OPERATOR'S COPY

AUG 21 2009

Form 3160-3
(August 2007)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5 Lease Serial No.
NM NM 103598

6. If Indian, Allotee or Tribe Name
N/A

1a. Type of work: ☑ DRILL ☐ REENTER

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

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

8. Lease Name and Well No.
Carbon Valley 25 Fed Com #4H

2. Name of Operator
Murchison Oil & Gas, Inc.

9 API Well No.
30-015-37250

3a. Address 1100 Mira Vista Blvd.
Plano, TX. 75093-4698

3b Phone No. *(include area code)*
(972) 931-0700

10 Field and Pool, or Exploratory
Wolfcamp (79707

4. Location of Well *(Report location clearly and in accordance with any State requirements *)*
At surface 2640' FNL & 150' FEL, UNIT H
At proposed prod. zone 1980' FNL & 330' FWL, UNIT E
UNORTHODOX LOCATION

11. Sec., T. R. M. or Blk. and Survey or Area
Section 25, T16S, R27E

14 Distance in miles and direction from nearest town or post office*
approximately 11 miles NE of Artesia, New Mexico

12 County or Parish
Eddy

13. State
NM

15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig. unit line, if any)	16. No. of acres in lease	17 Spacing Unit dedicated to this well
382'	120	160
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft	**19 Proposed Depth**	**20 BLM/BIA Bond No on file**
1468'	11190' MD; 6280' TVD Pilot ~~6528~~ TVD 6580	NM2163 per drilling plan
21 Elevations (Show whether DF, KDB, RT, GL, etc.)	**22. Approximate date work will start***	**23. Estimated duration**
3505' GL	10/01/2009	35-40 days

24. Attachments

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

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

25 Signature	Name *(Printed/Typed)*	Date
A Arnold Nall	A. Arnold Nall	07/15/2009

Title
VP Operations

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
/s/ David D. Evans	/S/ DAVID D. EVANS	August 21, 2009

Title	Office
FOR FIELD MANAGER	CARLSBAD FIELD OFFICE

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

APPROVAL FOR TWO YEARS

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

(Continued on page 2)

Well becomes orthodox at approximately 6400 MD/6256 TVD.

*(Instructions on page 2)

Roswell Controlled Water Basin

SEE ATTACHED FOR CONDITIONS OF APPROVAL

APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED

STATEMENT ACCEPTING RESPONSIBILITY FOR OPERATIONS

Murchison Oil & Gas Inc.
1100 Mira Vista Boulevard
Plano, Texas 75093-4698

The undersigned accepts all applicable terms, conditions, stipulations and restrictions covering operations conducted on the leased land or portion thereof, as described below:

Lease No:	NMNM 103598
Well Name:	Carbon Valley 25 Fed Com #4-H
Legal Description of Land:	SL: 2640' FNL & 150' FEL, Unit H BHL: 1980' FNL & 330' FWL, Unit E Sec 25, T16S, R27E Eddy County, New Mexico
Formation(s) (if applicable):	Wolfcamp
Bond Coverage:	$25,000 statewide bond of Murchison Oil & Gas, Inc.
BLM Bond File No:	Personal Statewide Bond NM 2163

July 15, 2009
Date

Arnold Nall
VP, Operations
Murchison Oil & Gas Inc.

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240

DISTRICT II
1301 W. Grand Avenue, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

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

Form C-102
Revised October 12, 2005

Submit to Appropriate District Office
State Lease – 4 Copies
Fee Lease – 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015-37250	17970	Dog Canyon; Wolfcamp

Property Code	Property Name	Well Number
37485	CARBON VALLEY "25" FEDERAL COM	4-H

OGRID No.	Operator Name	Elevation
153363	MURCHISON OIL & GAS, INC.	3505'

Surface Location

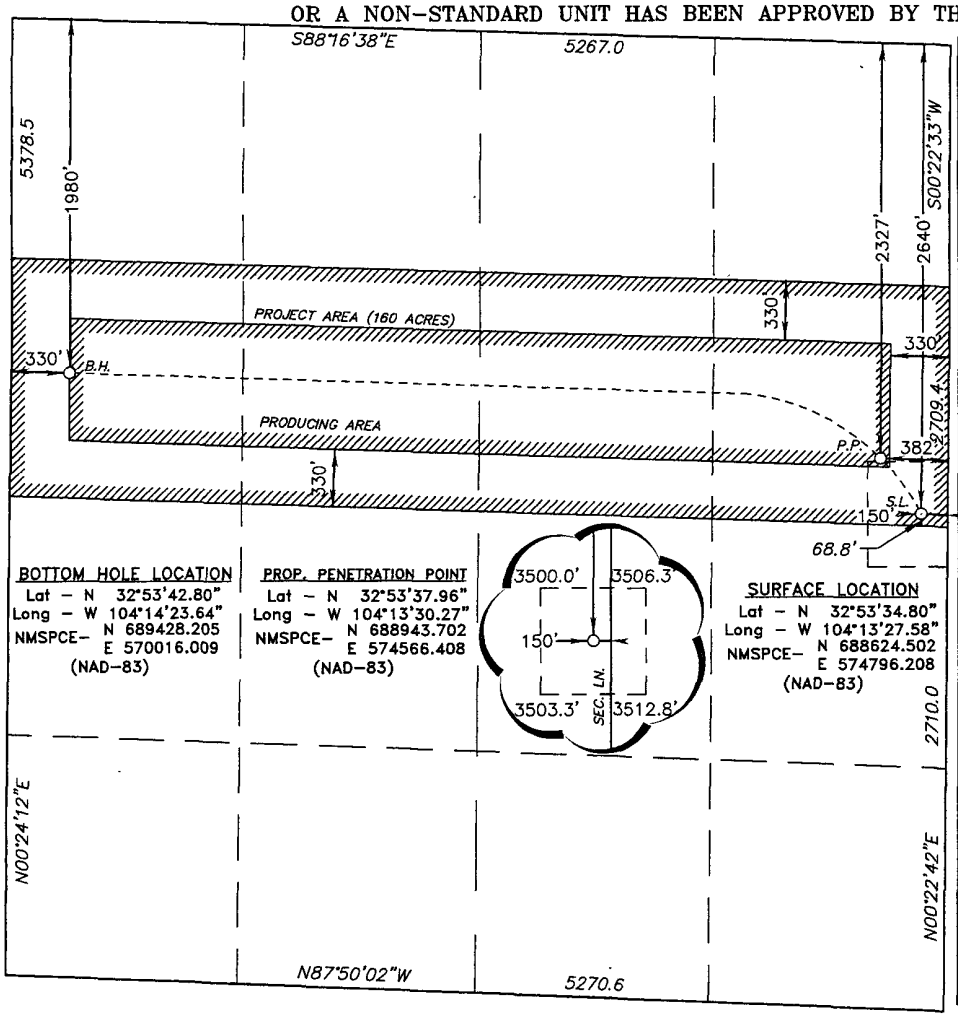
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	25	16 S	27 E		2640	NORTH	150	EAST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	25	16 S	27 E		1980	NORTH	330	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			

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



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location 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.

A. Arnold Nall 7/15/09
Signature Date

A. Arnold Nall
Printed Name

SURVEYOR CERTIFICATION

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

JUNE 09, 2009
Date Surveyed

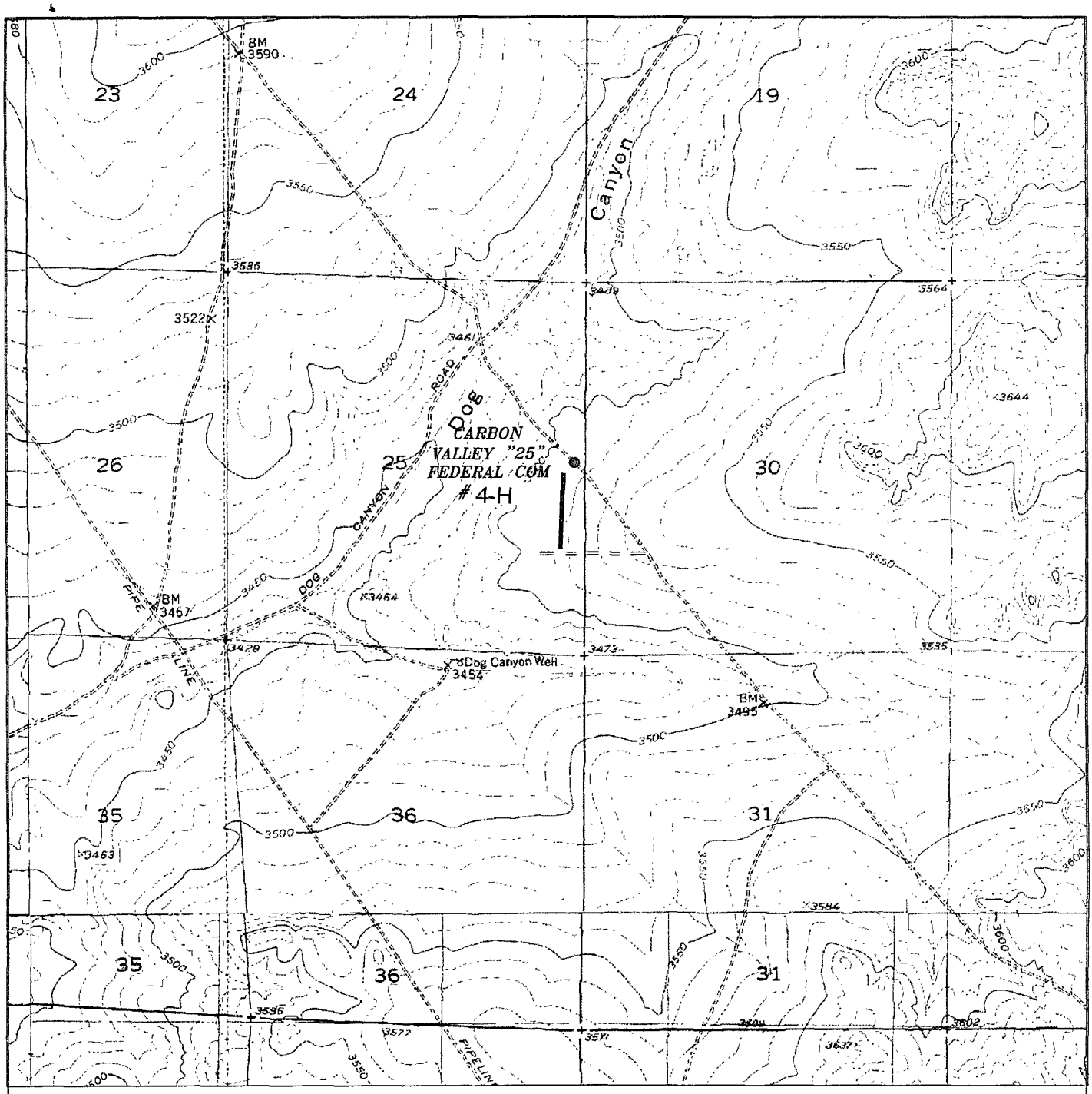
Signature & Seal of Professional Surveyor

GARY L. JONES NEW MEXICO 7977 REGISTERED PROFESSIONAL LAND SURVEYOR

Certificate No. Gary L. Jones 7977

BASIN SURVEYS

EXHIBIT D



CARBON VALLEY "25" FEDERAL COM # 4-H
Located 2640' FNL and 150' FEL
Section 25, Township 16 South, Range 27 East,
N.M.P.M., Eddy County, New Mexico.

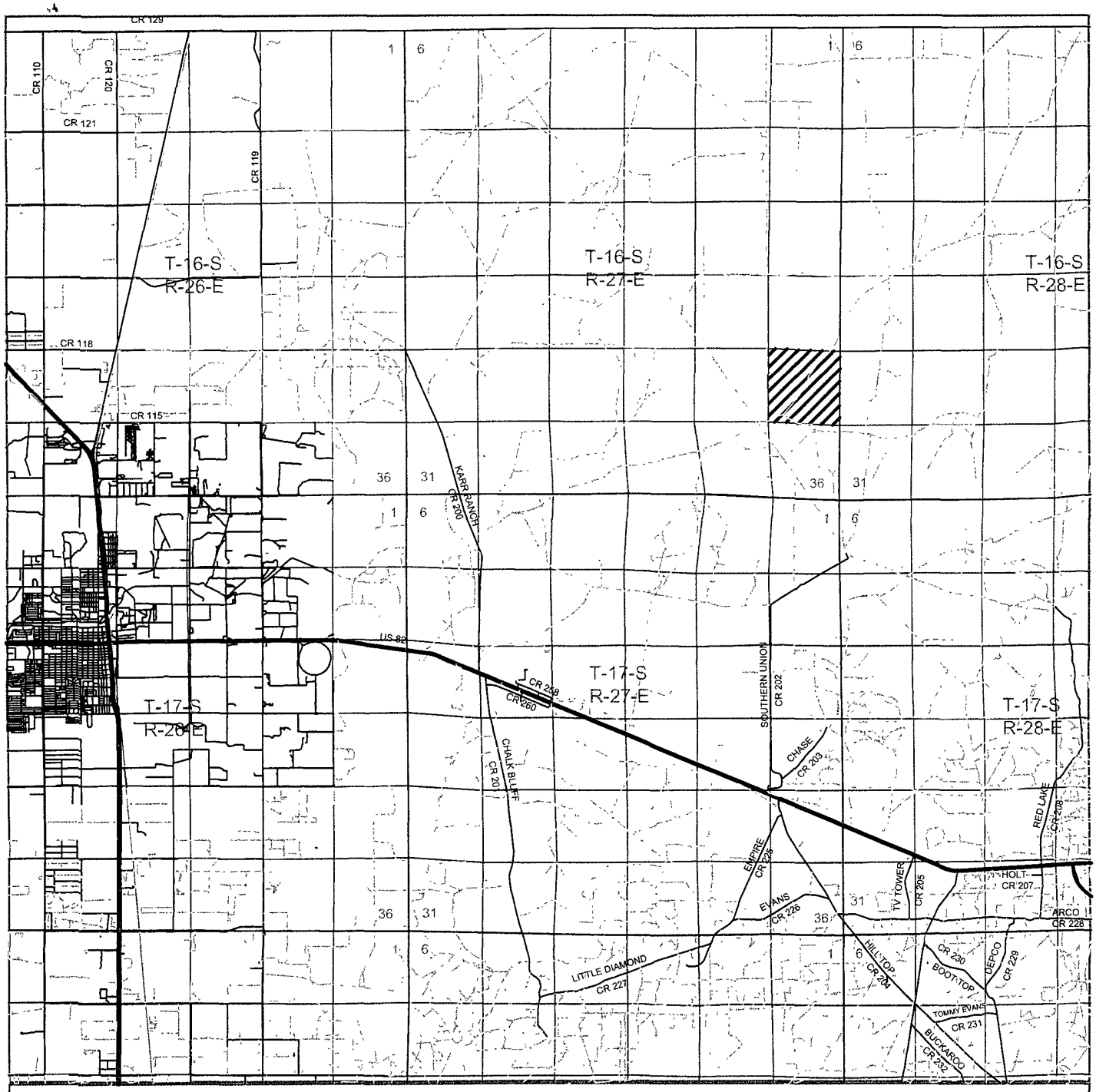
basin surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 - Office
(575) 392-2206 - Fax
basinsurveys.com

W.O. Number:	JMS 21441
Survey Date:	06-09-2009
Scale:	1" = 2000'
Date:	06-10-2009

N

MURCHISON OIL & GAS, INC.

EXHIBIT B



CARBON VALLEY "25" FEDERAL COM # 4-H
Located 2640' FNL and 150' FEL
Section 25, Township 16 South, Range 27 East,
N.M.P.M., Eddy County, New Mexico.

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

W.O. Number: JMS 21441
Survey Date: 06-09-2009
Scale: 1" = 2 Miles
Date: 06-10-2009

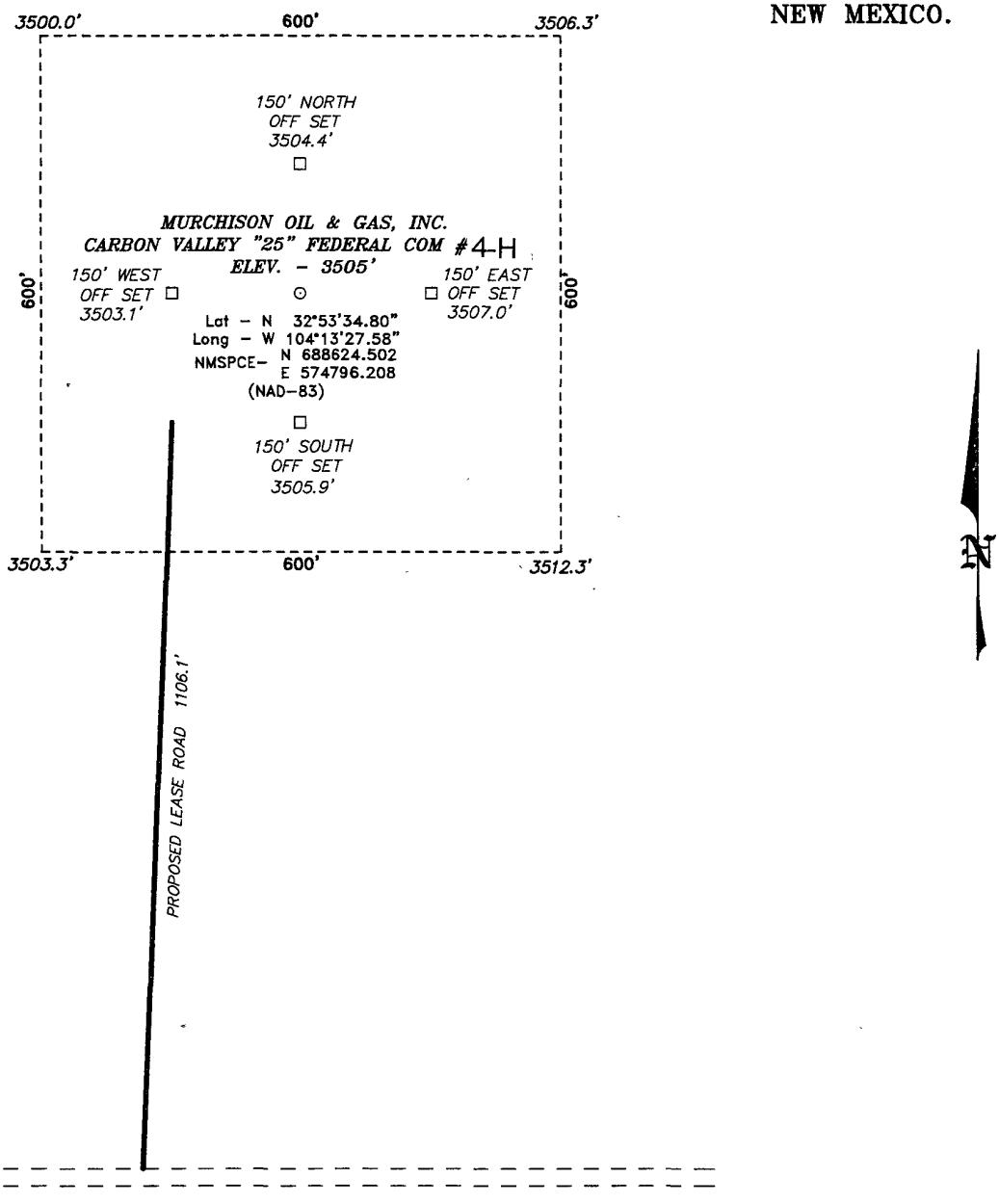
N

MURCHISON OIL & GAS, INC.

