

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

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

NM OIL CONSERVATION

ARTESIA DISTRICT

Form C-102

Revised August 1, 2011

OCT 15 2015 Submit one copy to appropriate District Office

RECEIVED

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015- 43414	² Pool Code 97565	³ Pool Name N Seven Rivers; Glorieta Yeso
⁴ Property Code 315130	⁵ Property Name BONE YARD 11 FEE	
⁷ GRID NO. 229137	⁸ Operator Name COG OPERATING, LLC	⁶ Well Number 11H
		⁹ Elevation 3394'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	11	20S	25E		10	SOUTH	130	WEST	EDDY

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	11	20S	25E		330	NORTH	330	WEST	EDDY

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
160			

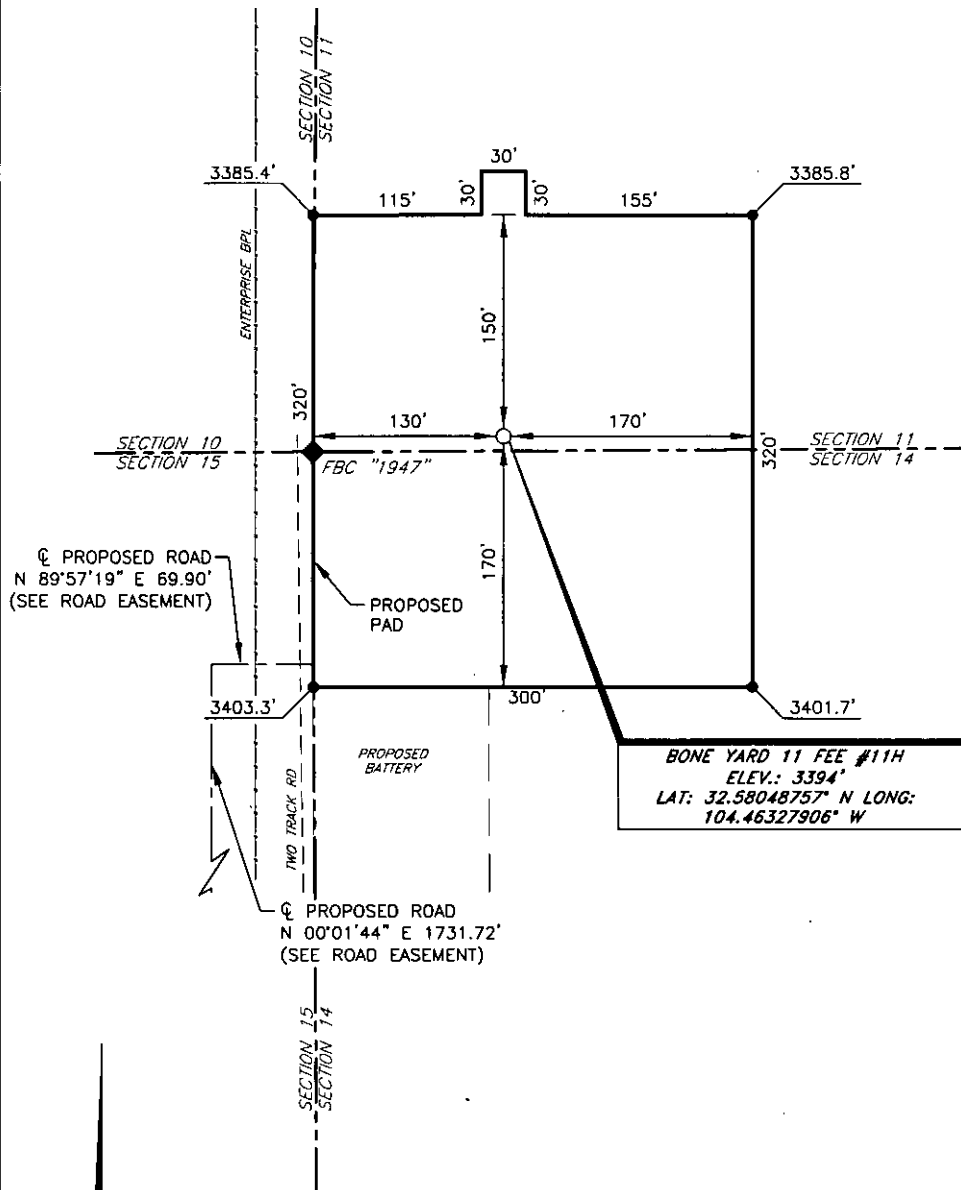
No allowable will be assigned to this completion until all interest have been consolidated or a non-standard unit has been approved by the division.

	17 OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. Signature: <u>Kelly J Holly</u> Date: <u>10-14-15</u> Printed Name: <u>Kelly J Holly</u> E-mail Address: <u>kholly@concho.com</u>
	18 SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. Date of Survey: <u>7-14-2015</u> Signature and Seal of Professional Surveyor: <u>Robert M. Howett</u> Certificate Number: <u>19680</u>

RRC - Firm No.: TX 10193838 NM 4655451 - Job No.: LS1507399

RED
10/5/15

COG OPERATING, LLC
BONE YARD 11 FEE #11H
(10' FSL & 130' FWL)
SECTION 11, T20S, R25E
N. M. P. M., EDDY CO., NEW MEXICO



BONE YARD 11 FEE #11H
ELEV.: 3394'
LAT: 32.58048757° N LONG:
104.46327906° W

DIRECTIONS TO LOCATION

From the intersection of CR-28 (White Pine Rd.) and U.S. Hwy 285;
Go West on CR-28 approx. 2.5 miles to a two track road on right;
Turn right on two track road and go North approx. 0.4 miles;
Location is on the right.

SCALE: 1" = 100'
0 50 100
BEARINGS ARE
NAD 27 GRID - NM EAST
DISTANCES ARE
GROUND.

