 25, 24S, 26E
Eddy Co., NM

**Emergency Procedures**

In the event of a release of gas containing $H_2S$, the first responder(s) must:

- « Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- « Evacuate any public places encompassed by the 100 ppm ROE.
- « Be equipped with $H_2S$ monitors and air packs in order to control the release.
- « Use the "buddy system" to ensure no injuries occur during the response.
- « Take precautions to avoid personal injury during this operation.
- « Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
- « Have received training in the:
  - Detection of $H_2S$, and
  - Measures for protection against the gas,
  - Equipment used for protection and emergency response.

**Ignition of Gas Source**

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide ($SO_2$). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas.

**Characteristics of $H_2S$ and $SO_2$**

Please see attached International Chemical Safety Cards.

**Contacting Authorities**

Cimarex Energy Co. of Colorado's personnel must liaise with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. Cimarex Energy Co. of Colorado's response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMER).

$H_2S$ Contingency Plan Emergency Contacts

**Black River 25 Federal 4H**

Cimarex Energy Co.

UL: P, Sec. 25, 24S, 26E

Eddy Co., NM

| **Company Office** | | | |
|---|---|---|---|
| Cimarex Energy Co. of Colorado | | 800-969-4789 | |
| Co. Office and After-Hours Menu | | | |

| **Key Personnel** | | | |
|---|---|---|---|
| **Name** | **Title** | **Office** | **Mobile** |
| Larry Seigrist | Drilling Manager | 432-620-1934 | 580-243-8485 |
| Doug McQuitty | Drilling Superintendent | 432-620-1933 | 806-640-2605 |
| Scott Lucas | Drilling Superintendent | 432-620-1989 | 432-894-5572 |
| Roy Shirley | Construction Superintendent | | 432-634-2136 |

| **Artesia** | |
|---|---|
| Ambulance | 911 |
| State Police | 575-746-2703 |
| City Police | 575-746-2703 |
| Sheriff's Office | 575-746-9888 |
| **Fire Department** | **575-746-2701** |
| Local Emergency Planning Committee | 575-746-2122 |
| New Mexico Oil Conservation Division | 575-748-1283 |

| **Carlsbad** | |
|---|---|
| Ambulance | 911 |
| State Police | 575-885-3137 |
| City Police | 575-885-2111 |
| Sheriff's Office | 575-887-7551 |
| **Fire Department** | **575-887-3798** |
| Local Emergency Planning Committee | 575-887-6544 |
| US Bureau of Land Management | 575-887-6544 |

| **Santa Fe** | |
|---|---|
| New Mexico Emergency Response Commission (Santa Fe) | 505-476-9600 |
| New Mexico Emergency Response Commission (Santa Fe) 24 Hrs | 505-827-9126 |
| New Mexico State Emergency Operations Center | 505-476-9635 |

| **National** | |
|---|---|
| National Emergency Response Center (Washington, D.C.) | 800-424-8802 |

| **Medical** | |
|---|---|
| Flight for Life - 4000 24th St.; Lubbock, TX | 806-743-9911 |
| Aerocare - R3, Box 49F; Lubbock, TX | 806-747-8923 |
| Med Flight Air Amb - 2301 Yale Blvd S.E., #D3; Albuquerque, NM | 505-842-4433 |
| SB Air Med Service - 2505 Clark Carr Loop S.E.; Albuquerque, NM | 505-842-4949 |

| **Other** | | | |
|---|---|---|---|
| Boots & Coots IWC | 800-256-9688 | or | 281-931-8884 |
| Cudd Pressure Control | 432-699-0139 | or | 432-563-3356 |
| Halliburton | 575-746-2757 | | |
| B.J. Services | 575-746-3569 | | |

