

OCD-ARTESIA

Form 3160-3
(April 2004)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

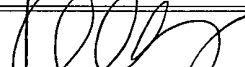
FORM APPROVED
OMB No. 1004-0137
Expires March 31, 2007

1a. Type of work <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5 Lease Serial No. SHL:NMNM-2507
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6 If Indian, Allottee or Tribe Name N/A
2 Name of Operator COG Operating LLC		7 If Unit or CA Agreement, Name and No N/A
3a Address 550 W. Texas, Suite 1300 Midland TX 79701		8 Lease Name and Well No. Trigg 5 Federal Com #1H [38991]
3b. Phone No. (include area code) (432) 685-4384		9 API Well No. 30-015- 39798
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface SHL: 380' FNL & 90' FWL, UL D, Lot 4 At proposed prod zone BHL: 380' FNL & 330' FEL, UL A, Lot 1 UNORTHODOX LOCATION		10 Field and Pool, or Exploratory Wildcat; Wolfcamp [96794]
14 Distance in miles and direction from nearest town or post office* 2.5 miles north of Loco Hills, NM		11. Sec., T R. M. or Blk and Survey or Area Sec 5, T16S, R31E
15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig unit line, if any) 90'	16 No of acres in lease SHL:854.35	17 Spacing Unit dedicated to this well 158.08
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft 2243'	19 Proposed Depth TVD 8240'; MD 12821' PH 8600'	20 BLM/BLA Bond No. on file NMB000740; NMB000215
21 Elevations (Show whether DF, KDB, RT, GL, etc) 4050' GL	22 Approximate date work will start* 12/31/2011	23 Estimated duration 10 days

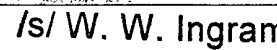
24. Attachments

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

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

25. Signature 	Name (Printed/Typed) Kelly J. Holly	Date 10/17/2011
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Title
Permitting Tech

Approved by (Signature) 	Name (Printed/Typed) W. W. Ingram	Date DEC 16 2011
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Title FOR FIELD MANAGER	Office CARLSBAD FIELD OFFICE
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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 USC Section 1001 and Title 43 USC Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction

*(Instructions on page 2)

Roswell Controlled Water Basin

RECEIVED

DEC 20 2011

NMOCD ARTESIA

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS
ATTACHED

Cost

Surface Use Plan
COG Operating, LLC
Trigg 5 Federal Com 1H
SL: 380' FNL & 90' FWL *UN 4*
BHL: 380' FNL & 330' FEL *UN 1*
Section 5, T-16-S, R-31-E
Eddy County, New Mexico

I hereby certify that I, or persons under my direct supervision, have inspected the drill site and access road proposed herein; that I am familiar with the conditions that presently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or COG Operating, LLC, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements. Executed this 27th day of September, 2011.

Signed: Carl Bird

Printed Name: Carl Bird

Position: Drilling Engineer

Address: 550 W. Texas, Suite 1300, Midland, Texas 79701

Telephone: (432) 683-7443

Field Representative (if not above signatory): Same

E-mail: cbird@conchoresources.com

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
11885 S ST FRANCIS DR, SANTA FE, NM 87505

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

Form C-102
Revised July 16, 2010
Submit to Appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015 - 39798	Pool Code 96794	Pool Name Wildcat-Wolfcamp
Property Code 38991	Property Name TRIGG 5 FEDERAL COM	Well Number 1H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 4050'

Surface Location

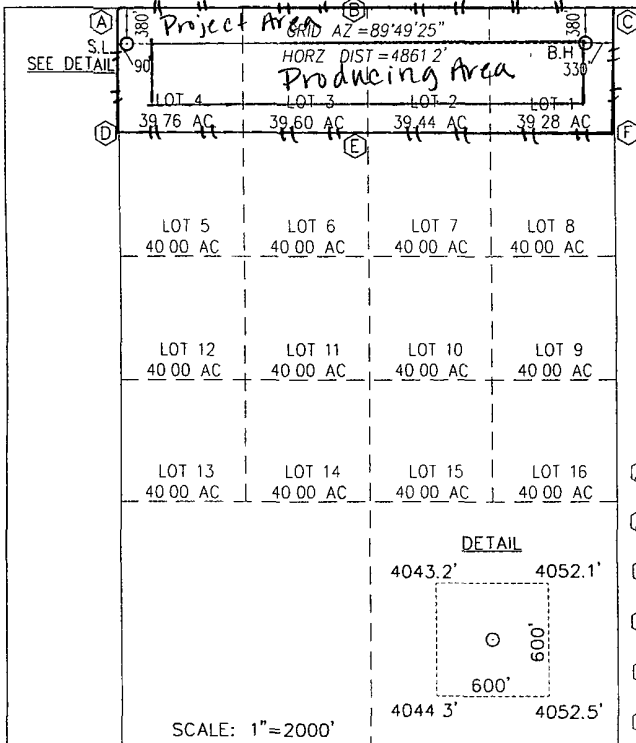

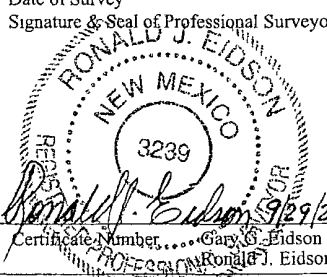
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
4	5	16-S	31-E		380	NORTH	90	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
1	5	16-S	31-E		380	NORTH	330	EAST	EDDY

Dedicated Acres 160	Joint or Infill	Consolidation Code	Order No
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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

 <p>Project Area Producing Area</p> <p>LOT 1 39.28 AC LOT 2 39.44 AC LOT 3 39.60 AC LOT 4 39.76 AC LOT 5 40.00 AC LOT 6 40.00 AC LOT 7 40.00 AC LOT 8 40.00 AC LOT 9 40.00 AC LOT 10 40.00 AC LOT 11 40.00 AC LOT 12 40.00 AC LOT 13 40.00 AC LOT 14 40.00 AC LOT 15 40.00 AC LOT 16 40.00 AC</p> <p>DETAIL 4043.2' 4052.1' 600' 4044.3' 4052.5'</p> <p>SCALE: 1"=2000'</p>	<p>GEODETIC COORDINATES NAD 27 NME</p> <p>SURFACE LOCATION Y=714672.6 N X=632946.7 E</p> <p>LAT=32.963955° N LONG.=103.899871° W</p> <p>BOTTOM HOLE LOCATION Y=714687.5 N X=637806.7 E</p> <p>TABLE OF SECTION, QUARTER & SIXTEENTH CORNER COORDINATES</p> <p>Ⓐ - Y=715050.7 N, X=632854.6 E Ⓑ - Y=715057.8 N, X=635494.5 E Ⓒ - Y=715064.9 N, X=638134.4 E Ⓓ - Y=713732.0 N, X=632861.9 E Ⓔ - Y=713741.8 N, X=635501.9 E Ⓕ - Y=713751.6 N, X=638142.0 E</p>	<p>OPERATOR CERTIFICATION</p> <p>I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p> Signature 10-3-11 Date</p> <p>Kelly J. Holly Printed Name kholly@concho.com E-mail Address</p> <p>SURVEYOR CERTIFICATION</p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>SEPTEMBER 2, 2011</p> <p>Date of Survey Signature & Seal of Professional Surveyor:  Certificate Number: Gary S. Eidson 12641 Ronald J. Eidson 3239</p> <p>DSS Rev. 9/29/10 JWSC W O 11 11.1934</p>
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30-015-39798

ATTACHMENT TO FORM 3160-3
 COG Operating, LLC
 Trigg 5 Federal Com #1H
 SHL: 380' FNL & 90' FWL, Unit 4
 BHL: 380' FNL & 330' FEL, Unit 1
 Sec 5, T16S, R31E
 Eddy County, NM

1. Proration Unit Spacing: 160 Acres
2. Ground Elevation: 4050'
3. Proposed Depths: Pilot hole TD = 8,600', Horizontal TVD = 8,240', MD = 12,821'
4. Estimated tops of geological markers:

	<u>TVD</u>	<u>MD</u>
Quaternary	Surface	
Rustler	651'	
Top of Salt	736'	
Base of Salt	1636'	
Yates	1810'	
Seven Rivers	2050'	
Queen	2555'	
Grayburg	3100'	
San Andres	3325'	
Glorietta	4965'	
Paddock	5060'	
Blinbry	5450'	
Tubb	6080'	
Drinkard	6275'	
Abo	6350'	
Lower Abo/Wolfcamp	8140'	

5. Possible mineral bearing formations:

Water Sand	-150'	Fresh Water
Yates	1810'	Oil / Gas
Queen	2555'	Oil / Gas
San Andres	3325'	Oil / Gas
Tubb	6080'	Oil / Gas
Abo	6350'	Oil / Gas
Lower Abo/Wolfcamp	8140'	Oil / Gas

6. Casing Program - Proposed

<u>Hole size</u>	<u>Interval</u>	<u>755' OD of Casing</u>	<u>Weight</u>	<u>Cond.</u>	<u>Collar</u>	<u>Grade</u>
17-1/2"	0' - +/-700'	13-3/8"	48#	New	STC	H-40 or J/K-55
Collapse sf - 5.59, Burst sf - 2.49, Tension sf - 9.58						
12 1/4"	0' - +/-3400'	9-5/8"	40#	New	STC	J/K-55
Collapse sf - 2.46, Burst sf - 1.60, Tension sf - 3.82						
8-3/4"	0' - +/-7400'	7"	26#	New	LTC	P-110
Collapse sf - 2.84, Burst sf - 1.77, Tension sf - 3.60						
6-1/8"	7300' - 12821'	4-1/2"	11.6#	New	LTC	P-110
Collapse sf - 2.63, Burst sf - 1.86, Tension sf - 2.92						

Respectfully request permission for 100' liner overlap to set pump as deep as possible.