Firm No.: TX 10193838 NM 4655451

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1	WELL #	7/27/15
NO.	REVISION	DATE
JOB NO.:	LS1507399	
DWG. NO.:	1507399PAD	

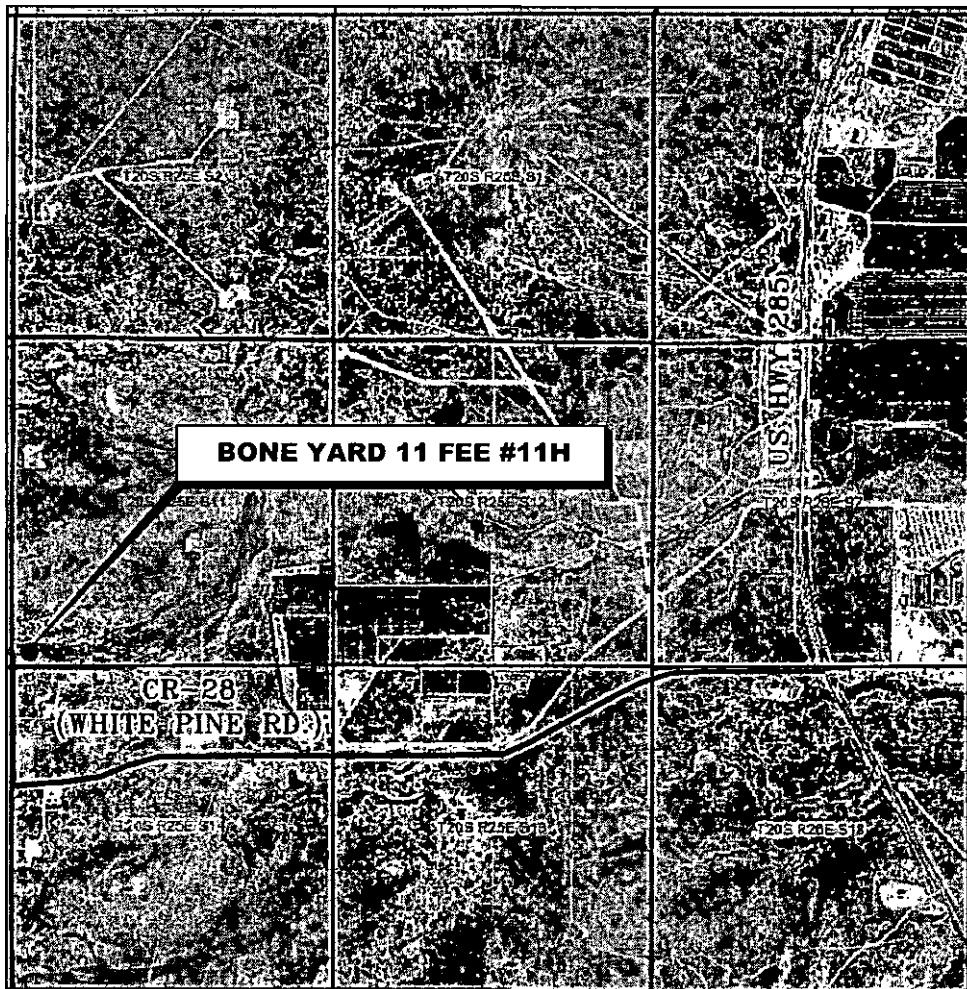
RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 100'
DATE: 7-14-2015
SURVEYED BY: GB/CG
DRAWN BY: CMJ
APPROVED BY: RMH
SHEET : 1 OF 1

VICINITY MAP

NOT TO SCALE



*SECTION 11, TWP. 20 SOUTH, RGE. 25 EAST,
N. M. P. M., EDDY CO., NEW MEXICO*

OPERATOR: COG Operating, LLC
LEASE: Bone Yard 11 Fee
WELL NO.: 11H

LOCATION: 10' FSL & 130' FWL
ELEVATION: 3394'

Firm No.: TX 10193838 NM 4655451

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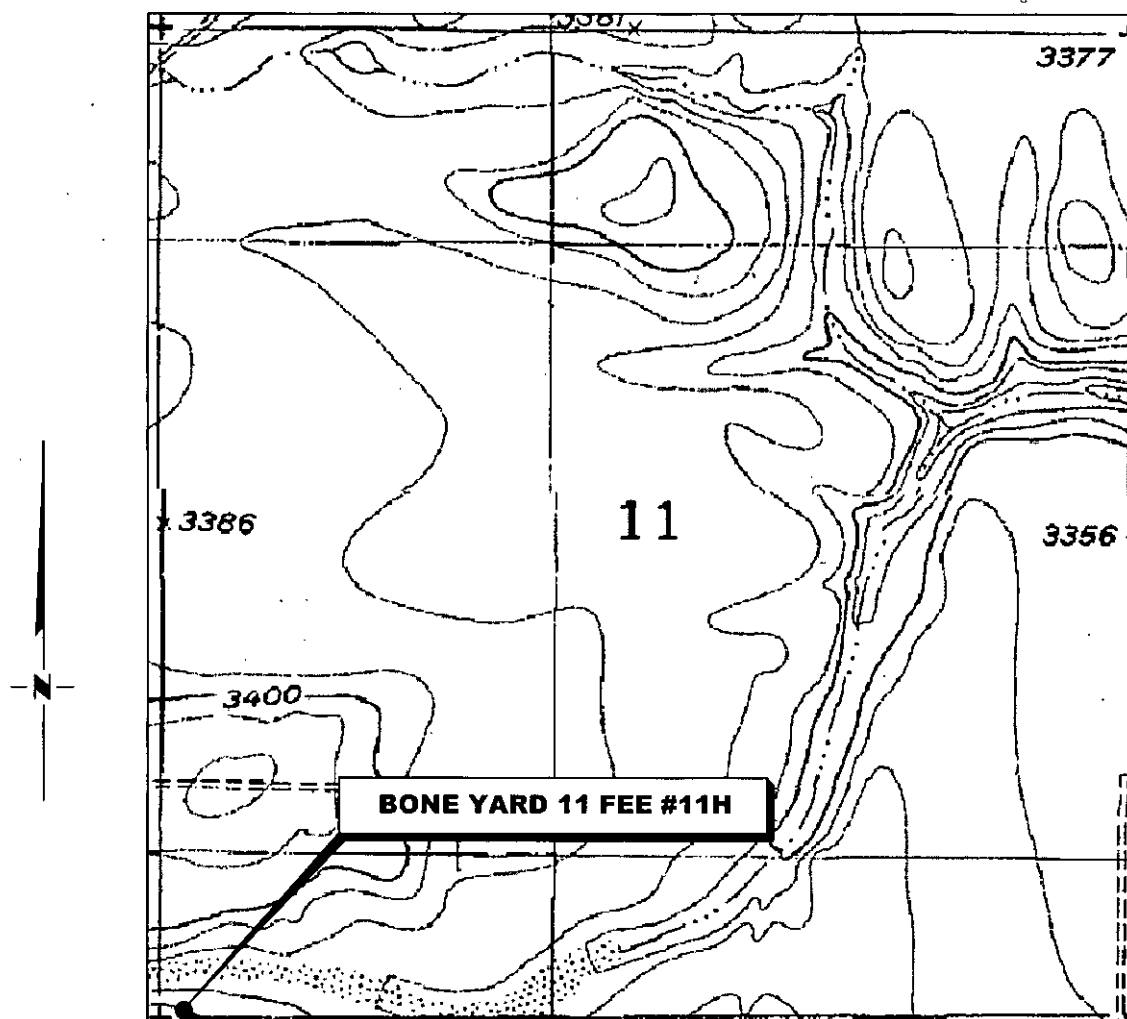
1	WELL #	7/27/15
NO.	REVISION	DATE
JOB NO.:	LS1507399	
DWG. NO.:	1507399VM	

