NM OIL CONSERVATION
ARTESIA DISTRICT
MAY 15 2015
OCD Artesia
RECEIVED

ATS-14-980

Form 3160-3
(March 2012)

HIGH CAVEKARST

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☑ DRILL ☐ REENTER	5. Lease Serial No. NMNM 012764
1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☑ Multiple Zone	6. If Indian, Allotee or Tribe Name N/A
2. Name of Operator Tandem Energy Corporation	7. If Unit or CA Agreement, Name and No. NMNM 107668
3a. Address 2700 Post Oak Blvd, Suite 1000 Houston, Texas 77056	8. Lease Name and Well No. Nunlee Federal 009
3b. Phone No. (include area code) (713) 364-7822	9. API Well No. 30-015-43550
4. Location of Well (Report location clearly and in accordance with any State requirements.*) At surface 1,139' FNL & 1,812' FEL (NW/4 NE/4) of Section 35-16S-29E N.M. At proposed prod. zone 1,139' FNL & 1,812' FEL (NW/4 NE/4) of Section 35-16S-29E N.M.	10. Field and Pool, or Exploratory Metex/Premier
	11. Sec., T. R. M. or Blk. and Survey or Area 35-16S-29E N.M.
14. Distance in miles and direction from nearest town or post office* Approximately 5.7 miles northwest of Loco Hills, New Mexico.	12. County or Parish Eddy County / 13. State NM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. unit line, if any) 1,139' FWL	16. No. of acres in lease 1,000.000 ac. / 17. Spacing Unit dedicated to this well 640 acres
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 1,325' (Nunlee Federal 004)	19. Proposed Depth TVD: 2,950' / 20. BLM/BIA Bond No. on file NMB 00432 563
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3,672' GL	22. Approximate date work will start* 08/20/2014 / 23. Estimated duration 30 Days

24. Attachments

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

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

25. Signature	Name (Printed/Typed) Troy Zaikis	Date 8/4/14
Title Agent for Tandem Energy Corporation		
Approved by (Signature) Steve Caffey	Name (Printed/Typed)	Date MAY 26 2015
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

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

APPROVAL FOR TWO YEARS

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

(Continued on page 2)

*(Instructions on page 2)

Roswell Controlled Water Basin

12/21/2015

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1API Number	2Pool Code	3Pool Name
30-015-43550	51570	Sand Lake-Grayburg-San Andres

4Property Code	5Property Name	6Well Number
305335	NUNLEE FEDERAL	#009

7OGRID No.	8Operator Name	9Elevation
236183	TANDEM ENERGY CORP.	3672'

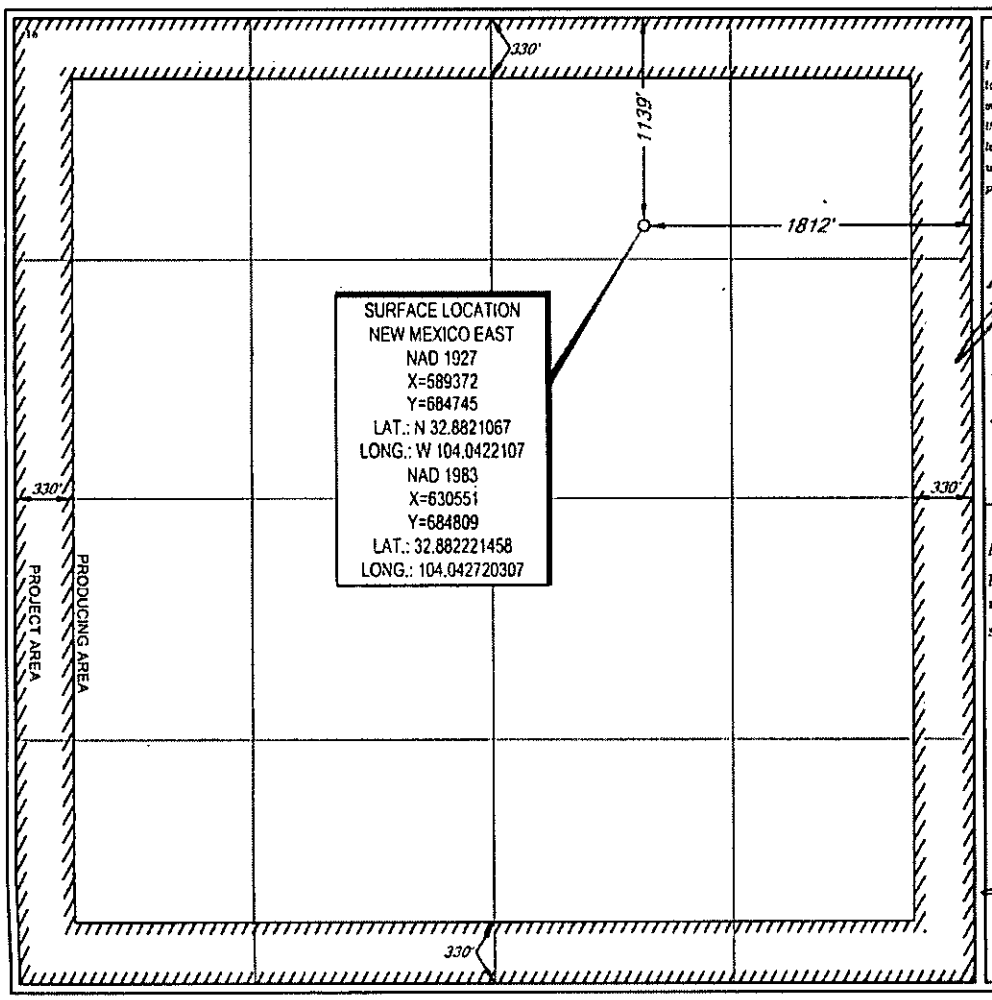
10Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	35	16-S	29-E	–	1139'	NORTH	1812'	EAST	EDDY

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
–	–	–	–	–	–	–	–	–	–

12Dedicated Acres	13Joint or Infill	14Consolidation Code	15Order No.
~~640~~ 40.00			

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.



17OPERATOR 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 — Date: 9-3-15

Troy Zaikis
Printed Name

TZaikis@RSEnergySolutions.com
E-mail Address

18SURVEYOR 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 to the best of my belief.