7. Cement Program

755' see COA

13 3/8" Surf. Csg. Set at +/- 700', Lead: 400sx Class "C" w/ 2% CaCl₂ & 4% gel, 1.74 yd. Tail: 200sx Class "C" w/ 2% CaCl₂, 1.35 yd. 167% excess, calculated to surface.

9 5/8" Intrmd. Csg. Set at +/- 3400'. Lead: 800sx 35:65:6 C:Poz:gel w/ 5pps LCM-1 0.2% sodium metasilicate, 0.3% FL5ZA, 5% NaCl, 2.05 yd. Tail: 200sx Class "C" w/ 2% CaCl₂, 1.35 yd. 87% excess, calculated to surface.

7" Production Casing set at +/- 7400' MD, Lead: 800 sx 35:65:6 C:Poz w/ 1% CaCl₂, 1.89 yd. Tail: 200sx Class "C" w/ 2% CaCl₂, 0.35% R-3, 1.33 yd. 106% excess in open hole, calculated to surface.

6-1/8" Pilot hole 7400' to 8600' plugged back completely with 330 sx Class "C" with 0.3% R-3, 1.5% CD-32, 0.99 yd. 33% excess calculated to bottom of 7" at 7400'.

4 1/2" Production Liner set from +/- 7300' to +/- 12821' MD, 8240' TVD, Liner run with +/- 12 isolation Packers and Sliding sleeves in un-cemented Lateral.

8. Pressure Control Equipment:

OK TMM

After setting 13 3/8" casing and installing 3000 psi casing head, NU 13 5/8" 3000 psi annular BOP. Test annular BOP, casing and manifold with clear fluid to 1000 psi. After setting 9 5/8" casing and installing 3000 psi casing spool, NU 3000 psi double ram BOP and 3000 psi annular BOP. Test double ram BOP and manifold to 3000# with clear fluid and annular to 1500 psi using an independent tester, this equipment will be used continuously until TD is reached. Blind rams will be operationally checked on each trip out of hole. Pipe rams will be operationally checked each 24 hour period. These checks will be noted on daily tour sheets. Other accessories to the BOP equipment include a Kelly cock and floor safety valves, choke lines and choke manifold with 3000 psi WP rating.

9. Proposed Mud Circulating System

fresh water. mud to surface casing point. See COA

Interval	Mud Wt.	Visc.	FL	Type Mud System
0' - 700' 755'	8.5	28	NC	Fresh water native mud w/ paper for seepage and sweeps. Lime for PH.
755' 700' - 3400'	9.1	30	NC	Cut brine mud, lime for PH and paper for seepage and sweeps.
3400' - 7400'	9.1	29	NC	Drill section with fresh water/cut brine circulating the reserve utilizing periodic sweeps of paper as needed for seepage control and solids removal.
7400' - 12821'	9.5	36	10	Drill pilot hole, curve and horizontal section with XCD polymer / cut brine / starch.

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

8. Pressure Control Equipment:

After setting 13 3/8" casing and installing 3000 psi casing head, NU 3000 psi double ram BOP and 3000 psi annular BOP. Test double ram BOP and manifold to 3000 psi with clear fluid and annular to 1500 psi using an independent tester, this equipment will be used continuously until 4 1/2" liner is set. After setting 9 5/8" casing, the bottom spool will be removed and B section will be installed and Double Studded Adapter will be nipped up above the B section. After setting 7" casing, the remaining spacer spool will be removed, the C section will be installed with a Double Studded Adapter above the C section. Blind rams will be operationally checked on each trip out of hole. Pipe rams will be operationally checked each 24 hour period. These checks will be noted on daily tour sheets. Other accessories to the BOP equipment include a Kelly cock and floor safety valves, choke lines and choke manifold with 3000 psi WP rating.

INSTALLED
Tmm
15 DEC 2011

ATTACHMENT TO FORM 3160-3

COG Operating, LLC

Trigg 5 Federal Com #1H

Page 3 of 3

10. Production Hole Drilling Summary:

H

Set 7" production casing at +/- 7400'. Drill 6-1/8" pilot hole thru Lower Abo/Wolfcamp to +/- 8600', run open hole logs. Spot +/-330 sx. "Ø" Kick off plug from +/- 8600' to +/-7400'. Drill 6-1/8" hole and kick off at +/- 7688', building curve over +/- 450' to horizontal at 8165' TVD. Drill horizontal section in a Easterly direction for +/-4391' lateral to TD at +/-12,821' MD, 8240' TVD. Run 4-1/2" production liner in Open hole lateral and set isolation packers and liner top packer @ +/- 7300' MD.

11. Auxiliary Well Control and Monitoring Equipment

- A. Kelly cock will be kept in the drill string at all times.
- B. A full opening drill pipe-stabbing valve with proper drill pipe connections will be on the rig floor at all times.

12. Logging, Testing and Coring Program:

see COA

- A. The electric logging program will consist of GR-Dual Laterolog, Spectral Density, Dual Spaced Neutron, CSNG Log and will be ran from T.D. in vertical pilot hole to 9 5/8" casing shoe.
- B. The mud logging program will consist of lagged 10' samples from intermediate casing point to T.D. in vertical pilot hole and from Kick off point to TD in Horizontal hole.
- C. Drill Stem test is not anticipated.
- D. No conventional coring is anticipated.
- E. Further testing procedures will be determined after the 4 1/2" production casing has been cemented at TD based on drill shows and log evaluation.

liner per program TMM

run not cemented, per program TMM

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

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 120 degrees and estimated maximum bottom hole pressure is 3160 psig. Low levels of Hydrogen sulfide have been monitored in producing wells in the area, so H2S may be present while drilling of the well. An H2S plan is attached to the Drilling Program. No major loss of circulation zones has been reported in offsetting wells.

14. Anticipated Starting Date

Drilling operations will commence approximately on November 30 with drilling and completion operations lasting approximately 90 days.

APD front page states 12/31/2011



COG Operating LLC

Eddy County, NM (NAN27 NME)

Trigg 5 Federal Com #1H

Trigg 5 Federal Com #1H

OH

Plan: Plan #1 8-3/4" Hole

SHL = 380' FNL & 90' FWL

PP = 380' FNL & 330' FWL

BHL = 380' FNL & 330' FEL

Standard Planning Report

13 October, 2011





Scientific Drilling
Planning Report



Database:	EDM-Julio	Local Co-ordinate Reference:	Site Trigg 5 Federal Com #1H
Company:	COG Operating LLC	TVD Reference:	GL Elev @ 4051 00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 4051 00usft
Site:	Trigg 5 Federal Com #1H	North Reference:	Grid
Well:	Trigg 5 Federal Com #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 8-3/4" Hole		

Project:	Eddy County, NM (NAN27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:	Trigg 5 Federal Com #1H		
Site Position:		Northing:	714,672.60 usft
From:	Map	Easting:	632,946.70 usft
Position Uncertainty:	0 00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 57' 50.236 N
		Longitude:	103° 53' 59.537 W
		Grid Convergence:	0 24 °

Well:	Trigg 5 Federal Com #1H		
Well Position	+N/-S	0 00 usft	Northing:
	+E/-W	0 00 usft	Easting:
Position Uncertainty	0 00 usft	Wellhead Elevation:	Ground Level:
			4,051 00 usft

Wellbore:	OH		
Magnetics	Model/Name	Sample Date	Declination
	IGRF2010	2011/10/12	7 75
			Dip Angle
			60 81
			Field Strength
			48,988

Design:	Plan #1 8-3/4" Hole		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0 00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0 00	0.00	0 00
			Direction
			89 82

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(°)	
(usft)			(usft)			(°/100usft)	(°/100usft)	(°/100usft)		
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
7,687 50	0 00	0 00	7,687 50	0 00	0 00	0 00	0 00	0 00	0 00	
8,429 50	89 02	89.82	8,165 00	1.44	469 41	12.00	12 00	0.00	89 82	
12,820 76	89 02	89 82	8,240 00	14 90	4,860 00	0 00	0 00	0 00	0 00	PBHL-Trigg 5 #1H