EXHIBIT E-1

SECTION 25, TOWNSHIP 16 SOUTH, RANGE 27 EAST, N.M.P.M.,

EDDY COUNTY, **NEW MEXICO.**



200 0 200 400 FEET

SCALE: 1" = 200'

Directions to Location:

FROM THE JUNCTION OF HWY 82 AND SOUTHERN UNION, GO NORTH WINDING EAST 4.0 MILES TO LEASE ROAD, GO NORTH 0.1 MILES TO LEASE ROAD, ON LEASE ROAD GO NORTHEAST WINDING NORTH 1.0 MILES TO A "T", GO NORTH 0.6 MILES THEN WEST THENCE IMMEDIATELY NORTH 0.3 MILES TO LEASE ROAD, ON LEASE ROAD GO WEST 0.4 MILES TO PROPOSED LEASE ROAD.

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

MURCHISON OIL & GAS, INC.

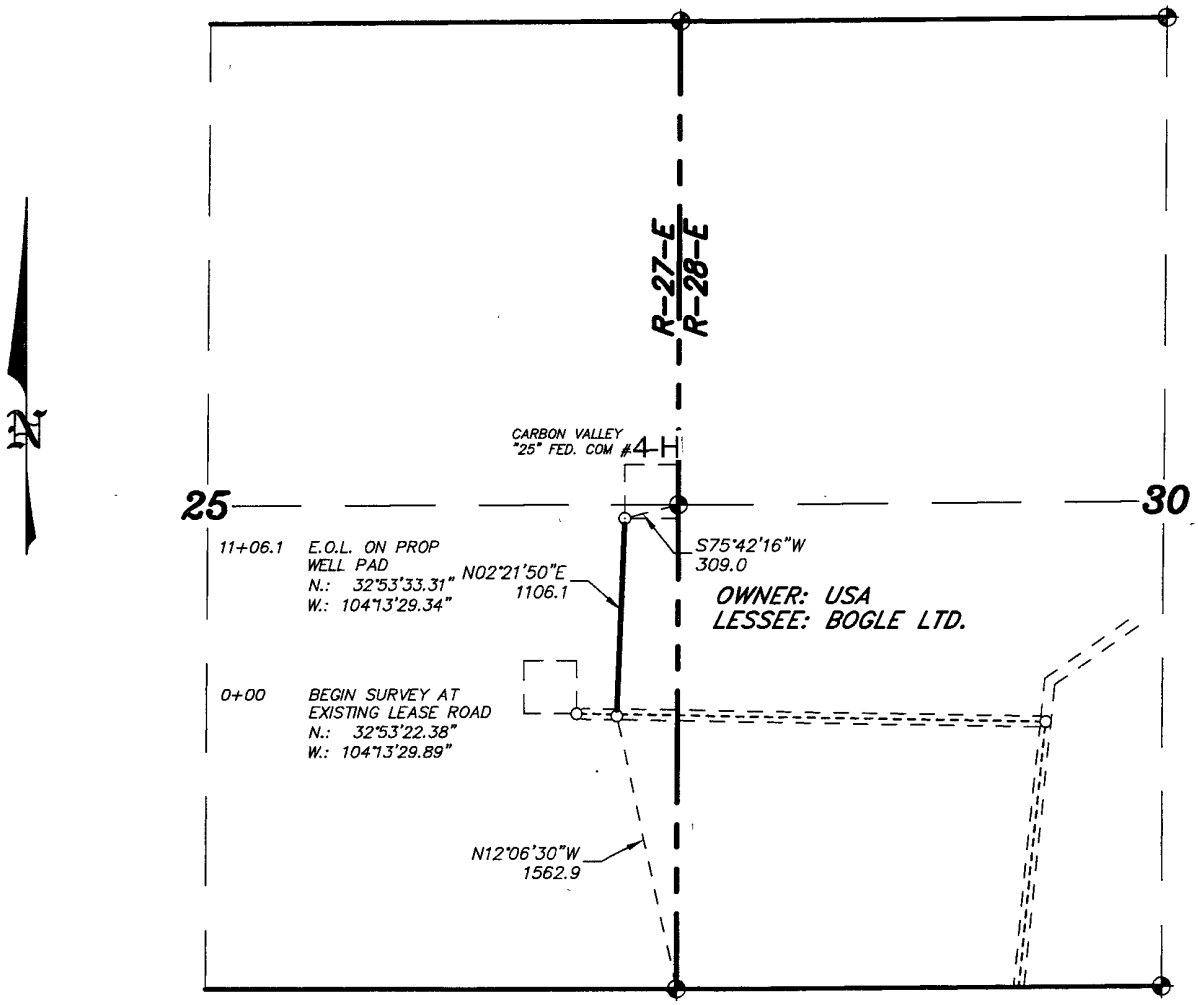
REF: CARBON VALLEY "25" FEDERAL COM #4-H / WELL PAD TOPO

THE CARBON VALLEY "25" FEDERAL COM #4-H LOCATED 2640' FROM THE NORTH LINE AND 150' FROM THE EAST LINE OF SECTION 25, TOWNSHIP 16 SOUTH, RANGE 27 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

W.O. Number: 21441	Drawn By: J. SMALL		
Date: 06-10-2009	Disk: JMS 21441	Survey Date: 06-09-2009	Sheet 1 of 1 Sheets

EXHIBIT E-2

SECTION 25, TOWNSHIP 16 SOUTH, RANGE 27 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.



LEGAL DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE, LOCATED IN SECTION 25, TOWNSHIP 16 SOUTH, RANGE 27 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

SECTION 25 = 1106.1 FEET = 67.04 RODS = 0.21 MILES = 0.76 ACRES

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.

GARY L. JONES, N.M. P.S. No. 7977
TEXAS R.P.L.S. No. 5074

1000 0 1000 2000 FEET

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

MURCHISON OIL & GAS, INC

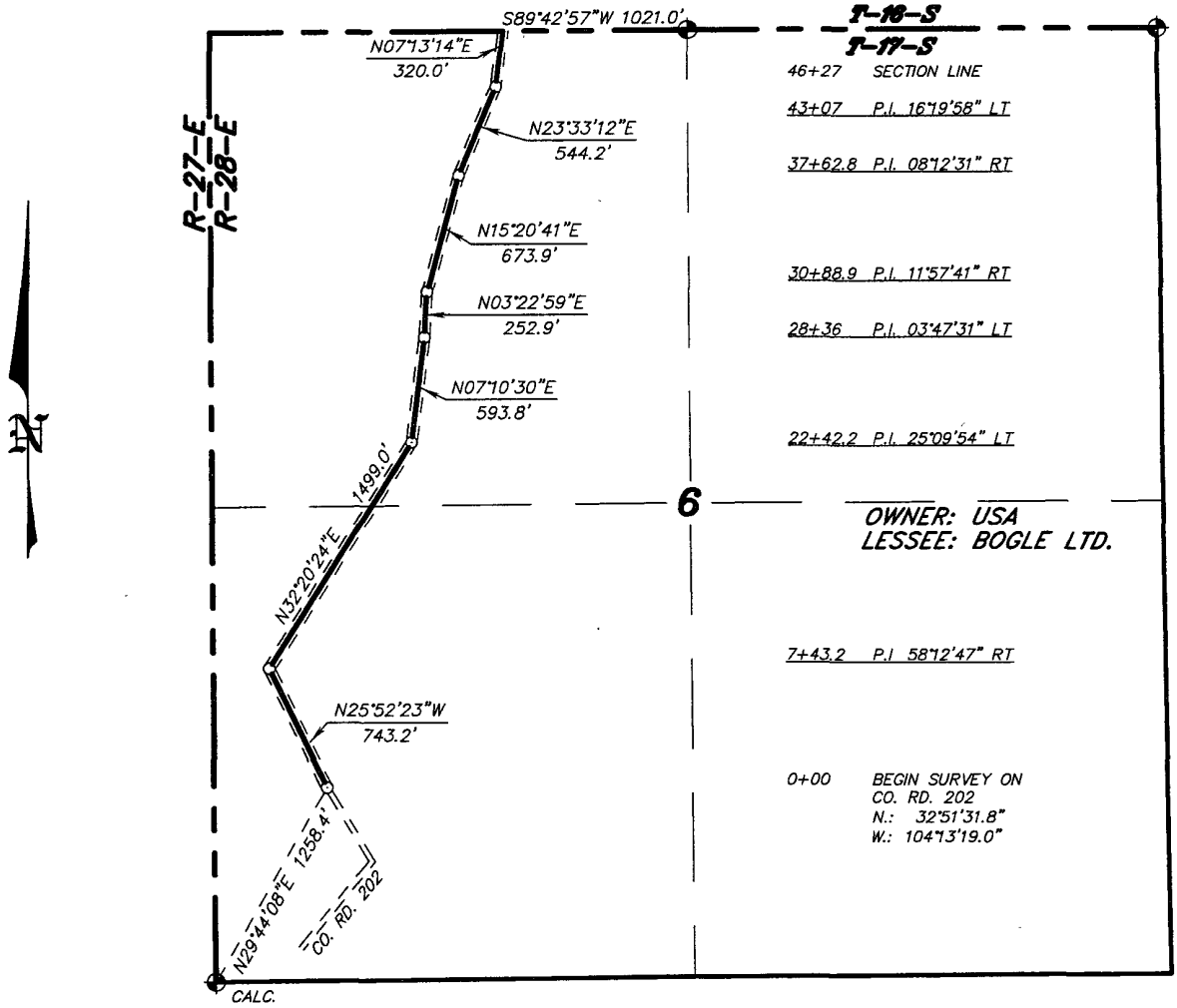
REF: PROP.LEASE ROAD THE CARBON VALLEY "25" FED. COM # 4-H

A ROAD CROSSING USA LAND IN
SECTION 25, TOWNSHIP 16 SOUTH, RANGE 27 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO.

W.O. Number: 21463	Drawn By: J. M. SMALL		
Date: 06-16-2009	Disk: JMS 21463	Survey Date: 06-15-2009	Sheet 1 of 1 Sheets

EXHIBIT E-3

SECTION 6, TOWNSHIP 17 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, **NEW MEXICO.**



LEGAL DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE, LOCATED IN SECTION 6, TOWNSHIP 17 SOUTH, RANGE 28 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND RIGHT OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY.

SECTION 6 = 4627.0 FEET = 280.42 RODS = 0.88 MILES = 3.18 ACRES

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THE STATE.

GARY L. JONES, N.M. P.S. No. 7977
No. 5074

1000 0 1000 2000 FEET

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

MURCHISON OIL & GAS, INC

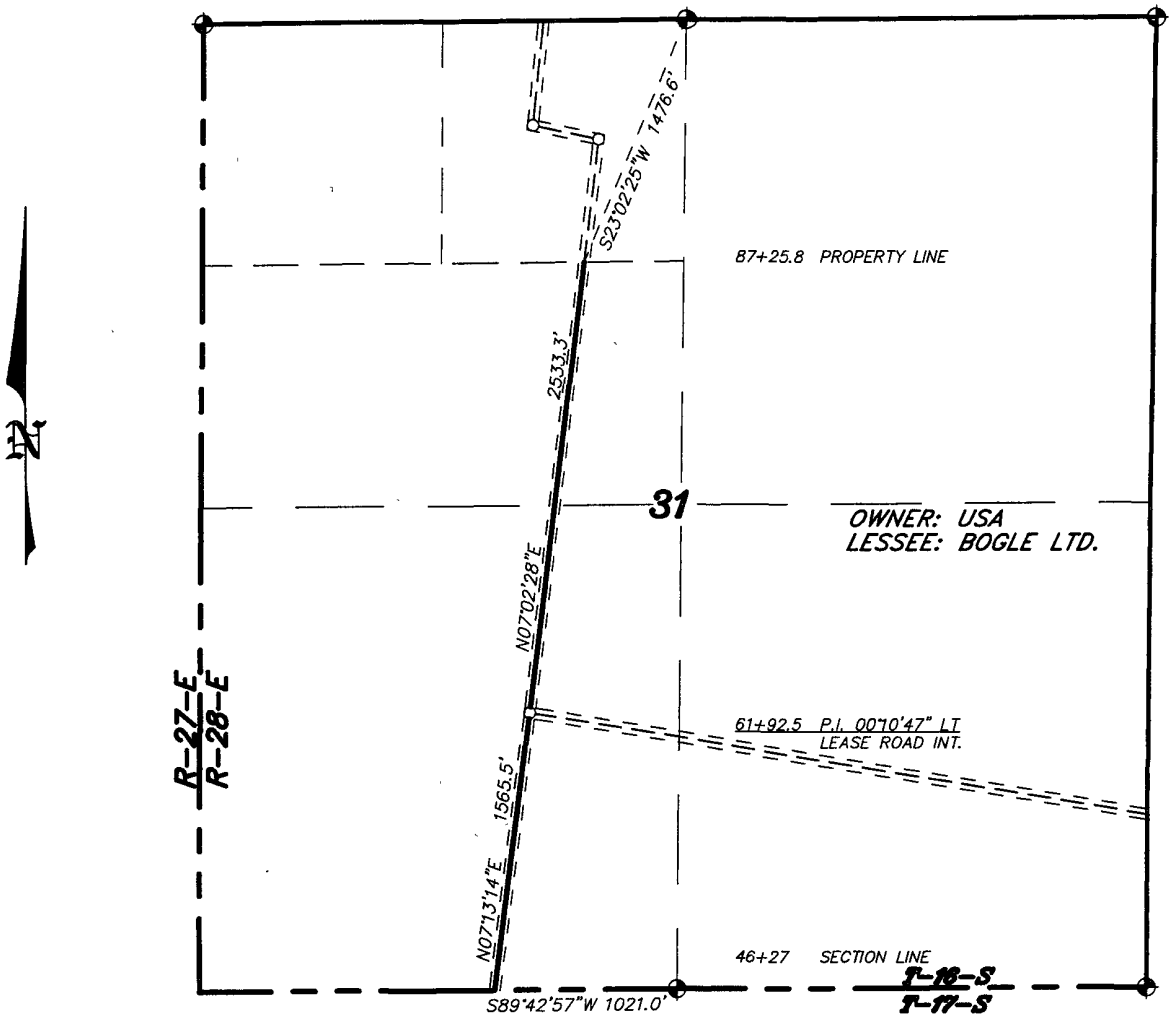
REF: PROPOSED LEASE ROAD THE CARBON VALLEY WELLS

A ROAD CROSSING USA LAND IN
SECTION 6, TOWNSHIP 17 SOUTH, RANGE 28 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO.

W.O. Number: 21463	Drawn By: J. M. SMALL		
Date: 06-16-2009	Disk: JMS 21463	Survey Date: 06-15-2009	Sheet 1 of 4 Sheets

EXHIBIT E-4

SECTION 31, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, **NEW MEXICO.**



LEGAL DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE, LOCATED IN SECTION 31, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND RIGHT OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY.

SECTION 31 = 4098.8 FEET = 248.41 RODS = 0.78 MILES = 2.82 ACRES

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THE STATE.

GARY L. JONES, N.M. P.S. No. 7977
No. 5074

1000 0 1000 2000 FEET

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

MURCHISON OIL & GAS, INC

REF: PROPOSED LEASE ROAD THE CARBON VALLEY WELLS

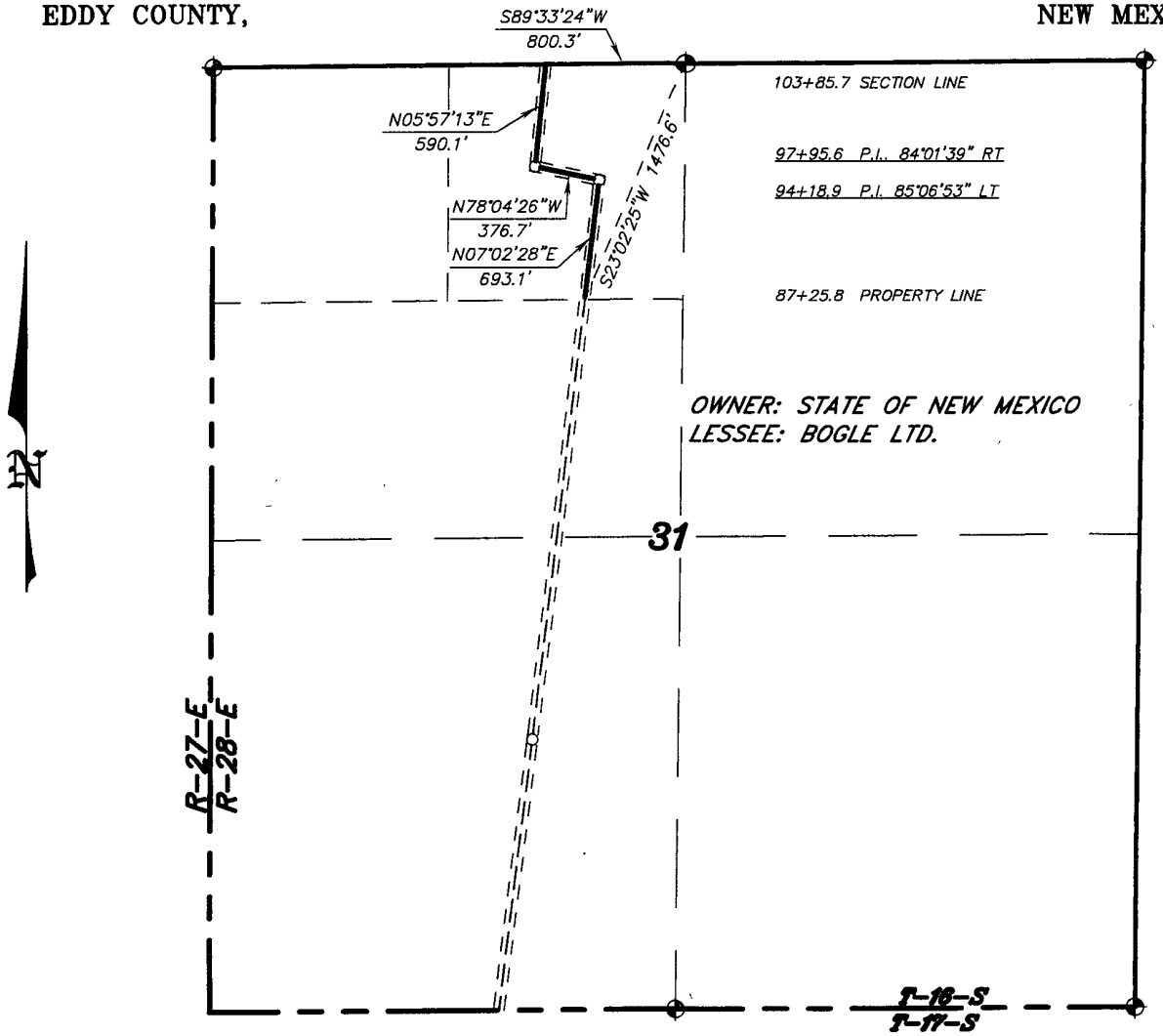
A ROAD CROSSING USA LAND IN
SECTION 31, TOWNSHIP 16 SOUTH, RANGE 28 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO.

W.O. Number: 21463	Drawn By: J. M. SMALL		
Date: 06-16-2009	Disk: JMS 21463	Survey Date: 06-15-2009	Sheet 2 of 4 Sheets

EXHIBIT E-5

SECTION 31, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.,

EDDY COUNTY, **NEW MEXICO.**



LEGAL DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE, LOCATED IN SECTION 31, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND RIGHT OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY.

BEGINNING AT A POINT WHICH LIES S.23°02'25"W., 1476.6 FEET FROM THE NORTH QUARTER CORNER OF SAID SECTION 31; THENCE N.07°02'28"E., 693.1 FEET; THENCE N.78°04'26"W., 376.7 FEET, THENCE N.05°57'13" E., 590.1 FEET TO THE END OF THIS LINE WHICH LIES S.89°33'24"W., 800.3 FEET FROM THE NORTH QUARTER CORNER OF SAID SECTION 31. SAID STRIP OF LAND BEING 1659.9 FEET OR 100.60 RODS IN LENGTH, AND CONTAINING 1.14 ACRES, MORE OR LESS, AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NW/4 = 100.60 RODS = 1.14 ACRES

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THE STATE.