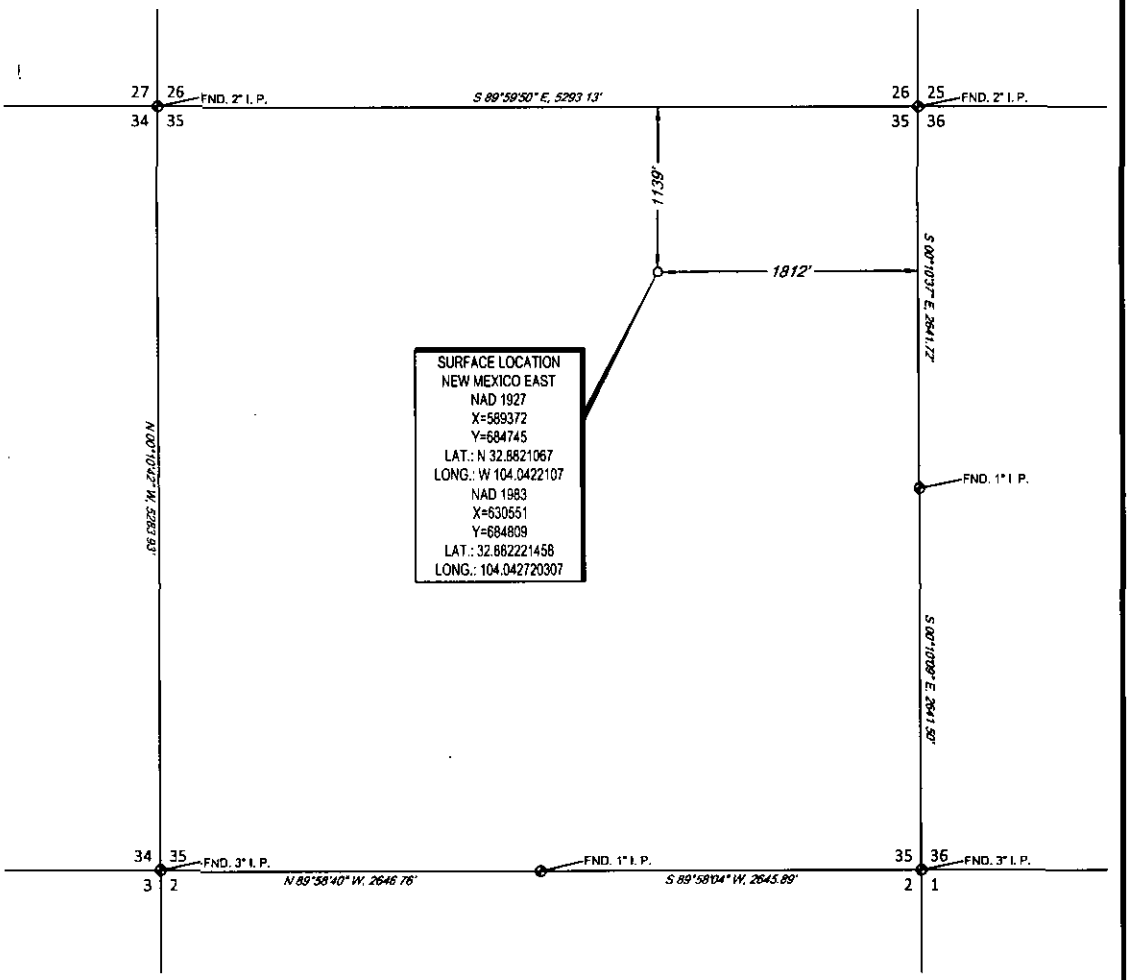
Date of Survey: 5/19/2014
Signature and Seal of Professional Surveyor: MICHAEL BROWN NEW MEXICO 18329 PROFESSIONAL SURVEYOR

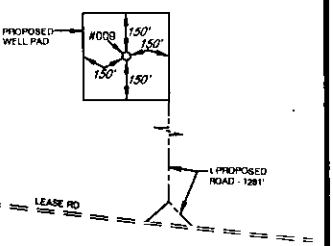
Certificate Number

M:\SURVEY\TANDEM ENERGY CORP\EDDY\NUNLEE FEDERAL\FINAL PRODUCTS\LO NUNLEE FEDERAL 009 REV1 DWG 6/9/2014 8:05:15 PM swilagrana

TANDEM ENERGY CORP.

SECTION 35, TOWNSHIP 16 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, NEW MEXICO





DETAIL VIEW
SCALE: 1" = 500'

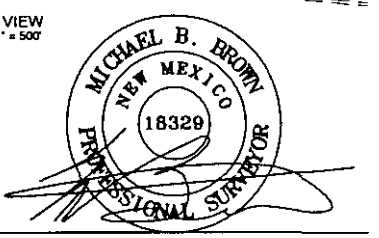
LEASE NAME & WELL NO.: NUNLEE FEDERAL #009

SECTION 35 TWP 16-S RGE 29-E SURVEY N.M.P.M.
COUNTY EDDY STATE NM
DESCRIPTION 1139' FNL & 1812' FEL

DISTANCE & DIRECTION FROM INT. OF US-82 E & E MAIN ST., GO EAST ON US-82 E ±21.8 MILES, THENCE NORTH (LEFT) ON KEWANEE RD. ±4.0 MILES, THENCE WEST (LEFT) ON LEASE RD. ±0.35 MILES TO A POINT ±1281 FEET SOUTH OF THE LOCATION.

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE OF THE NORTH AMERICAN DATUM 1927, U.S. SURVEY FEET.

THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY TANDEM ENERGY CORP. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.



Michael Blake Brown, P.S. No. 18329
JUNE 23, 2014

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, Ste. 197 · FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 · FAX (817) 744-7548
3803 NORTH BIG SPRING · MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 · FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

M:\SURVEY\TANDEM ENERGY CORP\EDDY\NUNLEE_FEDERAL\FINAL_PRODUCTS\0_NUNLEE_FEDERAL_009_REV2.DWG 6/23/2014 3:54:38 PM shalgrave

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NM OIL CONSERVATION
ARTESIA DISTRICT
JUN 15 2015
RECEIVED

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1]API Number	[2]Pool Code	[3]Pool Name

[4]Property Code	[5]Property Name	[6]Well Number
	NUNLEE FEDERAL	#009

[7]OGRID No.	[8]Operator Name	[9]Elevation
236183	TANDEM ENERGY CORP.	3672'

[10]Surface Location

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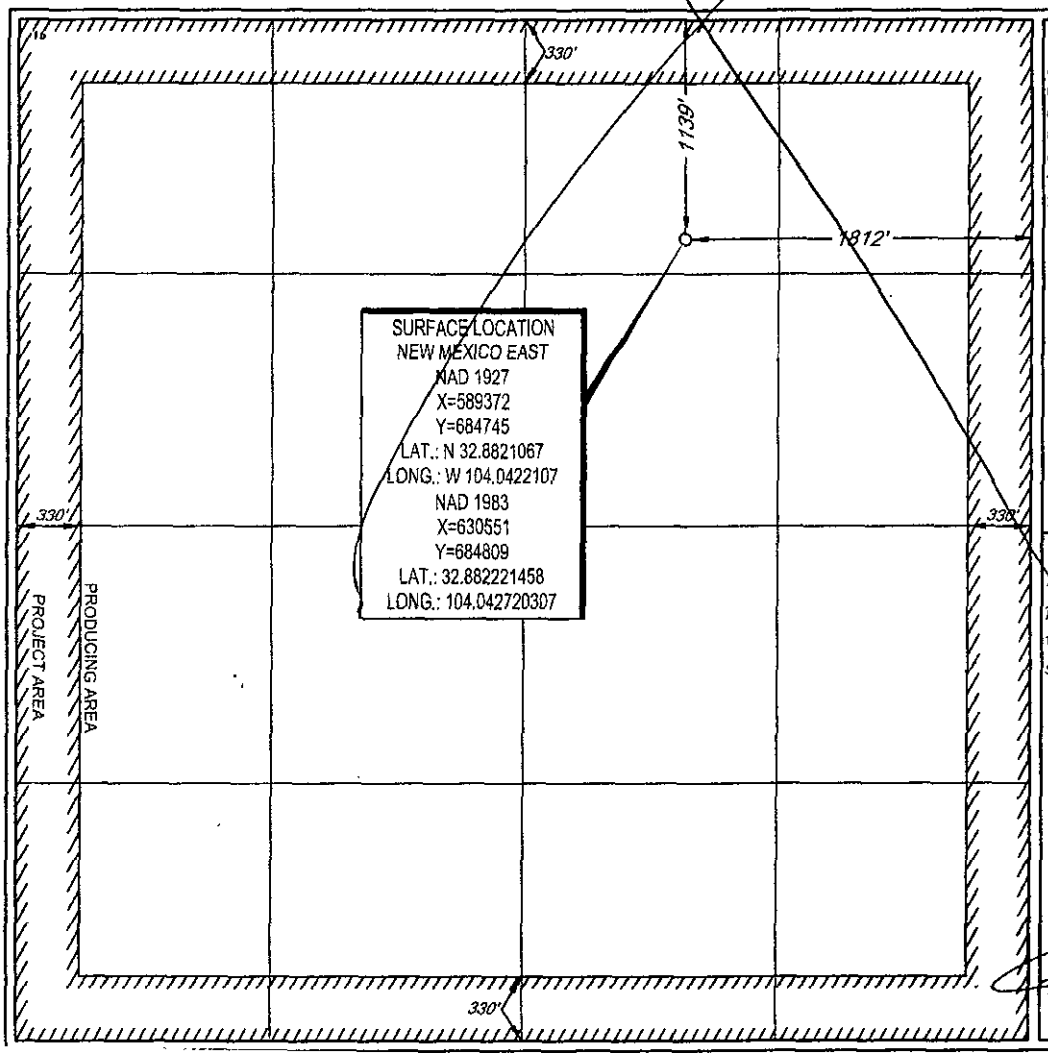
-	-	-	-	-	-	-	-	-	-