Scientific Drilling
Planning Report



Database:	EDM-Julio	Local Co-ordinate Reference:	Site Tngg 5 Federal Com #1H
Company:	COG Operating LLC	TVD Reference:	GL Elev @ 4051.00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 4051 00usft
Site:	Tngg 5 Federal Com #1H	North Reference:	Grid
Well:	Trigg 5 Federal Com #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 8-3/4" Hole		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0 00	0 00	0 00	0 00	0.00	0.00	0 00	0 00	0.00
7,687 50	0 00	0 00	7,687 50	0 00	0.00	0.00	0 00	0.00	0.00
KOP Start Build 12.00/100									
7,700 00	1 50	89 82	7,700 00	0 00	0.16	0 16	12 00	12 00	0.00
7,800 00	13.50	89 82	7,798.96	0 04	13 19	13 19	12 00	12 00	0.00
7,900 00	25 49	89 82	7,893 06	0 14	46 50	46 50	12.00	12 00	0.00
8,000 00	37 49	89 82	7,978.17	0.30	98.65	98 65	12 00	12.00	0.00
8,100 00	49 49	89 82	8,050 59	0 51	167 34	167.35	12 00	12 00	0.00
8,189 04	60 17	89 82	8,101 80	0 74	240 02	240 02	12.00	12 00	0.00
PP=330' FWL, Trigg 5 #1H									
8,200.00	61 49	89 82	8,107 14	0.77	249 59	249 60	12 00	12 00	0.00
8,300 00	73 48	89 82	8,145 36	1.05	341.80	341.81	12.00	12 00	0.00
8,400 00	85 48	89 82	8,163 58	1 35	439 94	439 95	12 00	12 00	0.00
8,429 05	88.97	89 82	8,164 99	1 44	468 96	468 96	12 00	12.00	0.00
Land EOC hold 88.96°									
8,429 50	89 02	89 82	8,165 00	1.44	469 41	469 41	12 00	12 00	0.00
8,500 00	89 02	89 82	8,166 20	1.66	539.89	539 90	0 00	0 00	0.00
8,600 00	89 02	89 82	8,167 91	1 96	639 88	639 88	0 00	0.00	0.00
8,700 00	89 02	89 82	8,169 62	2 27	739 86	739 87	0.00	0 00	0.00
8,800 00	89 02	89 82	8,171 33	2 57	839 85	839 85	0 00	0 00	0.00
8,900 00	89.02	89 82	8,173 03	2 88	939.83	939 84	0.00	0 00	0.00
9,000 00	89 02	89 82	8,174 74	3 19	1,039 82	1,039 82	0 00	0.00	0.00
9,100 00	89 02	89 82	8,176 45	3.49	1,139.80	1,139 81	0 00	0 00	0.00
9,200 00	89 02	89 82	8,178 16	3 80	1,239 79	1,239 79	0 00	0.00	0.00
9,300 00	89 02	89 82	8,179 87	4.11	1,339 77	1,339 78	0.00	0 00	0.00
9,400 00	89 02	89 82	8,181.57	4 41	1,439 76	1,439 77	0 00	0.00	0.00
9,500 00	89 02	89 82	8,183.28	4 72	1,539 74	1,539.75	0 00	0 00	0.00
9,600 00	89 02	89 82	8,184 99	5.03	1,639 73	1,639 74	0 00	0 00	0.00
9,700 00	89 02	89 82	8,186 70	5 33	1,739.71	1,739 72	0 00	0 00	0.00
9,800 00	89 02	89 82	8,188 41	5 64	1,839 70	1,839 71	0 00	0 00	0.00
9,900 00	89 02	89 82	8,190 11	5 95	1,939 68	1,939 69	0 00	0.00	0.00
10,000 00	89 02	89 82	8,191 82	6 25	2,039.67	2,039 68	0 00	0 00	0.00
10,100.00	89 02	89.82	8,193 53	6 56	2,139 65	2,139 66	0 00	0.00	0.00
10,200 00	89 02	89 82	8,195 24	6.87	2,239 64	2,239 65	0 00	0 00	0.00
10,300 00	89 02	89 82	8,196 95	7 17	2,339 62	2,339 63	0 00	0 00	0.00
10,400 00	89.02	89.82	8,198 65	7 48	2,439 61	2,439 62	0 00	0 00	0.00
10,500 00	89 02	89.82	8,200 36	7.79	2,539.59	2,539 61	0 00	0.00	0.00
10,600 00	89 02	89 82	8,202 07	8 09	2,639.58	2,639 59	0 00	0.00	0.00
10,700 00	89 02	89 82	8,203 78	8 40	2,739.56	2,739 58	0 00	0 00	0.00
10,800 00	89 02	89 82	8,205.49	8.71	2,839.55	2,839 56	0 00	0 00	0.00
10,900 00	89 02	89 82	8,207 19	9.01	2,939.53	2,939 55	0 00	0 00	0.00
11,000 00	89 02	89 82	8,208 90	9 32	3,039.52	3,039 53	0 00	0 00	0.00
11,100 00	89 02	89 82	8,210 61	9.63	3,139 50	3,139 52	0 00	0.00	0.00
11,200 00	89 02	89 82	8,212.32	9 93	3,239 49	3,239 50	0 00	0 00	0.00
11,300 00	89 02	89 82	8,214.03	10 24	3,339.47	3,339 49	0 00	0.00	0.00
11,400 00	89 02	89 82	8,215 73	10 54	3,439 46	3,439 47	0 00	0.00	0.00
11,500 00	89.02	89 82	8,217 44	10 85	3,539 44	3,539 46	0 00	0.00	0.00
11,600 00	89 02	89 82	8,219 15	11 16	3,639 43	3,639 44	0 00	0.00	0.00
11,700 00	89 02	89 82	8,220 86	11 46	3,739.41	3,739 43	0 00	0 00	0.00
11,800 00	89 02	89 82	8,222 57	11 77	3,839 40	3,839 42	0 00	0 00	0.00
11,900 00	89 02	89 82	8,224 27	12 08	3,939.38	3,939 40	0 00	0 00	0.00
12,000 00	89.02	89 82	8,225 98	12 38	4,039 37	4,039 39	0 00	0 00	0.00
12,100 00	89 02	89 82	8,227 69	12 69	4,139 35	4,139 37	0 00	0 00	0.00



Scientific Drilling
Planning Report



Database:	EDM-Julio	Local Co-ordinate Reference:	Site Trigg 5 Federal Com #1H
Company:	COG Operating LLC	TVD Reference:	GL Elev @ 4051 00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 4051 00usft
Site:	Trigg 5 Federal Com #1H	North Reference:	Grid
Well:	Trigg 5 Federal Com #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 8-3/4" Hole		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
12,200 00	89 02	89 82	8,229 40	13 00	4,239 34	4,239 36	0 00	0 00	0 00	
12,300 00	89 02	89 82	8,231 11	13 30	4,339 32	4,339 34	0 00	0 00	0 00	
12,400 00	89 02	89 82	8,232 81	13 61	4,439 31	4,439 33	0 00	0 00	0 00	
12,500 00	89 02	89 82	8,234 52	13 92	4,539 29	4,539 31	0 00	0 00	0 00	
12,600 00	89 02	89 82	8,236 23	14 22	4,639 28	4,639 30	0 00	0 00	0 00	
12,700 00	89 02	89 82	8,237 94	14 53	4,739 26	4,739 28	0 00	0 00	0 00	
12,800 00	89 02	89 82	8,239 65	14 84	4,839 25	4,839 27	0 00	0 00	0 00	
12,820 76	89 02	89 82	8,240 00	14 90	4,860 00	4,860 02	0 00	0 00	0 00	
PBHL-Trigg 5 #1H										

Design Targets										
Target Name	hit/miss target	Dip Angle (°)	Dip Dir (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PP=330' FWL, Trigg 5 #		0 00	0 00	8,101 79	0 74	240 00	714,673 33	633,186 70	32° 57' 50 234 N	103° 53' 56 720 W
- plan hits target center										
- Point										
PBHL-Trigg 5 #1H		0 00	0 00	8,240 00	14 90	4,860 00	714,687 50	637,806 70	32° 57' 50 182 N	103° 53' 2 494 W
- plan hits target center										
- Point										

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Local Coordinates	
7,687 50	7,687 50	0 00	0 00	KOP Start Build 12 00/100'	
8,429 05	8,164 99	1 44	468 96	Land EOC hold 88 96°	



Scientific Drilling for COG Operating LLC
Site: Eddy County, NM (NAN27 NME)
Well: Trigg 5 Federal Com #1H
Wellbore: OH
Design: Plan #1 8-3/4" Hole



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	7687.50	0.00	0.00	7687.50	0.00	0.00	0.00	0.00	0.00	
3	8429.50	89.02	89.82	8165.00	1.44	469.41	12.00	89.82	469.41	
4	12820.76	89.02	89.82	8240.00	14.90	4860.00	0.00	0.00	4860.02	PBHL-Trigg 5 #1H