GARY L. JONES N.M. P.S. No. 7977
No. 5074

1000 0 1000 2000 FEET

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

MURCHISON OIL & GAS, INC

REF: PROPOSED LEASE ROAD THE CARBON VALLEY WELLS

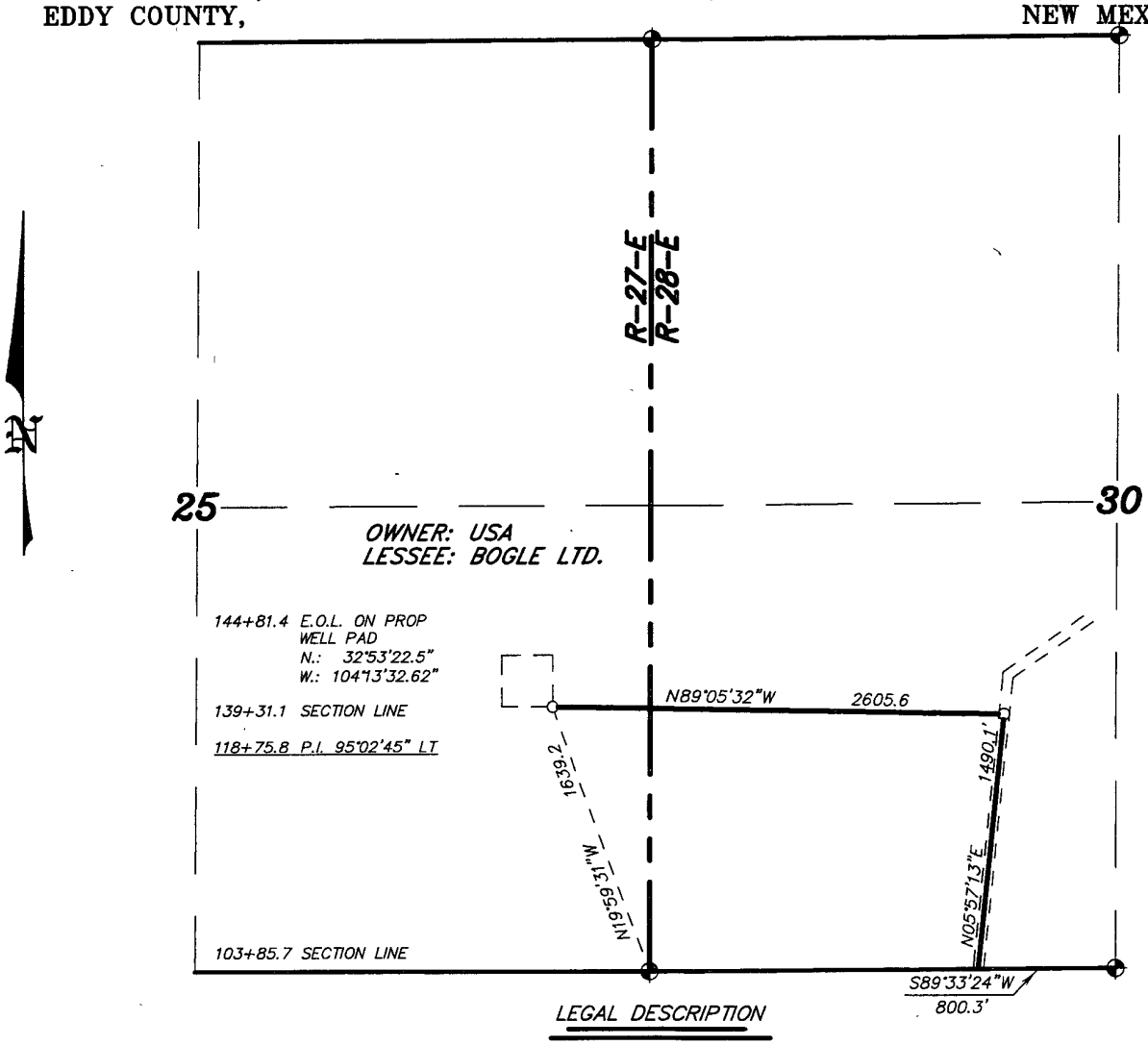
A ROAD CROSSING STATE LAND IN

SECTION 31, TOWNSHIP 16 SOUTH, RANGE 28 EAST,

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

W.O. Number: 21463	Drawn By: J. M. SMALL		
Date: 06-16-2009	Disk: JMS 21463	Survey Date: 06-15-2009	Sheet 3 of 4 Sheets

SECTION 30, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.,
SECTION 25, TOWNSHIP 16 SOUTH, RANGE 27 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.



LEGAL DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE, LOCATED IN SECTION 30, TOWNSHIP 16 SOUTH, RANGE 28 EAST, AND SECTION 25, TOWNSHIP 16 SOUTH, RANGE 27 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND RIGHT OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY.

SECTION 30 =	3545.4 FEET =	214.87 RODS =	0.68 MILES =	2.44 ACRES
SECTION 25 =	550.3 FEET =	33.35 RODS =	0.10 MILES =	0.38 ACRES
TOTAL	= 4095.7 FEET =	248.22 RODS =	0.78 MILES =	2.82 ACRES

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THE STATE.

GARY L. JONES, N.M. P.S. No. 7977
TEXAS P.L.S. No. 5074

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

1000 0 1000 2000 FEET

MURCHISON OIL & GAS, INC

REF: PROPOSED LEASE ROAD THE CARBON VALLEY WELLS

A ROAD CROSSING USA LAND IN

SECTION 30, TOWNSHIP 16 SOUTH, RANGE 28 EAST,
SECTION 25, TOWNSHIP 16 SOUTH, RANGE 27 EAST,

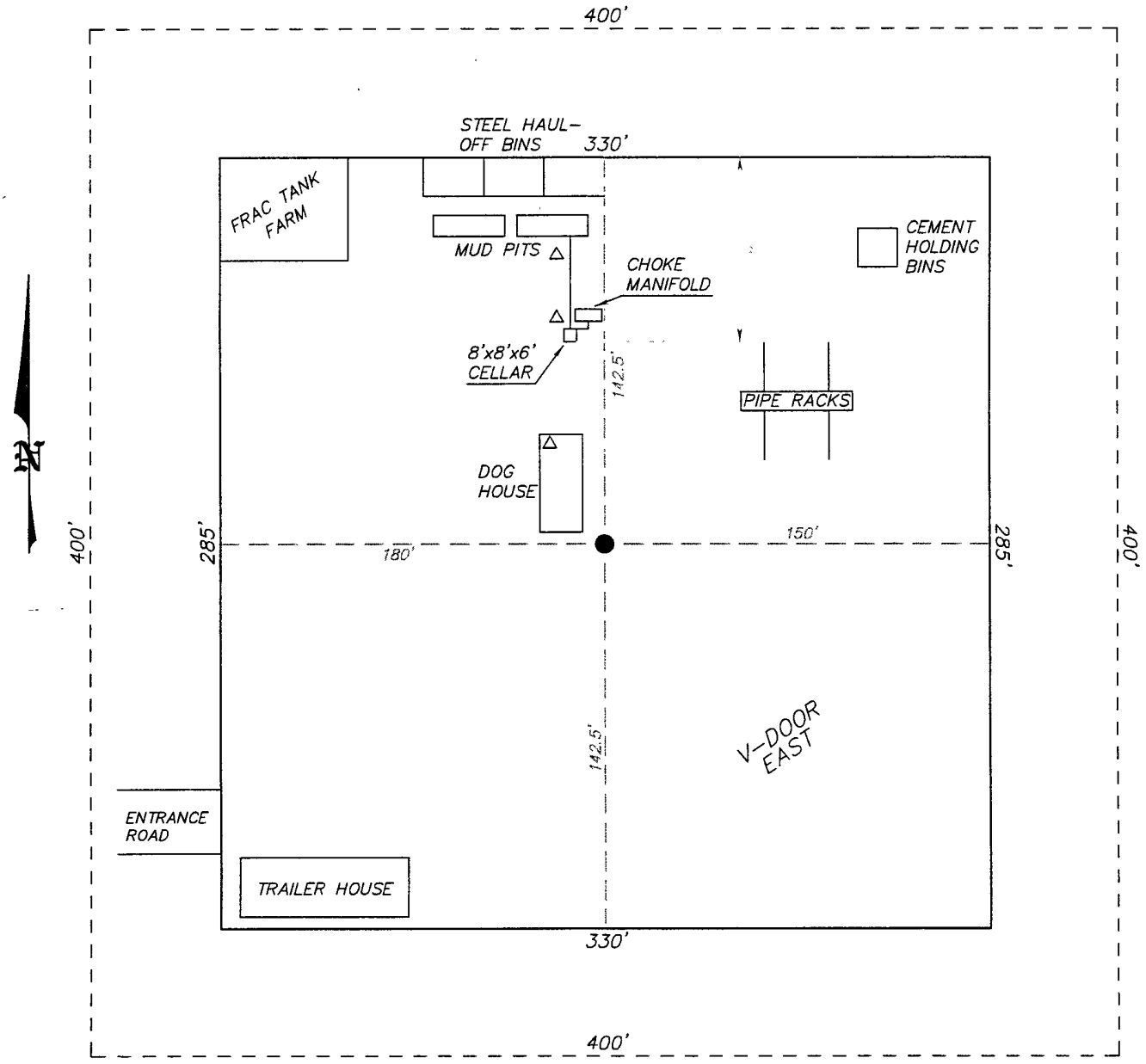
N.M.P.M., EDDY COUNTY, NEW MEXICO.

W.O. Number: 21463	Drawn By: J. M. SMALL		
Date: 06-16-2009	Disk: JMS 21463	Survey Date: 06-15-2009	Sheet 4 of 4 Sheets

EXHIBIT E-7

SECTION 25, TOWNSHIP 16 SOUTH, RANGE 27 EAST, N.M.P.M.,

EDDY COUNTY, **NEW MEXICO.**



60 0 60 120 FEET

SCALE: 1" = 60'

MURCHISON OIL & GAS, INC.
CARBON VALLEY "25" FEDERAL COM #4-H
ELEV. - 3505'

Lat - N 32°53'34.80"
Long - W 104°13'27.58"
NMSPCE- N 688624.502
E 574796.208
(NAD-83)

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

MURCHISON OIL & GAS, INC.

REF: CARBON VALLEY "25" FEDERAL COM #4-H / WELL PAD TOPO

THE CARBON VALLEY "25" FEDERAL COM #4-H LOCATED 2460' FROM THE NORTH LINE AND 150' FROM THE EAST LINE OF SECTION 25, TOWNSHIP 16 SOUTH, RANGE 27 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

W.O. Number: 21441	Drawn By: J. SMALL	Survey Date: 06-09-2009	Sheet 1 of 1 Sheets
Date: 07-29-2009	Disk: JMS 21441		

EXHIBIT C-1

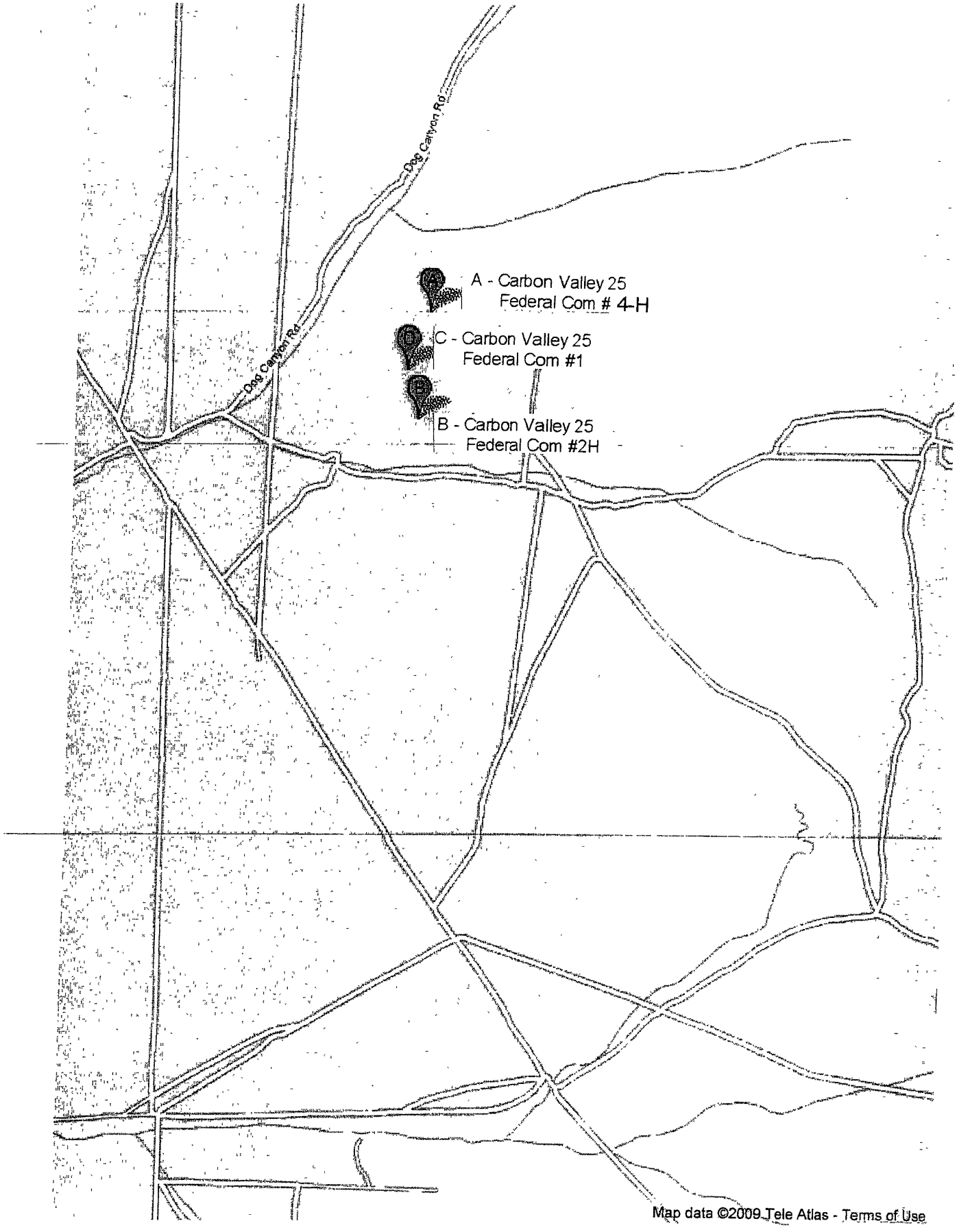
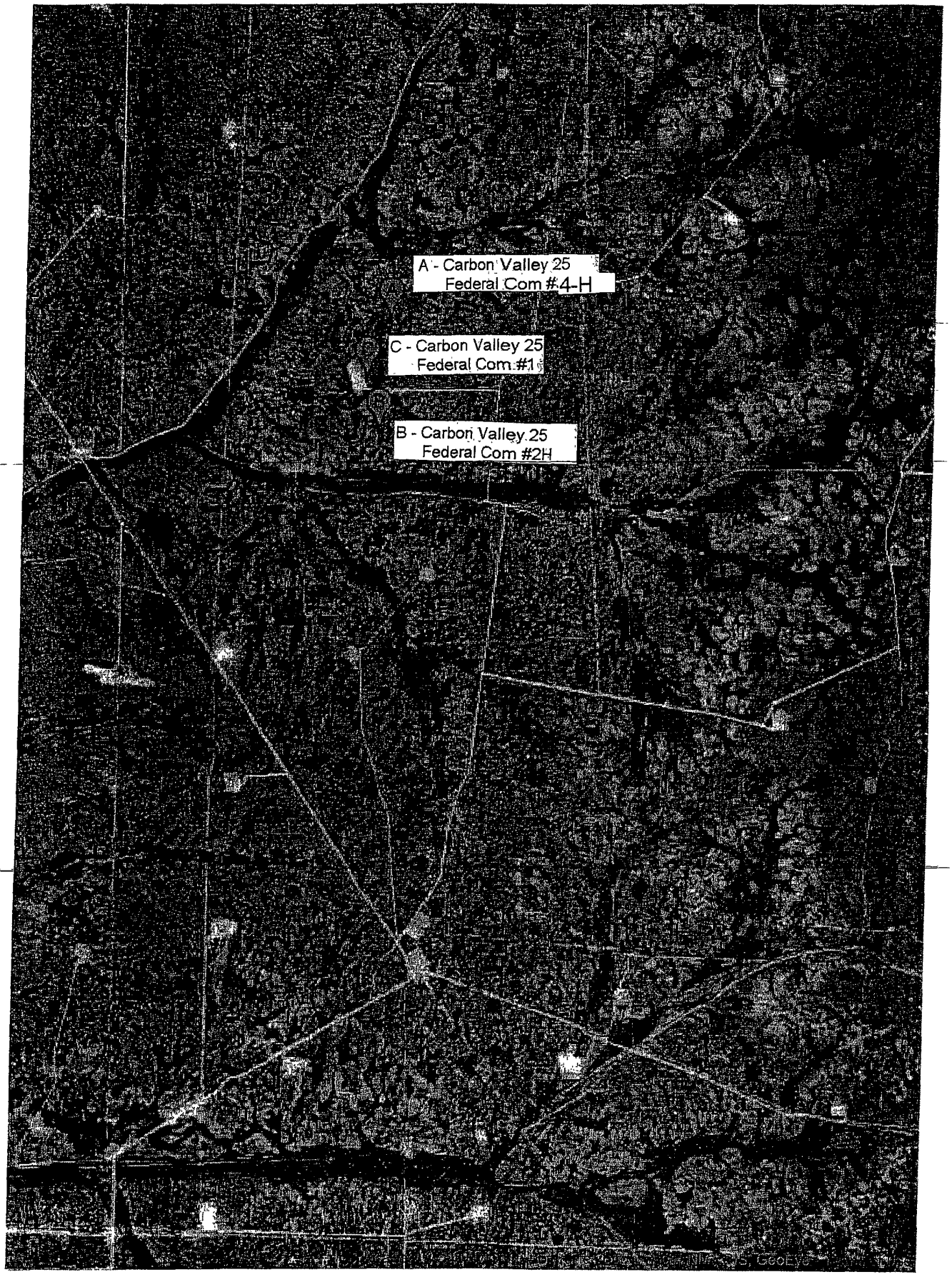

Dog Canyon Rd
Dog Canyon Rd
A - Carbon Valley 25
Federal Com # 4-H
C - Carbon Valley 25
Federal Com #1
B - Carbon Valley 25
Federal Com #2H
Map data ©2009 Tele Atlas - Terms of Use

EXHIBIT C-2


A - Carbon Valley 25 Federal Com #4-H
C - Carbon Valley 25 Federal Com #1
B - Carbon Valley 25 Federal Com #2H

REVISED JULY 10, 2009

ATTACHMENT TO FORM 3160-3
Murchison Oil & Gas, Inc.
Carbon Valley 25 Fed Com #4-H
SL: 2640' FNL & 150' FEL, UNIT H
BHL: 1980' FNL & 330' FWL, UNIT E
Sec 25, T16S, R27E
Eddy County, New Mexico

1. Proration Unit Spacing: 160 acres

2. Ground Elevation: 3505' Est. RKB 3522'

3. ESTIMATED TOPS OF IMPORTANT GEOLOGIC MARKERS

	DEPTH (RKB)	SUBSURFACE
Yates	76'	+3446'
Queen	775'	+2747'
Premier	1546'	+1976'
San Andres	1590'	+1932'
Glorietta	3030'	+492'
Yeso	3124'	+398'
Tubb	4338'	-816'
Abo	5058'	-1536'
Wolfcamp/"pay" zone	6274'	-2752'
TVD Pilot Hole	6580'*	-3058'

*Includes 250' of "rat hole" below base of pay zone

PROPOSED DEPTHS: TVD 6280' and MD 11190'

4. ESTIMATED DEPTHS OF ANTICIPATED FRESH WATER, OIL, OR GAS

Fresh Water	100' – 120'	Dewey Lake
Fresh Water	190' – 215'	Yates Sandstone
Fresh Water	340' – 360'	Seven Rivers Carbonate
Fresh Water	515' – 525'	Bowers Sand (Seven Rivers)
Oil/Gas	1599'	San Andres
Oil/Gas	3039'	Glorietta
Oil/Gas	4347'	Tubb
Oil/Gas	5067'	Abo
Oil/Gas	6274'	Wolfcamp

5. CASING AND CEMENTING PROGRAM

See COA

Casing Size	Hole Size	From To	Weight	Grade	Joint	Conditions
9-5/8"	12-1/4"	0' - 1100'	36.0#	J-55	LT&C	New
7"	8-3/4"	0' – 5700'	26.0#	P-110	LT&C	New
4-1/2"	6-1/8"	5600' – 11190'	11.6#	HCP-110	BT&C	New

Casing Size	Burst Rating, psi	Safety Factor	Collapse Rating, psi	Safety Factor	Tension Rating, 1000 lbs.	Safety Factor
9-5/8"	3520	1.25	2020	3.90	453	11.40
7"	9950	3.10	6230	2.08	693	4.70
4-1/2"	10690	3.20	8650	2.60	385	30+

Equivalent or adequate grades and weights of casing may be substituted at time casing is run, depending on availability. See COA

6. CASING DEPTH AND CEMENTING PROGRAM: ← See COA

9.625" Surface Casing - Cementing Program
Cement lead with 150 sacks of Interfill Class C + additives with yield = 2.45 cu.ft./sack, tail with 175 sacks Premium Plus + additives with yield = 1.34 cu.ft./sack; sufficient volume of cement will be pumped to ensure cement is circulated to surface.