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: NTS
DATE: 7-14-2015
SURVEYED BY: GB/CG
DRAWN BY: CMJ
APPROVED BY: RMH
SHEET : 1 OF 1

LOCATION VERIFICATION MAP



SECTION 11, TWP. 20 SOUTH, RGE. 25 EAST,
N. M. P. M., EDDY CO., NEW MEXICO

OPERATOR: COG Operating, LLC
LEASE: Bone Yard 11 Fee
WELL NO.: 11H
ELEVATION: 3394'

LOCATION: 10' FSL & 130' FWL
CONTOUR INTERVAL: 10'
USGS TOPO. SOURCE MAP:
Seven Rivers, NM (1954)

Firm No.: TX 10193838 NM 4655451

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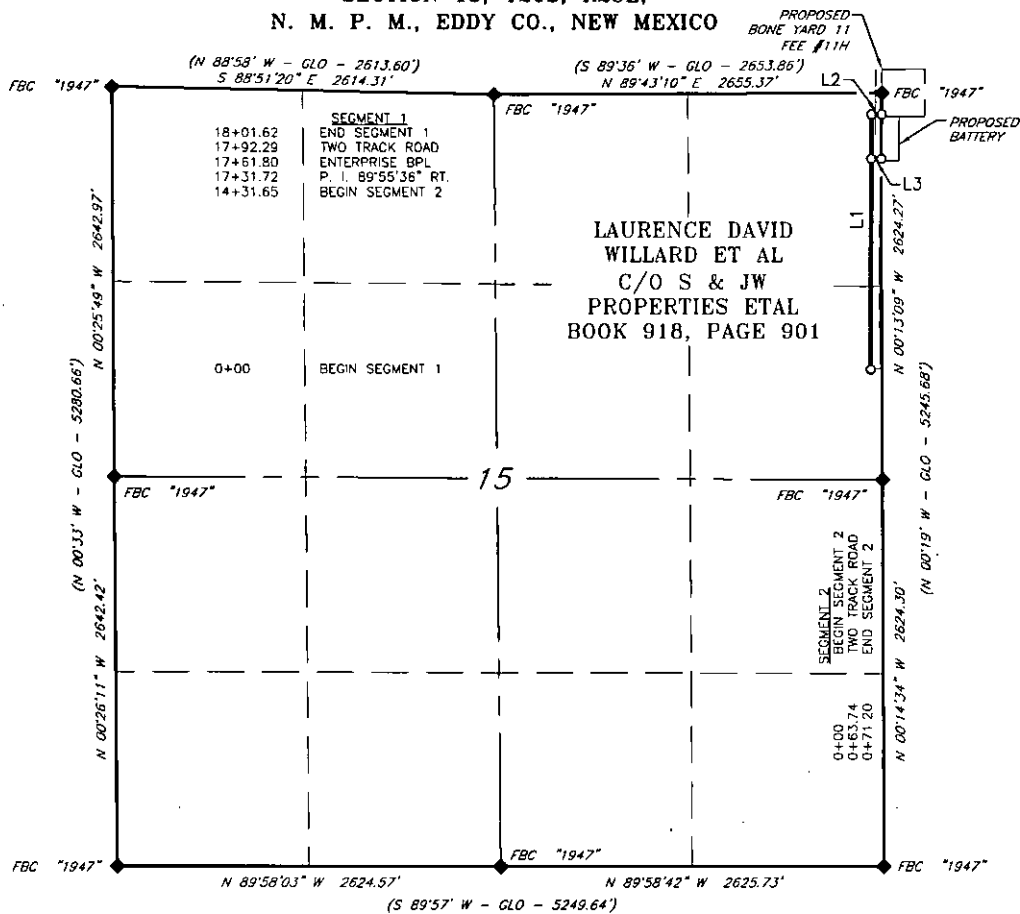
1	WELL #	7/27/15
NO.	REVISION	DATE
JOB NO.:	LS1507399	
DWG. NO.:	1507399LVM	

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1"=1000'
DATE: 7-14-2015
SURVEYED BY: GB/CG
DRAWN BY: CMJ
APPROVED BY: RMH
SHEET : 1 OF 1

COG OPERATING, LLC
OVERALL OF PROPOSED ACCESS ROADS FOR
THE BONE YARD 11 FEE #11H AND THE PROPOSED BONE YARD BATTERY
SECTION 15, T20S, R25E,
N. M. P. M., EDDY CO., NEW MEXICO



LINE TABLE		
LINE	BEARING	LENGTH
L1	N 00°01'44" E	1731.72'
L2	N 89°57'19" E	69.90'
L3	S 89°55'55" E	71.20'

SCALE: 1" = 1000'
 0 500' 1000'

BEARINGS ARE GRID NAD 27
 NM EAST
 DISTANCES ARE HORIZ. GROUND.