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PP=330' FWL, Trigg 5 #1H	8101.79	0.74	240.00	714673.34	633186.70	32°57' 50.234 N	103°53' 56.720 W	Point
PBHL-Trigg 5 #1H	8240.00	14.90	4860.00	714687.50	637806.70	32°57' 50.182 N	103°53' 2.494 W	Point

AZIMUTH CORRECTIONS

ALL AZIMUTHS MUST BE CORRECTED TO GRID
GRID CORRECTIONS MUST BE APPLIED BEFORE PLOTTING
To convert a Magnetic Direction to a Grid Direction, Add 7.52°
To convert a True Direction to a Grid Direction, Subtract 0.24°

PROJECT DETAILS: Eddy County, NM (NAN27 NME)

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level

Plan: Plan #1 8-3/4" Hole (Trigg 5 Federal Com #1H/OH)

Created By: Julio Pina

Date: 12-Oct-11

Checked:

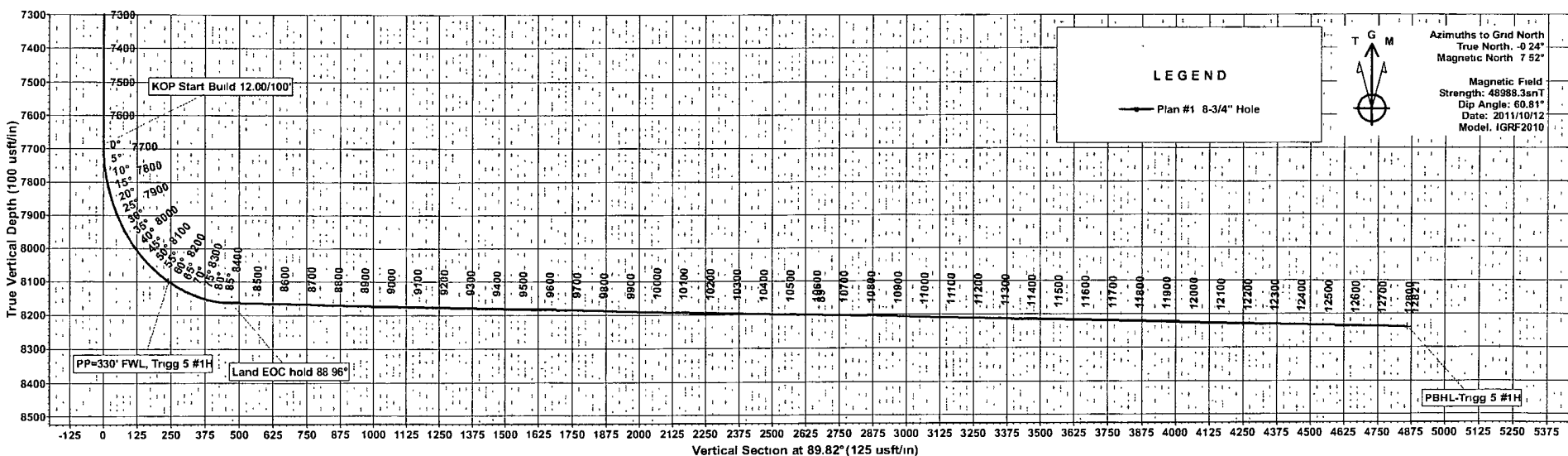
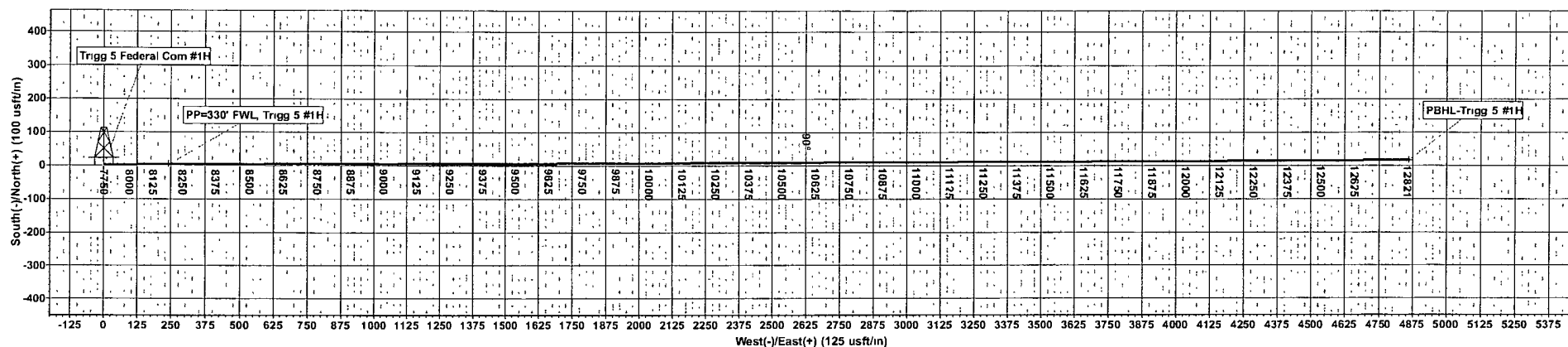
Date:

Reviewed:

Date:

WELL DETAILS Trigg 5 Federal Com #1H

Ground Level	4051.00	Latitude	Longitude	Slot
Northing	714672.60	32°57' 50.236 N	103°53' 59.537 W	
Easting	632946.70			



13 5/8" 3M BOP
FOR 6 1/8" HOLE SECTION

12-1/4

(Turn)



13 5/8" - 3,000 psi
Annular

Blind Rams

Pipe Rams

Manual

Manual

Manual

HCR

Check

Mud Cross

2" per Anshore order 2

3" per Anshore order 2

DSA

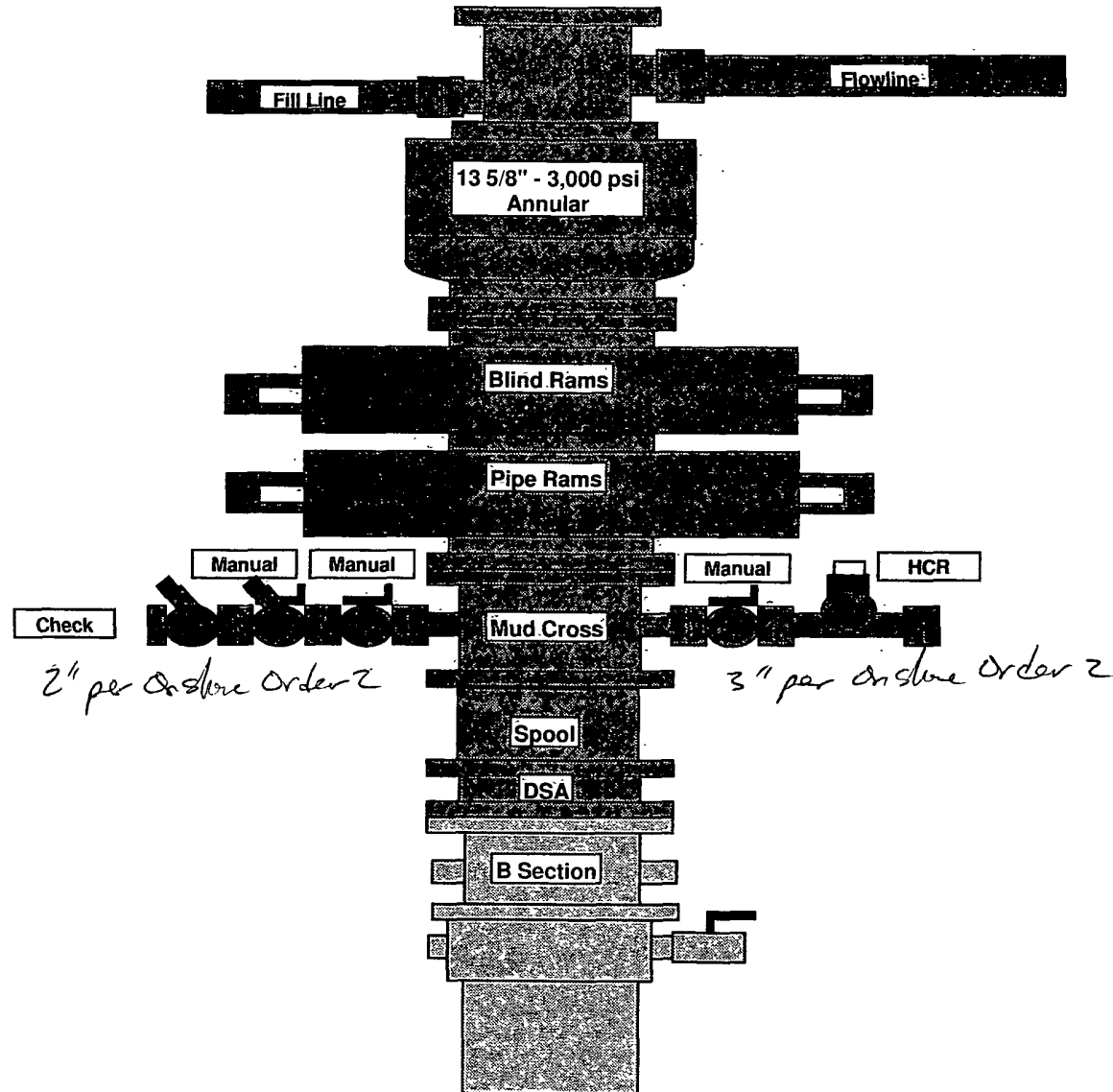
C Section

B Section

BOP diagram will be accepted for 12-1/4" hole. (However, it ~~does~~ not agree with the written description. Operator was contacted, but did not respond.)

