# NM OIL CONSERVATION ARTESIA DISTRICT

Intent X As Drilled					OCT 0 1 2018									
API#	-015-	4530										F	RECEIV	ΈD
Operator Name: DEVON ENERGY PRODUCTION COMPANY, L.P.					I	Property Name: SPUD MUFFIN 31-30					Well Number			
lich (	Off Point	(KOB)				-								
UL	Section 31	Township.	Range 29E	Lot	Feet 50		From N		Feet 99		From E/V EAST	w	County EDDY	
Latitu	ide	54328	29E		Longitu		104.018			3 1	EASI		NAD 83	
irst 1	Take Poir	nt (FTP)			<b></b>			•••				I	····	
ÜL P	Section 31	Township 23S	Range 29E	Lot	Feet 100	·	From N		Feet 995		From E/V EAST		County EDDY	
Latitu 32.2	ide 254479	4			Longitu 104.0		4619	-		·			NAD 83	
Last T	rake Poin	t (LTP)												
UĻ <b>A</b>	Section 30	Township 23S	Range 29E	Ļot	Feet 100		om N/S	Feet 975		From E/ EAST		unty		
132.2	ode 282962	5			Longitu 104.0	NAD .0186820 83								
Is this well the defining well for the Horizontal Spacing Unit? YES														
Is this well an infill well?														
	ll is yes p ng Unit.	lease prov	ide API if	availab	ile, Opei	rator	Name ·	and v	vell ni	umber (	for Defi	inin	g well fo	or Horizontal
API#		**												
Ope	rator Nai	ne:		. <u>-</u>		Pro	perty N	lame	:					Well Number
	_													

KZ 06/29/2018

### 1. Geologic Formations

TVD of target	9,730	Pilot hole depth	N/A
MD at TD:	20,050'	Deepest expected fresh water:	

## Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Top Salt	500		
Base of Salt	2700		
Lamar	3106		
Bell Canyon	3157		
Brushy Canyon	5230		
Bone Spring Lime	6812		
1st BSPG Sand	7872		
2nd BSPG Sand	8716		
3rd BSPG Sand	9791		
Wolfcamp	10050		
Wolfcamp XY	10164		
Wolfcamp 100	10268		
-			

<sup>\*</sup>H2S, water flows, loss of circulation, abnormal pressures, etc.

#### 2. Casing Program

Hole Size	Casing Interval		Csg.	Weight	Grade	Conn.
	From	To	Size	(lbs)		
17.5"	0	400'	13.375"	48	H-40	STC
12.25"	0	2,700'	9.625"	40	J-55	LTC
8.75"	0	TD	5.5"	17	P-110	BTC
BLM Minin	num Safet	y Factor		Collapse: 1.125	Burst: 1.00	Tension: 1.6 Dry 1.8 Wet

- All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h
- Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.
- Int casing shoe will be selected based on drilling data / gamma, setting depth with be revised accordingly if needed.

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	H₂0 gal/sk	Yld ft3/ sack	Slurry Description
13-3/8" Surf	310	14.8	6.368	1.33	C + Adds
9-5/8"	461	12.5	10.654	1.94	35:65 Poz:C + Adds
Inter.	156	14.8	6.352	1.33	C + Adds
5-1/2"	555	9	15.442	3.569	C + Adds
Prod	580	13.2	5.175	1.46	50:50 Poz:H + Adds

If a DV tool is used, depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
13-3/8" Surface	0'	50%
9-5/8" Intermediate	0'	30%
5-1/2" Production Casing	2,500	10%

PNP10-2-18

#### 4. Pressure Control Equipment

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

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Туре		<b>Y</b>	Tested to:
			Anı	nular	X	50% of rated working pressure
1	12 5/0"	534	Blind	d Ram	X	
Intermediate	13-5/8"	5M	Pipe	Ram		5M
			Double Ram		X	SIVI
			Other*			
			Annul	ar (5M)	X	50% of rated working pressure
			Blind Ram		X	
Production	13-5/8"	5M	Pipe Ram			
			Double Ram		X	5M
			Other *			
<u> </u>			An	nular		
			Blind Ram			<u> </u>
			Pipe Ram			
			Double Ram			
			Other *			

<sup>\*</sup>Specify if additional ram is utilized.