LEGEND

() RECORD DATA - GLO
 ♦ FOUND MONUMENT AS NOTED
 — PROPOSED ACCESS ROAD

Firm No.: TX 10193838 NM 4655451

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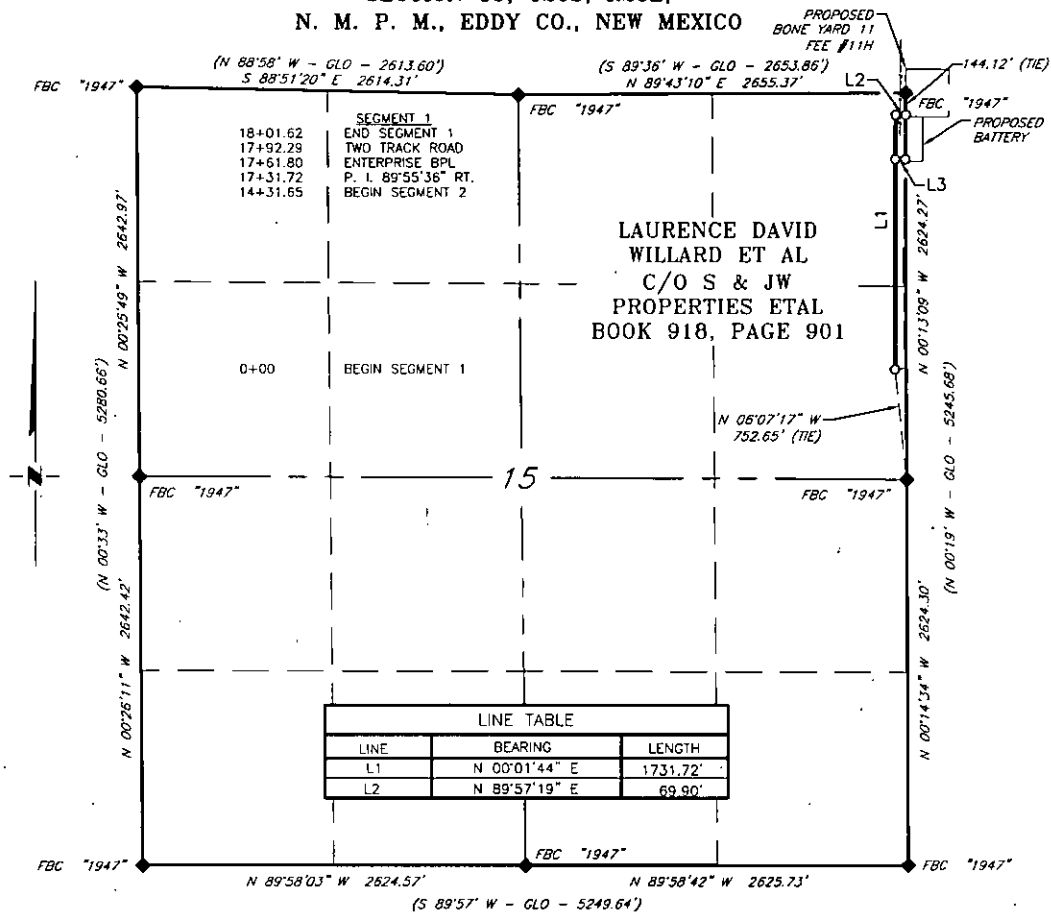
1	WELL #	7/27/15
NO.	REVISION	DATE
JOB NO.:	LS1507399	
DWG. NO.:	1507399-1	

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 1000'
DATE: 7-14-2015
SURVEYED BY: GB/CG
DRAWN BY: CMJ
APPROVED BY: RMH
SHEET : 1 OF 3

**COG OPERATING, LLC
PROPOSED ACCESS ROAD FOR
THE BONE YARD 11 FEE #11H
SECTION 15, T20S, R25E,
N. M. P. M., EDDY CO., NEW MEXICO**



SEGMENT 1 DESCRIPTION

A strip of land 20 feet wide, being 1,801.62 feet or 109.189 rods in length, lying in Section 15, Township 20 South, Range 25 East, N. M. P. M., Eddy County, New Mexico, being 10 feet left and 10 feet right of the following described survey of a centerline across the lands of Laurence David Willard & S. & JW Properties, according to a deed filed for record in Book 918, Page 901, of the Deed Records of Eddy County, New Mexico:

BEGINNING at Engr. Sta. 0+00, a point in the Northeast quarter of Section 15, which bears N 06°07'17" W, 752.65 feet from a brass cap, stamped "1947", found for the East quarter corner of Section 15;

Thence N 00°01'44" E, 1,731.72 feet, to Engr. Sta. 17+31.72, a P. I. of 89°55'36" right;

Thence N 89°57'19" E, 69.90 feet, to Engr. Sta. 18+01.62, the End of Survey, a point on the East line of Section 15 which bears S 00°13'09" E, 144.12 feet from a brass cap, stamped "1947", found for the Northeast corner of Section 15.

Said strip of land contains 0.827 acres, more or less and is allocated by forties as follows:

SE 1/4 NE 1/4	34.194	Rods	0.259	Acres
NE 1/4 NE 1/4	74.995	Rods	0.568	Acres

SCALE: 1" = 1000'
0 500' 1000'

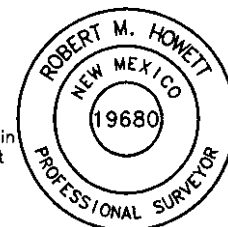
BEARINGS ARE GRID NAD 27
NM EAST
DISTANCES ARE HORIZ. GROUND.

LEGEND

- () RECORD DATA - GLO
- ◆ FOUND MONUMENT AS NOTED
- PROPOSED ACCESS ROAD

I, R. M. Howett, a N. M. Professional Surveyor, hereby certify that I prepared this plat from an actual survey made on the ground under my direct supervision, said survey and plat meet the Min. Stds. for Land Surveying in the State of N. M. and are true and correct to the best of my knowledge and belief.