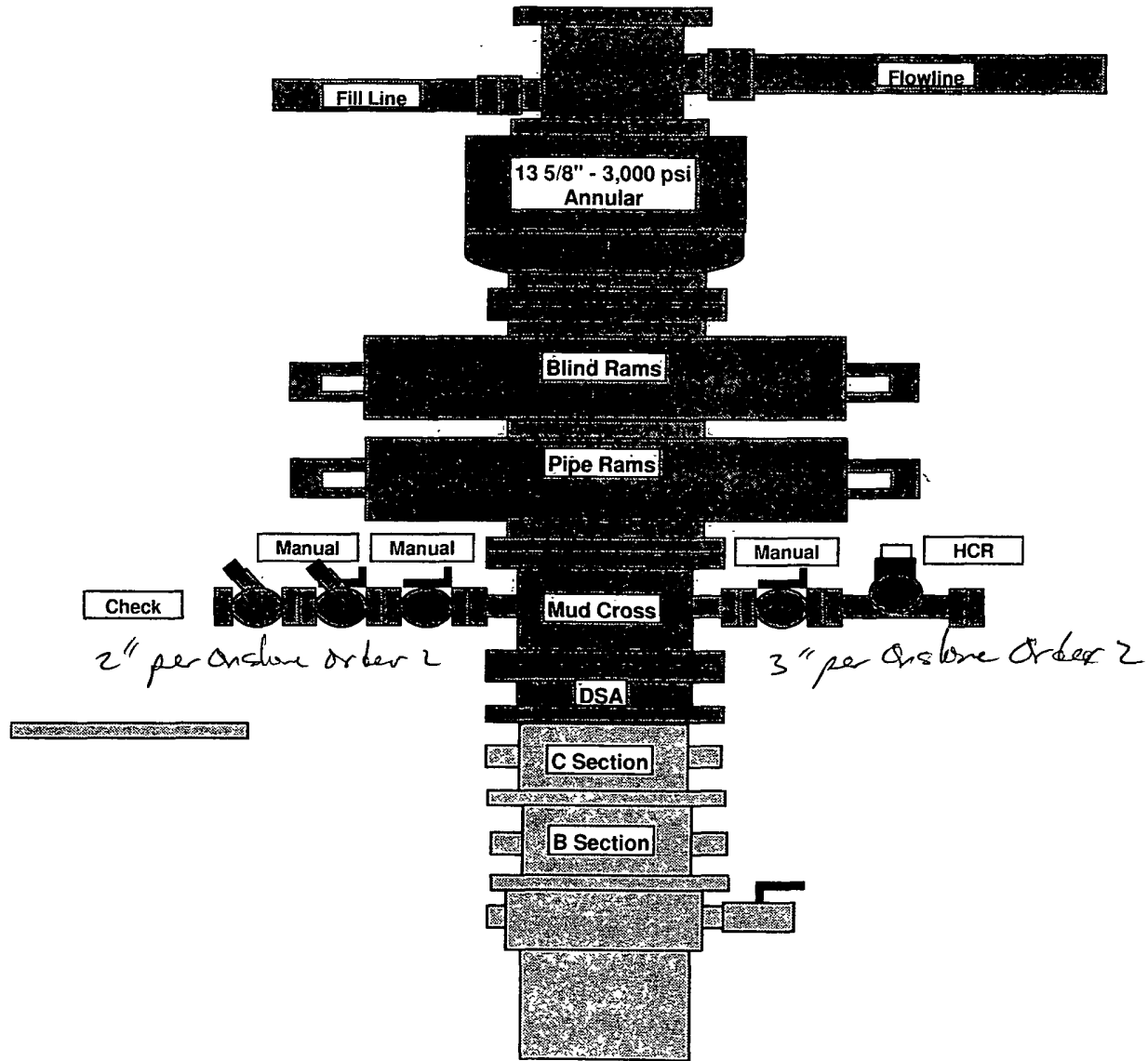
Inserted
12/15/2011
TMM

13 5/8" 3M BOP
FOR 8 3/4" HOLE SECTION



12/15/2011
Tasert-d
Tamm

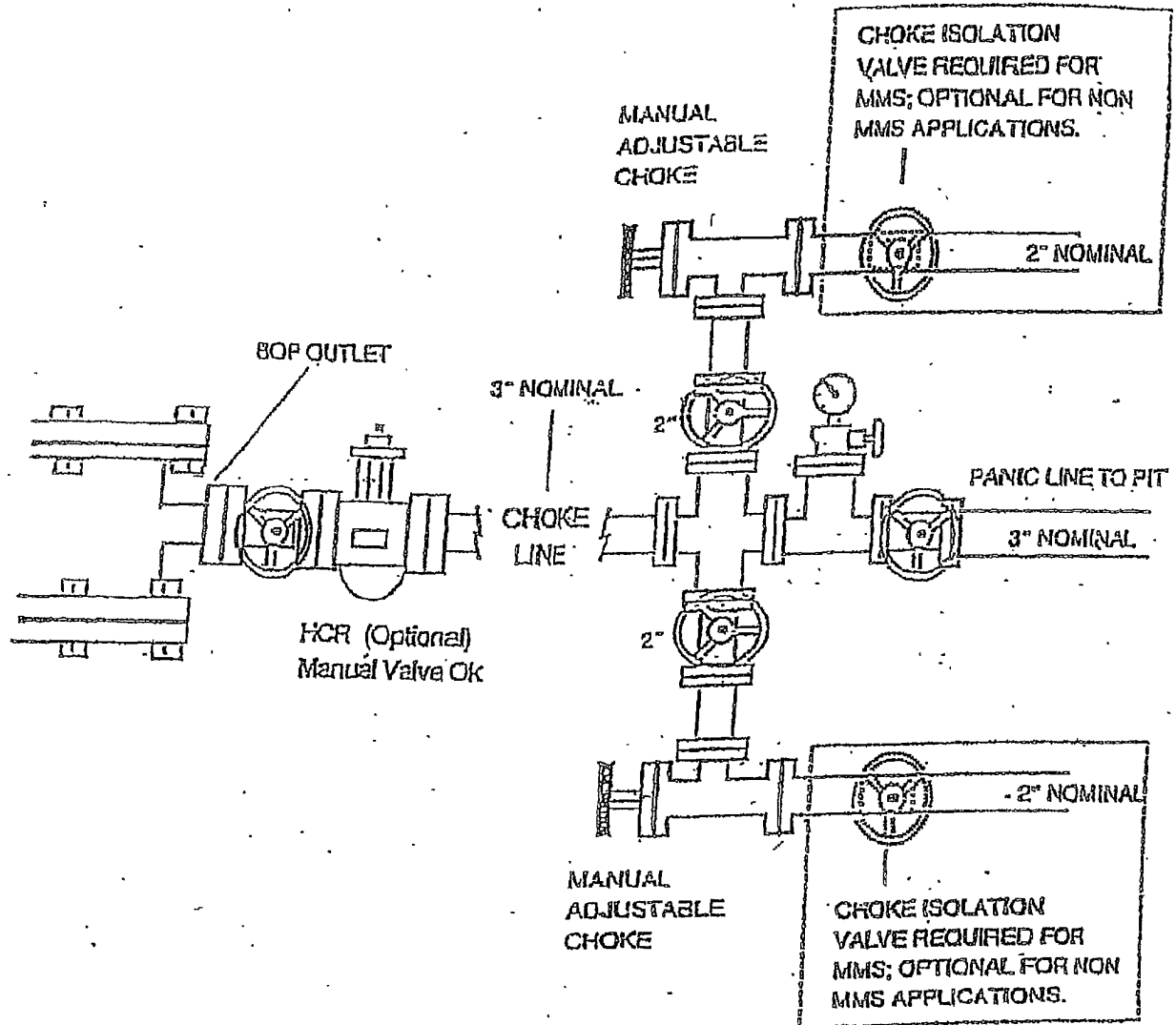
13 5/8" 3M BOP
FOR 6 1/8" HOLE SECTION



Inserted
12/15/2011
TMM

CHOKE MANIFOLD

3M SERVICE



COG OPERATING, LLC

HYDROGENSULFIDE (H₂S) CONTINGENCY PLAN
FOR DRILLING / COMPLETING / WORKOVER / FACILITY
WITH THE EXPECTATION OF H₂S IN EXCESS OF 100 PPM