[12]Dedicated Acres	[13]Joint or Infill	[14]Consolidation Code	[15]Order No.
640.00			

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.



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Signature Date

Printed Name

E-mail Address

[18]SURVEYOR CERTIFICATION

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

5/19/2014

Date of Survey
Signature and Seal of Professional Surveyor: BLAKE BROWN

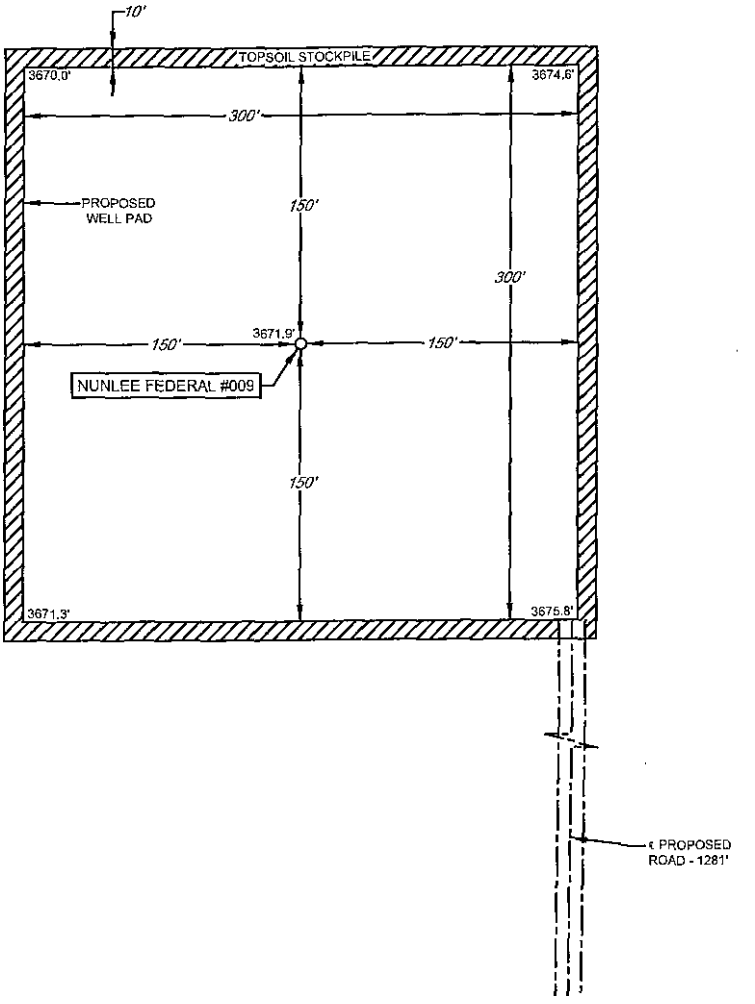
MICHAEL BLAKE BROWN
NEW MEXICO
18329
PROFESSIONAL SURVEYOR

Certificate Number

TANDEM ENERGY CORP.

SECTION 35, TOWNSHIP 16 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, NEW MEXICO

DETAIL VIEW
SCALE: 1" = 100'



LEASE NAME & WELL NO.: NUNLEE FEDERAL #009

#009 LATITUDE N 32.8822214 #009 LONGITUDE W 104.0427203

LEGEND

EXISTING ROAD
SECTION LINE
EXISTING PIPELINE

N

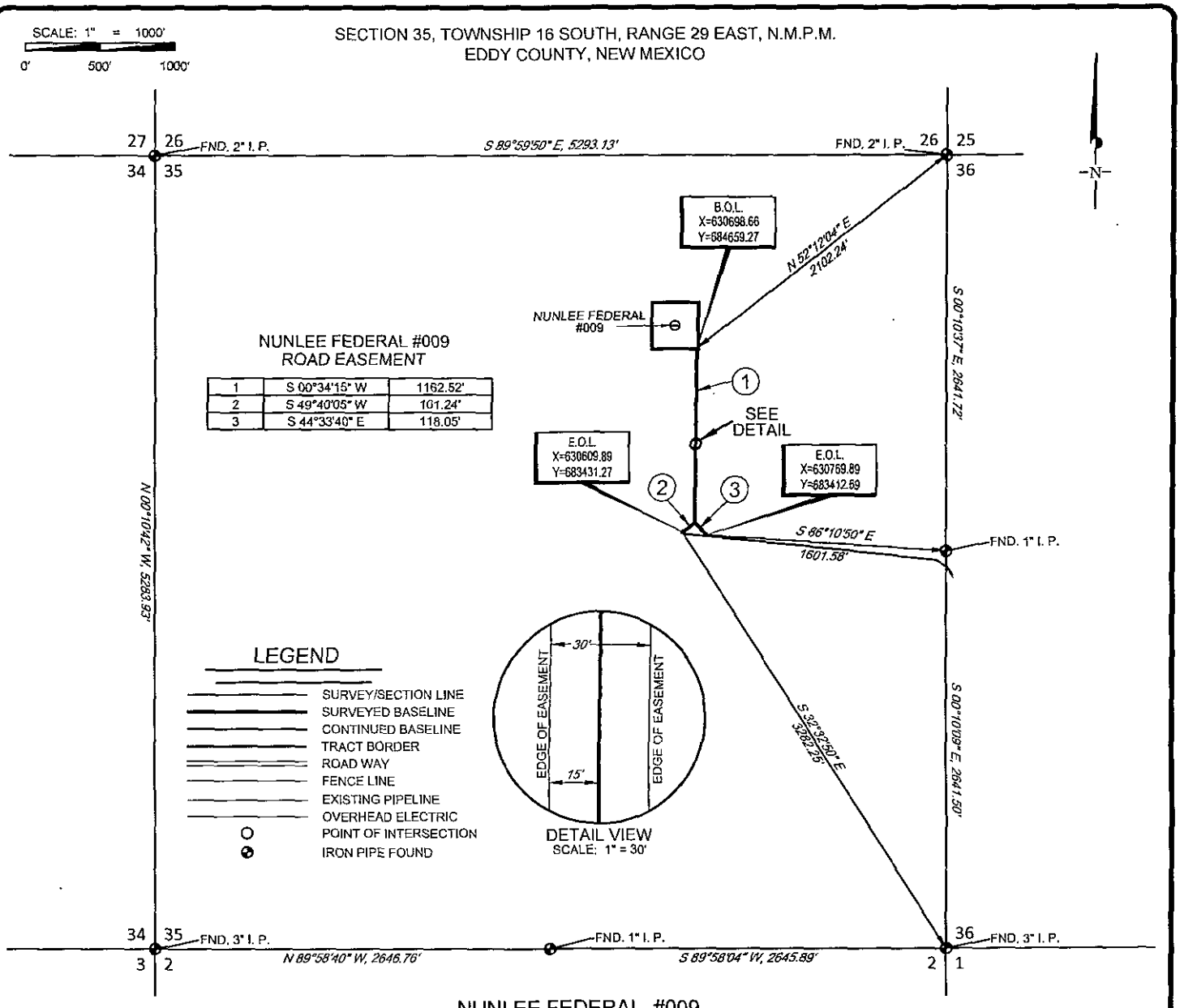
SCALE: 1" = 100'
0' 50' 100'