Robert M. Howett
Robert M. Howett NM PS 19680



Firm No.: TX 10193838 NM 4655451

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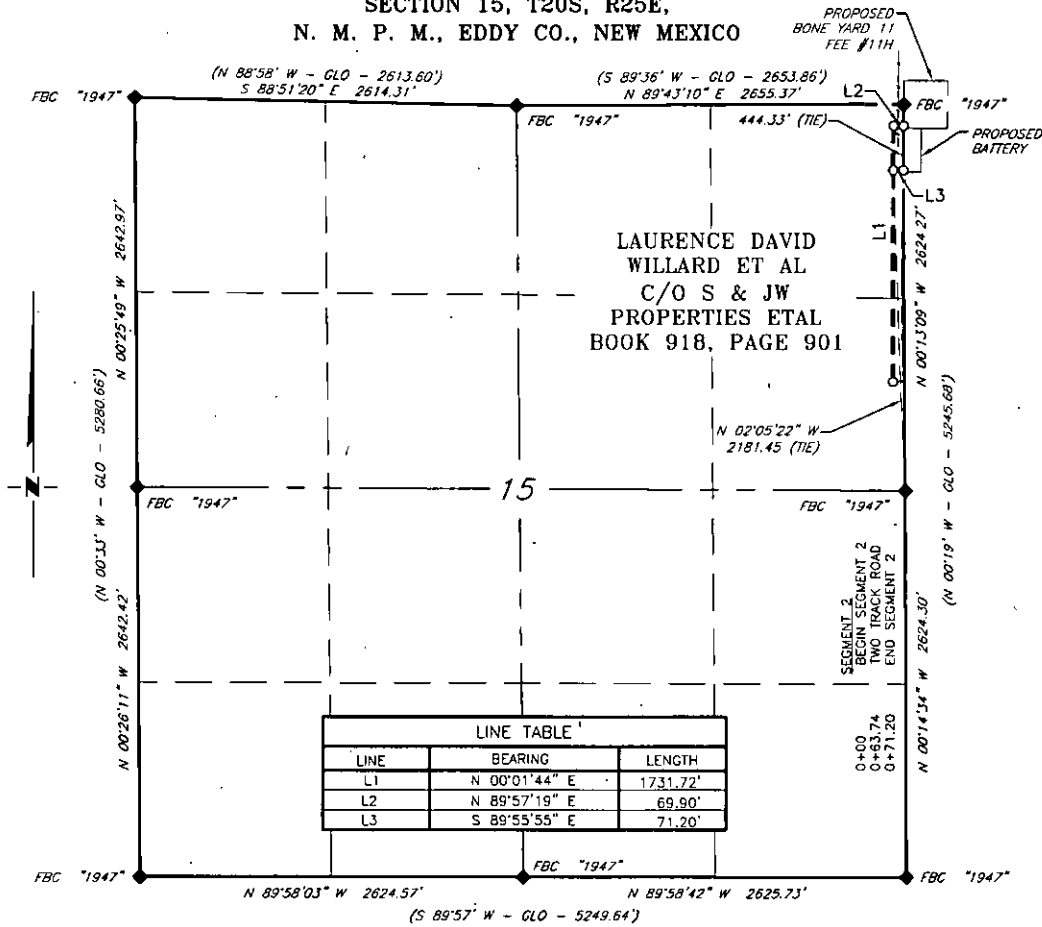
1	WELL #	7/27/15
NO.	REVISION	DATE
JOB NO.:	LS1507399	
DWG. NO.:	1507399-2	

RRC

308 W. BROADWAY ST., HOBBBS, NM 88240 (575) 964-8200

SCALE: 1" = 1000'
DATE: 7-14-2015
SURVEYED BY: GB/CG
DRAWN BY: CMJ
APPROVED BY: RMH
SHEET : 2 OF 3

**COG OPERATING, LLC
PROPOSED ACCESS ROAD FOR
THE PROPOSED BONE YARD BATTERY
SECTION 15, T20S, R25E,
N. M. P. M., EDDY CO., NEW MEXICO**



SEGMENT 2 DESCRIPTION

A strip of land 20 feet wide, being 71.20 feet or 4.315 rods in length, lying in Section 15, Township 20 South, Range 25 East, N. M. P. M., Eddy County, New Mexico, being 10 feet left and 10 feet right of the following described survey of a centerline across the lands of Laurence David Willard & S. & JW Properites, according to a deed filed for record in Book 918, Page 901, of the Deed Records of Eddy County, New Mexico:

BEGINNING at Engr. Sta. 0+00, a point in the Northeast quarter of Section 15, which bears N 02°05'22" W, 2,181.45 feet from a brass cap, stamped "1947", found for the East quarter corner of Section 15;

Thence S 89°55'55" E, 71.20 feet, to Engr. Sta. 0+71.20, the End of Survey, a point on the East line of Section 15 which bears S 00°13'09" E, 444.33 feet from a brass cap, stamped "1947", found for the Northeast corner of Section 15.

Said strip of land contains 0.033 acres, more or less and is allocated by forties as follows:

NE 1/4 NE 1/4 4.315 Rods 0.033 Acres

SCALE: 1" = 1000'
0 500' 1000'

BEARINGS ARE GRID NAD 27
NM EAST
DISTANCES ARE HORIZ. GROUND.

LEGEND
() RECORD DATA - GLO
FOUND MONUMENT
AS NOTED
PROPOSED ACCESS ROAD

I, R. M. Howett, a N. M. Professional Surveyor, hereby certify that I prepared this plat from an actual survey made on the ground under my direct supervision, said survey and plot meet the Min. Stds. for Land Surveying in the State of N. M. and are true and correct to the best of my knowledge and belief.

Robert M. Howett
Robert M. Howett NM PS 19680



Firm No.: TX 10193838 NM 4655451

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1	WELL #	7/27/15
NO.	REVISION	DATE
JOB NO.:	LS1507399	
DWG. NO.:	1507399-3	

RRC

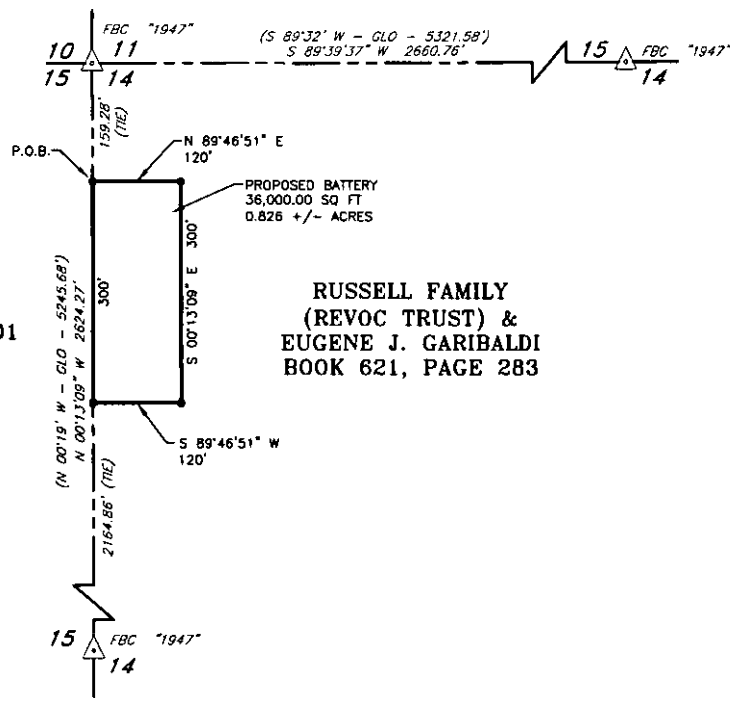
308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 1000'
DATE: 7-14-2015
SURVEYED BY: GB/CG
DRAWN BY: CMJ
APPROVED BY: RMH
SHEET : 3 OF 3

COG OPERATING, LLC.
SURVEY OF A PROPOSED BATTERY
SITUATED WITHIN THE NW 1/4, NW 1/4,
SECTION 14, TOWNSHIP 20 SOUTH, RANGE 25 EAST,
N. M. P. M., EDDY CO., NEW MEXICO

**LAURENCE DAVID
 WILLARD ET AL
 C/O S & JW
 PROPERTIES ETAL
 BOOK 918, PAGE 901**

**RUSSELL FAMILY
 (REVOC TRUST) &
 EUGENE J. GARIBALDI
 BOOK 621, PAGE 283**



LEGEND
 (-GLO-) Record Data
 (A) Found Corner As Noted
 (•) Set 1/2" Rebar w/Orange Cap
 stamped "RRC PS 19680" "TYP."
 P.O.B. Point Of Beginning

SCALE: 1" = 200'
 0 200' 400'
 BEARINGS ARE NAD 27 GRID
 NM EAST & DISTANCES ARE
 HORIZ. GROUND.