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

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

Y Formation integrity test will be performed per Onshore Order #2.

On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.

A variance is requested for the use of a flexible choke line from the BOP to Choke Y Manifold. See attached for specs and hydrostatic test chart.

Y Are anchors required by manufacturer?

A multibowl wellhead may be used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.

Devon proposes using a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 5000 (5M) psi.

- Wellhead will be installed by wellhead representatives.
- If the welding is performed by a third party, the wellhead representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
- Wellhead representative will install the test plug for the initial BOP test.
- Wellhead company will install a solid steel body pack-off to completely isolate the lower head after cementing intermediate casing. After installation of the pack-off, the pack-off and the lower flange will be tested to 3M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time.
- If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted.
- Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating.
- Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2.

After running surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 5M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 5,000 psi high pressure test. The 5,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2.

13-5/8" BOP/BOPE system will have been tested to 10M rating prior to drilling out intermediate casing.

The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In

addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 5,000 psi WP.

Devon's proposed wellhead manufactures will be FMC Technologies, Cactus Wellhead, or Cameron.

Devon requests a variance to use a flexible line with flanged ends between the BOP and the choke manifold (choke line). The line will be kept as straight as possible with minimal turns.

#### 5. Mud Program

Depth		Туре	Weight (ppg)	Viscosity	Water Loss
From	To				
0	400'	FW Gel	8.6-8.8	28-34	N/C
400'	2700'	Sat Brine	9.9-10.1	34-40	N/C - 6
2700'	TD	Cut Brine	9.0-9.8	32-36	N/C - 6

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

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

#### 6. Logging and Testing Procedures

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

Add	litional logs planned	Interval
	Resistivity	Int. shoe to KOP
	Density	Int. shoe to KOP
X	CBL	Production casing
X	Mud log	Intermediate shoe to TD
	PEX	

#### 7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	4920 psi
Abnormal Temperature	No

Mitigation measure for abnormal conditions. Describe. Lost circulation material/sweeps/mud scavengers.

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

values and formations will be provided to the BLM.		
N	H2S is present	
Y	H2S Plan attached	

#### 8. Other facets of operation

Is this a walking operation? Potentially

- 1. In the event the spudder rig is unable to drill the surface holes the drilling rig will batch drill the surface holes and run/cement surface casing; walking the rig to next wells on the pad.
- 2. The drilling rig will then batch drill the intermediate sections with either OBM or cut brine and run/cement intermediate casing; the wellbore will be isolated with a blind flange and pressure gauge installed for monitoring the well before walking to the next well.
- 3. The drilling rig will then batch drill the production hole sections on the wells with OBM, run/cement production casing, and install TA caps or tubing heads for completions.