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE OF THE NORTH AMERICAN DATUM 1983, U.S. SURVEY FEET

THIS PROPOSED PAD SITE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY TANDEM ENERGY CORP. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, Ste. 197 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7546
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

ORIGINAL DOCUMENT SIZE: 8.5" X 11"



NUNLEE FEDERAL #009
ROAD EASEMENT

Being a proposed road easement being 30 feet in width, 15 feet left, and 15 feet right of the above platted centerline total line footage containing 1381.83 feet or 83.75 rods, containing 0.94 acres more or less.

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WWW.TOPOGRAPHIC.COM

"PRELIMINARY, THIS DOCUMENT SHALL NOT BE RECORDED FOR ANY PURPOSE."

Michael Blake Brown, P.S. No. 18329

JUNE 24, 2014

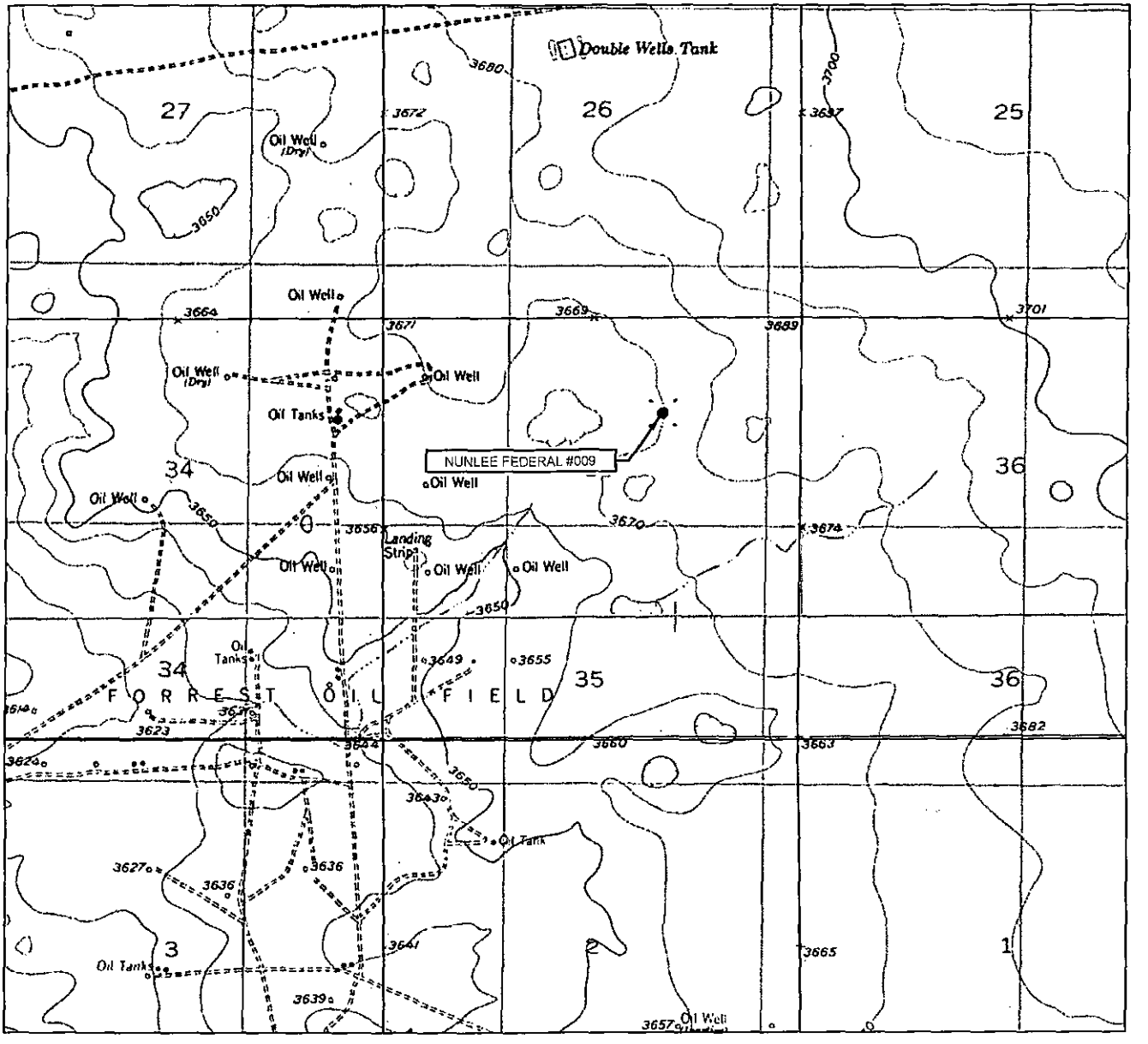
TANDEM ENERGY CORP.

NUNLEE FEDERAL #009 ROAD EASEMENT	REVISION: INT	DATE
DATE: 06/24/14		
FILE: EP_NUNLEE_FEDERAL_009_ROAD		
DRAWN BY: C.W.N		
SHEET: 1 OF 1		

NOTES:
1. ORIGINAL DOCUMENT SIZE: 8.5" X 1 1"
2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE, U.S. SURVEY FEET, NORTH AMERICAN DATUM 19 27.
3. CERTIFICATION IS MADE ONLY TO THE LOCATION OF THIS EASEMENT, IN RELATION TO THE EVIDENCE FOUND DURING A FIELD SURVEY, MADE ON THE GROUND, UNDER MY SUPERVISION, AND USING DOCUMENTATION PROVIDED BY EOG RESOURCES, INC . ONLY *UTILITIES/EASEMENTS THAT WERE VISIBLE ON THE DATE OF THIS SURVEY, WITHIN/ADJOINING THIS EASEMENT, HAVE BEEN LOCATED AS* SHOWN HEREON OF WHICH I HAVE KNOWLEDGE. THIS CERTIFICATION IS LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE, AND MADE FOR THIS TRANSACTION ONLY.
4. B.O.L./P.O.B. = BEGINNING OF LINE/POINT OF BEGINNING
5. E.O.L./P.O.E. = END OF LINE/POINT OF EXIT

S:\SURVEY\TANDEM_ENERGY_CORP\NUNLEE_FEDERAL\FINAL_PRODUCTS\EP_NUNLEE_FEDERAL_009_ROAD.DWG 6/24/2014 1:56:18 PM crewmark

LOCATION & ELEVATION VERIFICATION MAP



TANDEM ENERGY CORP.