7" Intermediate Casing and Fiberglass Tubing - Cementing Program
Cement lead with 300 sacks of Interfill Class H + additives with yield = 2.77 cu.ft./sack, tail with 300 sacks Super Class H + additives with yield = 1.61 cu.ft./sack; sufficient volume of cement will be pumped to ensure cement is circulated to surface. Will cement below 7" casing via 2-7/8" fiberglass tubing stinger to adequately plug back vertical pilot hole after logging and prior to drilling curve/horizontal section of well. May perform a 2-stage job utilizing DV tool if determined to be necessary to circulate cement to surface.

4.5" Production Casing - Cementing Program
Plan to utilize 4-1/2" 11.6# HCP-110 BTC Peak completion liner system from RSB packer @ 5600' to TD of 11190' MD. No cement required.

~~0 – 1100'~~ ~~13-3/8" 3000# ram type preventers with one set blind rams and one set pipe rams.~~ per Operator 8/20/09 WWI

1100' – 11190' 11" 3000# ram type preventers with one set blind rams and one set pipe rams and a 3000# annular type preventer. A choke manifold and 120 gallon accumulator with floor and remote operating stations and auxiliary power system. Rotating head below 5500'. See attached Sketch of BOP Equipment.

A Kelly cock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.

After setting the 9 5/8" casing, the blowout preventers and related control equipment shall be pressure tested to 3000 psi and 1500 psi respectively. Any equipment failing to test satisfactorily shall be repaired or replaced. Results of the BOP test will be recorded in the Driller's Log.

The BOP's will be maintained ready for use until drilling operations are completed. Pipe and blind rams shall be activated each trip. Annular preventer shall be functionally operated at least weekly.

BOP drills will be conducted as necessary to assure that equipment is operational and each crew is properly trained to carry out emergency duties.

Accumulator shall maintain a pressure capacity reserve at all times to provide for the close-open-close sequence of the blind and pipe rams of the hydraulic preventers.

8. MUD PROGRAM

0 – 1100'	Fresh water / native mud. Wt. 8.4 to 8.6 ppg, vis 28-34 sec, Lime for pH control. Paper for seepage. Lost circulation may be encountered.
1100' – 6200'	Cut brine. Wt. 8.4 – 8.8 ppg, vis 28-29 sec, No control water loss, lime for pH control.
6200' – 11190'	Mud up with XCD Polymer mud system. Wt. 9.0 – 9.5 ppg, Vis 32-40 sec, WL 8-10 cc.

Sufficient mud materials will be kept on location at all times in order to combat lost circulation, or unexpected kicks. In order to run open-hole logs and casing, the viscosity and water loss may have to be adjusted to meet these needs.

Mud system monitoring equipment with derrick floor indicators and visual / audio alarms shall be installed and operative prior to drilling into the Wolfcamp formation. This equipment will remain in use until the production casing is run and cemented. Monitoring equipment shall consist of the following:

A recording pit level indicator.
A pit volume totalizer.
A flowline sensor.

9. TESTING, LOGGING AND CORING PROGRAM ← See COA

   A. Testing program: None planned.

   B. Mud logging program. Two man unit from 1100' to TD.

   C. Electric logging program: CNL/LDT/CAL/GR, MSFL/HALS/GR.

   D. Coring program: None planned.

10. No abnormal temperatures or pressures are anticipated. Low levels of H2S have been monitored in producing wells in the area, so H2S may be present while drilling the well. An H2S Plan is attached to the Drilling Program. Anticipated Bottom Hole Pressure is 2700 PSI (maximum), and anticipated static Bottom Hole Temperature is 125 degrees Fahrenheit.

11. Anticipated starting date is October 1, 2009. It should take approximately 35–40 days to drill the well and another 10-15 days to complete.

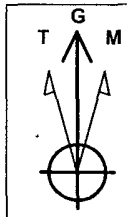
12. A statement accepting responsibility for operations is attached.

13. The Multi-Point Surface Use & Operation Plan is attached.

14. If the Bureau of Land Management needs additional information to evaluate this application, please advise.

Murchison Oil & Gas

Project: Eddy County
Site: Carbon Valley '25' Fed Com
Well: #4-H
Wellbore: Original Hole
Plan: Plan #1 (#4-H/Original Hole)



Azimuths to Grid North
True North: -0.06°
Magnetic North: 8.10°

Magnetic Field
Strength: 49172.9snT
Dip Angle: 60.76°
Date: 06/18/2009
Model: IGRF200510

PATHFINDER

WELL DETAILS: #4-H

Ground Elevation: 3505.00
RKB Elevation: WELL1 @ 3523.00ft (18' KB Correction)
Rig Name: 18' KB Correction

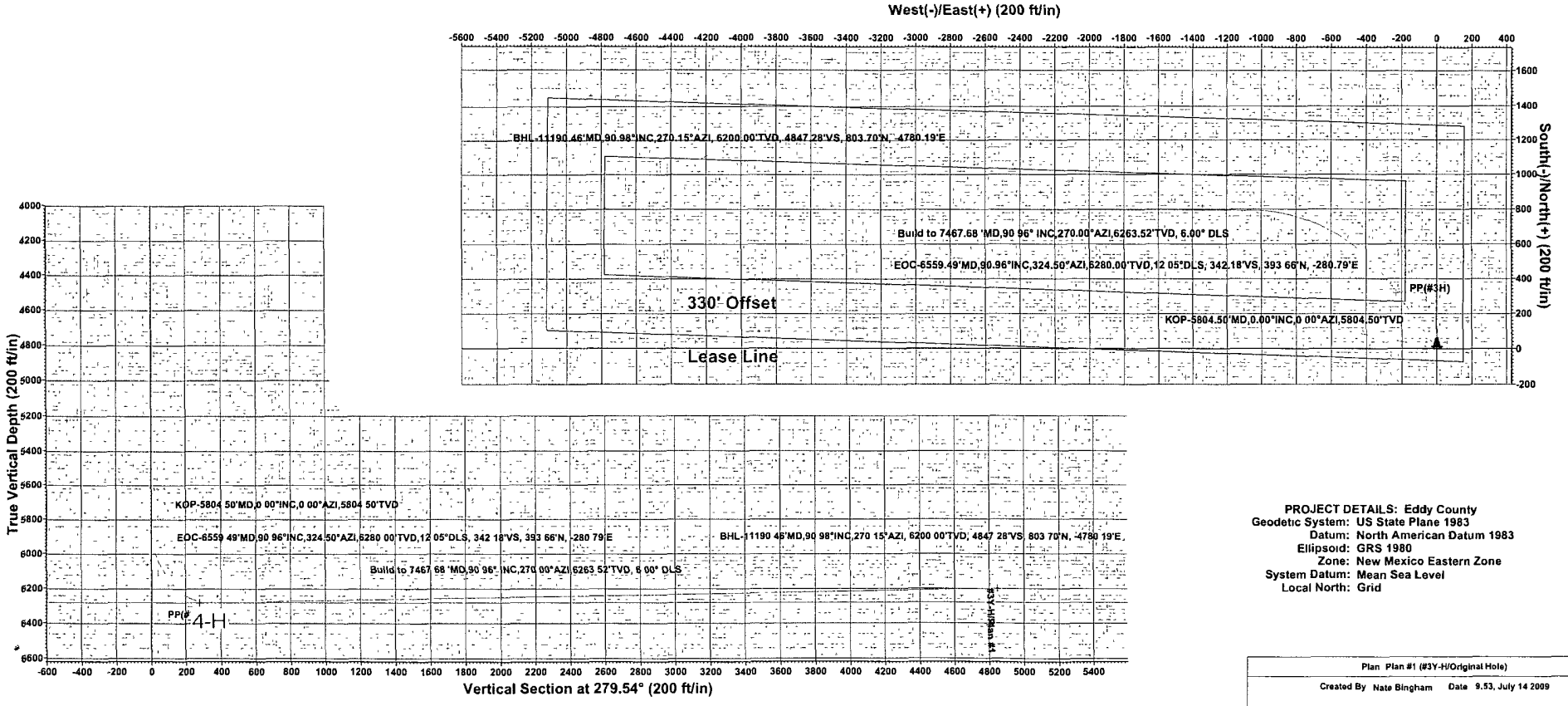
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	688624.502	574796.208	32° 53' 34.798 N	104° 13' 27.581 W	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	5804.50	0.00	0.00	5804.50	0.00	0.00	0.00	0.00	0.00	
2	6559.49	90.96	324.50	6280.00	393.65	-280.79	12.05	324.50	342.17	
3	7467.68	90.96	270.00	6263.52	793.92	-1057.97	6.00	-89.51	1174.96	
4	7470.21	90.98	270.15	6263.48	793.93	-1060.49	6.00	83.29	1177.45	
5	11190.47	90.98	270.15	6200.00	803.70	-4780.20	0.00	0.00	4847.29	PBHL

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL	6200.00	803.70	-4780.20	689428.205	570016.009	Point
PP(#3H)	6280.00	319.20	-229.80	688943.702	574566.408	Point
PBHL #2	6410.00	533.70	-4780.20	689158.205	570016.009	Point



PROJECT DETAILS: Eddy County
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level
Local North: Grid

Plan: Plan #1 (#3Y-H/Original Hole)
Created By: Nate Bingham Date: 9.53, July 14 2009

Murchison Oil & Gas

Eddy County
Carbon Valley '25' Fed Com
#4-H
Original Hole

Plan: Plan #1

Pathfinder X & Y Planning Report

14 July, 2009

PATHFINDER

Company:	Murchison Oil & Gas	**Local Co-ordinate Reference:**	Well # 4-H
Project:	Eddy County	**TVD Reference:**	WELL1 @ 3523.00ft (18' KB Correction)
Site:	Carbon Valley '25' Fed Com	**MD Reference:**	WELL1 @ 3523.00ft (18' KB Correction)
Well:	# 4-H	**North Reference:**	Grid
Wellbore:	Original Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	Midland Database

Project Eddy County

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Carbon Valley '25' Fed Com

Site Position:		**Northing:**	688,624.502 ft	**Latitude:**	32° 53' 34.798 N
From:	Map	**Easting:**	574,796.208 ft	**Longitude:**	104° 13' 27.581 W
Position Uncertainty:	0.00 ft	**Slot Radius:**	"	**Grid Convergence:**	0.06 °

Well #3Y-H

Well Position	**+N/-S**	0.00 ft	**Northing:**	688,624.502 ft	**Latitude:**	32° 53' 34.798 N
	+E/-W	0.00 ft	**Easting:**	574,796.208 ft	**Longitude:**	104° 13' 27.581 W
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	ft	**Ground Level:**	3,505.00 ft

Wellbore Original Hole

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	06/18/2009	8.16	60.76	49,173

Design Plan #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	5,804.50

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	279.54

Company:	Murchison Oil & Gas	**Local Co-ordinate Reference:**	Well # 4-H
Project:	Eddy County	**TVD Reference:**	WELL1 @ 3523.00ft (18' KB Correction)
Site:	Carbon Valley '25' Fed Com	**MD Reference:**	WELL1 @ 3523.00ft (18' KB Correction)
Well:	# 4-H	**North Reference:**	Grid
Wellbore:	Original Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	Midland Database

Survey Tool Program **Date** 07/02/2009

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
3,523.00	5,804.50	Plan #1 (Pilot Hole)		
5,804.50	11,190.47	Plan #1 (Original Hole)		

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
0.00	0.00	0.00	0.00	-3,523.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
3,523.00	0.00	0.00	3,523.00	0.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
3,623.00	0.00	0.00	3,623.00	100.00	0.00	0.00	0.00	0.00	688,624 50	574,796.21
3,723.00	0.00	0.00	3,723.00	200.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
3,823.00	0.00	0.00	3,823.00	300.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
3,923.00	0.00	0.00	3,923.00	400.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
4,023.00	0.00	0.00	4,023.00	500.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
4,123.00	0.00	0.00	4,123.00	600.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
4,223.00	0.00	0.00	4,223.00	700.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
4,323.00	0.00	0.00	4,323.00	800.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
4,423.00	0.00	0.00	4,423.00	900.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
4,523.00	0.00	0.00	4,523.00	1,000.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
4,623.00	0.00	0.00	4,623.00	1,100.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
4,723.00	0.00	0.00	4,723.00	1,200.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
4,823.00	0.00	0.00	4,823.00	1,300.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
4,923.00	0.00	0.00	4,923.00	1,400.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
5,023.00	0.00	0.00	5,023.00	1,500.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
5,123.00	0.00	0.00	5,123.00	1,600.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
5,223.00	0.00	0.00	5,223.00	1,700.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
5,323.00	0.00	0.00	5,323.00	1,800.00	0.00	0.00	0 00	0.00	688,624.50	574,796.21
5,423.00	0 00	0.00	5,423.00	1,900.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21

Company:	Murchison Oil & Gas	**Local Co-ordinate Reference:**	Well #4-H
Project:	Eddy County	**TVD Reference:**	WELL1 @ 3523.00ft (18' KB Correction)
Site:	Carbon Valley '25' Fed Com	**MD Reference:**	WELL1 @ 3523.00ft (18' KB Correction)
Well:	#4-H	**North Reference:**	Grid
Wellbore:	Original Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
5,523.00	0.00	0.00	5,523.00	2,000.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
5,623.00	0.00	0.00	5,623.00	2,100.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
5,723.00	0.00	0.00	5,723.00	2,200.00	0.00	0.00	0.00	0.00	688,624.50	574,796.21
5,804.50	0.00	0.00	5,804.50	2,281.50	0.00	0.00	0.00	0.00	688,624.50	574,796.21
KOP-5804.50'MD,0.00°INC,0.00°AZI,5804.50'TVD										
5,825.00	2.47	324.50	5,824.99	2,301.99	0.36	-0.26	0.31	12.05	688,624.86	574,795.95
5,850.00	5.48	324.50	5,849.93	2,326.93	1.77	-1.26	1.54	12.05	688,626.27	574,794.94
5,875.00	8.49	324.50	5,874.74	2,351.74	4.25	-3.03	3.69	12.05	688,628.75	574,793.18
5,900.00	11.51	324.50	5,899.36	2,376.36	7.78	-5 55	6.76	12 05	688,632.28	574,790.66
5,925.00	14.52	324.50	5,923.71	2,400.71	12.36	-8.82	10.75	12.05	688,636.86	574,787.39
5,950.00	17.53	324.50	5,947.74	2,424.74	17.98	-12.82	15.63	12.05	688,642.48	574,783.38
5,975.00	20.54	324.50	5,971.37	2,448.37	24.62	-17.56	21.40	12.05	688,649.12	574,778.65
6,000.00	23.55	324.50	5,994.54	2,471.54	32.26	-23.01	28.04	12.05	688,656.76	574,773.20
6,025.00	26.57	324.50	6,017.18	2,494.18	40.88	-29.16	35.53	12.05	688,665.38	574,767.05
6,050.00	29.58	324.50	6,039.24	2,516.24	50.45	-35.99	43.85	12.05	688,674.95	574,760.22
6,075.00	32.59	324.50	6,060.65	2,537.65	60.96	-43.48	52.99	12.05	688,685.46	574,752.73
6,100 00	35.60	324.50	6,081.35	2,558 35	72.37	-51.62	62.90	12.05	688,696.87	574,744.59
6,125.00	38.61	324.50	6,101.28	2,578.28	84.64	-60.38	73.58	12.05	688,709.15	574,735.83
6,150.00	41.63	324.50	6,120.40	2,597.40	97.76	-69.73	84.97	12.05	688,722.26	574,726.48
6,175.00	44.64	324.50	6,138.64	2,615.64	111.67	-79.65	97.07	12.05	688,736.17	574,716.55
6,200.00	47.65	324.50	6,155.96	2,632 96	126.35	-90.12	109.82	12.05	688,750.85	574,706.09
6,225.00	50.66	324.50	6,172.31	2,649.31	141.74	-101.10	123.20	12.05	688,766.24	574,695.11
6,250.00	53.67	324.50	6,187.64	2,664.64	157.81	-112.57	137.18	12.05	688,782.32	574,683.64
6,275 00	56.69	324.50	6,201.92	2,678.92	174.52	-124.48	151.70	12.05	688,799.02	574,671.72
6,300.00	59.70	324.50	6,215.09	2,692.09	191.81	-136.82	166.73	12.05	688,816.32	574,659.39
6,325.00	62.71	324.50	6,227.13	2,704.13	209.65	-149.54	182.23	12.05	688,834.15	574,646.67
6,350.00	65.72	324 50	6,238.01	2,715.01	227 97	-162 61	198.16	12.05	688,852.47	574,633.60