C.O.G. Operating, LLC
NEW DRILL WELL
Trigg 5 Federal #1
SHL: 330' FNL & 330' FWL, Unit D, Lot 4
BHL: 330' FNL & 330' FEL, Unit A, Lot 1
Sec 5, T16S, R31E
Eddy County, New Mexico

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

TABLE OF CONTENTS

I.	General Emergency Plan	Page 3
II.	Emergency Procedure for Uncontrolled Release of H ₂ S	Page 3
III.	Emergency Numbers for Notification	Page 4
IV.	Protection of the General (ROE) Radius of Exposure	Page 5
V.	Public Evacuation Plan	Page 6
VI.	Procedure for Igniting an Uncontrollable Condition	Page 7
VII.	Required Emergency Equipment	Page 8
VIII.	Using Self-Contained Breathing Air Equipment (SCBA)	Page 9
IX.	Rescue & First Aid for Victims of H ₂ S Poisoning	Page 10
X.	H ₂ s Toxic Effects	Pages 11-12
XI.	H ₂ s Physical Effects	Pages 13-14
XII.	Location Map	Page 15
XIII.	Vicinity Map	Page 16

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 up-wind and if possible up-hill “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 harms way, he will immediately notify public safety personnel.

EMERGENCY CALL LIST

	<u>Office</u>	<u>Cell</u>	<u>Home</u>
John Coffman	432-683-7443	432-631-9762	432-699-5552
Erick Nelson	432-683-7443	432-238-7591	
Matt Corser	432-683-7443	432-413-0071	

EMERGENCY RESPONSE NUMBERS

Eddy County, New Mexico

State Police	505-748-9718
Eddy County Sheriff	505-746-2701
Emergency Medical Services (Ambulance)	911 or 505-746-2701
Eddy County Emergency Management (Harry Burgess)	505-887-9511
State Emergency Response Center (SERC)	505-476-9620
Carlsbad Police Department	505-885-2111
Carlsbad Fire Department	505-885-3125
New Mexico Oil Conservation Division	505-748-1283
Callaway Safety Equipment, Inc.	505-392-2973

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 is warranted:

- * 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)

$$X = [(1.589)(\text{concentration})(Q)] (0.6258)$$

$$10,000 \text{ ppm} = .01$$

$$1,000 \text{ ppm} = .001$$

Calculation for the 500 ppm ROE:

$$100 \text{ ppm} = .0001$$

$$10 \text{ ppm} = .00001$$

$$X = [(0.4546)(\text{concentration})(Q)] (.06258)$$

EXAMPLE: If a well / facility has been determined to have 150 ppm H₂S in the gas mixture and the well / facility is producing at a gas rate of 200 MCFD then:

$$\text{ROE for 100 ppm} \quad X = [(1.589)(.00010)(200,000)] (0.6258)$$

$$X = 8.8'$$

$$\text{ROE for 500 ppm} \quad X = [(0.4546)(.00050)(200,000)] (0.6258)$$

$$X = 10.9'$$

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 effected area is safe to enter.

PROCEDURE FOR IGNITING AN UNCONTROLLABLE CONDITION

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

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 company representative.
3. Ignite upwind from a distance no closer than necessary. Make sure that where you ignite from 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. Windssocks

- * Two windssocks 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.
- * Get 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 than Carbon Monoxide. Occupational exposure limits for Hydrogen Sulfide and other gases are compared below in Table I. Toxicity table for H2S and physical effects are shown in Table II.

Table I
Permissible Exposure Limits of Various Gases

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	100ppm
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. TVL – Threshold Limit Value is the concentration employees may be exposed to based on a TWA (time weighed average) for eight (8) hours in one day for 40 hours in one (1) week. This is set by ACGIH (American Conference of Government 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 a 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

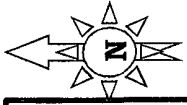
Hydrogen Sulfide will burn readily with a distinctive clear blue flame, producing Sulfur Dioxide (SO₂), another hazardous gas that irritates the eyes and lungs.

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.



Trigg Federal Tank Battery Area

300'

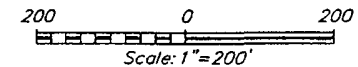
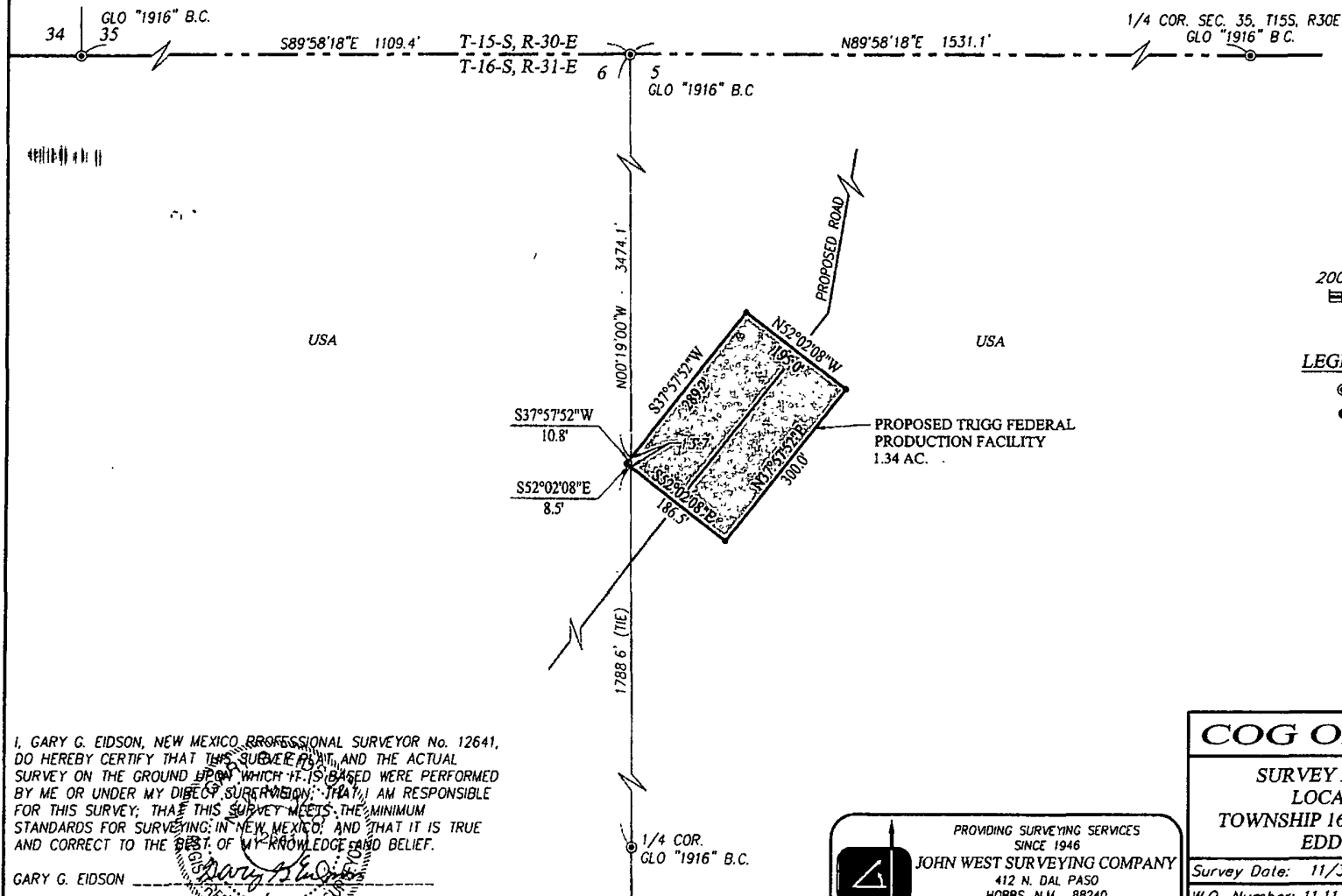
70'

Injection well

Access Road to
Trigg wells

Road
Access

SECTIONS 5 AND 6, TOWNSHIP 16 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY NEW MEXICO



LEGEND

- ⊙ DENOTES FOUND CORNER AS NOTED
- DENOTES SET SPIKE NAIL

I, GARY G. EIDSON, NEW MEXICO PROFESSIONAL SURVEYOR No. 12641, DO HEREBY CERTIFY THAT THIS SURVEY REPORT, AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

GARY G. EIDSON

DATE: _____

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBBS, N.M. 88240
(575) 393-3117