LEASE NAME & WELL NO.: NUNLEE FEDERAL #009

SECTION 35 TWP 16-S RGE 29-E SURVEY N.M.P.M.
COUNTY EDDY STATE NM ELEVATION 3672'
DESCRIPTION 1139' FNL & 1812' FEL

LATITUDE N 32.8822214 LONGITUDE W 104.0427203

-N-

SCALE: 1" = 2000'
0' 1000' 2000'

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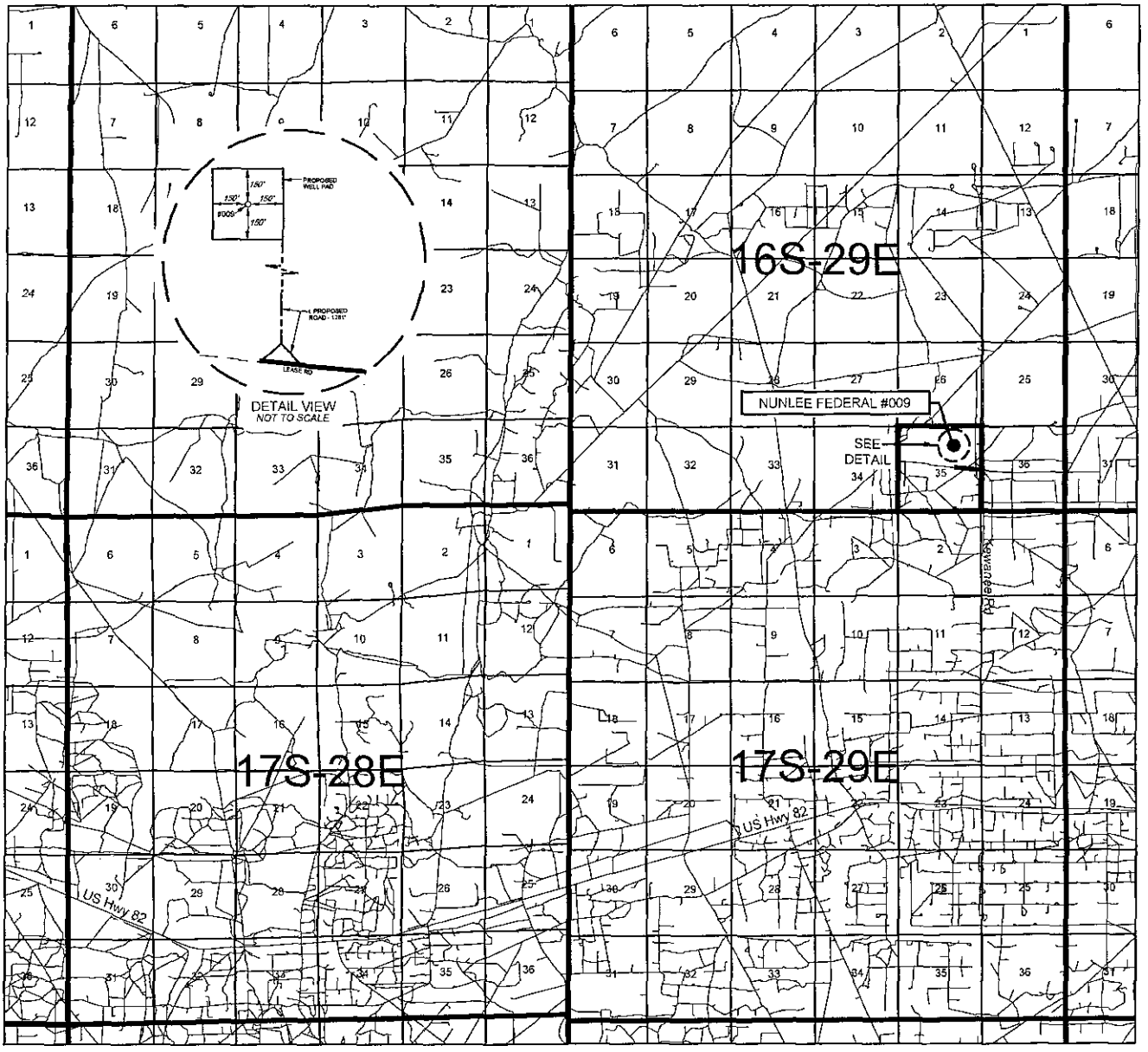
VICINITY MAP



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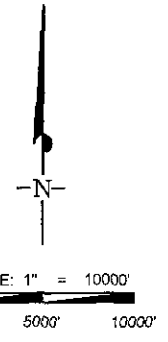

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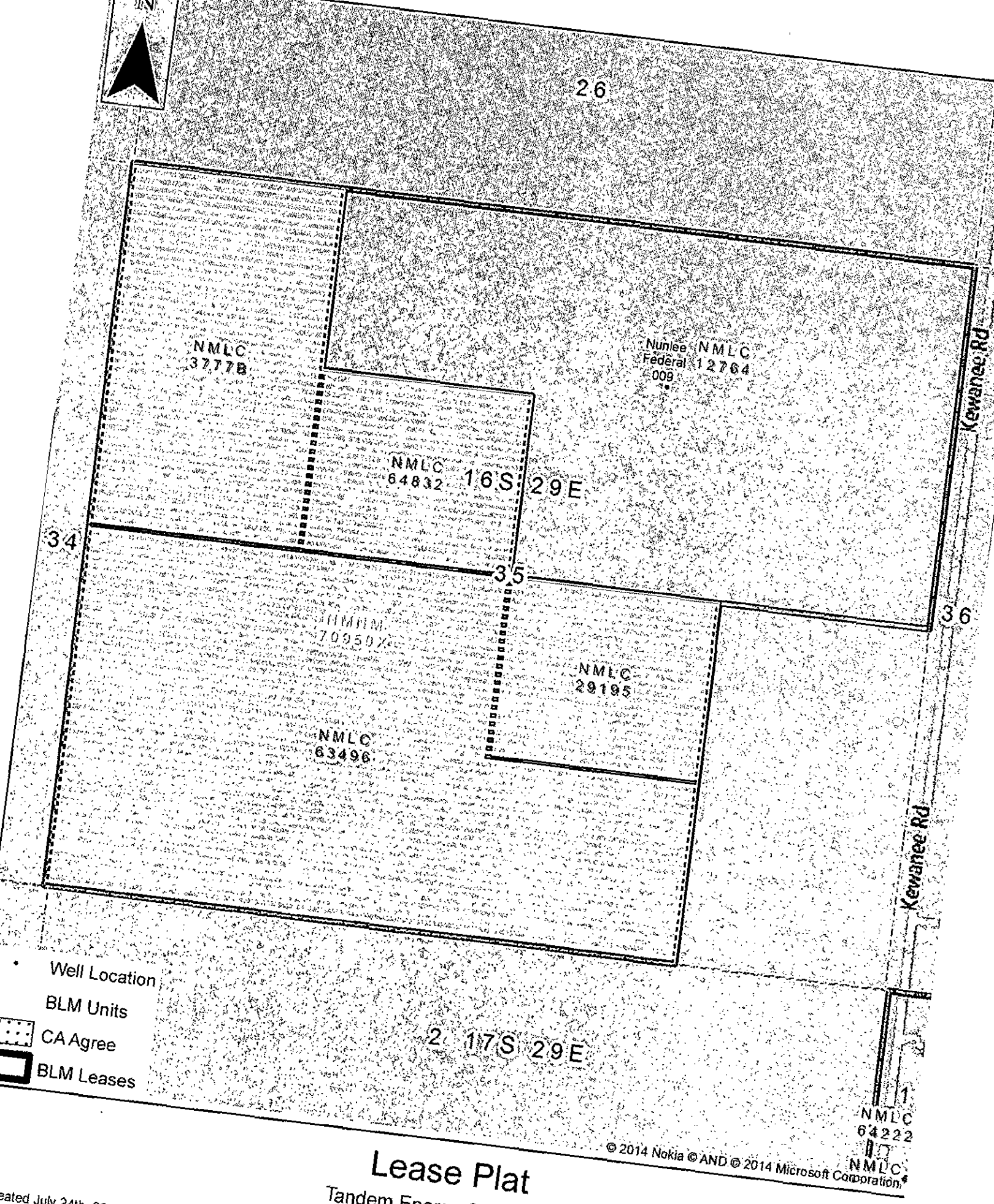