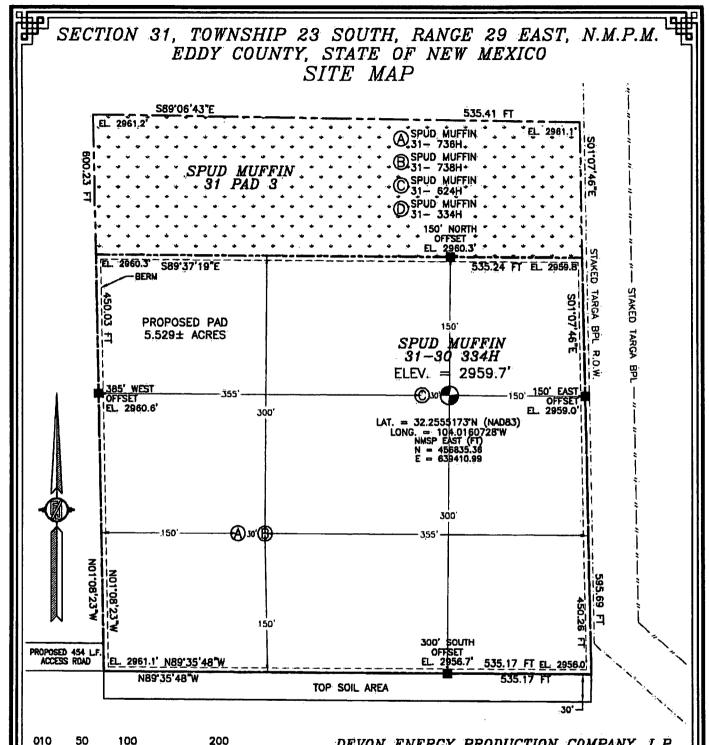
NOTE: During batch operations the drilling rig will be moved from well to well however, it will not be removed from the pad until all wells have production casing run/cemented.

#### Will be pre-setting casing? Potentially

- 1. Spudder rig will move in and drill surface hole.
  - a. Rig will utilize fresh water based mud to drill surface hole to TD. Solids control will be handled entirely on a closed loop basis.
- 2. After drilling the surface hole section, the spudder rig will run casing and cement following all of the applicable rules and regulations (OnShore Order 2, all COAs and NMOCD regulations).
- 3. The wellhead will be installed and tested once the surface casing is cut off and the WOC time has been reached.
- 4. A blind flange with the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with a pressure gauge installed on the wellhead.
- 5. Spudder rig operations is expected to take 4-5 days per well on a multi well pad.
- 6. The NMOCD will be contacted and notified 24 hours prior to commencing spudder rig operations.
- 7. Drilling operations will be performed with the drilling rig. At that time an approved BOP stack will be nippled up and tested on the wellhead before drilling operations commences on each well.
  - a. The NMOCD will be contacted / notified 24 hours before the drilling rig moves back on to the pad with the pre-set surface casing.

#### Attachments

<u>x</u> Directional Plan Other, describe



SCALE 1" = 100'
DIRECTIONS TO LOCATION
BEGINNING AT THE JUNCTION OF US 285 AND CR 720,
GO EAST ON CR 720 0.8 OF A. MILE TO HARROUN
ROAD ON THE LEFT. GO NORTH-NORTHEAST ON
HARROUN ROAD FOR 3.1 MILES TO A FORK IN THE
ROAD. CONTINUE NORTH, LEFT ON SAID HARROUN ROAD
230' TO A LEASE ROAD TO THE LEFT, GO NORTH 0.5
OF A MILE. GO EAST 0.48 OF A MILE TO THE
SOUTHWEST PAD OF HARROUN TRUST 31 4H & 5H,
THEN FROM SOUTHEAST PAD GO EAST 454' TO THE
SOUTHWEST PAD CORNER FOR THIS LOCATION.

DEVON ENERGY PRODUCTION COMPANY, L.P.