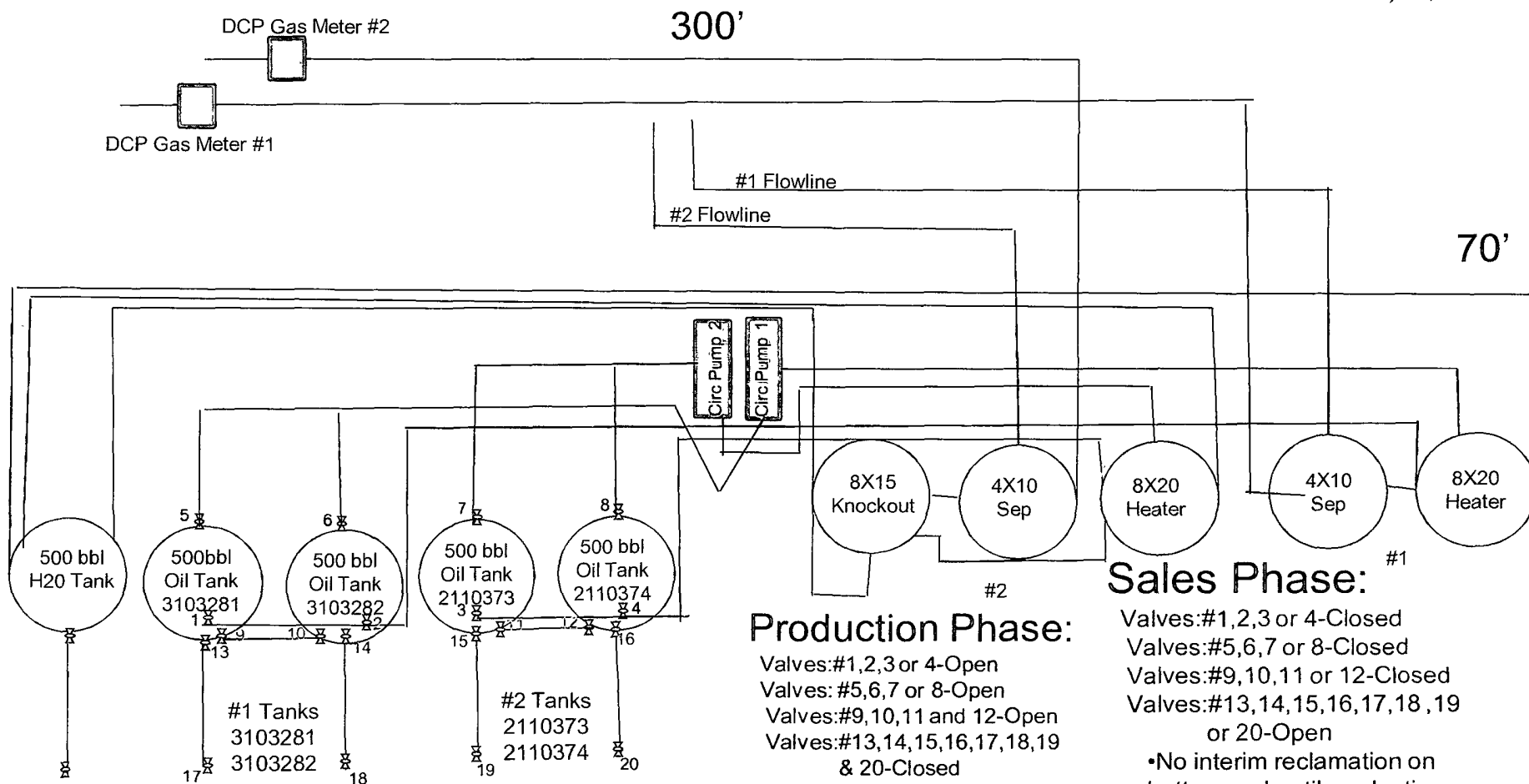
COG OPERATING, LLC			
SURVEY FOR A PRODUCTION FACILITY LOCATED IN SECTIONS 5 AND 6, TOWNSHIP 16 SOUTH, RANGE 31 EAST, N.M.P.M. EDDY COUNTY, NEW MEXICO			
Survey Date: 11/3/11	Sheet 1 of 1 Sheets		
W.O. Number: 11.11.2338	Dr. By: DSS	Rev 1:	
Date: 11/8/11	Rel. W.O.:	11112338	Scale: 1"=200'

COG OPERATING LLC

550 W. Texas Ave Ste 100 Midland, Texas 79701
(432)-683-7443

Trigg Federal Tank Battery

Approx. 3300' FNL, Approx. 10' FWL * Sec 6-T16S-R31E * Eddy CO, NM



•Road access will be from southwest of the battery pad

•This battery site will be located directly southeast of the future Trigg 5 Fed. #3 well

Production Phase:

Valves: #1, 2, 3 or 4-Open
Valves: #5, 6, 7 or 8-Open
Valves: #9, 10, 11 and 12-Open
Valves: #13, 14, 15, 16, 17, 18, 19 & 20-Closed

Water Transfer by Truck

•Battery pad will be approx. 70' x 300' along the west side of the existing lease road.

Sales Phase:

Valves: #1, 2, 3 or 4-Closed
Valves: #5, 6, 7 or 8-Closed
Valves: #9, 10, 11 or 12-Closed
Valves: #13, 14, 15, 16, 17, 18, 19 or 20-Open

•No interim reclamation on battery pad until production or foreseeable production ceases. Reclamation standards will follow Section 10 B from the Surface Use Plan from the Trigg 5 Fed Com #1 well

Road Route

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating
LEASE NO.:	NM2507
WELL NAME & NO.:	1H Trigg 5 Fed Com
SURFACE HOLE FOOTAGE:	380' FNL & 90' FWL
BOTTOM HOLE FOOTAGE:	380' FNL & 330' FEL
LOCATION:	Section 5, T.16S., R.31 E., NMPM
COUNTY:	Eddy County, New Mexico

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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.

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- ☐ **Interim Reclamation**
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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)

Frac Pond special requirement:

The exterior dimensions of the frac pond are 190' x 475'. No disturbance can occur outside these dimensions or outside the previously disturbed caliche pit. No disturbance of any kind shall occur more than 230' from the south edge of the existing road that the frac pond will parallel. See more COAs for the frac pond further in this document.

Pipeline special requirement:

Surface production pipelines shall be routed no farther than 6 feet from and parallel to existing roads. See more COAs for pipelines further in this document. Water transfer lines shall be routed no farther than 2 feet from and parallel to existing roads.

Production Facility:

The production facility tanks shall be installed on the east side of the access road. A turn-around area is permitted on the west side of the access road. This location was chosen for the tank battery so that when the Trigg 5 Fed Com #3H well is constructed, it would be constructed on top of the turn-around area and would have the same orientation as the production facility pad.

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

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

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

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-6235 at least 3 working days prior to commencing construction of the access road and/or well pad.

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

B. TOPSOIL

The operator shall stockpile the topsoil in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be used for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

D. FEDERAL MINERAL MATERIALS PIT

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

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

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

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

F. ON LEASE ACCESS ROADS

Road Width

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty (20) feet.

Surfacing

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

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

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

Crowning

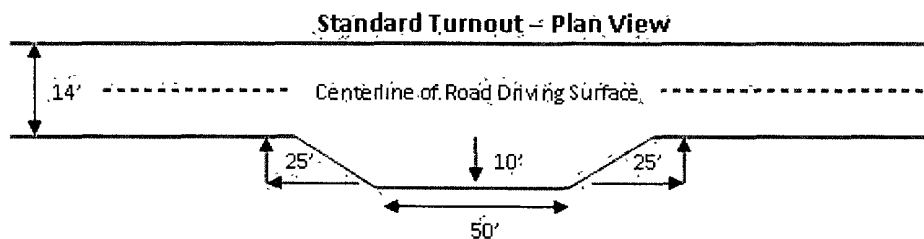
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching

Ditching shall be required on both sides of the road.