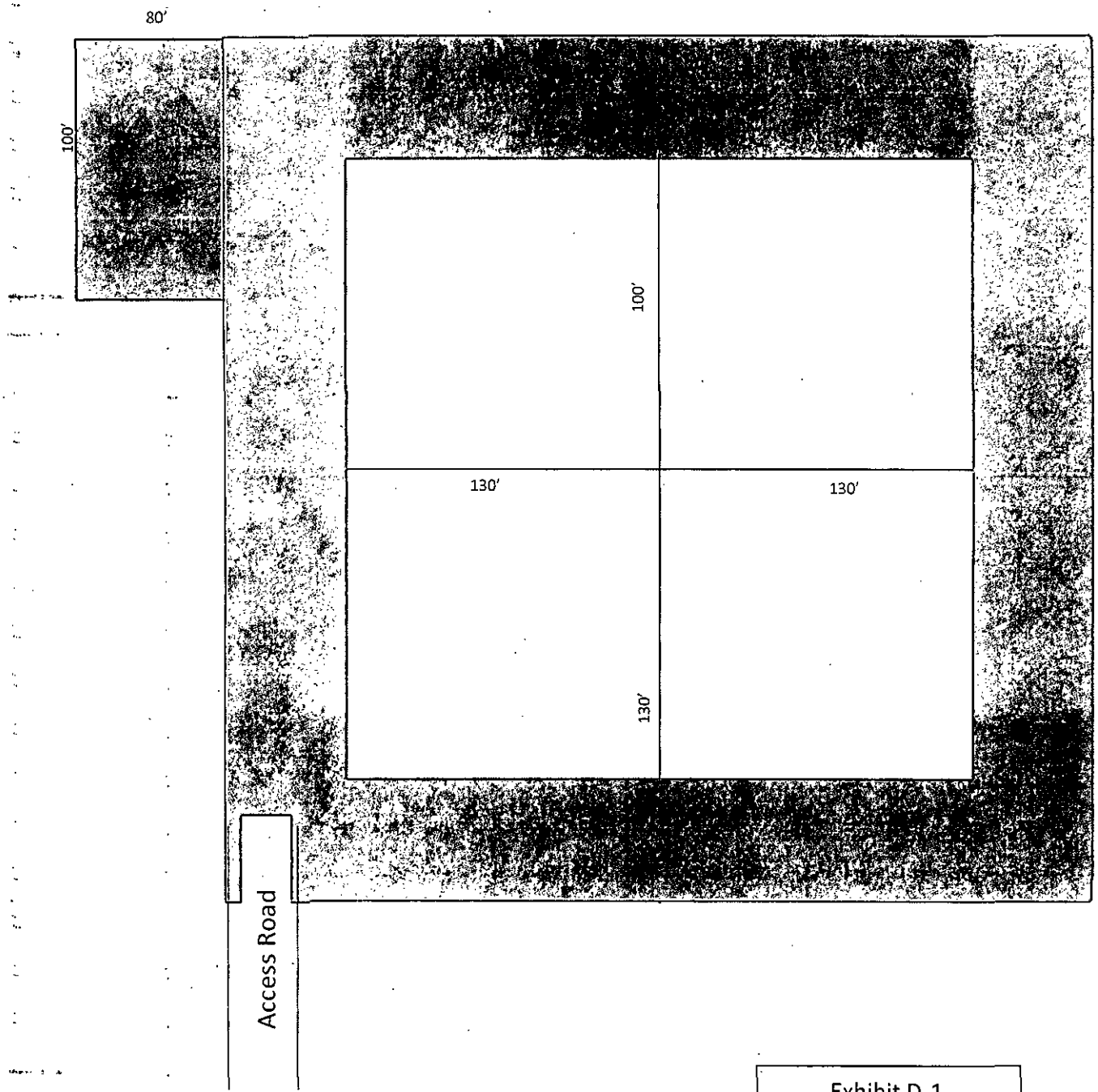



Exhibit D-1
Interim Reclamation
**Black River 25 Fed 4H**
Cimarex Energy Co.
25-24S-26E
Eddy County, NM

Surface Use Plan
**Black River 25 Fed #4H**
Cimarex Energy Co.
UL: P, Sec. 25, 24S, 26E
Eddy Co., NM

The following surface use plan of operations will be followed and carried out once the APD is approved. No other disturbance will be created other than what is submitted in this surface use plan without approval. If any other disturbance is needed after the APD is approved, a BLM approved sundry notice or right of way application will be submitted for approval prior to any new surface disturbance.

**1. Existing Roads:**

Area access roads and general road maps:

- Exhibit B: General Highway Map
- Exhibit C: USGS Topographic Map
- Exhibit C-1: Public Access Road Map
- Exhibit C-2: Existing and proposed access roads plat

The maximum width of the driving surface will be 14.' The road will be crowned and ditched with a 2% slope from the tip of the crown to the edge of the driving surface. The ditches will be 1' deep with 3:1 slopes. The driving surface will be made of 6" rolled and compacted caliche.

Existing access road route to the proposed project is depicted on the public access point map if applicable. Improvements to the driving surface will be done where necessary. No new surface disturbance will be done, unless otherwiswe noted in the New or Reconstructed Access Roads section of the surface use plan.

BEGINNING AT THE INTERSECTION OF OLD CAVERN HIGHWAY/CR 748 AND HIGHWAY 720 LOCATED IN THE SE 1/4 OF SECTION 6, T24S, R27E, N.M.P.M. PROCEED IN A SOUTHERLY DIRECTION APPROXIMATELY 3.9 MILES TO THE BEGINNING OF THE PROPOSED ACCESS FOR THE BLACK RIVER 25 FEDERAL COM 3H WELL PAD TO THE WEST; FOLLOW ROAD FLAGS IN A WESTERLY, THEN NORTHWESTERLY DIRECTION APPROXIMATELY 6162' TO THE BEGINNING OF THE PROPOSED ACCESS TO THE NORTH; FOLLOW ROAD FLAGS IN A NORTHERLY DIRECTION APPROXIMATELY 99' TO THE PROPOSED LOCATION.