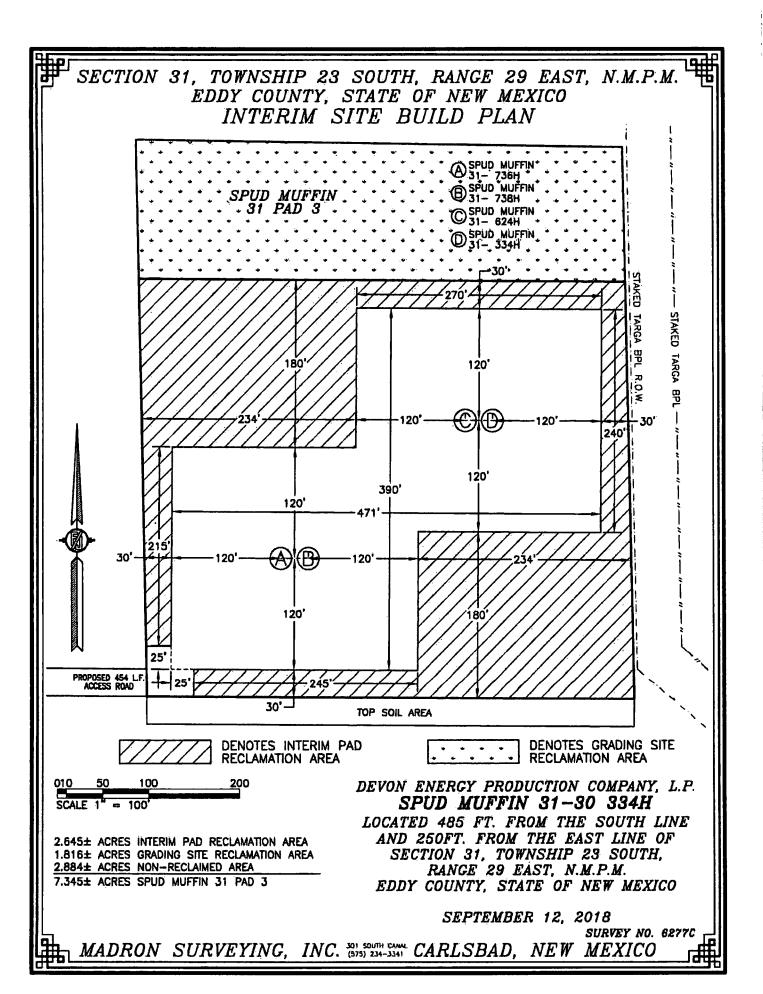
SPUD MUFFIN 31-30 334H

LOCATED 485 FT. FROM THE SOUTH LINE
AND 250FT. FROM THE EAST LINE OF
SECTION 31, TOWNSHIP 23 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