Turnouts

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

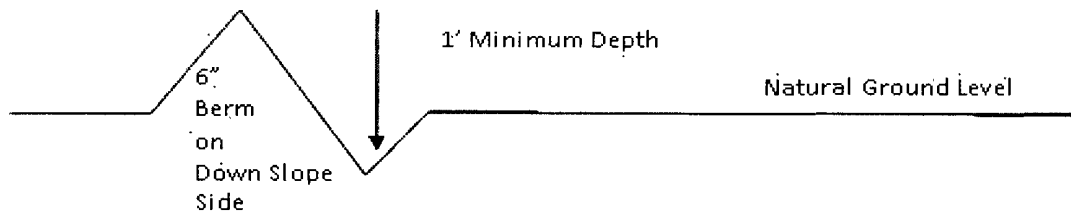


Drainage

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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

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

Culvert Installations

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

Cattleguards

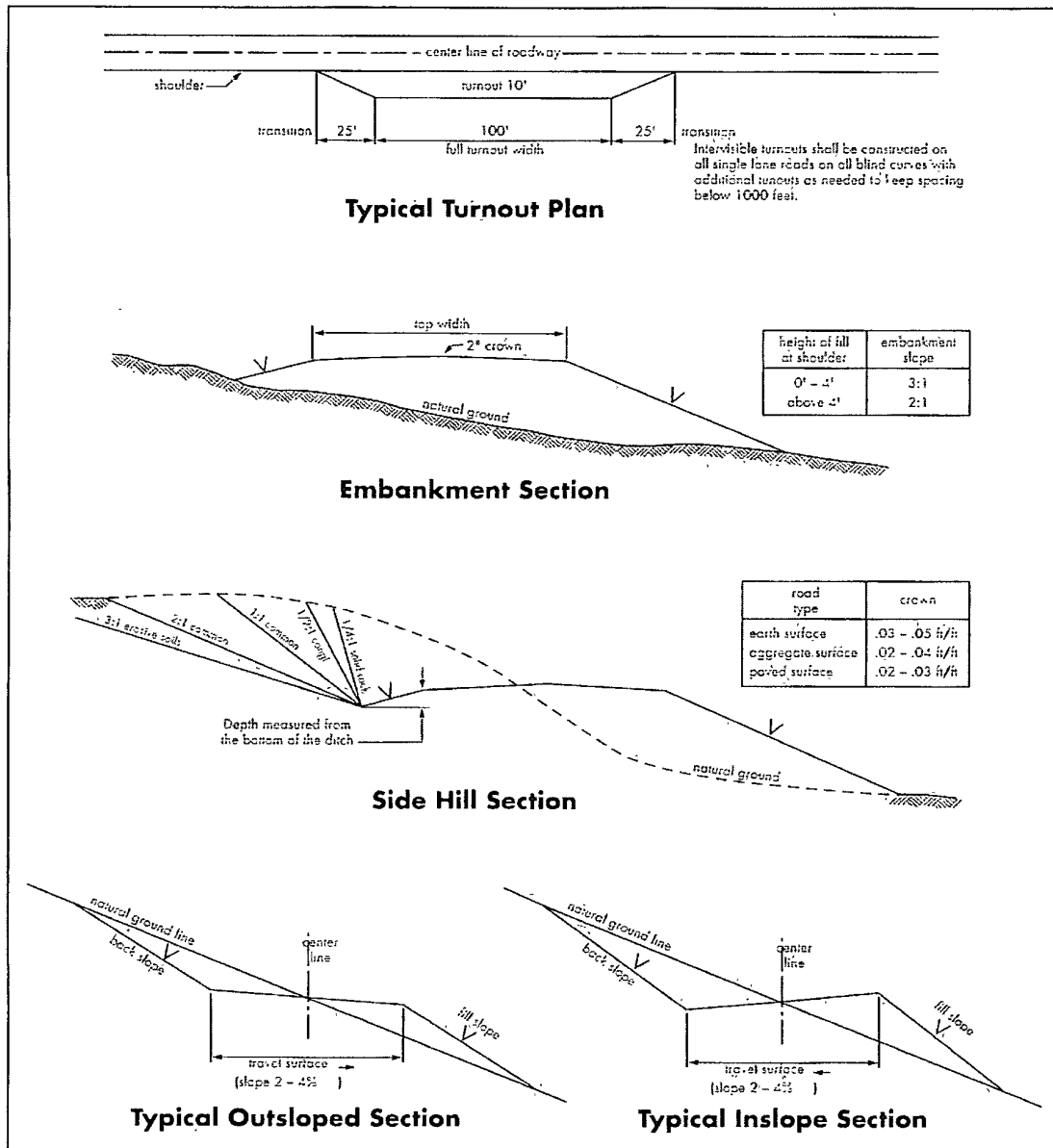
An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

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

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. **Hydrogen Sulfide has been reported as a hazard, but no measurements have been recorded. It is recommended that monitoring equipment be onsite for potential Hydrogen Sulfide. If Hydrogen Sulfide is encountered, please report measurements and formations to the BLM.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.
4. **The record of the drilling rate along with the GR/N well log run in the vertical portion of hole shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

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

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

Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.

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

**Possible water and brine flows in the Salado and Artesia Groups.
Possible Lost Circulation in the Grayburg and San Andres formations.**

1. The **13-3/8** inch surface casing shall be set at approximately **755** feet (**a minimum of 25 feet into the Rustler Anhydrite and above the salt**) and cemented to the surface. **Freshwater mud to be used to setting depth.**
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:
 - ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.

Pilot hole plugging procedure approved as written. Operator to set one plug from bottom of pilot hole to the 7" shoe.

3. The minimum required fill of cement behind the 7 inch production casing is:
 - ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.
4. The minimum required fill of cement behind the 4-1/2" production liner is:
 - ☒ Not cemented. Liner assembly includes +/-12 Isolation Packers and sliding sleeves in un-cemented lateral. NOTE: request for 100' liner lap is approved.
5. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** psi.
 - a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.
3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

- b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- c. The results of the test shall be reported to the appropriate BLM office.
- d. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
- e. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

D. DRILL STEM TEST

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

E. WASTE MATERIAL AND FLUIDS

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

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

TMM 121211

VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities

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

Containment Structures

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

Painting Requirement

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

B. PIPELINES

STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

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

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

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

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

4. The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

- a. Activities of the holder including, but not limited to construction, operation, maintenance, and termination of the facility.
- b. Activities of other parties including, but not limited to:
 - (1) Land clearing.
 - (2) Earth-disturbing and earth-moving work.
 - (3) Blasting.
 - (4) Vandalism and sabotage.
- c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars (\$1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

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

of any responsibility as provided herein.

6. The authorized right-of-way width will be 20 feet. 14 feet of the right-of-way width will consist of existing disturbance (existing lease roads) and the remaining 6 feet will consist of area adjacent to the disturbance. All construction and maintenance activity will be confined to existing roads.

7. No blading or clearing of any vegetation will be allowed unless approved in writing by the Authorized Officer.

8. The holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky or dune areas, the pipeline will be "snaked" around hummocks and dunes rather than suspended across these features.

9. The pipeline shall be buried with a minimum of 24 inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

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

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

12. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

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

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the

holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

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

16. 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, powerline 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.

C. FRAC POND

FRAC POND CONDITIONS OF APPROVAL

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

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

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this permit.
2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated.
3. Required Standard Conditions of Approval:
 - Contact the Supervisory Environmental Protection Specialist, Jim Amos, at 575-234-5909 at least 24 hours prior to starting construction.
 - The frac pond will only be authorized to contain freshwater and testing of water quality is required. Additives are not allowed without consent of the authorized officer.

- If at any time the water in the frac pond becomes polluted with salts or other contaminants, use of the frac pond will cease and desist, and all liquids will be removed from the frac pond and disposed of properly.
- Confine all construction and maintenance activity to the authorized area.
- Temporary pipelines flowing from the frac pond to the target well will be laid along existing roadways unless an exception has been granted by the authorized officer.
- Mineral materials extracted during construction of the frac pond will be stored on-location and/or used for constructing the frac pond.
- The frac pond will be lined.
- The frac pond shall be fenced on all sides to BLM standards.
- Install earthen erosion-control structures as are suitable for the specific terrain and soil conditions.
- The plastic lining will be removed prior to final abandonment
- Reclamation efforts will commence immediately after the frac pond is no longer needed for the purpose of completing wells.
- Within 3 months of completion of frac operations on associated wells, all earthwork and final reclamation must be completed. This includes reclaiming and/or removal of:
 1. Any roads approved for use with the pond
 2. Surface water lines
 3. Tanks, pumps, fencing etc.
- Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

Requirements for Operations and Final Reclamation:

4. If, during any phase of the construction, operation, maintenance, or termination of the frac pond, any pollutant should be released from the contaminated frac pond, the control and total removal, disposal, and cleaning up of such pollutant, wherever found, shall be the responsibility of holder, regardless of fault.

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

6. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific

values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

7. 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.

8. After all disturbed areas have been satisfactorily contoured and prepared for seeding the location needs to be revegetated with the seed mixture provided. Seeding may need to be repeated until revegetation is successful. Operators shall contact Jim Amos, Supervisor, Environmental Protection – (575)234-5909, **prior** to beginning surface reclamation operations.

9. Seeding is required: Use the following seed mix.

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

10. The topsoil to be stripped is approximately 0-2 inches in depth.

11. Upon failure of holder to control, dispose of, or clean up such discharge, or to repair all damages resulting there-from, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

IX. INTERIM RECLAMATION

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

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

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or

complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

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

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

X. FINAL ABANDONMENT & RECLAMATION

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

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

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

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

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

Seed Mixture 2, for Sandy Sites

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

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

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

<u>Species</u>	<u>lb/acre</u>
Sand dropseed (<i>Sporobolus cryptandrus</i>)	1.0
Sand love grass (<i>Eragrostis trichodes</i>)	1.0
Plains bristlegrass (<i>Setaria macrostachya</i>)	2.0

*Pounds of pure live seed:

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