If existing roads are used, the operator will improve or maintain existing roads in a condition the same as or better than before the operations began. The operator will repair pot holes, etc. All existing structures on the entire access route such as cattleguards, other range improvement projects, culverts, etc. will be properly repaired or replaced if they are damaged or have deterioated beyond practical use.

The operator will prevent and abate fugitive dust as needed, whether created by vehicular traffic, equipment operations, or other events. The operator will obtain written BLM approval prior to the application of surfactants, binding agents, or other dust suppression chemicals on the roadways.

**2. New of Reconstructed Access Roads:**

A new road will be constructed for this project.
Cimarex Energy plans to construct 99' of new on-lease access road to service the well. The planned access road does not cross lease boundaries, a right of way grant will not be acquired from the BLM.
The maximum width of the driving surface will be 14'. The road will be crowned and ditched with a 2% slope from the tip of the crown to the edge of the driving surface. The ditches will be 1' deep with 3:1 slopes. The driving surface will be made of 6" rolled and compacted caliche.
Proposed and existing access road route to the proposed wellsite is depicted on Exhibit C-2. Improvements to the driving surface will be done where necessary. No new surface disturbance will be done without prior approval from the BLM.
The operator will prevent and abate fugitive dust as needed, whether created by vehicular traffic, equipment operations, or other events.

Surface Use Plan
**Black River 25 Fed #4H**
Cimarex Energy Co.
UL: P, Sec. 25, 24S, 26E
Eddy Co., NM

The following surface use plan of operations will be followed and carried out once the APD is approved. No other disturbance will be created other than what is submitted in this surface use plan without approval. If any other disturbance is needed after the APD is approved, a BLM approved sundry notice or right of way application will be submitted for approval prior to any new surface disturbance.

**1. Existing Roads:**

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- Exhibit B: General Highway Map
- Exhibit C: USGS Topographic Map
- Exhibit C-1: Public Access Road Map
- Exhibit C-2: Existing and proposed access roads plat

The maximum width of the driving surface will be 14.' The road will be crowned and ditched with a 2% slope from the tip of the crown to the edge of the driving surface. The ditches will be 1' deep with 3:1 slopes. The driving surface will be made of 6" rolled and compacted caliche.

Existing access road route to the proposed project is depicted on the public access point map if applicable. Improvements to the driving surface will be done where necessary. No new surface disturbance will be done, unless otherwiswe noted in the New or Reconstructed Access Roads section of the surface use plan.

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The maximum width of the driving surface will be 14'. The road will be crowned and ditched with a 2% slope from the tip of the crown to the edge of the driving surface. The ditches will be 1' deep with 3:1 slopes. The driving surface will be made of 6" rolled and compacted caliche.
Proposed and existing access road route to the proposed wellsite is depicted on Exhibit C-2. Improvements to the driving surface will be done where necessary. No new surface disturbance will be done without prior approval from the BLM.
The operator will prevent and abate fugitive dust as needed, whether created by vehicular traffic, equipment operations, or other events.

**3. Planned Electric Line:**

No new electric lines are planned.

**4. Location of Existing Well in a One-Mile Radius -Exhibit A:**

- Water Wells - None known
- Disposal Wells - None known
- Drilling Wells - None known
- Producing Wells - As shown on Exhibit A
- Abandoned Wells - As shownd on Exhibit A

**5. Location of Existing or Proposed Production Facilities:**

If on completion this well is a producer, a tank battery will be used and the necessary production equipment will be installed and production will be sent to the Black River 25 Federal 3H. Cimarex Energy proposes to install two 4 inch buried HP polylines down existing lease road to the Black River 25 Federal 3H battery.

Cimarex Energy plans to construct on lease flowlines to service the well.

Specifications of Polyline: 1 HP polyline for oil, gas, and water production. 1 HP polyline for gas lift.

Both lines will be buried 10'-20' South of the access road.

Length: 761'

MAOP: 1500 psi. Anticipated working pressure: 200-300 psi.

Allocation will be based on well test. Route is on lease, please see Exhibit G-1. Any changes to on lease route will be submited via sundry notice. If route is off lease, a right of way will be submitted to the BLM for approval.

**6. Location and Type of Water Supply:**

Water will be purchased locally from a commercial source and trucked over the access roads.

**7. Source of Construction Material:**

If possible, native caliche will be obtained from the excavation of drill site. The primary way of obtaining caliche will be by "turning over" the location. This means caliche will be obtained from the actual well site. A caliche permit will be obtained from BLM prior to pushing up any caliche. 2400 cu yds is the max amount of caliche needed for pad and roads. Amount will vary for each pad. The procedure below has been approved by BLM personnel:

- The top 6 inches of topsoil is pushed off and stockpiled along the side of the location.
- An approximate 120' x 120' area is used within the proposed well site to remove caliche.
- Subsoil is removed and piled alongside the 120' by 120' area within the pad site.
- When caliche is found, material will be stockpiled within the pad site to build the location and road.
- Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road.
- Once well is drilled, the stockpiled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced. Neither caliche nor subsoil will be stockpiled outside of the well pad. Topsoil will be stockpiled along the edge of the pad as depicted in Exhibit D – Rig Layout Diagram.