I, Robert M. Howett, New Mexico Professional Surveyor No. 19680, do hereby certify that this survey plat and the actual survey on the ground upon which it is based was performed under my direct supervision and this survey meets the minimum standards for surveying in the State of New Mexico and is true and correct to the best of my knowledge and belief.

Robert M. Howett
 Robert M. Howett
 Date: 7/14/2015
 Firm No.: TX 10193838 NM 4655451

DESCRIPTION

A tract of land situated within the NW 1/4 of the NW 1/4 quarter of Section 14, Township 20 South, Range 25 East, N. M. P. M., Eddy County, New Mexico, across the lands of Russell Family (Revocable Trust) and Eugene J. Garibaldi, according to a deed filed for record in Book 621, Page 283, of the Deed Records of Eddy County, New Mexico and being more particularly described by metes and bounds as follows:

BEGINNING at a 1/2" rebar with an orange cap, stamped "RRC PS 19680" set for a corner, which bears S 00°13'09" E, 159.28 feet, from a brass cap, stamped "1947", found for the Northwest corner of Section 14 and being N 00°13'09" W, 2,164.86 feet from a brass cap, stamped "1947", found for the West quarter corner of Section 14;

Thence N 89°46'51" E, 120 feet, to a set 1/2" rebar with an orange cap stamped "RRC PS 19680";

Thence S 00°13'09" E, 300 feet, to a set 1/2" rebar with an orange cap stamped "RRC PS 19680";

Thence S 89°46'51" W, 120 feet, to a set 1/2" rebar with an orange cap stamped "RRC PS 19680";

Thence N 00°13'09" W, 300 feet, along the West line of Section 14 to the Point Of Beginning.

Said tract of land contains 36,000.00 square feet or 0.826 acres, more or less.

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1	WELL #	7/27/15
NO.	REVISION	DATE
JOB NO.:	LS1507399	
DWG. NO.:	1507399BT	

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1"=200'
DATE: 7-14-2015
SURVEYED BY: GB/CG
DRAWN BY: CMJ
APPROVED BY: RMH
SHEET : 1 OF 1



COG Operating LLC

Eddy County, NM (NAD27 NME)

Bone Yard 11 Fee

#1H

OH

Plan: Plan #1 07-13-15

Surface: 10' FSL, 330' FWL, Sec 11, T20S, R25E, Unit M

PP: 330' FSL, 330' FWL, Sec 11, T20S, R25E, Unit M

BHL: 330' FNL, 330' FWL, Sec 11, T20S, R25E, Unit D

Standard Planning Report

13 July, 2015





Planning Report



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well #1H
Company:	COG Operating LLC	TVD Reference:	KB @ 3411.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	KB @ 3411.00usft (Silver Oak 3)
Site:	Bone Yard 11 Fee	North Reference:	Grid
Well:	#1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 07-13-15		

Project	Eddy County, NM (NAD27 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	Bone Yard 11 Fee		
Site Position:		Northing:	574,918.70 usft
From:	Map	Easting:	460,173.20 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 34' 49.76860 N
		Longitude:	104° 27' 45.46885 W
		Grid Convergence:	-0.07 °

Well	#1H		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	Ground Level:

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	HDGM	7/13/2015	7.70	60.42	48,397

Design	Plan #1 07-13-15			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	7.05

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(usft)	(°)	(°)	(usft)	(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	
2,355.14	0.00	0.00	2,355.14	0.00	0.00	0.00	0.00	0.00	0.00	
3,177.87	90.50	0.47	2,875.99	525.40	4.32	11.00	11.00	0.00	0.47	
7,678.09	90.50	0.47	2,836.72	5,025.30	41.30	0.00	0.00	0.00	0.00	BHL(Bone Yard 11 Fee)



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well #1H
Company:	COG Operating LLC	TVD Reference:	KB @ 3411.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	KB @ 3411.00usft (Silver Oak 3)
Site:	Bone Yard 11 Fee	North Reference:	Grid
Well:	#1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 07-13-15		