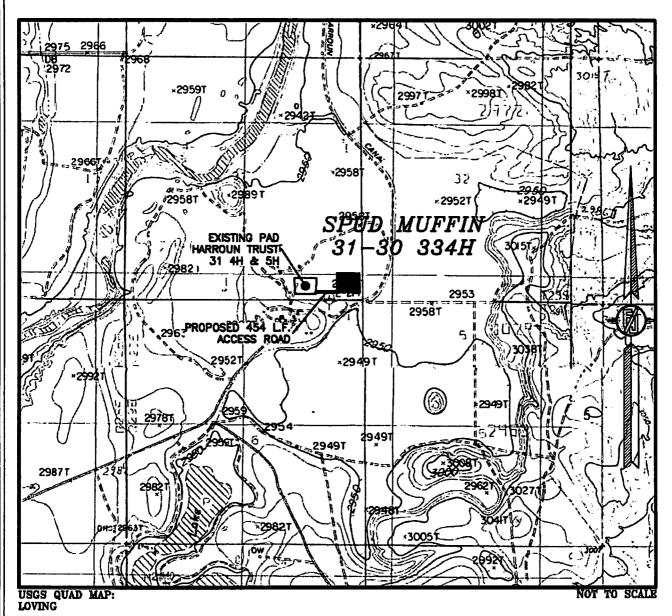
SEPTEMBER 12, 2018

SURVEY NO. 8277C

MADRON SURVEYING, INC. 301 SOUTH CARLSBAD, NEW MEXICO



# SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO LOCATION VERIFICATION MAP



DEVON ENERGY PRODUCTION COMPANY, L.P.
SPUD MUFFIN 31-30 334H

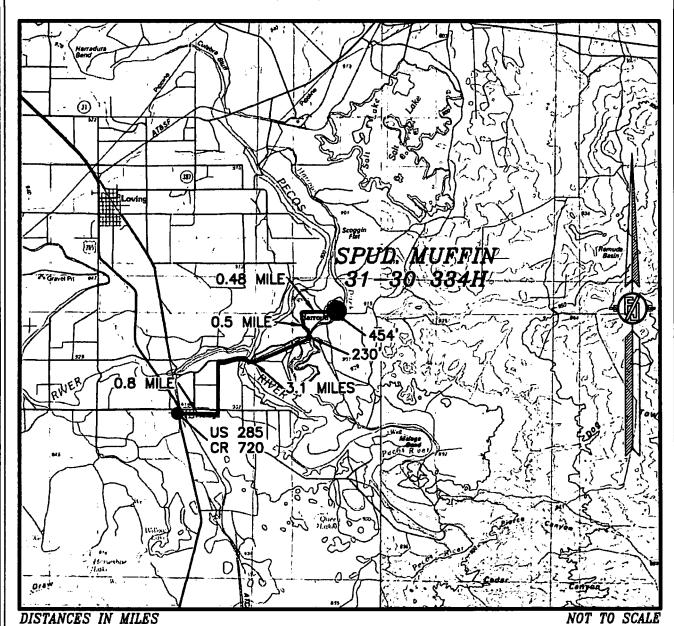
LOCATED 485 FT. FROM THE SOUTH LINE
AND 250FT. FROM THE EAST LINE OF
SECTION 31, TOWNSHIP 23 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

SEPTEMBER 12, 2018

SURVEY NO. 6277C

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO

# SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO VICINITY MAP



\*

DIRECTIONS TO LOCATION
BEGINNING AT THE JUNCTION OF US 285 AND CR 720,
GO EAST ON CR 720 0.8 OF A MILE TO HARROUN
ROAD ON THE LEFT. GO NORTH-NORTHEAST ON
HARROUN ROAD FOR 3.1 MILES TO A FORK IN THE
ROAD. CONTINUE NORTH, LEFT ON SAID HARROUN ROAD
230' TO A LEASE ROAD TO THE LEFT, GO NORTH 0.5
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AND 250FT. FROM THE EAST LINE OF
SECTION 31, TOWNSHIP 23 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

SEPTEMBER 12, 2018

SURVEY NO. 6277C

MADRON SURVEYING, INC. 301 SOUTH CAMAL CARLSBAD, NEW MEXICO

# SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO AERIAL PHOTO



NOT TO SCALE AERIAL PHOTO: GOOGLE EARTH FEB. 2017

DEVON ENERGY PRODUCTION COMPANY, L.P. SPUD MUFFIN 31-30 334H

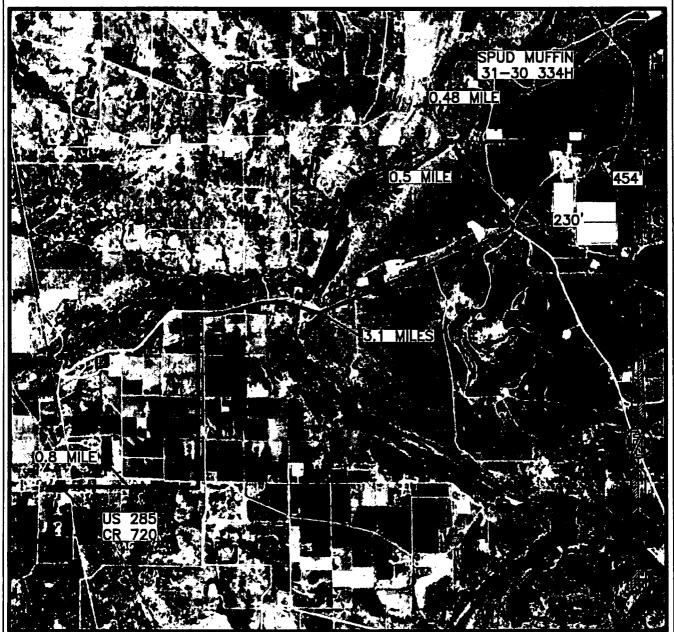
LOCATED 485 FT. FROM THE SOUTH LINE AND 250FT. FROM THE EAST LINE OF SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO

SEPTEMBER 12, 2018

SURVEY NO. 6277C

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO

# SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO AERIAL ACCESS ROUTE MAP



NOT TO SCALE AERIAL PHOTO: GOOGLE EARTH FEB. 2017

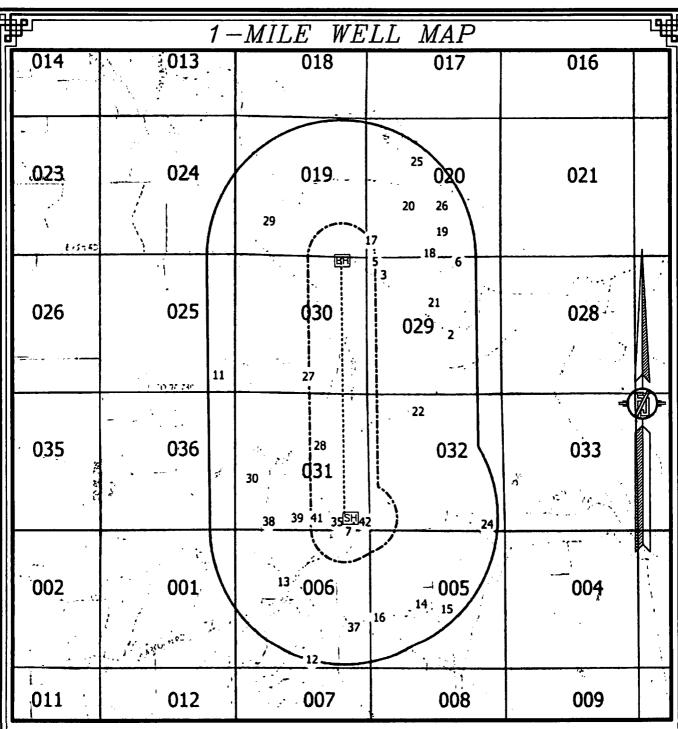
DEVON ENERGY PRODUCTION COMPANY, L.P. SPUD MUFFIN 31-30 334H

LOCATED 485 FT. FROM THE SOUTH LINE AND 250FT. FROM THE EAST LINE OF SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO

SEPTEMBER 12, 2018

SURVEY NO. 6277C

MADRON SURVEYING, INC. 301 SOUTH CARLSBAD, NEW MEXICO



WELL DATA FROM NMOCD GIS - 8/22/18

SH	SURFACE	LOCATION
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BH BOTTOM OF HOLE

WELLS WITHIN 1 MILE

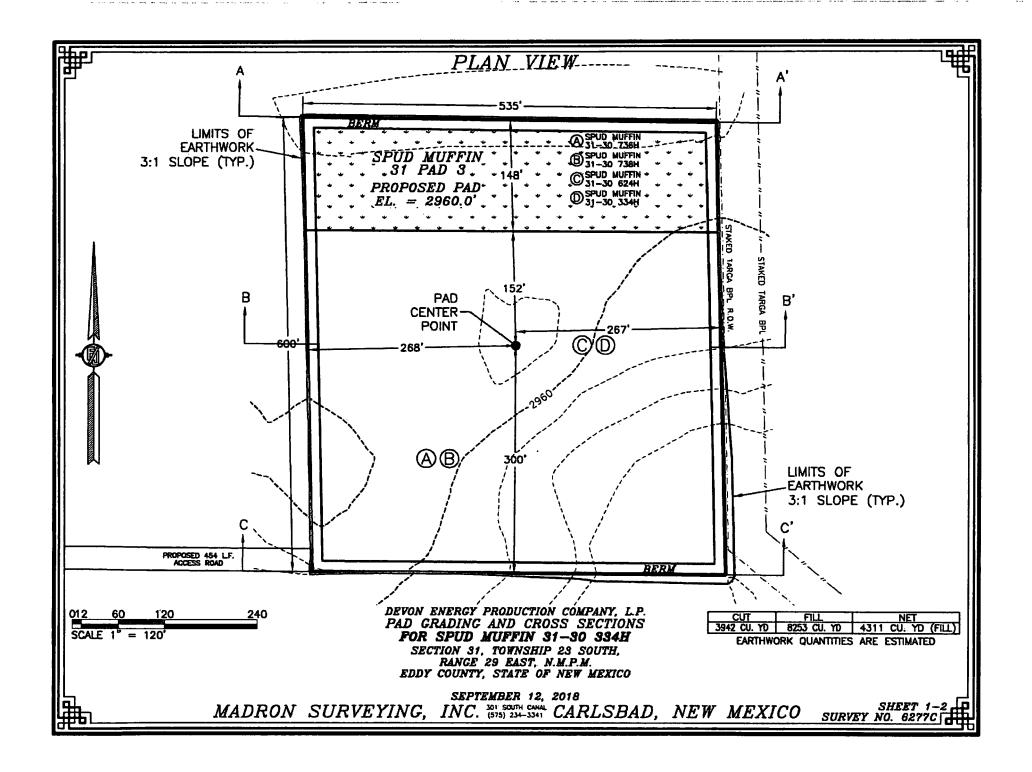
DEVON ENERGY PRODUCTION COMPANY, L.P. SPUD MUFFIN 31-30 334H