In the event that no caliche is found onsite, caliche will be hauled in from a BLM-approved caliche pit.

**3. Planned Electric Line:**

No new electric lines are planned.

**4. Location of Existing Well in a One-Mile Radius -Exhibit A:**

- Water Wells - None known
- Disposal Wells - None known
- Drilling Wells - None known
- Producing Wells - As shown on Exhibit A
- Abandoned Wells - As shownd on Exhibit A

**5. Location of Existing or Proposed Production Facilities:**

If on completion this well is a producer, a tank battery will be used and the necessary production equipment will be installed and production will be sent to the Black River 25 Federal 3H. Cimarex Energy proposes to install two 4 inch buried HP polylines down existing lease road to the Black River 25 Federal 3H battery.

Cimarex Energy plans to construct on lease flowlines to service the well.

Specifications of Polyline: 1 HP polyline for oil, gas, and water production. 1 HP polyline for gas lift.

Both lines will be buried 25'-35' South of the access road.

Length: 761'

MAOP: 1500 psi. Anticipated working pressure: 200-300 psi.

Allocation will be based on well test. Route is on lease, please see Exhibit G-1. Any changes to on lease route will be submited via sundry notice. If route is off lease, a right of way will be submitted to the BLM for approval.

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Surface Use Plan
**Black River 25 Fed #4H**
Cimarex Energy Co.
UL: P, Sec. 25, 24S, 26E
Eddy Co., NM

**8. Methods of Handling Waste**

- Drilling fluids, produced oil, and water from the well during drilling and completion operations will be stored safely and disposed of properly in a NMOCD approved disposal facility.
- Garbage and trash produced during drilling and completion operations will be collected in a trash container and disposed of properly at a state approved disposal facility. All trash on and around well site will be collected for disposal.
- Human waste and grey water will be properly contained and disposed of properly at a state approved disposal site.
- After drilling and completion operations, trash, chemicals, salts, frac sand and other waste will be removed and disposed of properly at a state approved disposal site.
- The well will be drilled utilizing a closed loop system. Drill cuttings will be properly disposed of into steel tanks and taken to an NMOCD approved disposal facility.

**9. Ancillary Facilities:**

No camps or airstrips to be constructed.

**10. Well Site Layout:**

- Exhibit D: Rig Layout
- Exhibit D-2: Well Site layout plat
- Mud pits in the closed circulation system will be steel pits and the cuttings will be stored in steel containment pits.
- Cuttings will be stored in steel pits until they are hauled to a state-approved disposal facility.
- If the well is a producer, those areas of the location not essential to production facilities will be reclaimed and seeded per BLM requirements. Exhibit D-1: Interim Reclamation Diagram.

**11. Plans for Restoration of Surface:**

Rehabilitation of the location will start in a timely manner after all drilling operations cease. The type of reclamation will depend on whether the well is a producer or a dry hole.

In areas planned for interim and final reclamation, surfacing materials will be removed and returned to a mineral pit or recycled to repair or build roads and well pads.

Drainage systems, if any, will be reshaped to the original configuration with provisions made to alleviate erosion. These may need to be modified in certain circumstances to prevent inundation of the location's pad and surface facilities. After the area has been shaped and contoured, topsoil from the spoil pile will be placed over the disturbed area to the extent possible. Revegetation procedures will comply with BLM standards.

If the well is a dry hole, the pad and road area will be recountoured to match the existing terrain. Topsoil will be spread to the extent possible. Revegetation will comply with BLM standards.

Should the well be a producer, those areas of the location not essential to porduction facilities and operations will be reclaimed and seeded per BLM requirements. Exhibit D-1 illustrates the proposed Interim Reclamation.

**12. Other Information:**

- Topography consists of a sloping plane with loose tan sands. Vegetation is mainly yucca, mesquite and shin oak.
- Archeological survey will be conducted for the well pad/location and proposed road and the arch report will be filed with the BLM.
- There are no known dwellings within 1½ miles of this location.

**13. On Site Notes and Information:**

Onsite with BLM (Jesse Rice and Steve Daly), Lone Mountain Archaeology, Grazing Lease holder (Lisa Ogden), Barry Hunt and Randall Kirkes on August 19, 2014. : All of the wells were moved south and east due to the close proximity to Black River and the numerous drainage systems to the river. V-Door East. Frac pad Northwest corner (west). Top soil south. Interim reclamation: All sides. Berm to be constructed around entire pad. Access road from southwest corner, south to existing lease road (almost touches the road at SW corner).