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
2,355.14	0.00	0.00	2,355.14	0.00	0.00	0.00	0.00	0.00	0.00
KOP, Begin 11°/100' Build									
2,400.00	4.93	0.47	2,399.94	1.93	0.02	1.92	11.00	11.00	0.00
2,500.00	15.93	0.47	2,498.14	20.01	0.16	19.88	11.00	11.00	0.00
2,600.00	26.93	0.47	2,591.08	56.50	0.46	56.13	11.00	11.00	0.00
2,700.00	37.93	0.47	2,675.35	110.05	0.90	109.33	11.00	11.00	0.00
2,800.00	48.93	0.47	2,747.86	178.69	1.47	177.52	11.00	11.00	0.00
2,900.00	59.93	0.47	2,805.93	259.91	2.14	258.21	11.00	11.00	0.00
3,000.00	70.93	0.47	2,847.44	350.72	2.88	348.42	11.00	11.00	0.00
3,100.00	81.93	0.47	2,870.86	447.78	3.68	444.84	11.00	11.00	0.00
3,177.87	90.50	0.47	2,875.99	525.40	4.32	521.96	11.00	11.00	0.00
LP, Hold 90.5° Inc, 0.47° Azm									
3,200.00	90.50	0.47	2,875.80	547.53	4.50	543.94	0.00	0.00	0.00
3,300.00	90.50	0.47	2,874.93	647.52	5.32	643.28	0.00	0.00	0.00
3,400.00	90.50	0.47	2,874.05	747.51	6.14	742.62	0.00	0.00	0.00
3,500.00	90.50	0.47	2,873.18	847.51	6.97	841.96	0.00	0.00	0.00
3,600.00	90.50	0.47	2,872.31	947.50	7.79	941.29	0.00	0.00	0.00
3,700.00	90.50	0.47	2,871.44	1,047.49	8.61	1,040.63	0.00	0.00	0.00
3,800.00	90.50	0.47	2,870.56	1,147.49	9.43	1,139.97	0.00	0.00	0.00
3,900.00	90.50	0.47	2,869.69	1,247.48	10.25	1,239.31	0.00	0.00	0.00
4,000.00	90.50	0.47	2,868.82	1,347.47	11.07	1,338.64	0.00	0.00	0.00
4,100.00	90.50	0.47	2,867.94	1,447.46	11.90	1,437.98	0.00	0.00	0.00
4,200.00	90.50	0.47	2,867.07	1,547.46	12.72	1,537.32	0.00	0.00	0.00
4,300.00	90.50	0.47	2,866.20	1,647.45	13.54	1,636.66	0.00	0.00	0.00
4,400.00	90.50	0.47	2,865.33	1,747.44	14.36	1,736.00	0.00	0.00	0.00
4,500.00	90.50	0.47	2,864.45	1,847.44	15.18	1,835.33	0.00	0.00	0.00
4,600.00	90.50	0.47	2,863.58	1,947.43	16.00	1,934.67	0.00	0.00	0.00
4,700.00	90.50	0.47	2,862.71	2,047.42	16.83	2,034.01	0.00	0.00	0.00
4,800.00	90.50	0.47	2,861.84	2,147.41	17.65	2,133.35	0.00	0.00	0.00
4,900.00	90.50	0.47	2,860.96	2,247.41	18.47	2,232.68	0.00	0.00	0.00
5,000.00	90.50	0.47	2,860.09	2,347.40	19.29	2,332.02	0.00	0.00	0.00
5,100.00	90.50	0.47	2,859.22	2,447.39	20.11	2,431.36	0.00	0.00	0.00
5,200.00	90.50	0.47	2,858.35	2,547.39	20.94	2,530.70	0.00	0.00	0.00
5,300.00	90.50	0.47	2,857.47	2,647.38	21.76	2,630.04	0.00	0.00	0.00
5,400.00	90.50	0.47	2,856.60	2,747.37	22.58	2,729.37	0.00	0.00	0.00
5,500.00	90.50	0.47	2,855.73	2,847.36	23.40	2,828.71	0.00	0.00	0.00
5,600.00	90.50	0.47	2,854.85	2,947.36	24.22	2,928.05	0.00	0.00	0.00
5,700.00	90.50	0.47	2,853.98	3,047.35	25.04	3,027.39	0.00	0.00	0.00
5,800.00	90.50	0.47	2,853.11	3,147.34	25.87	3,126.73	0.00	0.00	0.00
5,900.00	90.50	0.47	2,852.24	3,247.34	26.69	3,226.06	0.00	0.00	0.00
6,000.00	90.50	0.47	2,851.36	3,347.33	27.51	3,325.40	0.00	0.00	0.00
6,100.00	90.50	0.47	2,850.49	3,447.32	28.33	3,424.74	0.00	0.00	0.00
6,200.00	90.50	0.47	2,849.62	3,547.31	29.15	3,524.08	0.00	0.00	0.00
6,300.00	90.50	0.47	2,848.75	3,647.31	29.98	3,623.41	0.00	0.00	0.00
6,400.00	90.50	0.47	2,847.87	3,747.30	30.80	3,722.75	0.00	0.00	0.00
6,500.00	90.50	0.47	2,847.00	3,847.29	31.62	3,822.09	0.00	0.00	0.00
6,600.00	90.50	0.47	2,846.13	3,947.28	32.44	3,921.43	0.00	0.00	0.00
6,700.00	90.50	0.47	2,845.26	4,047.28	33.26	4,020.77	0.00	0.00	0.00
6,800.00	90.50	0.47	2,844.38	4,147.27	34.08	4,120.10	0.00	0.00	0.00
6,900.00	90.50	0.47	2,843.51	4,247.26	34.91	4,219.44	0.00	0.00	0.00
7,000.00	90.50	0.47	2,842.64	4,347.26	35.73	4,318.78	0.00	0.00	0.00
7,100.00	90.50	0.47	2,841.76	4,447.25	36.55	4,418.12	0.00	0.00	0.00
7,200.00	90.50	0.47	2,840.89	4,547.24	37.37	4,517.45	0.00	0.00	0.00



Database:	Compass 5000.GCR	Local Co-ordinate Reference:	Well #1H
Company:	COG Operating LLC	TVD Reference:	KB @ 3411.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	KB @ 3411.00usft (Silver Oak 3)
Site:	Bone Yard 11 Fee	North Reference:	Grid
Well:	#1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 07-13-15		

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)
7,300.00	90.50	0.47	2,840.02	4,647.23	38.19	4,616.79	0.00	0.00	0.00
7,400.00	90.50	0.47	2,839.15	4,747.23	39.01	4,716.13	0.00	0.00	0.00
7,500.00	90.50	0.47	2,838.27	4,847.22	39.84	4,815.47	0.00	0.00	0.00
7,600.00	90.50	0.47	2,837.40	4,947.21	40.66	4,914.81	0.00	0.00	0.00
7,678.09	90.50	0.47	2,836.72	5,025.30	41.30	4,992.38	0.00	0.00	0.00
TD at 7678.09' MD - BHL(Bone Yard 11 Fee #1H)									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
BHL(Bone Yard 11 Fee #1)	-90.40	0.07	2,836.72	5,025.30	41.30	579,944.00	460,214.50	32° 35' 39.49836 N	104° 27' 45.05749 W
- plan hits target center									
- Point									

Formations

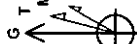
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,153.36	2,875.63	TL, 2880' TVD @ 0 VZ, 90.5° Inc		-0.50	0.47

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,355.14	2,355.14	0.00	0.00	KOP, Begin 11°/100' Build
3,177.87	2,875.99	525.40	4.32	LP, Hold 90.5° Inc, 0.47° Azm
7,678.09	2,836.72	5,025.30	41.30	TD at 7678.09' MD



Project: Eddy County, NM (NAD27 NME)
Site: Bone Yard T1 Fee
Well: #1H
Wellbore: OH
Design: Plan #1 07-13-15
Rig: Silver Oak 3