Lease Plat

Tandem Energy Corporation
Nunlee Federal 009
Section 35-16S-29E
Eddy County, NM

eated July 24th, 2014
Sherman
an@rsenergysolutions

DRILLING PROGRAM

Operator:
Tandem Energy Corporation

Project Name:
Nunlee Federal 009

Project Location:
Surface Hole: 1,139' FNL & 1,812' FEL of Section 35-16S-29E N.M.

Federal Nexus:
Mineral Estate
Bureau of Land Management Lease: # NMNM 012764
NE/4, NE/4 SE/4 Section 35-T16S-R29E, Eddy County, New Mexico
Containing 1,000.000 acres
Reagan Smith Energy Solutions, Inc.

Date Prepared:
July 22, 2014

Submitted To:
Bureau of Land Management
Carlsbad Field Office

Please address inquiries, questions, scheduling of meetings and *deficiency statements, if any, to Scott St. John and/or Monica Smith Griffin* at the address shown below:

Reagan Smith Energy Solutions, Inc.
1219 Classen Drive
Oklahoma City, OK 73103
405-286-9326
sstjohn@rsenergysolutions.com msmith@rsenergysolutions.com

1.0 Drilling Programs

1.1.1 Estimated Formation Tops

EST. FORMATION TOP.	Average Depth		13-004		19-004		23-006		3-004	
	SUBSEA	MD	SUBSEA	MD	SUBSEA	MD	SUBSEA	MD	SUBSEA	MD
Rustler (TOP OF SALT)	3,200	375	3,200	375	3,200	375	3,200	375	3,200	375
BASE OF SALT	2,850	725	2,850	725	2,850	725	2,850	725	2,850	725
YATES	2,679	898	2,691	887	2,671	897	2,678	908	2,677	898
SEVEN RIVERS	2,323	1,254	2,326	1,252	2,313	1,255	2,326	1,260	2,325	1,250
QUEEN	1,677	1,900	1,670	1,908	1,681	1,887	1,669	1,917	1,688	1,887
GRAYBURG	1,327	2,250	1,290	2,288	1,348	2,220	1,316	2,270	1,353	2,222
LOCO HILLS	1,207	2,370	1,166	2,412	1,229	2,339	1,197	2,389	1,236	2,339
METEX	1,100	2,477	1,056	2,522	1,124	2,444	1,091	2,495	1,129	2,446
PREMIER	979	2,598	942	2,636	999	2,569	969	2,617	1,007	2,568
SAN ANDRES	904	2,673	865	2,713	922	2,646	894	2,692	933	2,642
Total Depth (TD)	727	2,850	728	2,850	718	2,850	736	2,850	725	2,850

Target Formation and Total Depth:

The depth of the proposed well is TVD 2,900' in the Metex and Premier.

1.1.2 Estimated Depths of Anticipated Fresh Water, Oil, and Gas

Substance	Depth
Fresh Water	0'-400'
Hydrocarbons	2,477' - TD

1.1.2.1 Water Protection Compliance

No other formations are expected to yield oil, gas, or freshwater in measureable volumes. The potential fresh water sands will be protected with the 8-5/8" casing set at 400' based on 25 ft penetration into the Rustler Formation at 375'. See COA

1.1.3 Pressure Control Equipment

See COA

Surface: 0'-400' None. See COA

Production: 400' MD/TVD – 2,900' TVD The minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required to drill below the surface casing shoe shall be 3000 (3M) psi. Operator will be using an 11" 3M two ram stack with 3M annular preventer, & 3M Choke Manifold.

a. The 11" 3000 psi blowout prevention equipment will be installed and operational after setting the 8 5/8" surface casing and the 8 5/8" SOW x 11" 3K conventional wellhead; the rotating head body will be installed but the rubber will be installed when it becomes operationally necessary.
b. The BOP and ancillary BOPE will be tested by a third party after setting surface casing. All equipment will be tested to 250/3000 psi for 10 minutes and charted, except the annular, which will be tested to 50% of working pressure.
c. The BOPE test will be repeated within 21 days of the original test, on the first trip
d. Other accessory BOP equipment will include a floor safety valve, choke lines, and choke manifold having a 3000 psi working pressure rating and tested to 3000 psi.
e. The Operator also requests a variance to connect the BOP choke outlet to the choke manifold using a 3" co-flex hose with a working pressure of 3000 psi.
f. BOP & Choke manifold diagrams attached.

See COA

An 11" 3M system will be installed, used, maintained, and tested accordingly as described in Onshore Oil and Gas Order No. 2.

Our BOP equipment will be:

- Rotating Head
- Annular BOP I 11" 3M
- a Blind Ram, 11" 3M
- Pipe Ram, 11" 3M

After nippling up, and every 30 days thereafter or whenever any seal subject to test pressure is broken followed by related repairs, blowout preventors will be pressure tested. BOP will be inspected and operated at least daily to insure good working order. All pressure and operating tests will be done by an independent service company and recorded on the daily drilling reports. BOP will be tested using a test plug to isolate BOP stack from casing. BOP test will include a low pressure test from 250 to 300 psi for a minimum of 10 minutes or until requirements of test are met, whichever is longer. Ram type preventers and associated equipment will be tested to the approved stack working pressure of 3000 psi isolated by test plug. Annular type preventers will be tested to 50 percent of rated working pressure, and therefore will be tested to 1500 psi. Pressure will be held for at least 10 minutes or until provisions of test are met, whichever is longer. Valve on casing head below test plug will be open during testing of BOP stack. BOP will comply with all provisions of Onshore Oil and Gas Order No. 2 as specified (See Attached BOP Schematic).