Company:	Murchison Oil & Gas	**Local Co-ordinate Reference:**	Well #4-H
Project:	Eddy County	**TVD Reference:**	WELL1 @ 3523.00ft (18' KB Correction)
Site:	Carbon Valley '25' Fed Com	**MD Reference:**	WELL1 @ 3523.00ft (18' KB Correction)
Well:	#4-H	**North Reference:**	Grid
Wellbore:	Original Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
6,375.00	68.73	324.50	6,247.68	2,724.68	246.74	-176.00	214.47	12.05	688,871.24	574,620.21
6,400.00	71.75	324.50	6,256.13	2,733.13	265.89	-189.66	231.12	12.05	688,890.39	574,606.55
6,425.00	74.76	324.50	6,263.34	2,740.34	285.38	-203.56	248.06	12.05	688,909.88	574,592.65
6,450.00	77.77	324.50	6,269.27	2,746.27	305.14	-217.66	265.24	12.05	688,929.65	574,578.55
6,470.17	80.20	324.50	6,273.13	2,750.13	321.26	-229.15	279.25	12.05	688,945.76	574,567.05
PP(#3H)										
6,475.00	80.78	324.50	6,273.92	2,750.92	325.14	-231.92	282.62	12.05	688,949.64	574,564.29
6,500.00	83.79	324.50	6,277.28	2,754.28	345.31	-246.30	300.15	12.05	688,969.81	574,549.90
6,525.00	86.81	324.50	6,279.33	2,756.33	365.59	-260.77	317.78	12.05	688,990.09	574,535.44
6,550.00	89.82	324.50	6,280.06	2,757.06	385.93	-275.28	335.46	12.05	689,010.43	574,520.93
6,559.49	90.96	324.50	6,280.00	2,757.00	393.66	-280.79	342.18	12.04	689,018.16	574,515.42
EOC-6559.49'MD,90.96°INC,324.50°AZI,6280.00'TVD,12.05°DLS, 342.18'VS, 393.66'N, -280.79'E										
6,600.00	90.98	322.07	6,279.31	2,756.31	426.12	-305.01	371.44	6.00	689,050.62	574,491.20
6,650.00	91.00	319.07	6,278.45	2,755.45	464.73	-336.75	409.15	6.00	689,089.23	574,459.45
6,700.00	91.02	316.07	6,277.57	2,754.57	501.63	-370.48	448.52	6.00	689,126.13	574,425.73
6,750.00	91.04	313.07	6,276.67	2,753.67	536.70	-406.09	489.46	6.00	689,161.21	574,390.12
6,800.00	91.05	310.07	6,275.75	2,752.75	569.87	-443.49	531.84	6.00	689,194.37	574,352.72
6,850.00	91.06	307.07	6,274.83	2,751.83	601.03	-482.57	575.55	6.00	689,225.53	574,313.64
6,900.00	91.07	304.07	6,273.90	2,750.90	630.11	-523.23	620.47	6.00	689,254.61	574,272.97
6,950.00	91.08	301.07	6,272.96	2,749.96	657.01	-565.36	666.47	6.00	689,281.51	574,230.85
7,000.00	91.08	298.07	6,272.02	2,749.02	681.68	-608.84	713.43	6.00	689,306.18	574,187.37
7,050.00	91.08	295.06	6,271.08	2,748.08	704.03	-653.54	761.23	6.00	689,328.53	574,142.66
7,100.00	91.08	292.06	6,270.14	2,747.14	724.01	-699.36	809.73	6.00	689,348.51	574,096.85
7,150.00	91.07	289.06	6,269.20	2,746.20	741.57	-746.16	858.79	6.00	689,366.07	574,050.05
7,200.00	91.06	286.06	6,268.27	2,745.27	756.65	-793.82	908.29	6.00	689,381.16	574,002.39
7,250.00	91.05	283.06	6,267.35	2,744.35	769.22	-842.20	958.08	6.00	689,393.72	573,954.01
7,300.00	91.03	280.06	6,266.44	2,743.44	779.24	-891.17	1,008.04	6.00	689,403.74	573,905.04

Company:	Murchison Oil & Gas	**Local Co-ordinate Reference:**	Well # 4-H
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Well:	# 4-H	**North Reference:**	Grid
Wellbore:	Original Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
7,350.00	91.01	277.06	6,265.55	2,742.55	786.68	-940.60	1,058.02	6.00	689,411.18	573,855.61
7,400.00	90.99	274.06	6,264.68	2,741.68	791.53	-990.35	1,107.88	6.00	689,416.03	573,805.86
7,450.00	90.97	271.06	6,263.82	2,740.82	793.76	-1,040.29	1,157.50	6.00	689,418.26	573,755.92
7,467.68	90.96	270.00	6,263.52	2,740.52	793.92	-1,057.96	1,174.96	6.00	689,418.43	573,738.24
Build to 7467.68 'MD,90.96° INC,270.00°AZI,6263.52'TVD, 6.00° DLS										
7,470.21	90.98	270.15	6,263.48	2,740.48	793.93	-1,060.49	1,177.45	5.99	689,418.43	573,735.72
7,500.00	90.98	270.15	6,262.97	2,739.97	794.01	-1,090.28	1,206.84	0.00	689,418.51	573,705.93
7,600.00	90.98	270.15	6,261.27	2,738.27	794.27	-1,190.26	1,305.48	0.00	689,418.77	573,605.94
7,700.00	90.98	270.15	6,259.56	2,736 56	794.53	-1,290.25	1,404.13	0.00	689,419.03	573,505.96
7,800.00	90.98	270.15	6,257.85	2,734.85	794.79	-1,390.23	1,502.77	0.00	689,419.30	573,405.97
7,900.00	90.98	270.15	6,256.15	2,733.15	795.06	-1,490.22	1,601.42	0.00	689,419.56	573,305.99
8,000.00	90.98	270.15	6,254.44	2,731.44	795.32	-1,590.20	1,700.06	0.00	689,419.82	573,206.00
8,100.00	90.98	270.15	6,252.73	2,729.73	795.58	-1,690.19	1,798.71	0.00	689,420.08	573,106.02
8,200.00	90.98	270.15	6,251.03	2,728.03	795.85	-1,790.17	1,897.35	0.00	689,420.35	573,006.03
8,300.00	90.98	270.15	6,249.32	2,726.32	796.11	-1,890.16	1,996.00	0.00	689,420.61	572,906.05
8,400.00	90.98	270.15	6,247.61	2,724.61	796.37	-1,990.14	2,094.64	0.00	689,420.87	572,806.06
8,500.00	90.98	270.15	6,245.91	2,722.91	796.63	-2,090.13	2,193.29	0.00	689,421.14	572,706.08
8,600.00	90.98	270.15	6,244.20	2,721.20	796.90	-2,190.12	2,291.93	0.00	689,421.40	572,606.09
8,700.00	90.98	270.15	6,242.50	2,719 50	797.16	-2,290.10	2,390.57	0.00	689,421.66	572,506.11
8,800.00	90.98	270.15	6,240.79	2,717.79	797.42	-2,390.09	2,489.22	0.00	689,421.92	572,406.12
8,900.00	90.98	270.15	6,239.08	2,716.08	797.68	-2,490.07	2,587.86	0.00	689,422.19	572,306.14
9,000.00	90.98	270.15	6,237.38	2,714.38	797.95	-2,590.06	2,686.51	0.00	689,422.45	572,206.15
9,100.00	90.98	270.15	6,235.67	2,712.67	798.21	-2,690.04	2,785.15	0.00	689,422.71	572,106.17
9,200.00	90.98	270.15	6,233.96	2,710.96	798.47	-2,790.03	2,883.80	0.00	689,422 98	572,006.18
9,300.00	90.98	270.15	6,232.26	2,709.26	798.74	-2,890.01	2,982.44	0.00	689,423.24	571,906.20
9,400.00	90.98	270.15	6,230.55	2,707.55	799.00	-2,990.00	3,081.09	0.00	689,423.50	571,806.21
9,500.00	90.98	270.15	6,228.84	2,705.84	799.26	-3,089.98	3,179.73	0.00	689,423.76	571,706.23

Company:	Murchison Oil & Gas	**Local Co-ordinate Reference:**	Well # 4-H
Project:	Eddy County	**TVD Reference:**	WELL1 @ 3523.00ft (18' KB Correction)
Site:	Carbon Valley '25' Fed Com	**MD Reference:**	WELL1 @ 3523.00ft (18' KB Correction)
Well:	# 4-H	**North Reference:**	Grid
Wellbore:	Original Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
9,600.00	90.98	270.15	6,227.14	2,704.14	799.52	-3,189.97	3,278.38	0.00	689,424.03	571,606.24
9,700.00	90.98	270.15	6,225.43	2,702.43	799.79	-3,289.95	3,377 02	0.00	689,424.29	571,506.26
9,800.00	90.98	270.15	6,223.73	2,700.73	800.05	-3,389.94	3,475.67	0.00	689,424.55	571,406.27
9,900.00	90.98	270.15	6,222.02	2,699.02	800.31	-3,489.92	3,574.31	0.00	689,424.81	571,306.29
10,000.00	90.98	270.15	6,220.31	2,697.31	800.58	-3,589.91	3,672 96	0.00	689,425.08	571,206.30
10,100.00	90.98	270.15	6,218.61	2,695.61	800.84	-3,689.89	3,771.60	0.00	689,425.34	571,106.32
10,200.00	90.98	270.15	6,216.90	2,693.90	801.10	-3,789.88	3,870.25	0.00	689,425.60	571,006.33
10,300.00	90.98	270.15	6,215.19	2,692.19	801.36	-3,889.86	3,968.89	0.00	689,425.87	570,906.35
10,400.00	90.98	270.15	6,213.49	2,690.49	801.63	-3,989.85	4,067.54	0.00	689,426.13	570,806.36
10,500.00	90.98	270.15	6,211.78	2,688.78	801.89	-4,089.83	4,166.18	0.00	689,426.39	570,706.38
10,600.00	90.98	270.15	6,210.08	2,687.08	802.15	-4,189.82	4,264.82	0.00	689,426.65	570,606.39
10,700.00	90.98	270.15	6,208.37	2,685.37	802.41	-4,289.80	4,363.47	0.00	689,426.92	570,506.41
10,800.00	90.98	270.15	6,206.66	2,683.66	802.68	-4,389.79	4,462.11	0.00	689,427.18	570,406.42
10,900.00	90.98	270.15	6,204.96	2,681.96	802.94	-4,489.77	4,560.76	0.00	689,427.44	570,306.44
11,000.00	90.98	270.15	6,203.25	2,680.25	803.20	-4,589.76	4,659.40	0.00	689,427.70	570,206.45
11,100.00	90.98	270.15	6,201.54	2,678.54	803.47	-4,689.74	4,758.05	0.00	689,427.97	570,106.47
11,186.18	90.98	270.15	6,200.07	2,677.07	803.69	-4,775.91	4,843.06	0.00	689,428.19	570,020.30
PBHL #2										
11,190.46	90.98	270.15	6,200.00	2,677.00	803.70	-4,780.19	4,847.28	0.00	689,428.20	570,016.02
BHL-11190.46'MD,90.98°INC,270.15°AZI, 6200.00'TVD, 4847.28'VS, 803.70'N, -4780.19'E										
11,190.47	90.98	270.15	6,200.00	2,677.00	803.70	-4,780.20	4,847.29	0.01	689,428.21	570,016.01
PBHL										

Company:	Murchison Oil & Gas	**Local Co-ordinate Reference:**	Well # 4-H
Project:	Eddy County	**TVD Reference:**	WELL1 @ 3523.00ft (18' KB Correction)
Site:	Carbon Valley '25' Fed Com	**MD Reference:**	WELL1 @ 3523.00ft (18' KB Correction)
Well:	# 4-H	**North Reference:**	Grid
Wellbore:	Original Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	Midland Database

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL #2	0.00	0.00	6,410.00	533.70	-4,780.20	689,158.205	570,016.009	32° 53' 40.124 N	104° 14' 23 640 W
- plan misses by 342.03ft at 11186.18ft MD (6200.07 TVD, 803.69 N, -4775.91 E)									
- Point									
PBHL	0.00	0.00	6,200.00	803.70	-4,780.20	689,428.205	570,016.009	32° 53' 42.796 N	104° 14' 23 637 W
- plan hits target									
- Point									
PP(#3H)	0.00	0.00	6,280.00	319.20	-229.80	688,943.702	574,566.408	32° 53' 37.959 N	104° 13' 30.273 W
- plan misses by 7.21ft at 6470.17ft MD (6273.13 TVD, 321.26 N, -229.15 E)									
- Point									

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,543.55	6,280.00	Top of Wolfcamp		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
5,804.50	5,804.50	0.00	0.00	KOP-5804.50'MD,0.00°INC,0.00°AZI,5804.50'TVD
6,559.49	6,280.00	393.66	-280.79	EOC-6559.49'MD,90.96°INC,324.50°AZI,6280.00'TVD,12.05°DLS, 342
7,467.68	6,263.52	793.92	-1,057.96	Build to 7467.68 'MD,90.96° INC,270.00°AZI,6263.52'TVD, 6.00° DLS
11,190.46	6,200.00	803.70	-4,780.19	BHL-11190.46'MD,90.98°INC,270.15°AZI, 6200.00'TVD, 4847.28'VS, 8

Checked By: _____ Approved By: _____ Date: _____

Murchison Oil & Gas, Inc.

Closed Loop Equipment Diagram

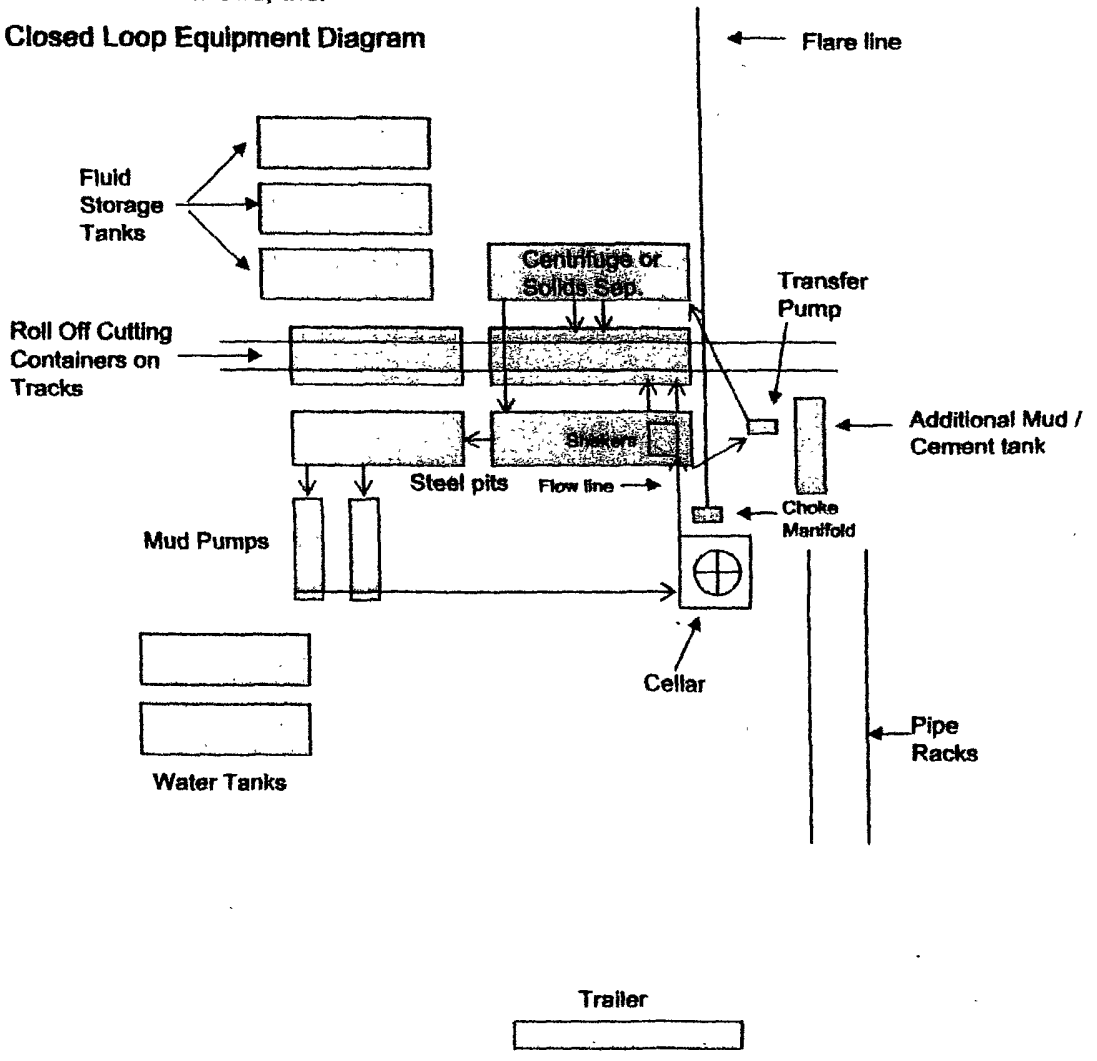
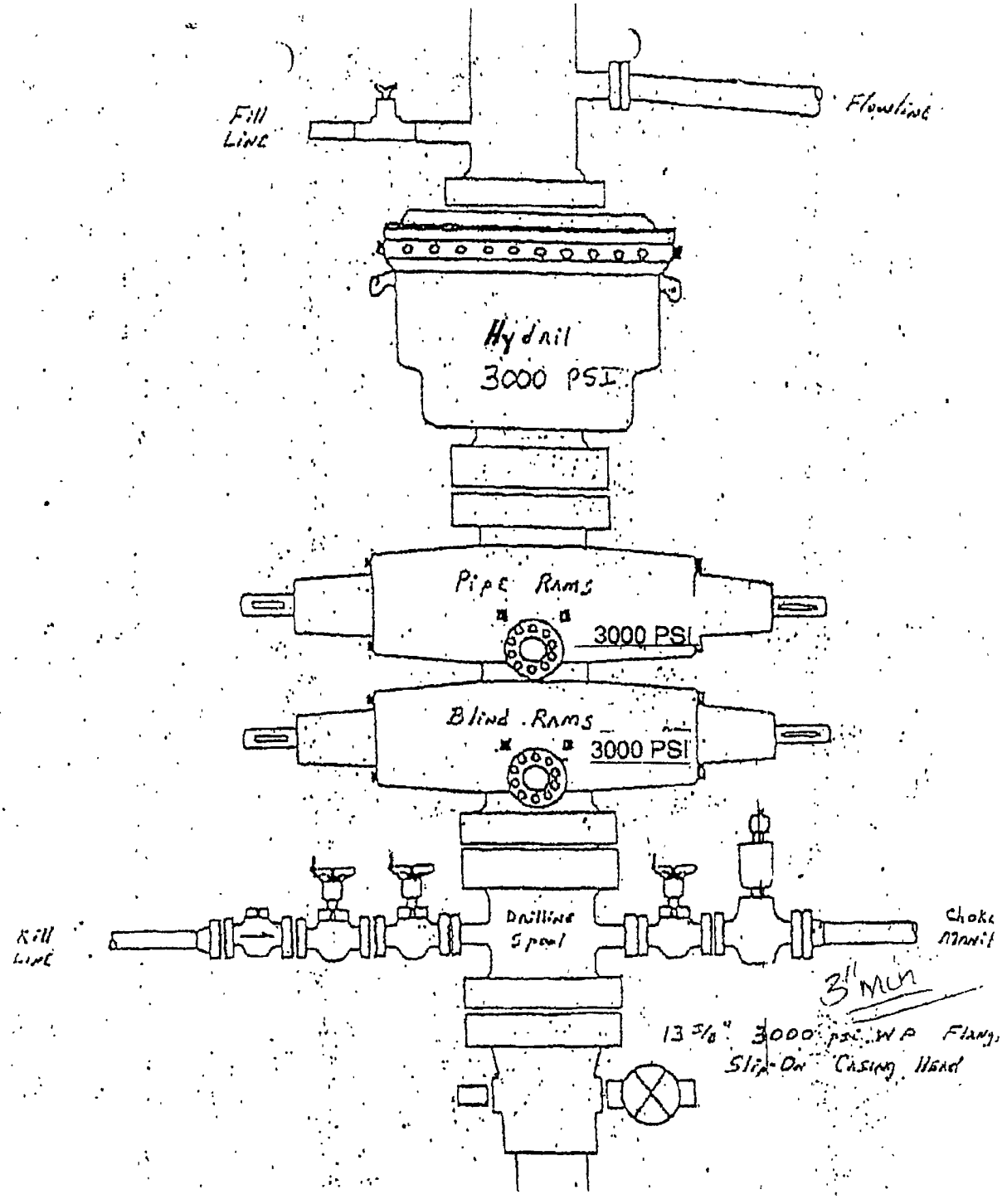


EXHIBIT F

EXHIBIT G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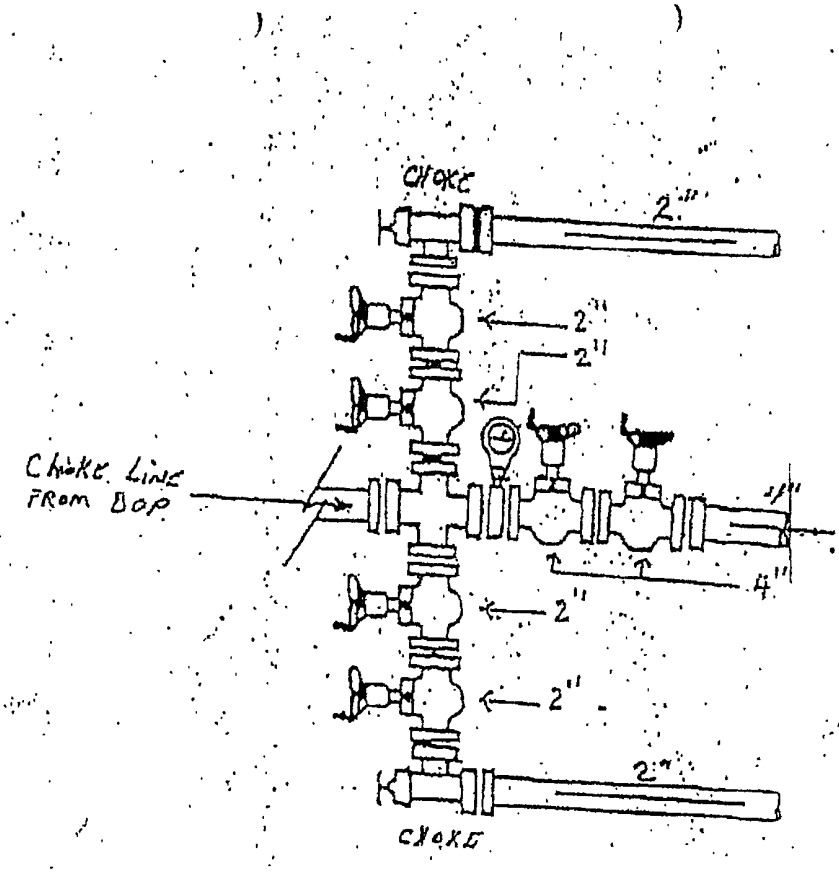
Flowline
Hydril
3000 PSI
Pipe Rams
3000 PSI
Blind Rams
3000 PSI
Kill Line
Drilling Spool
Choke Manif
3" Min
13 5/8" 3000 psi WP Flang
Slip-On Casing Head

EXHIBIT H



MURCHISON OIL & GAS, INC.