**14. Surface Ownership:**

The wellsite is on surface owned by Bureau of Land Management, , . A copy of Surface Use Agreement has been given to the surface owner. The land is used mainly for farming, cattle ranching, recreational use, and oil and gas production.

Surface Use Plan
**Black River 25 Fed #4H**
Cimarex Energy Co.
UL: P, Sec. 25, 24S, 26E
Eddy Co., NM

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Operator Certification Statement
**Black River 25 Fed #4H**
Cimarex Energy Co.
UL: P, Sec. 25, 24S, 26E
Eddy Co., NM

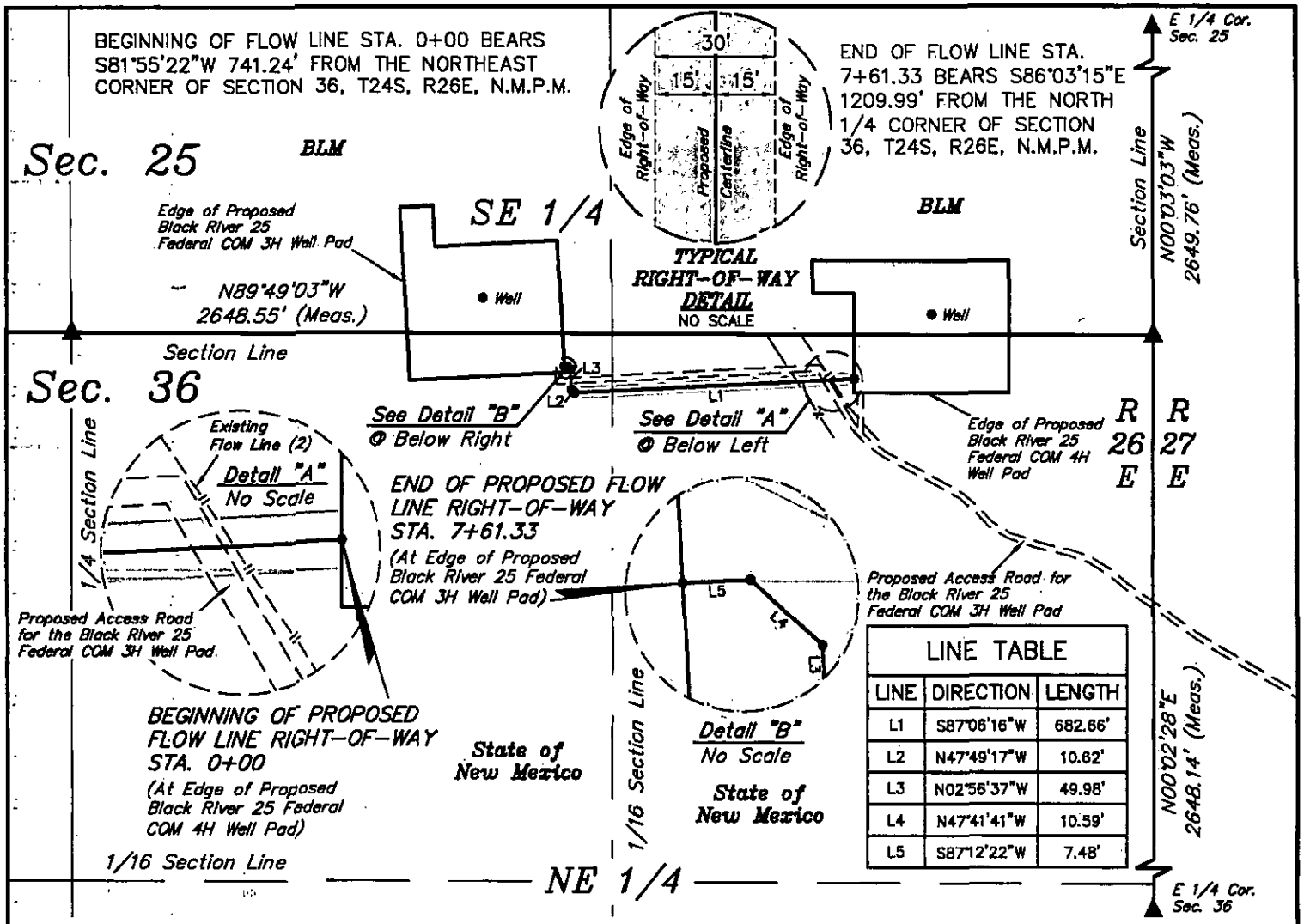
Operator's Representative
Cimarex Energy Co. of Colorado
600 N. Marienfeld St., Ste. 600
Midland, TX 79701
Office Phone: (432) 571-7800

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

I am responsible under the terms and conditions of the lease to conduct lease operations in conjunction with the application. Bond coverage pursuant to 43, 25 or 36 CFR for lease activities is being provided by Cimarex Energy Co. under their (Lease, Statewide, Nationwide, Unit or Permit) Bond, BLM/BIA/FS Bond No. NMB001188.