1.1.4 Proposed Casing and Cementing Program

1.1.4.1 Proposed Casing Program * See COA

8-3/4" hole per operator

See COA

Interval	Length (MD)	Size	Weight/ft	Grade	Thread	Condition	Hole size	Washout Factor	Cement Yield
Surface	~~400'~~	8 5/8"	24.0#	J-55	ST&C	New	12 ¼"	100%	1.35 cu. Ft/sk
Production	2,900'	5 1/2"	17.0#	J-55	LT&C	New	~~6.8"~~	100%	2.37/1.53 cu. Ft/sk

Surface Casing: High CAVE/KARST - See COA Contingency casing

Top	Bottom	Size	Weight/Ft	Grade	Collapse psi	Internal Yld psi	Body Yld Strength	Joint Strength
Surface	~~400'~~	8 5/8"	24#	J-55	1,370	2,950	381,000	244,000

See COA

Production Casing:

Top	Bottom	Size	Weight/Ft	Grade	Thread	Collapse psi	Internal Yld psi	Body Yld Strength	Joint Strength
Surface	2,900'	5-1/2"	17#	J-55	LT&C	4,910	6,320	273,000	247,000

1.1.4.2 Proposed Cement Program

See COA

Surface Casing: 250 sx Class "C" with 2% CaCl, 0.25% R-38 and 0.25 lb/sx Cellophane flakes (14.8 ppg, 1.35 ft3/sx, 6.34 gps)

Production Casing: Lead – 320 sx Lite (35% Poz, 65% Class "C", 6% gel) with 5 lbs/sx CaCl and ¼ lb/sx Cellophane flakes (12.01 ppg, 2.37 ft3/sx, 14.08 gps) **Tail** – 115 sx Class "C" with 0.25 lb/sx Cellophane flakes (13.9 ppg, 1.53 ft3/sx)

Cement volumes are based on bringing TOC to surface.

Operator reserves the right to change cement designs as hole conditions may warrant.

1.1.5 Proposed Mud Program

Interval	Type	Mud Weight for Pressure Control Design	Maximum Mud Weight for Hole Control Design	Viscosity	Formation Fracture Gradient	Fluid Loss
0' – 400'	Freshwater	8.4 - 8.8	8.8	26 - 36	.60	NC
400'- TD'	Cut Brine	8.8 - 9.2	9.2	28 - 32	.60	NC to <8

1.1.5.1 Mud System Requirements

Interval	Max TVD (ft)	Anticipated Mud Weight (ppg)	Estimated Max Pore Pressure (ppg)	Internal Yield Strength (psi)	Collapse Strength (psi)	Joint Strenght (psi)	Body Strength (psi)	Burst Safety Factor (Min 1.0)	Collpase Safety Factor (Min 1.1)	Tensile Safety Factor (Min 1.8)
Surface	400'	8.8	5	2,950	1,370	244,000	381,000	16.12	26.82	25.42
Prod.	2,900'	9.2	5	5,320	4,910	247,000	273,000	1.3	3.65	5.10

See COA

The production hole will start with the fresh water mud to test the surface casing and drill out the shoe track into open hole. The fresh water mud system will be allowed to gain chlorides through the salt section and be cut with brine water for weight increase. Plan to drill with a cut brine system with a mud weight of 8.8-9.2 ppg with no water loss control. When the hole is within 50-100 ft of TD, will start using gel to increase viscosity and LCM (paper) to control fluid loss during logging operations.

If the well will have whole core, sidewall core and open hole logs, the mud properties will be altered to provide a better wall cake and lower fluid loss to improve the quality of the core samples.

The Mud System will run as a closed loop system with PVT monitoring. All drill cuttings and liquid mud will be hauled to an approved site.

1.1.6 Evaluation Program X See COA

See COA

Samples:	10' from 1,800' to TD
Logging:	GR/Neutron/Density/Resistivity/CAL-Triple Combo Run
Coring:	Whole cores and sidewall cores may be taken subject to the conditions of the hole and drilling fluid
Drill Stem Tests:	None planned

1.1.7 Downhole Conditions

Zones of possible lost circulation:	N/A
Zones of possible abnormal pressure:	N/A
Maximum bottom hole temperature:	110° F
Maximum bottom hole pressure:	1,200 psi or less.

1.1.8 Flare Pit

The proposed well will not require a flare pit.

1.1.9 Plug and Abandon Costs

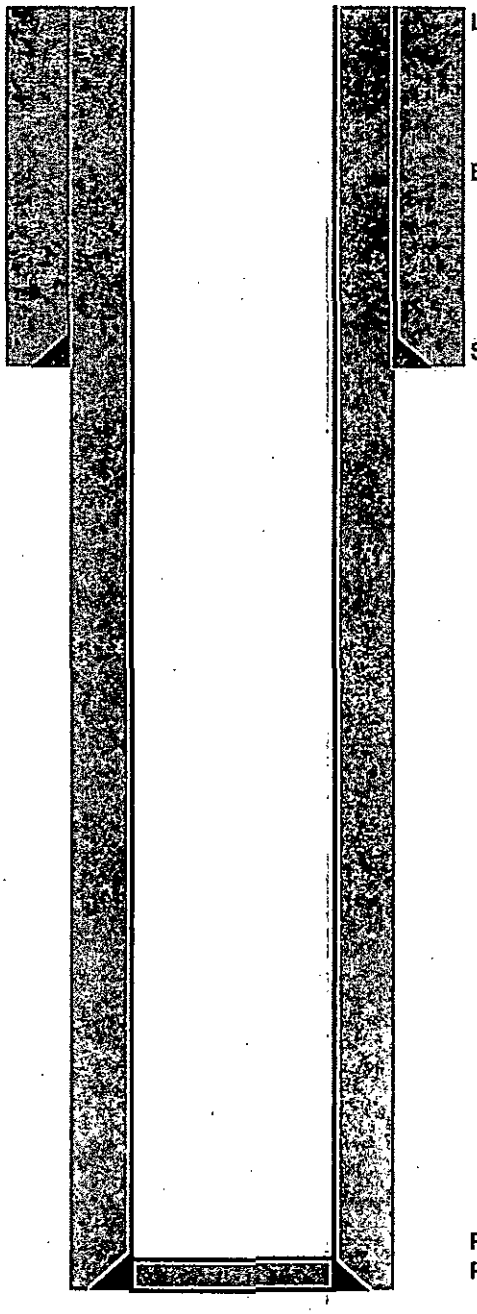
It estimated that P&A costs associated with this well, including reclamation, is $35,000.