HYDROGEN SULFIDE (H2S) CONTINGENCY PLAN FOR DRILLING/COMPLETING/WORKOVER/FACILITY WITH THE EXCEPTION OF H2S IN EXCESS OF 100 PPM

MURCHISON OIL & GAS, INC.
NEW DRILL WELL
CARBON VALLEY 25 FED COM #4-H
SL: 2640' FNL & 150' FEL, UNIT H
BHL: 1980' FNL & 330' FWL, UNIT E
SEC 25, T16S, R27E
EDDY COUNTY, NEW MEXICO

This well/facility is not expected to have H2S, but the following is submitted as requested.

TABLE OF CONTENTS

GENERAL H2S EMERGENCY ACTIONS

In the event of any evidence of H2S emergency, the following plan will be initiated:

1. All personnel will immediately evacuate to an upwind and if possible uphill "safe area".
2. If for any reason a person must enter the hazardous area, they must wear a SCBA (self-contained breathing apparatus).
3. Always use the "buddy system."
4. Isolate the well/problem if possible.
5. Account for all personnel.
6. Display the proper colors warning all unsuspecting personnel of the danger at hand.
7. Contact the company representative as soon as possible if not at the location (use the enclosed call list as instructed).

At this point the company representative will evaluate the situation and coordinate the necessary duties to bring the situation under control, and if necessary, the notification of emergency response agencies and residents.

EMERGENCY PROCEDURES FOR AN UNCONTROLLABLE RELEASE OF H2S

1. All personnel will don the self-contained breathing apparatus.
2. Remove all personnel to the "safe area": (always use the "buddy system").
3. Contact company representative if not on location.
4. Set in motion the steps to protect and/or remove the general public to any upwind "safe area." Maintain strict security and safety procedures while dealing with the source.
5. No entry to any unauthorized personnel.
6. Notify the appropriate agencies:
   City Police - City streets
   State Police - State Roads
   County Sheriff - County Roads
7. Call the NMOCD.

If at this time the supervising person determines the release of H2S cannot be contained to the site location and the general public is in harm's way, he will immediately notify public safety personnel.

EMERGENCY CALL LIST

	Office	Cell	Home
Arnold Nall	972-931-0700	214-415-3010	972-596-8504
Tommy Folsom	575-628-3932	575-706-0667	575-885-3474
Randy Ford	432-682-0440	432-599-2222	432-684-4334

EMERGENCY RESPONSE NUMBERS
Eddy County, New Mexico

State Police	**888-442-6677**
Eddy County Sheriff - Carlsbad	**575-396-3611**
Eddy County Emergency Management - Carlsbad	**575-887-7551**
State Emergency Response Center (SERC)	**575-476-9620**
Artesia Police / Fire / Ambulance Department	**575-746-5000**
New Mexico Oil Conservation Division - Artesia	**575-748-1283**
Callaway Safety Equipment, Inc.	**575-392-2973**

PROTECTION OF THE GENERAL (ROE) RADIUS OF EXPOSURE

In the event greater than 100 ppm H2S is present, the ROE calculations will be done to determine if the following conditions exist and whether the Plan must be activated:

* 100 ppm at any public area (any place not associated with this site)

* 500 ppm at any public road (any road which the general public may travel).

* 100 ppm radius of 3000' will be assumed if there is insufficient data to do the calculations, and there is a reasonable expectation that H2S could be present in concentrations greater than 100 ppm in the gas mixture.

Calculation for the 100 ppm ROE: (H2S concentrations in decimal form)

ROE = [(1.589)(H2S concentration)(Q)] (^0.6258) 10,000 ppm + = .01
1,000 ppm + = .001

Calculation for the 500 ppm ROE: 100 ppm + = .0001
10 ppm + = .00001

ROE = [(0.4546)(H2S concentration)(Q)] (^0.6258)

EXAMPLE: If a well/facility has been determined to have 650 ppm H2S in the gas mixture and the well/facility is producing at a gas rate of 200 MCFD then:

ROE for 100 ppm ROE=[(1.589)(.00065)(200,000)] ^0.6258
ROE=28.1'

ROE for 500 ppm ROE=[(.4546)(.00065)(200,000)] ^0.6258
ROE=12.8'

These calculations will be forwarded to the appropriate NMOCD district office when applicable.

PUBLIC EVACUATION PLAN

When the supervisor has determined that the general public will be involved, the following plan will be implemented.

1. Notification of the emergency response agencies of the hazardous condition and implement evacuation procedures.
2. A trained person in H2S safety shall monitor with detection equipment the H2S concentration, wind and area of exposure. This person will determine the outer perimeter of the hazardous area. The extent of the evacuation area will be determined from the data being collected. Monitoring shall continue until the situation has been resolved. All monitoring equipment shall be UL approved for use in Class I Groups A, B, C & D, Division I hazardous locations. All monitors will have a minimum capability of measuring H2S, oxygen, and flammable values.
3. Law enforcement shall be notified to set up necessary barriers and maintain such for the duration of the situation as well as aid in the evacuation procedure.
4. The company representative shall stay in communication with all agencies throughout the duration of the situation and inform such agencies when the situation has been contained and the affected area is safe to enter.

PROCEDURE FOR IGNITING AN UNCONTROLLABLE CONDITION

The decision to ignite a well should be a last resort with one, if not both, of the following conditions:

1. Human life and/or property are endangered.
2. There is no hope of bringing the situation under control with the prevailing conditions at the site.

Instructions for Igniting the Well:

1. Two people are required. They must be equipped with positive pressure, self-contained breathing apparatus and "D"-ring style, full body, OSHA approved safety harness. Non-flammable rope will be attached.
2. One of the people will be a qualified safety person who will test the atmosphere for H2S, oxygen and LFL. The other person will be the designated company representative.
3. Ignite upwind from a distance no closer than necessary. Make sure that the ignition site has the maximum escape avenue available. A 25mm flare gun with a range of approximately +/- 500 feet shall be used to ignite the gas.
4. Before igniting, check for the presence of combustible gases.
5. After igniting, continue emergency actions and procedures as before.

REQUIRED EMERGENCY EQUIPMENT

1. **Breathing Apparatus**
   - Rescue Packs (SCBA) – 1 unit shall be placed at each breathing area, 2 shall be stored in the safety trailer.
   - Work / Escape Packs – 4 packs shall be stored on the rig floor with sufficient air hose not to restrict work activity.
   - Emergency Escape Packs – 4 packs shall be stored in the doghouse for emergency evacuation.

2. **Signage and Flagging**
   - One Color Code Condition Sign will be placed at the entrance to the site reflecting the possible conditions at the site.
   - A Colored Condition flag will be on display reflecting the condition at the site at that time.

3. **Briefing Area**
   - Two perpendicular areas will be designated by signs and readily accessible.

4. **Windsocks**
   - Two windsocks will be placed in strategic locations, visible from all angles.

5. **H2S Detectors and Alarms**
   - The stationary detector with three (3) sensors will be placed in the upper dog house if equipped, set to visually alarm @ 10 ppm and audible alarm @ 15 ppm. Calibrate a minimum of every 30 days or as needed. The three sensors will be placed in the following places: (Gas sample tubes will be stored in the safety trailer):
     - Rig Floor
     - Bell Nipple
     - End of flow line or where well bore fluid is being discharged

6. **Auxiliary Rescue Equipment**
   - Stretcher
   - Two OSHA full body harnesses
   - 100' of 5/8" OSHA approved rope
   - One 20 lb. Class ABC fire extinguisher
   - Communication via cell phones on location and vehicles on location

USING SELF-CONTAINED BREATHING AIR EQUIPMENT (SCBA)

1. SCBA should be worn when any of the following are performed:
   - Working near the top or on top of a tank
   - Disconnecting any line where H2S can reasonably be expected.
   - Sampling air in the area to determine if toxic concentrations of H2S exist.
   - Working in areas where over 10 ppm of H2S has been detected.
   - At any time there is a doubt of the level of H2S in the area.
2. All personnel shall be trained in the use of SCBA prior to working in a potentially hazardous location.
3. Facial hair and standard eyeglasses are not allowed with SCBA.
4. Contact lenses are never allowed with SCBA.
5. When breaking out any line where H2S can reasonably be expected.
6. After each use, the SCBA unit shall be cleaned, disinfected, serviced and inspected.
7. All SCBA shall be inspected monthly.

RESCUE & FIRST AID FOR VICTIMS OF H2S POISONING

- Do not panic.
- Remain calm and think.
- Put on the breathing apparatus.
- Remove the victim to the safe breathing area as quickly as possible, upwind and uphill from source or crosswind to achieve upwind.
- Notify emergency response personnel.
- Provide artificial respiration and/or CPR as necessary.
- Remove all contaminated clothing to avoid further exposure.
- A minimum of two (2) personnel on location shall be trained in CPR and First Aid.

TOXIC EFFECTS OF H2S POISONING

Hydrogen Sulfide is extremely toxic. The acceptable ceiling concentration for eight-hour exposure is 10 PPM, which is .001% by volume. Hydrogen Sulfide is heavier than air (specific gravity-1.192) and is colorless and transparent. Hydrogen Sulfide is almost as toxic as Hydrogen Cyanide and is 5-6 times more toxic that Carbon Monoxide. Occupational exposure limits for Hydrogen sulfide and other gasses are compared below in Table 1. Toxicity table for H2S and physical effects are shown in Table II.

Table 1

Permissible Exposure Limits of Various Gasses

Common Name	Symbol	Sp. Gravity	TLV	STEL	IDLH
Hydrogen Cyanide	HCN	.94	4.7 ppm	C	
Hydrogen Sulfide	H2S	1.192	10 ppm	15 ppm	100 ppm
Sulfide Dioxide	SO2	2.21	2 ppm	5 ppm	
Chlorine	CL	2.45	.5 ppm	1 ppm	
Carbon Monoxide	CO	.97	25 ppm	200 ppm	
Carbon Dioxide	CO2	1.52	5000 ppm	30,000 ppm	
Methane	CH4	.55	4.7% LEL	14% UEL	

Definitions

A. TLV – Threshold Limit Value is the concentration employees may be exposed to based on a TWA (time weighted average) for eight (8) hours in one day for 40 hours in one (1) week. This is set by ACGIH (American Conference of Governmental Hygienists and regulated by OSHA.

B. STEL – Short Term Exposure Limit is the 15 minute average concentration an employee may be exposed to providing that the highest exposure never exceeds the OEL (Occupational Exposure Limit). The OEL for H2S is 19 PPM.

C. IDLH – Immediately Dangerous to Life and Health is the concentration that has been determined by the ACGIH to cause serious health problems or death if exposed to this level. The IDLH for H2S is 100 PPM.

D. TWA – Time Weighted Average is the average concentration of any chemical or gas for an eight (8) hour period. This is the concentration that any employee may be exposed to based on an TWA.

TABLE II

Toxicity Table of H2S

Percent %	PPM	Physical Effects
.0001	1	Can smell less than 1 ppm.
.001	10	TLV for 8 hours of exposure
.0015	15	STEL for 15 minutes of exposure
.01	100	Immediately Dangerous to Life & Health. Kills sense of smell in 3 to 5 minutes.
.02	200	Kills sense of smell quickly, may burn eyes and throat.
.05	500	Dizziness, cessation of breathing begins in a few minutes.
.07	700	Unconscious quickly, death will result if not rescued promptly.
.10	1000	Death will result unless rescued promptly. Artificial resuscitation may be necessary.

PHYSICAL PROPERTIES OF H2S

The properties of all gases are usually described in the context of seven major categories:

COLOR
ODOR
VAPOR DENSITY
EXPLOSIVE LIMITS
FLAMMABILITY
SOLUBILITY (IN WATER)
BOILING POINT

Hydrogen Sulfide is no exception. Information from these categories should be considered in order to provide a fairly complete picture of the properties of the gas.

COLOR – TRANSPARENT
Hydrogen Sulfide is colorless so it is invisible. This fact simply means that you can't rely on your eyes to detect its presence, a fact that makes the gas extremely dangerous to be around.

ODOR – ROTTEN EGGS
Hydrogen Sulfide has a distinctive offensive smell, similar to "rotten eggs." For this reason it earned its common name "sour gas." However, H2S, even in low concentrations, is so toxic that it attacks and quickly impairs a victim's sense of smell, so it could be fatal to rely on your nose as a detection device.

VAPOR DENSITY – SPECIFIC GRAVITY OF 1.192
Hydrogen Sulfide is heavier than air so it tends to settle in low-lying areas like pits, cellars or tanks. If you find yourself in a location where H2S is known to exist, protect yourself. Whenever possible, work in an area upwind and keep to higher ground.

EXPLOSIVE LIMITS – 4.3% TO 46%
Mixed with the right proportion of air or oxygen, H2S will ignite and burn or explode, producing another alarming element of danger besides poisoning.

FLAMMABILITY
Hydrogen Sulfide will burn readily with a distinctive clear blue flame, producing Sulfur Dioxide (SO2), another hazardous gas that irritates the eyes and lungs.

SOLUBILITY – 4 TO 1 RATIO WITH WATER
Hydrogen Sulfide can be dissolved in liquids, which means that it can be present in any container or vessel used to carry or hold well fluids including oil, water, emulsion and sludge. The solubility of H2S is dependent on temperature and pressure, but if conditions are right, simply agitating a fluid containing H2S may release the gas into the air.

BOILING POINT – (-76 degrees Fahrenheit)
Liquefied Hydrogen Sulfide boils at a very low temperature, so it is usually found as a gas.

SURFACE USE AND OPERATIONS PLAN FOR DRILLING, COMPLETION, AND PRODUCING

Murchison Oil & Gas, Inc.
Carbon Valley 25 Fed Com #4-H
SL: 2640' FNL & 150' FEL, UNIT H
BHL: 1980' FNL & 330' FWL, UNIT E
Sec 25, T16S, R27E
Eddy County, New Mexico

LOCATED
Approximately 11 miles NE of Artesia, New Mexico.

OIL & GAS LEASE
NMNM 103598

BOND COVERAGE
NM 2163

POOL
Wolfcamp

OIL & GAS RECORD LESSEE
Lessee: Murchison Oil & Gas, Inc., 1100 Mira Vista Blvd., Plano, Texas 75093
Operating Rights: Murchison Oil & Gas, Inc., 1100 Mira Vista Blvd, Plano, Texas 75093

SURFACE OWNER
State of New Mexico

MINERAL OWNER
State of New Mexico

GRAZING TENANT
Bogle Ltd Co. LLC, P.O. Box 460, Dexter, NM 88230 (575) 433-3500

EXHIBITS

A.	Well Location & Acreage Dedication Map
B.	Area Road Map
C-1 & C-2	Vicinity Oil & Gas Map
D.	Topographic & Location Verification Map
E-1---E-7	Proposed Lease Road and Pad Layout Map
F.	Drilling Rig Layout
G.	BOPE Schematic
H.	Choke Manifold Schematic

This well will be drilled to a BHL of approximately 6280' TVD, and approximately 11190' MD.

EXISTING ROADS

Exhibit A is a portion of a section map showing the location of the proposed well as staked.

Exhibit B is a map showing existing roads in the vicinity of the proposed well site.

Directions to well location: From the junction of Hwy. 82 and Southern Union (CR 202), go North winding East 4.0 miles to proposed lease road, go North 0.1 miles to lease road, on lease road go Northeast winding North 1.0 miles to a "T". Go North 0.6 miles then west then immediately North 0.3 miles to lease road. Go West 0.4 miles to proposed lease road; turn right (North) and proceed 0.2 miles to location.

ACCESS ROADS

Length and Width

Proposed access road is approximately 1106.1' of new road and 14481' of existing road (approx. 3.1 miles) long and 30' wide (Exhibit E-1 thru E-6). Murchison Oil & Gas, Inc. has agreements with the surface owners for right-of-way up to proposed lease road, and for the additional lease road to proposed well.

Surface Material

Six inches of caliche and water, compacted and graded.

Maximum Grade

Less than three percent

Turnouts

None needed

Drainage Design

N/A

Culverts

None needed

Gates and Cattle Guards

None required

LOCATION OF EXISTING WELLS

The locations of existing wells in Section 25 are shown on Exhibit C-1 and C-2.

LOCATION OF EXISTING AND/OR PROPOSED FACILITIES

Necessary production facilities for this well will be located on the well pad.

LOCATION AND TYPE OF WATER SUPPLY

It is planned to drill the proposed well with a cut-brine water system or with produced water. The water will be obtained from either a private water well owner or a commercial source and will either be piped to location from a nearby water well or will be hauled to location by truck over existing and proposed lease roads as shown on Exhibit E.

SOURCE OF CONSTRUCTION MATERIALS

Caliche required for the construction of the location pad and access road will be obtained from caliche on the location or from the nearest BLM-approved pit.

METHODS OF HANDLING WASTE DISPOSAL

All drilling fluid will be circulated over shaker(s) with cuttings discharged into roll off container.

Fluid and fines below shaker(s) will be circulated with transfer pump through centrifuge(s) or solids separator with cuttings and fines discharged into roll off container.

Fluid will be continuously re-circulated through equipment with polymer added to aid separation of cutting fines.

Roll-off containers will be lined and de-watered with fluids re-circulated into system.

Additional tank will be used to capture unused drilling fluid or cement returns from casing jobs.

This equipment will be maintained by solids control personnel and/or rig crews on location.

Cuttings will be hauled to one of the following, depending on which rig is available to drill well:

CRI (permit number R9166)
or
GMI (permit number 711-019-001)

ANCILLARY FACILITIES

None required.