Executed this 8 day of December, 2014

**NAME:** Aricka Easterling
Aricka Easterling
**TITLE:** Regulatory Compliance
**ADDRESS:** 202 S. Cheyenne Ave., Ste 1000, Tulsa, OK 74103
**TELEPHONE:** 918-585-1100
**EMAIL:** AEasterling@cimarex.com
**Field Representative:** Same as above




| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L1 | S87°06'16"W | 682.66' |
| L2 | N47°49'17"W | 10.62' |
| L3 | N02°56'37"W | 49.98' |
| L4 | N47°41'41"W | 10.59' |
| L5 | S87°12'22"W | 7.48' |

## FLOW LINE RIGHT-OF-WAY DESCRIPTION

A 30' WIDE RIGHT-OF-WAY 15' ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE.

BEGINNING AT A POINT IN THE NE 1/4 NE 1/4 OF SECTION 36, T24S, R26E, N.M.P.M., WHICH BEARS S81°55'22"W 741.24' FROM THE NORTHEAST CORNER OF SAID SECTION 36, THENCE S87°06'16"W 682.66'; THENCE N47°49'17"W 10.62'; THENCE N02°56'37"W 49.98'; THENCE N47°41'41"W 10.59'; THENCE S87°12'22"W 7.48' TO A POINT IN THE NW 1/4 NE 1/4 OF SAID SECTION 36, WHICH BEARS S86°03'15"E 1209.99' FROM THE NORTH 1/4 CORNER OF SAID SECTION 36. THE SIDE LINES OF SAID DESCRIBED RIGHT-OF-WAY BEING SHORTENED OR ELONGATED TO MEET THE GRANTOR'S PROPERTY LINES. BASIS OF BEARINGS IS A G.P.S. OBSERVATION. CONTAINS 0.524 ACRES MORE OR LESS.

| RIGHT-OF-WAY LENGTHS | | | |
|---|---|---|---|
| PROPERTY OWNER | FEET | ACRES | RODS |
| , STATE OF NEW MEXICO NE 1/4 NE 1/4 | 591.25 | 0.407 | 35.83 |
| STATE OF NEW MEXICO NW 1/4 NE 1/4 | 170.08 | 0.117 | 10.31 |
| TOTAL | 761.33 | 0.524 | 46.14 |

400' 200' 0' 400'

▲ = SECTION CORNERS LOCATED.

CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

NEW MEXICO 12446 PROFESSIONAL SURVEYOR

12446

REGISTERED LAND SURVEYOR
REGISTRATION NO. 12446
STATE OF NEW MEXICO

09-30-14

NOTES:

N

**CIMAREX ENERGY CO.**

**BLACK RIVER 25 FEDERAL 4H**
**SECTION 25, T24S, R26E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

| | |
|---|---|
| DRAWN BY: S.F. | DATE DRAWN: 09-03-14 |
| SCALE: 1" = 400' | REVISED: 00-00-00 |
| **FLOW LINE R-O-W** | **EXHIBIT G-1** |

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

BEGINNING AT THE INTERSECTION OF OLD CAVERN HIGHWAY/CR 748 AND HIGHWAY 720 LOCATED IN THE SE 1/4 OF SECTION 6, T24S, R27E, N.M.P.M. PROCEED IN A SOUTHERLY DIRECTION APPROXIMATELY 3.9 MILES TO THE THE BEGINNING OF THE PROPOSED ACCESS FOR THE BLACK RIVER 25 FEDERAL COM 3H WELL PAD TO THE WEST; FOLLOW ROAD FLAGS IN A WESTERLY, THEN NORTHWESTERLY DIRECTION APPROXIMATELY 6162' TO THE BEGINNING OF THE PROPOSED ACCESS TO THE NORTH; FOLLOW ROAD FLAGS IN A NORTHERLY DIRECTION APPROXIMATELY 99' TO THE PROPOSED LOCATION.

TOTAL DISTANCE FROM THE INTERSECTION OF OLD CAVERN HIGHWAY/CR 748 AND HIGHWAY 720 LOCATED IN THE SE 1/4 OF SECTION 6, T24S, R27E, N.M.P.M. TO THE PROPOSED WELL LOCATION IS APPROXIMATELY 5.1 MILES.