PHOENIX
TECHNOLOGY SERVICES

Azimuth to Grid North
True North: 0.07°
Magnetic North: 7.77°
Magnetic Field
Strength: 50.42
Dip Angle: 60.42°
Date: 7/13/2015
Model: HDGM

WELL DETAILS

Ground Level	3331.00	Latitude	Longitude
Northing	514918.70	32° 34' 43.5860" N	104° 27' 45.6585" W
Easting	460173.20		

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/S	-E/W	Dip	Trace	V-Sed	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2355.14	0.00	0.00	2355.14	0.00	0.00	0.00	0.00	0.00	0.00	KOP: Begin 117100' Build
3	3177.87	90.50	0.47	2875.98	525.40	0.47	521.98				LP: Hold 90.5° Inc 0.47° Azi
4	7016.09	90.50	0.47	2875.98	525.40	0.47	521.98				84L Bone Yard 11 Fee #1H TD at 7016.09 MD

DESIGN TARGET DETAILS

Name	TVD	+N/S	Northing	Easting	Latitude	Longitude	Shape
Bit (Bone Yard 11 Fee #1H)	2356.72	5025.30	41.30	579844.00	460214.50	32° 35' 39.4853" N 104° 27' 45.0574" W	Point

- plan has target center

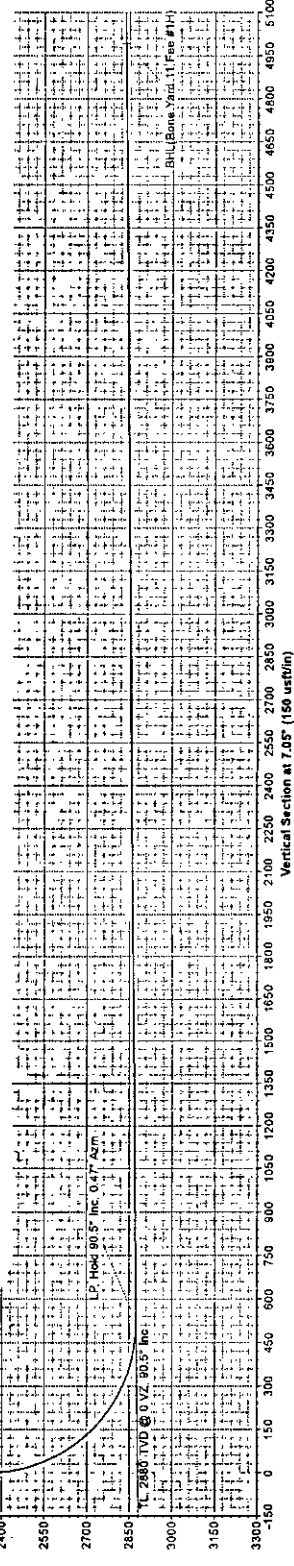
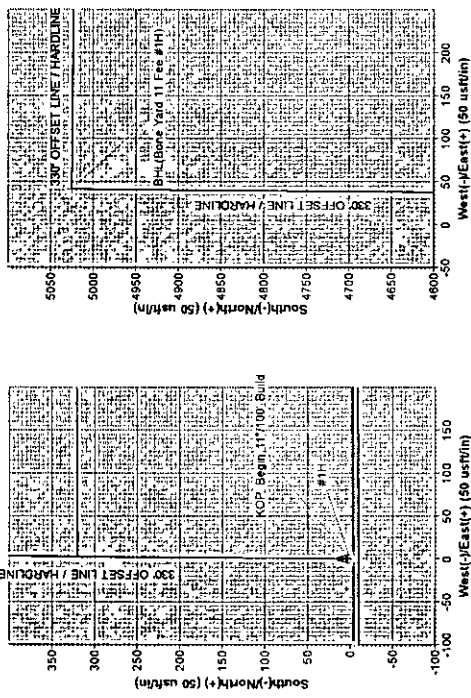
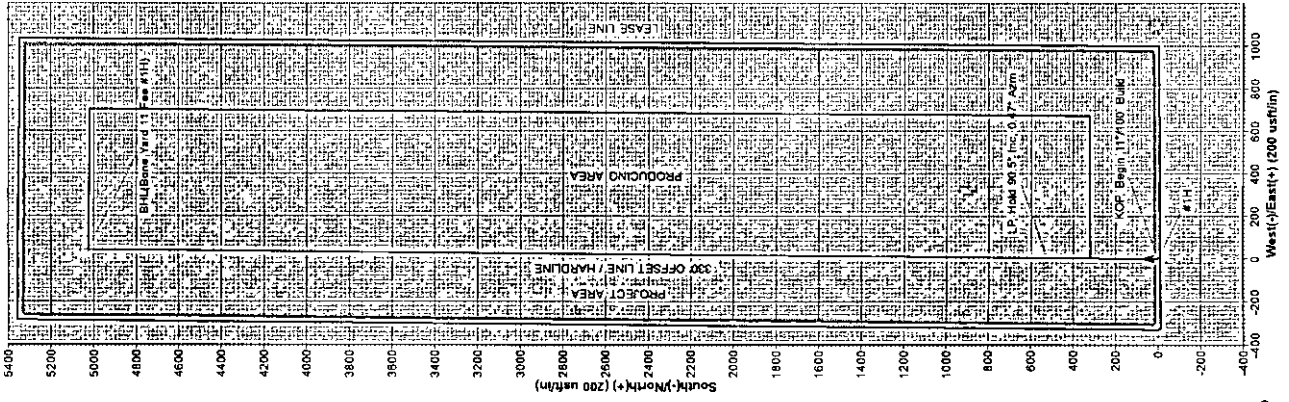
LEGEND

Plan #1 07-13-15

Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone Name: New Mexico East 3001
Local Origin: Well #1H, Grid North
Latitude: 32° 34' 43.5860" N
Longitude: 104° 27' 45.6585" W
Grid East: 460173.20
Grid North: 514918.70
Scale Factor: 1.000
Geometric Model: HDGM
Spheroid: Clarke 1866
Datum: NAD 1927
Magnetic Declination: 7.70°
Dip Angle from Horizontal: 60.42°
Magnetic Field Strength: 48397
To convert a Magnetic Direction to a Grid Direction, Add 7.77°
To convert a Grid Direction to a Magnetic Direction, Subtract 7.77°
To convert a True Direction to a Grid Direction, Add 0.07°

FORMATION TOP DETAILS

TVD	MD	Formation	Depth	Dip
2875.63	3163.38	TL 2840 TVD @ 0 VZ 90.5° Inc 0.50	0.47	0.47



Vertical Section at 7.05° (150 usft/in)