WELL SITE LAYOUT

Exhibit F shows the relative location and dimensions of the well pad, mud pits, reserve pit, and trash pit, and the location of major rig components. The V-door will be to the East, and the steel pits located to the North.

The ground surface at the drilling location is essentially flat.

A Closed-Loop System will be used.

The pad area has been staked and flagged.

PLANS FOR RESTORATION OF THE SURFACE

After finishing drilling and/or completion operations, all equipment and other material not needed for further operations will be removed. The location will be cleared of all trash and junk to leave the site in an as aesthetically pleasing condition as possible.

Any unguarded pits containing fluids will be fenced until they are filled.

If the proposed well is non productive, all rehabilitation and/or vegetation requirements of the Bureau of Land Management and the United States Geological Survey will be complied with and will be accomplished as expeditiously as possible.

OTHER INFORMATION

Topography

The land surface at the well site is small, rolling hills.

Soil

Loamy soil shallow to caliche and raw Gypsum.

Flora and Fauna

The vegetation consists of creosote, mesquite, yucca, prickly pear, Mormon tea, cane cholla, pencil cholla, horse crippler and various grasses. Faunal species include pronghorn antelope, mule deer, coyote, badger, rabbits, and various snakes, small mammals, birds and reptiles.

Ponds and Streams

There are no rivers, lakes, ponds, or streams in the area.

Residences and Other Structures

There are no residences within one mile of the proposed well site.

Archaeological, Historical, and Cultural sites

An Archaeological Survey has been sent to the BLM Office.

Land Use

Grazing

OPERATOR'S REPRESENTATIVES

Arnold Nall
1100 Mira Vista Blvd.
Plano, TX 75093-4698
Office Phone: (972) 931-0700
Cell Phone: (214) 415-3010

Randy Ford
415 W. Wall Street, Suite 1700
Midland, TX 79701
Office Phone: (432) 682-0440
Cell Phone: (432) 559-2222

Murchison Oil & Gas, Inc.
Carbon Valley 25 Fed Com #4-H
SL: 2640' FNL & 150' FEL, UNIT H
BHL: 1980' FNL & 330' FWL, UNIT E
Sec 25, T16S, R27E
Eddy County, New Mexico

CERTIFICATION

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Murchison Oil & Gas, Inc. and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

July 15, 2009
Date

Arnold Nall
VP, Operations
Murchison Oil & Gas, Inc.

WELL FILE COPY

NMCRIS INVESTIGATION ABSTRACT FORM (NIAF)

1. NMCRIS Activity No.:	2a. Lead (Sponsoring) Agency:	2b. Other Permitting Agency(ies):	3. Lead Agency Report No.:
114,042	BLM-CFO	State of New Mexico	

4. Title of Report: A Cultural Resource Survey for the Carbon Valley "25" Federal Com No 4-H Well Pad and Access Road

Author(s) Justin Rein

5. Type of Report
☐ **Negative** ☒ **Positive**

6. Investigation Type
☐ Research Design ☒ Survey/Inventory ☐ Test Excavation ☐ Excavation ☐ Collections/Non-Field Study
☐ Overview/Lit Review ☐ Monitoring ☐ Ethnographic study ☐ Site specific visit ☐ Other

7. Description of Undertaking (what does the project entail?): The proposed undertaking involves a pedestrian cultural resource survey for the proposed Murchison Oil and Gas, Inc. Carbon Valley "25" Federal Com No. 4H well location and associated access road. The proposed well will impact an area no greater than 400 ft by 400 ft yet a 600 ft by 600 ft block of land was surveyed. Likewise, the proposed road will impact a strip of land no greater than 50 ft wide, yet a 100 ft wide corridor was surveyed.

8. Dates of Investigation: June 1, 3, 8, and 9, 2009

9. Report Date: June 16, 2009

10. Performing Agency/Consultant:
Boone Archaeological Services, LLC
2030 North Canal
Carlsbad, NM 88220
505-885-1352
Principal Investigator: Danny Boone
Field Supervisor: Justin Rein
Field Personnel Names: Justin Rein

11. Performing Agency/Consultant Report No.:
BAS-05-09-25

12. Applicable Cultural Resource Permit No(s):
BLM Permit No. 190-2920-08-K
NM State Permit No. NM-09-157-S

13. Client/Customer (project proponent):
Murchison Oil & Gas, Inc.
Contact: Vicki Johnston
Address: 1100 Mira Vista Blvd.
Plano, Texas 75093-4698
Phone: (281) 468-2448

14. Client/Customer Project No.: N/A

15. Land Ownership Status ***(Must be indicated on project map):***

Land Owner	Acres Surveyed	Acres in APE
Bureau of Land Management – Carlsbad Field Office (BLM-CFO)	6.61	3.03
State of New Mexico	10.40	1.90
TOTALS	17.01	4.93

16. Records Search(es):

Date(s) of ARMS File Review: June 1, 2009	**Name of Reviewer(s):** Justin Rein	
Date(s) of NR/SR File Review: June 1, 2009	**Name of Reviewer(s):** Justin Rein	
Date(s) of Other Agency File Review: May 29, 2009	**Name of Reviewer(s):** Justin Rein	**Agency** BLM-CFO

Three previously recorded sites (LA 142362, LA 142398, and LA 142409) were found within 0.25 miles of the project area. One of these sites, LA 142409, was found within 500 ft. None of the sites will be affected by the current undertaking.

17. Survey Data:

a. Source Graphics ☒ NAD 27 ☐ NAD 83

☒ USGS 7.5' (1:24,000) topo map ☐ Other topo map, Scale:

☒ GPS Unit **Accuracy** ☐<1.0m ☒ 1-10m ☐ 10-100m ☐>100m

b. USGS 7.5' Topographic Map Name | **USGS Quad Code**

Diamond Mound, New Mexico 1951	32104-H2

c. County(ies): Eddy County

17. Survey Data (continued):

d. Nearest City or Town: Artesia, New Mexico

e. Legal Description:

Township (N/S)	Range (E/W)	Section	¼	¼	¼
16 South	27 East	25	E½	SE¼	NE¼
		25	E½	NE¼	SE¼
16 South	28 East	30	W½	SW¼	NW¼
		30	NW¼	NW¼	SW¼

Projected legal description? Yes ☒ **, No** ☐ **Unplatted** ☒

f. Other Description (e.g. well pad footages, mile markers, plats, land grant name, etc.): As originally staked, the proposed well surface location is centered 2,250 feet from the north line and 100 feet from the east line of Section 25 in Township 16 South Range 27 East. The proposed access road begins at the southeastern margin of the proposed well location and travels 1,496.1 ft south where it terminates at the northern margin of an existing caliche-capped lease road. Section 25, in Township 16 South, Range 27 East, is an irregular Section. The template was anchored in the northeast and southeast corners of the section for the above legal description.

To avoid any impact to LA 163178, the proposed well location was relocated to the south and slightly west. The access road was likewise relocated to adjust for the well pad shift. The new well location was relocated to be centered 2,640 feet from the north line and 150 feet from the east line of Section 25, still in Township 16 South, Range 27 East. The access road centerline was shifted 100 ft to the west and shortened slightly to approximately 1,100 ft.

18. Survey Field Methods:

Intensity: ☒ 100% coverage ☐ <100% coverage

Configuration: ☒ block survey units: two 600 ft by 600 ft blocks, less overlap (see below for description)

☒ linear survey units (l x w): 1,346.1 ft long by 100 ft wide, 965 ft long by 50 ft wide ☐ other survey units (specify):

Scope: ☒ non-selective (all sites recorded) ☐ selective/thematic (selected sites recorded)

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

Survey Interval (m): 15m (50 ft) **Crew Size:** 1 **Fieldwork Dates:** June 1, 3, 8, and 9, 2009

Survey Person Hours: 17 **Recording Person Hours:** 6 **Total Hours:** 23

Additional Narrative: The proposed well location will impact an area no greater than 400 ft by 400 ft, yet a 600 ft by 600 ft block was surveyed to ensure the protection of any cultural resources. Roughly 150 ft of the proposed access road is within the limits of the block survey. A 100 ft wide corridor was surveyed along the remainder of the proposed access road, outside of the block survey, utilizing the same 15m (50 ft) transect interval. The survey totaled 11.36 acres on State of New Mexico property (111.1 linear ft plus the block survey, 8.52 acres) and Federal property (1,235 linear ft, 2.84 acres) with the Bureau of Land Management – Carlsbad Field Office (BLM-CFO) acting as lead agency.

The ensure the protection of any additional cultural resources, an additional 5.65 acres was surveyed about the new well location and access road, outside of the original survey, including 1.88 acres on State property and 3.77 acres on Federal property. A small portion of the relocated block survey (approximately 130 ft long by 360 ft wide, 1.07 acres) is within the limits of a previous cultural resource investigation (BLM-CFO project No. NM-09-0334). The portion of the current project overlapping the previous investigation was not included in the total survey acreage. In all, a total of 17.01 acres was surveyed over the course of the entire project.

19. Environmental Setting (NRCS soil designation; vegetative community; elevation; etc.): The project area is located along a low rise southeast of Dog Canyon Draw, just over 10 miles east-northeast of Artesia, New Mexico. Elevation ranges from 3,490 ft to 3,510 ft above mean sea level. Overall, the terrain slopes gradually downhill to the south and west, towards Dog Canyon Draw, at a grade of roughly 1.5 percent. Local soils are of the Reeves-Gypsum land-Cottonwood association as defined by the Soil Conservation Service of the U.S. Department of Agriculture. Local vegetation is typical of Chihuahuan Desert scrub and includes various grasses, prickly pear cacti, mesquite, yucca, barrel cacti, Mormon tea, and various low forbs.

Meteorological data was obtained for the nearby City of Artesia, New Mexico from the Western Regional Climate Center (WRCC) online database. From 1914 to 2004, Artesia received an average annual precipitation of 11.87 inches. During the same time, Artesia had an average high temperature of 76.9 degrees Fahrenheit and an average low temperature of 43.8 degrees Fahrenheit. January was the coldest month averaging 56.8 degrees Fahrenheit, while July was the warmest on average at 94.8 degrees Fahrenheit.

20.a. Percent Ground Visibility: 85%

b. Condition of Survey Area (grazed, bladed, undisturbed, etc.): Due to the vegetative ground cover, surface visibility averaged 85 percent at the time of survey. The proposed access road originates at an existing caliche-capped lease road roughly a quarter mile south of the proposed well. The road serves an active well location to the southwest. Additional oil and gas exploration is visible in the surrounding area. The project area is otherwise undeveloped and susceptible to natural aeolean and alluvial activities and openly grazing cattle.

21. CULTURAL RESOURCE FINDINGS ☒ **Yes, See Page 3** ☐ **No, Discuss Why:**

22. Required Attachments (check all appropriate boxes):
- ☒ **USGS 7.5 Topographic Map with sites, isolates, and survey area clearly drawn**
- ☒ **Copy of NMCRIS Mapserver Map Check**
- ☒ **LA Site Forms - new sites** ***(with sketch map & topographic map)***
- ☐ **LA Site Forms (update) - previously recorded & un-relocated sites** ***(first 2 pages minimum)***
- ☐ **Historic Cultural Property Inventory Forms**
- ☒ **List and Description of isolates, if applicable**
- ☐ **List and Description of Collections, if applicable**

23. Other Attachments:
- ☒ **Photographs and Log**
- ☒ **Other Attachments**

(Describe): Plats/ drawings provided by Murchison Oil & Gas, Inc.

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

Principal Investigator/Responsible Archaeologist: Justin Rein

Signature _____ **Date** June 16, 2009 **Title (if not PI):** Crew Chief

25. Reviewing Agency:
Reviewer's Name/Date

Accepted ( ) Rejected ( )

Tribal Consultation (if applicable): ☐ **Yes** ☐ **No**

26. SHPO
Reviewer's Name/Date:

HPD Log #:
SHPO File Location:
Date sent to ARMS:

CULTURAL RESOURCE FINDINGS

[fill in appropriate section(s)]

1. NMCRIS Activity No.:	2. Lead (Sponsoring) Agency:	3. Lead Agency Report No.:
114,042	BLM - CFO	

SURVEY RESULTS:
Sites discovered and registered: 1
Sites discovered and NOT registered: 0
Previously recorded sites revisited *(site update form required)*: 0
Previously recorded sites not relocated ***(site update form required):*** 0
TOTAL SITES VISITED: 1
Total isolates recorded: 3 **Non-selective isolate recording?** ☒
Total structures recorded *(new and previously recorded, including acequias)*: 0

MANAGEMENT SUMMARY: During the course of the survey, one newly recorded site, LA 163178, and three isolated manifestations were encountered and recorded. The site retains additional research potential and is therefore recommended eligible to the National register of Historic Places under Criterion d.

To avoid any impact to the site, the proposed well pad and access road were relocated. The well location was shifted 390 feet to the south and 50 feet west and the proposed access road was shifted 100 ft to the west. The relocated location avoids the site to the south by at least 30 m (90 ft). The relocated well and road were staked and surveyed on June 9, 2009 with no additional significant cultural materials encountered.

As such, archaeological clearance is recommended for the Murchison Oil and Gas, Inc. Carbon Valley "25" Federal Com No. 4-H well pad and associated access road as presently staked. If any additional cultural materials are encountered during any phase of construction, work at that location should cease and archaeologists with the BLM-CFO should be notified immediately.

IF REPORT IS NEGATIVE YOU ARE DONE AT THIS POINT.

SURVEY LA NUMBER LOG

Sites Discovered:

LA No.	Field/Agency No.	Eligible? (Y/N, applicable criteria)
LA 163178	BAS-05-09-25A	Y, Criterion d.

Previously recorded revisited sites:

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

MONITORING LA NUMBER LOG *(site form required)*

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

LA No.	Field/Agency No.	LA No.	Field/Agency No.

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

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

Tested LA number(s)	Excavated LA number(s)

A CULTURAL RESOURCE SURVEY FOR THE CARBON VALLEY "25" FEDERAL COM NO 4-H WELL PAD AND ACCESS ROAD

Prepared by
Justin Rein

Submitted by
Boone Archaeological Services, LLC
Carlsbad, NM 88220

Presented to

Vicki Johnston
Murchison Oil and Gas, Inc.
1100 Mira Vista Blvd.
Plano, Texas 75093-4698

New Mexico State Permit No. NM-09-157-S
Bureau of Land Management Permit No. 190-2920-08-K
NMCRIS No. 114,042

BAS Report No. 05-09-25
June 16, 2009

Table of Contents

Introduction

On June 1, 3, 8, and 9, 2009, archaeologist Justin Rein, with Boone Archaeological Services, LLC performed a pedestrian cultural resource survey for the proposed Murchison Oil and Gas, Inc. Carbon Valley "25" Federal Com No. 4-H well pad and associated access road (NMCRIS Registration No. 114,042). Vicki Johnston, representing Murchison Oil and Gas, Inc., requested the survey and provided plats.

The project is located in Eddy County, New Mexico within Township 16 South, Range 27 East, Section 25 and Township 16 South, Range 28 East, Section 30. It can be found on the Diamond Mound, New Mexico 1951 7.5' series USGS quadrangle (Figure 1). A total of 17.01 acres was surveyed on State of New Mexico and Federal property with the Bureau of Land Management - Carlsbad Field Office (BLM-CFO) acting as lead agency.

During the course of the survey, one newly recorded site, LA 163178, and three isolated manifestations (IM's) were encountered and recorded. The site retains additional research potential and is recommended eligible for nomination to the National Register of Historic Places under Criterion d.

This survey was conducted in order to comply with federal and state laws designed to protect sensitive cultural resources, including Section 106 of the National Historic Preservation Act of 1966 (as amended) and Executive Order 11593. The standards and procedures that were followed are designed to meet or exceed those set forth by the Bureau of Land Management and the State of New Mexico. The project was conducted under New Mexico State Permit NM-09-157-S and Bureau of Land Management Survey Permit 190-2920-08-K.

Description of Undertaking

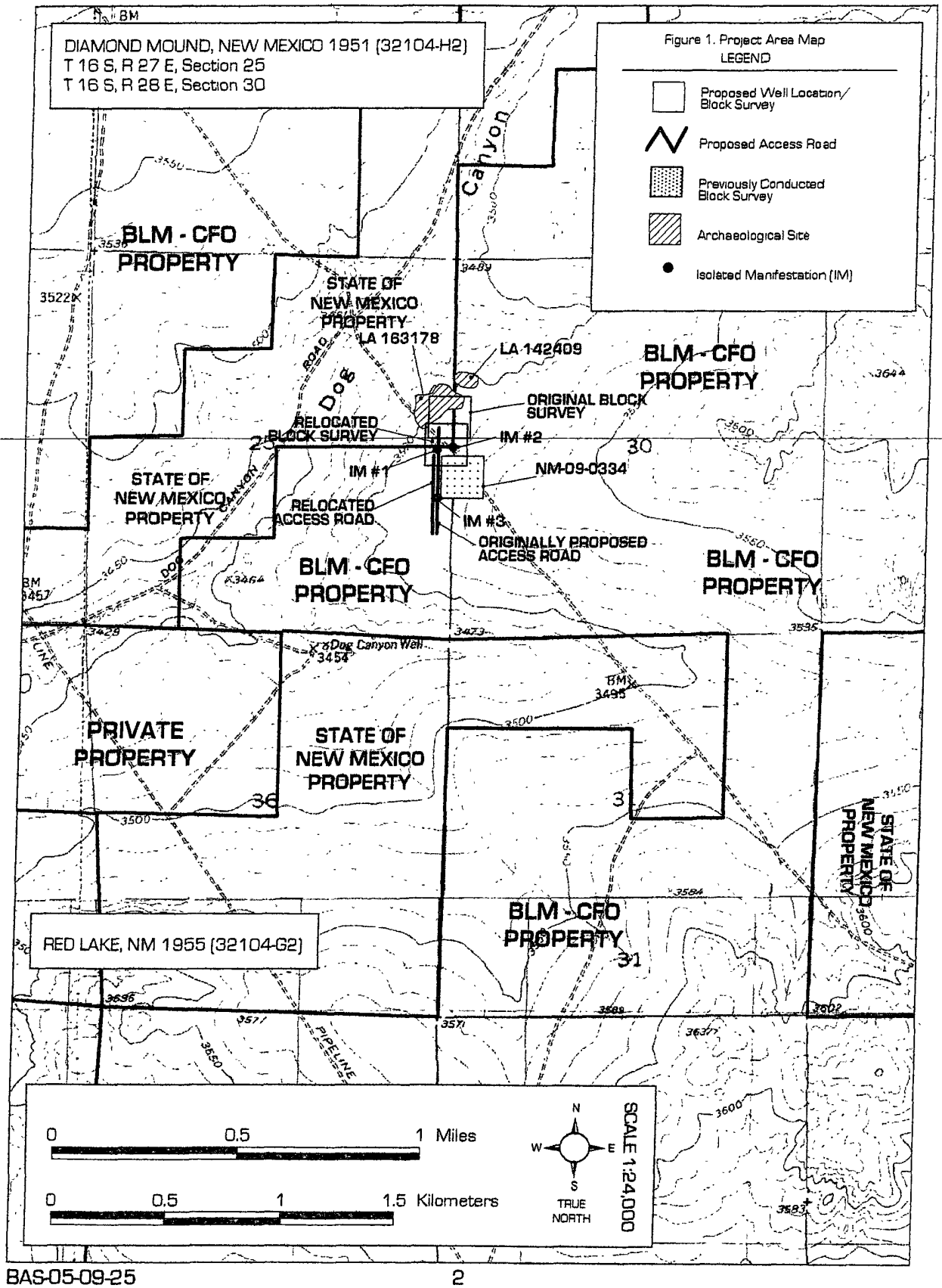
On June 1, 3, 8, and 9, 2009, Justin Rein, with Boone Archaeological Services, LLC conducted a pedestrian cultural resource survey for the proposed Murchison Oil and Gas, Inc. Carbon Valley "25" Federal Com No. 4-H well pad and associated access road. Vicki Johnston, representing Murchison Oil and Gas, Inc., requested the survey and provided plats. The project is located in Township 16 South, Range 27 East, Section 25 and Township 16 South, Range 28 East, Section 30. As originally staked, the proposed well surface location is centered 2,250 feet from the north line and 100 feet from the east line of Section 25 in Township 16 South Range 27 East. The proposed access road begins at the southeastern margin of the proposed well location and travels 1,496.1 ft south where it terminates at the northern margin of an existing caliche-capped lease road.