**CIMAREX ENERGY CO.**

**BLACK RIVER 25 FEDERAL 4H**
**SECTION 25, T24S, R26E, N.M.P.M.**
**50' FSL 544' FEL**

UINTAH ENGINEERING & LAND SURVEYING

**UELS, LLC**
**Corporate Office * 85 South 200 East**
**Vernal, UT 84078 * (435) 789-1017**

| DRAWN BY: M.M. | DATE DRAWN: 09-15-14 |
|---|---|
| | REV: 00-00-00 |
| **ROAD DESCRIPTION** | **EXHIBIT J** |

# PECOS DISTRICT
# CONDITIONS OF APPROVAL

| | |
|---|---|
| OPERATOR'S NAME: | Cimarex Energy Co |
| LEASE NO.: | NM132062 |
| WELL NAME & NO.: | 4H-Black River 25 Fed |
| SURFACE HOLE FOOTAGE: | 50'/S & 544'/E |
| BOTTOM HOLE FOOTAGE | 330'/N & 660'/E |
| LOCATION: | Section 25, T. 24 S., R.26 E., NMPM |
| COUNTY: | Eddy County, New Mexico |

## TABLE OF CONTENTS

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

## I. GENERAL PROVISIONS

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

## II. PERMIT EXPIRATION

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

## III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

## IV. NOXIOUS WEEDS

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

## V. SPECIAL REQUIREMENT(S)

## Cave and Karst Conditions of Approval

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

### Cave/Karst Surface Mitigation

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

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

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

**Pad Berming:**
The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.

- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g. caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised. (Any access road crossing the berm cannot be lower than the berm height.)

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

**Leak Detection System:**

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

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

## Cave/Karst Subsurface Mitigation

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

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

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

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

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

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

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

# VI. CONSTRUCTION

## A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

## B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

## C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

## D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

## E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

## F. EXCLOSURE FENCING (CELLARS & PITS)

**Exclosure Fencing**
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

## G. ON LEASE ACCESS ROADS

**Road Width**
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

**Surfacing**
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

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

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

**Ditching**
Ditching shall be required on both sides of the road.

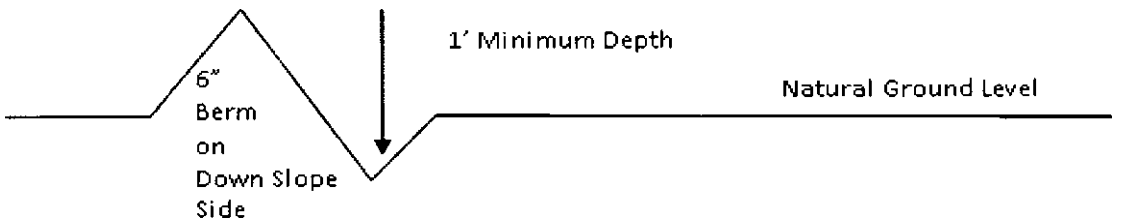
**Turnouts**
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

**Drainage**

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

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

**Cross Section of a Typical Lead-off Ditch**




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

**Formula for Spacing Interval of Lead-off Ditches**

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

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

**Cattleguards**

An appropriately sized cattleguard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattleguards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguards that are in place and are utilized during lease operations.