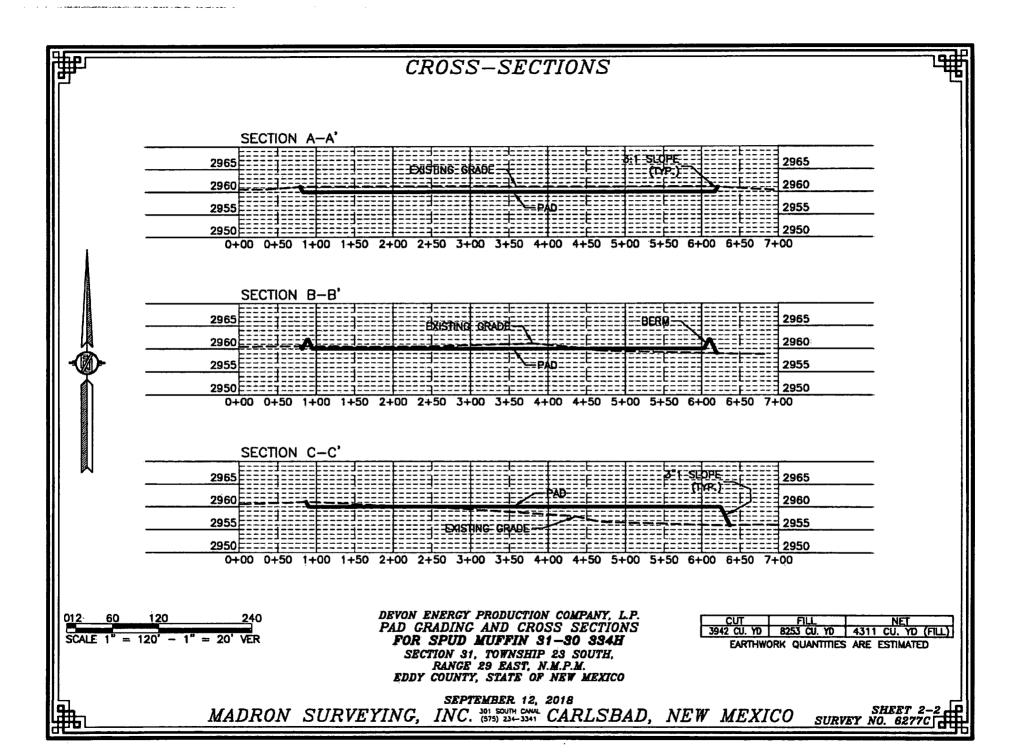
LOCATED 485 FT. FROM THE SOUTH LINE AND 250FT. FROM THE EAST LINE OF SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO

SEPTEMBER 12, 2018

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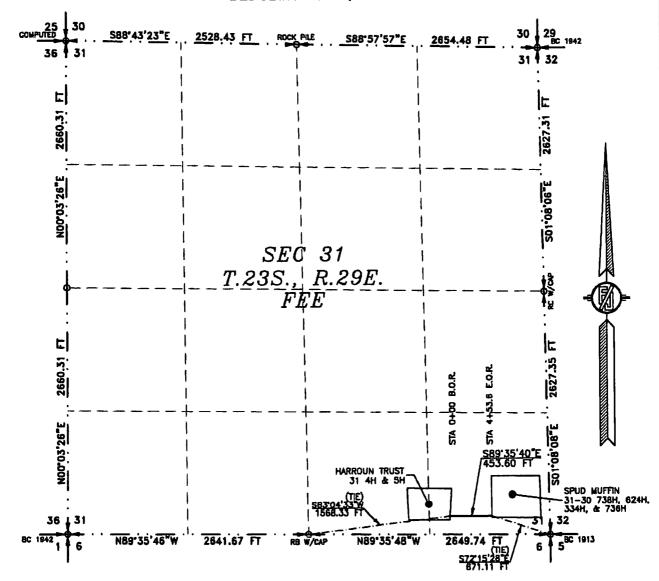
#### ACCESS ROAD PLAT

ACCESS ROAD FROM HARROUN TRUST 31 4H & 5H WELLPAD TO SPUD MUFFIN 31-30 738H, 624H, 334H, & 736H

DEVON ENERGY PRODUCTION COMPANY, L.P.

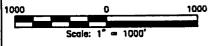
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.

EDDY COUNTY, STATE OF NEW MEXICO
SEPTEMBER 12, 2018



SEE NEXT SHEET (2-2) FOR DESCRIPTION

INC 301 5007/ CANAC (575) 234-3341



#### GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NADB3) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SHEET: 1-2

MADRON SURVEYING,

#### SURVEYOR CERTIFICATE

I, FILMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD,

NEW MEXICO, THIS DAY OF SEPTEMBER 2018

MADRI
301
CARL

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO 88220 Phone (575) 234-3341

SURVEY NO. 6277C

CARLSBAD, NEW MEXICO

#### ACCESS ROAD PLAT

ACCESS ROAD FROM HARROUN TRUST 31 4H & 6H WELLPAD TO SPUD MUFFIN 31-30 738H, 624H, 334H, & 736H

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.

EDDY COUNTY, STATE OF NEW MEXICO
SEPTEMBER 12, 2018

#### DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING FEE LAND IN SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, STATE OF NEW MEXICO AND BEING 15 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

BEGINNING AT A POINT WITHIN THE SE/4 SE/4 OF SAID SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M., WHENCE THE SOUTH QUARTER CORNER OF SAID SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M. BEARS \$83°04'33"W, A DISTANCE OF 1568.33 FEET;

THENCE S89"35'40"E A DISTANCE OF 453.60 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE SOUTHEAST CORNER OF SAID SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M. BEARS \$72"15'28"E, A DISTANCE OF 671.11 FEET:

SAID STRIP OF LAND BEING 453.60 FEET OR 27.49 RODS IN LENGTH, CONTAINING 0.312 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

SE/4 SE/4 453.60 L.F. 27.49 RODS 0.312 ACRES

#### SURVEYOR CERTIFICATE

#### GENERAL NOTES

- 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.
- 2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SHEET: 2-2

MADRON SURVEYING.

I, FILMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE-AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY, AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS/WHEREOF! THIS CERTIFICATE IS EXECUTED AT CARLSBAD,

NEW MEXICO THIS DAY OF SEPTEMBER 2018

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO 88220 Phone (575) 234-3341

SURVEY NO. 6277C

ASTS TO THE CARLSBAD, NEW MEXICO