The proposed well location will impact an area no greater than 400 ft by 400 ft, yet a 600 ft by 600 ft block was surveyed to ensure the protection of any cultural resources. Roughly 150 ft of the proposed access road is within the limits of the block survey. A 100 ft wide corridor was surveyed along the remainder of the proposed access road, outside of the block survey, utilizing the same 15m (50 ft) transect interval. The survey totaled 11.36 acres on State of New Mexico property (111.1 linear ft plus the block survey, 8.52 acres) and Federal property (1,235 linear ft, 2.84 acres) with the Bureau of Land Management - Carlsbad Field Office (BLM-CFO) acting as lead agency.

During the course of the survey, one newly recorded site, LA 163178, and three isolated manifestations (IM's) were encountered and recorded. The site retains additional research potential and is recommended eligible for nomination to the National Register of Historic Places under Criterion d.

To avoid any impact to the site, the proposed well location was relocated to the south and slightly west. The access road was likewise relocated to adjust for the well pad shift. The new well location was relocated to be centered 2,640 feet from the north line and 150 feet from the east line of Section 25, still in Township 16 South, Range 27 East. The access road centerline was shifted 100 ft to the west and shortened slightly to approximately 1,100 ft. The relocated well location avoids LA 163178 to the south by at least 30 m (90 ft). The ensure the protection of any additional cultural resources, an additional 5.65 acres was surveyed about the new well location and access road, outside of the original survey, including

CARBON VALLEY "25" FEDERAL COM No. 4-H WELL PAD AND ACCESS ROAD



1.88 acres on State property and 3.77 acres on Federal property. A small portion of the relocated block survey (approximately 130 ft long by 360 ft wide, 1.07 acres) is within the limits of a previous cultural resource investigation (BLM-CFO project No. NM-09-0334). The portion of the current project overlapping the previous investigation was not included in the total survey acreage. In all, a total of 17.01 acres was surveyed over the course of the entire project.

Environmental Setting

The project area is located along a low rise southeast of Dog Canyon Draw, just over 10 miles east-northeast of Artesia, New Mexico. Elevation ranges from 3,490 ft to 3,510 ft above mean sea level. Overall, the terrain slopes gradually downhill to the south and west, towards Dog Canyon Draw, at a grade of roughly 1.5 percent. Local soils are of the Reeves-Gypsum land-Cottonwood association as defined by the Soil Conservation Service of the U.S. Department of Agriculture. Local vegetation is typical of Chihuahuan Desert scrub and includes various grasses, prickly pear cacti, mesquite, yucca, barrel cacti, Mormon tea, and various low forbs. Due to the vegetative ground cover, surface visibility averaged 85 percent at the time of survey. The proposed access road originates at an existing caliche-capped lease road roughly a quarter mile south of the proposed well. The road serves an active well location to the southwest. Additional oil and gas exploration is visible in the surrounding area. The project area is otherwise undeveloped and susceptible to natural aeolean and alluvial activities and openly grazing cattle.

Meteorological data was obtained for the nearby City of Artesia, New Mexico from the Western Regional Climate Center (WRCC) online database. From 1914 to 2004, Artesia received an average annual precipitation of 11.87 inches. During the same time, Artesia had an average high temperature of 76.9 degrees Fahrenheit and an average low temperature of 43.8 degrees Fahrenheit. January was the coldest month averaging 56.8 degrees Fahrenheit, while July was the warmest on average at 94.8 degrees Fahrenheit.

Results

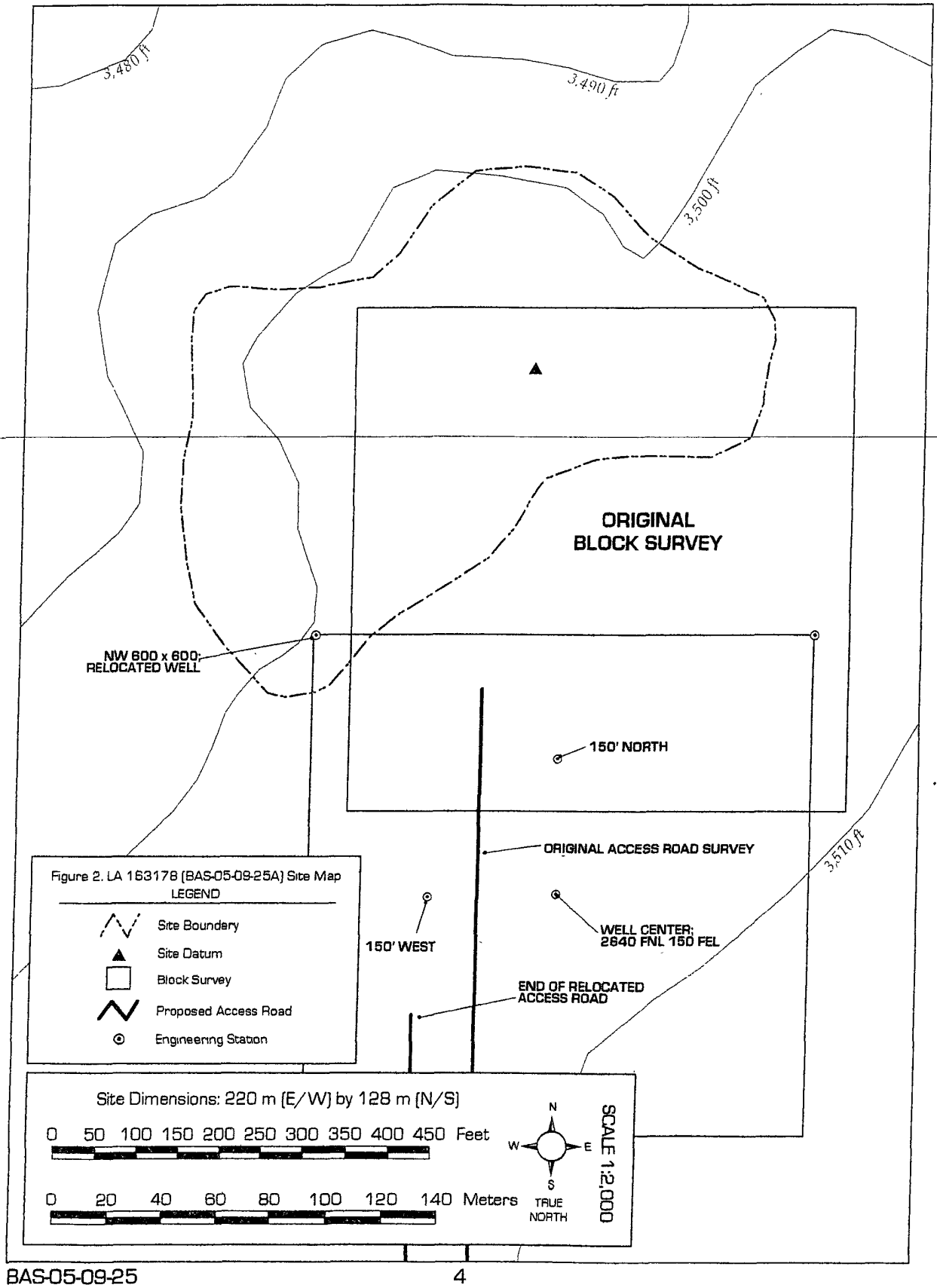
During the course of the survey, one newly recorded site, LA 163178, and three isolated manifestations (IM's) were encountered and recorded. The site retains additional research potential and is recommended eligible for nomination to the National Register of Historic Places under Criterion d. By definition, isolates are not eligible for the NRHP.

Recommendations

During the course of the survey, one newly recorded site, LA 163178, and three isolated manifestations were encountered and recorded. The site retains additional research potential and is therefore recommended eligible to the National register of Historic Places under Criterion d.

To avoid any impact to the site, the proposed well pad and access road were relocated. The well location was shifted 390 feet to the south and 50 feet west and the proposed access road was shifted 100 ft to the west. The relocated location avoids the site to the south by at least 30 m (90 ft). The relocated well and road were staked and surveyed on June 9, 2009 with no additional significant cultural materials encountered.

As such, archaeological clearance is recommended for the Murchison Oil and Gas, Inc. Carbon Valley "25" Federal Com No. 4-H well pad and associated access road as presently staked. If any additional cultural materials are encountered during any phase of construction, work at that location should cease and archaeologists with the BLM-CFO should be notified immediately.


3,480 ft
3,490 ft
3,500 ft
3,510 ft
ORIGINAL
BLOCK SURVEY
NW 600 x 600;
RELOCATED WELL
150' NORTH
ORIGINAL ACCESS ROAD SURVEY
150' WEST
WELL CENTER;
2640 FNL 150 FEL
END OF RELOCATED
ACCESS ROAD
Figure 2. LA 163178 (BAS-05-09-25A) Site Map
LEGEND
Site Boundary
Site Datum
Block Survey
Proposed Access Road
Engineering Station
Site Dimensions: 220 m (E/W) by 128 m (N/S)
0 50 100 150 200 250 300 350 400 450 Feet
0 20 40 60 80 100 120 140 Meters
N
W
E
S
TRUE
NORTH
SCALE 1:2,000

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Murchison Oil & Gas, Inc.
LEASE NO.:	NM103598
WELL NAME & NO.:	Carbon Valley 25 Fed Com 4H
SURFACE HOLE FOOTAGE:	2640' FNL & 150' FEL
BOTTOM HOLE FOOTAGE	1980' FNL & 330' FWL
LOCATION:	Section 25, T. 16 S., R 27 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

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

Cave/Karst Surface Mitigation

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

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

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

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

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

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

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

Cave/Karst Subsurface Mitigation

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

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

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

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

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

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

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

Communitization Agreement

A Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the BLM. The effective date of the agreement shall be prior to any sales. Operator to supply NMOCD order, which details the vertical and horizontal extent of pool to verify that requested communitization is within an approved and established pool.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5972 at least 3 working days prior to commencing construction of the access road and/or well pad.

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

B. TOPSOIL

The operator shall stockpile the topsoil of the well pad. The topsoil to be stripped is approximately 6 inches in depth. The topsoil shall not be used to backfill the reserve pit and will be used for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Although this is a closed loop system and no reserve pits will be utilized, the v-door will be on the east side of the location.

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

If the operator elects to surface the access road and/or well pad, mineral materials extracted during construction of the reserve pit may be used for surfacing the well pad and access road and other facilities on the lease.

Payment shall be made to the BLM prior to removal of any additional federal mineral materials from any site other than the reserve pit. Call the
Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. ON LEASE ACCESS ROADS

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

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

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

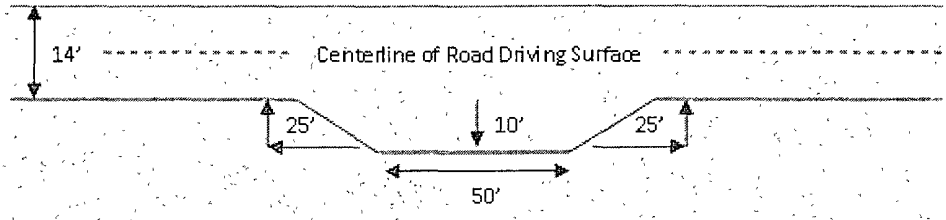
The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing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

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

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

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

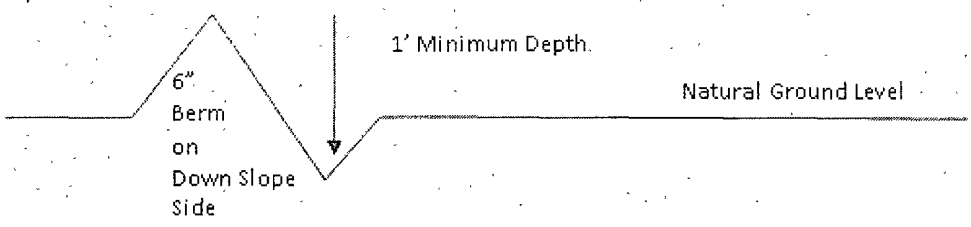
Standard Turnout – Plan View



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 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: 400'/4% + 100' = 200' lead-off ditch interval

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

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

Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations.

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

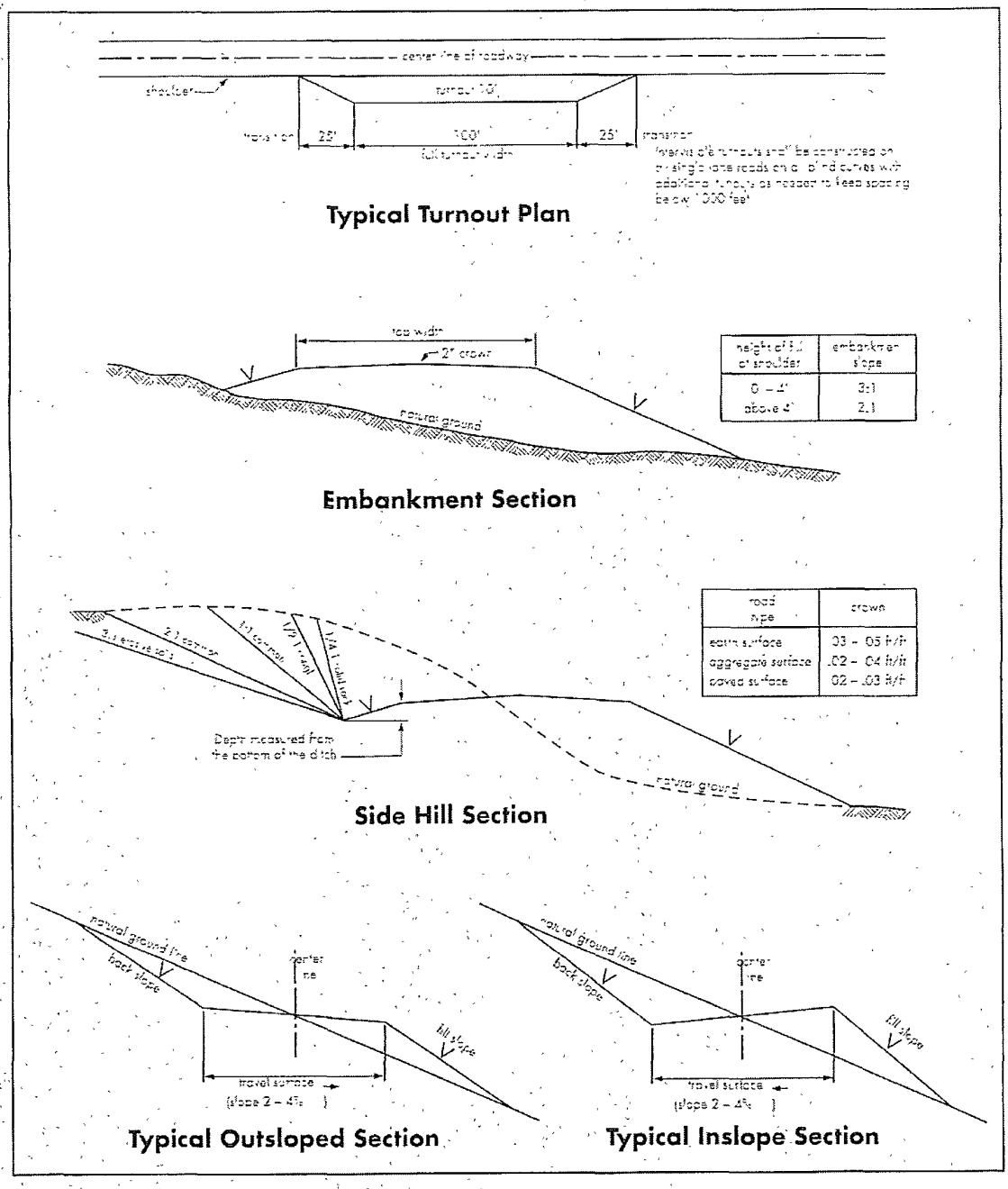
Fence Requirement
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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

Public Access

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

Figure 1 – Cross Sections and Plans For Typical Road Sections



VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

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

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

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

1. **Although Hydrogen Sulfide has not been reported in this section, it is always a potential hazard. If Hydrogen Sulfide is encountered, please report measured amounts and formations to the BLM. Operator has submitted an H2S drilling plan.**

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.

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

4. **The record of the drilling rate along with the CAL/GR/N well log run from TD to surface will be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

Changes to the approved APD casing and cement program require submitting a sundry and receiving approval prior to work. Failure to obtain approval prior to work will result in an Incident of Non-Compliance being issued.

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

Wait on cement (WOC) time for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Possible lost circulation in the Grayburg and San Andres formations.
Possible high pressure gas bursts in the Wolfcamp formation.

HIGH CAVE/KARST – IF LOST CIRCULATION OCCURS WHILE DRILLING THE SURFACE HOLE, THE BLM IS TO BE NOTIFIED PRIOR TO RUNNING THE SURFACE CASING. REVISED CEMENTING PROGRAM OR CONTINGENCY CASING MAY BE REQUIRED.

1. The **9-5/8** inch surface casing shall be set at approximately **1100** feet and cemented to the surface. **Casing is to be set in a competent formation, which may be difficult in the Artesia group. Onshore Order II requires casing to be set across a competent bed.**

    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 a surface log readout will be used or a cement bond log shall be run to verify the top of the cement.

    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.

IF LOST CIRCULATION OCCURS WHILE DRILLING THE 8-3/4" HOLE, THE CEMENT PROGRAM FOR THE 7" CASING WILL NEED TO BE MODIFIED AND THE BLM IS TO BE CONTACTED PRIOR TO RUNNING THE CASING. 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 WILL NOT BE PERMITTED. A DV TOOL WILL BE REQUIRED.

2. The minimum required fill of cement behind the **7** 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 high cave/karst. Additional cement may be required.**

   A two-stage job will require submitting a sundry and receiving approval prior to commencement of work.

Pilot hole will be plugged when the 7" casing is cemented.

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

   ☒ No cement required. Operator is using Peak Completion Liner.

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

   a. The tests shall be done by an independent service company.

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

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

   d. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

e. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the **Wolfcamp** formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

D. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the **Wolfcamp** formation, and shall be used until production casing is run and cemented.

E. DRILL STEM TEST

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

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VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

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

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

Painting Requirement
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color
Shale Green, Munsell Soil Color Chart # 5Y 4/2

IX. INTERIM RECLAMATION & RESEEDING PROCEDURE

A. INTERIM RECLAMATION

If the well is a producer, interim reclamation shall be conducted on the well site in accordance with the orders of the Authorized Officer. The operator shall submit a Sundry Notices and Reports on Wells (Notice of Intent), Form 3160-5, prior to conducting 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.

Operators should work with BLM surface management specialists to devise the best strategies to reduce the size of the location. Any reductions 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 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.

B. RESEEDING PROCEDURE

Once all drilling procedures are complete, completion procedures have been accomplished, and all trash removed, reseed the location and all surrounding disturbed areas as follows:

Seed Mixture 4, for Gypsum Sites

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

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

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

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

DWS: DeWinged Seed

*Pounds of pure live seed:

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

X. FINAL ABANDONMENT & REHABILITATION REQUIREMENTS

Upon abandonment of the well and/or when the access road is no longer in service the Authorized Officer shall issue instructions and/or orders for surface reclamation and restoration of all disturbed areas.

On private surface/federal mineral estate land the reclamation procedures on the road and well pad shall be accomplished in accordance with the private surface land owner agreement.