**Fence Requirement**

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

**Public Access**

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

**Construction Steps**

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

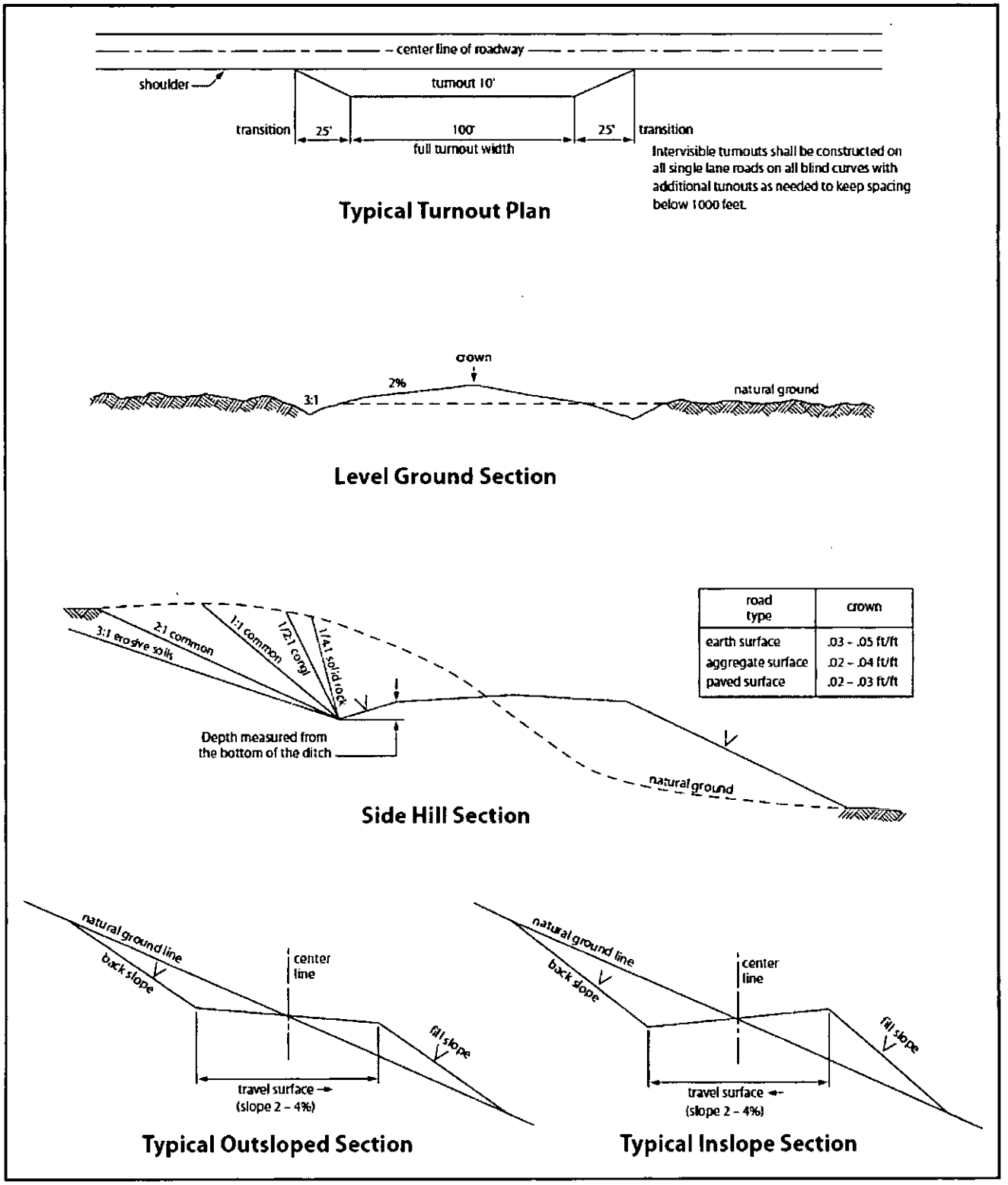



Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

# VII. DRILLING

## A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ **Eddy County**
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

1. **Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.**

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

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

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

## B. CASING

**Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).**

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

**Wait on cement (WOC) for Water Basin:**
**After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. 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.**

**Possibility of water flows in the Salado and Castile.**
**Possibility of lost circulation in the Delaware.**

**A MINIMUM OF TWO CASING STRINGS CEMENTED TO SURFACE IS REQUIRED IN HIGH CAVE/KARST AREAS. THE CEMENT MUST BE IN A SOLID SHEATH. THEREFORE, ONE INCH OPERATIONS ARE NOT SUFFICIENT TO PROTECT CAVE KARST RESOURCES. A CASING DESIGN THAT HAS A ONE INCH JOB PERFORMED DOES NOT COUNT AS A SOLID SHEATH. ON A THREE STRING DESIGN; IF THE PRIMARY CEMENT JOB ON THE SURFACE CASING DOES NOT CIRCULATE, THEN THE NEXT TWO CASING STRINGS MUST BE CEMENTED TO SURFACE.**

1. The **13-3/8** inch surface casing shall be set at approximately **450** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt. Excess calculates to 14% - Additional cement may be required.**

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

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

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
d. If cement falls back, remedial cementing will be done prior to drilling out that string.

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

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

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

   ☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification. **Excess calculates to 15% - Additional cement may be required.**

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. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.

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

4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** intermediate casing shoe shall be **3000 (3M)** psi.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

    b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

    c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

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

    e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

### D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

### E. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

***CRW 083115***

## VIII. PRODUCTION (POST DRILLING)

### A. WELL STRUCTURES & FACILITIES

**Placement of Production Facilities**
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

**Exclosure Netting (Open-top Tanks)**
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

**Chemical and Fuel Secondary Containment and Exclosure Screening**
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

**Open-Vent Exhaust Stack Exclosures**
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

**Containment Structures**
Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

**Painting Requirement**
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

**B.** BURIED PIPELINE STIPULATIONS

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

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

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

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

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

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

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

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

7. The maximum allowable disturbance for construction in this right-of-way will be **30** feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed **20** feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)

- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation*

*(grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.)*

- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.)*

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately ___6___ inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

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

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

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

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

| | |
|---|---|
| ( X ) seed mixture 1 | ( ) seed mixture 3 |
| ( ) seed mixture 2 | ( ) seed mixture 4 |
| ( ) seed mixture 2/LPC | ( ) Aplomado Falcon Mixture |

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

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

permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

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

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

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

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

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

## IX. INTERIM RECLAMATION

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

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce

the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

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

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

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

## X. FINAL ABANDONMENT & RECLAMATION

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

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

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

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

**Seed Mixture 1 for Loamy Sites**

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 shall 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 shall be either certified or registered seed. The seed container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

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

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

| Species | lb/acre |
|---|---|
| Plains lovegrass (Eragrostis intermedia) | 0.5 |
| Sand dropseed (Sporobolus cryptandrus) | 1.0 |
| Sideoats grama (Bouteloua curtipendula) | 5.0 |
| Plains bristlegrass (Setaria macrostachya) | 2.0 |

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