Tandem Energy Corporation

SQUARE LAKE 12 UNIT

WELL NAME - NUNLEE FEDERAL #009

Planned



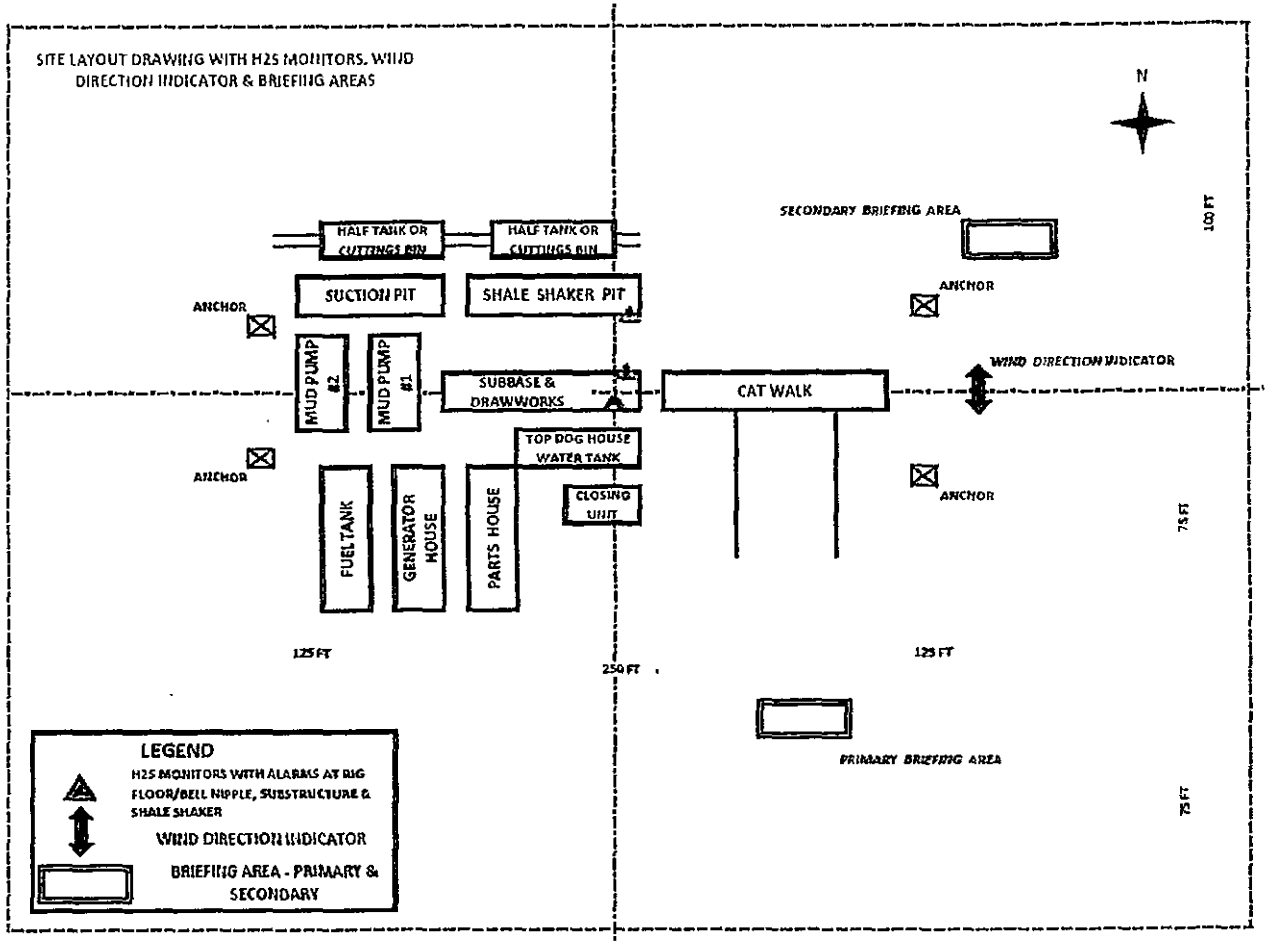
TD 2950

Legals: Lease: Nunlee Federal #009
Location: 1139' FNL, 1812' FEL,
NW/NE Sec. 35 Township 16S Range 29E
Field: Square Lake 12 Unit

Elevation: 3672 KB 7' above GL

Surface Csg.: 8-5/8" 24# @ 400'
cmt'd to surface 250 sx cmt.
12 1/4" Hole size

PBTD 2900'
Prod. Csg.: 5 1/2" 17 #, LTD @ 2948'
450 sxs cmt.
TOC calculated at surface


SITE LAYOUT DRAWING WITH H2S MONITORS, WIND DIRECTION INDICATOR & BRIEFING AREAS
N
SECONDARY BRIEFING AREA
100 FT
HALF TANK OR CUTTINGS BIN
HALF TANK OR CUTTINGS BIN
ANCHOR
SUCTION PIT
SHALE SHAKER PIT
ANCHOR
MUD PUMP #2
MUD PUMP #1
SUBBASE & DRAWWORKS
CAT WALK
WIND DIRECTION INDICATOR
TOP DOG HOUSE WATER TANK
ANCHOR
CLOSING UNIT
ANCHOR
FUEL TANK
GENERATOR HOUSE
PARTS HOUSE
75 FT
125 FT
250 FT
125 FT
PRIMARY BRIEFING AREA
75 FT
LEGEND
H2S MONITORS WITH ALARMS AT RIG FLOOR/BELL NIPPLE, SUBSTRUCTURE & SHALE SHAKER
WIND DIRECTION INDICATOR
BRIEFING AREA - PRIMARY & SECONDARY

SURFACE USE PLAN

Operator:
Tandem Energy Corporation

Project Name:
Nunlee Federal 009

Project Location:
Surface Hole: 1,139' FNL & 1,812' FEL of Section 35-16S-29E N.M.

Federal Nexus:
Mineral Estate
Bureau of Land Management Lease: # NMNM 012764
NE/4, NE/4 SE/4 Section 35-T16S-R29E, Eddy County, New Mexico
Containing 1,000.000 acres
Reagan Smith Energy Solutions, Inc.

Date Prepared:
July 22, 2014

Submitted To:
Bureau of Land Management
Carlsbad Field Office

Please address inquiries, questions, scheduling of meetings and deficiency statements, if any, to Scott St. John and/or Monica Smith Griffin at the address shown below:

Reagan Smith Energy Solutions, Inc.
1219 Classen Drive
Oklahoma City, OK 73103
405-286-9326
sstjohn@rsenergysolutions.com msmith@rsenergysolutions.com

2.0 Surface Use Plan

Tandem Energy Corporation proposes to drill the Nunlee Federal 009 oil well. The proposed well is located on Bureau of Land Management surface and will be drilled through and produce from Bureau of Land Management managed minerals in NE/4 of Section 35-16S-29E Eddy County, New Mexico.

The Nunlee Federal well pad will be approximately 300' by 300' (2.07 acres) (See well pad cut/fill plat in exhibit section). A proposed lease road commences at the southeast corner of the well pad and traverses 1,281' south to an existing lease road. Total length of the lease road will be 1,281' with a 30' right-of-way (0.88 acres). The proposed pipeline will be placed above the surface and will run to an existing tank battery. The project area falls in an arid grassland utilized for cattle grazing.

Due to the proposed well producing from Bureau of Land Management managed minerals, this well must be permitted through the Bureau of Land Management.

2.1 Cultural and Biological Clearances

2.1.1 Cultural Clearances

In lieu of a cultural resources inventory survey, compliance with Section 106 of the National Historic Preservation Act will be met via contribution to the Permian Basin Programmatic Agreement off-site mitigation fund.

2.1.2 Special Status Species

The Biota Information System of New Mexico was consulted to find special status species at or near the proposed location. A Biological Evaluation was performed for the project area for Tandem Energy Corporation's Ballard Plan of Development in Eddy County, New Mexico.

Determination of Effect Summary

Federally Endangered or Threatened Species:
A determination of **"No Effect"** on federally listed species has been made for the proposed project.

New Mexico Species of Concern:
A determination of **"May Impact Individuals but not likely to Cause a Trend to Federal Listing or a Loss of Viability"** has been assessed to the following species:

Swift Fox (*Vulpes velox*)

A determination of **"No Impact"** on all other New Mexico Species of Concern has been assessed for this project.

2.1.3 Wetlands

A Wetland Delineation was performed for the proposed project. The on-site inspection determined that there is no wetland habitat in the project area; therefore, no impact on wetland habitat is expected (See the attached Biological Evaluation).

2.2 Surface Use Program

2.2.1 Staking Information

Well site staking was performed on May 13, 2014, prior to on-site survey and APD approval. The staking and associated plats include directional reference stakes, exterior dimensions of the drill pad, cut/fill, lease road, and pipeline (See Staking Plats in Exhibit Section).

2.3 Existing Roads

2.3.1 Route and distance from nearest town or locatable reference point to where well access route leaves main road is given below.

From the intersection of U.S. 82 Highway and Kewanee road; thence north on Kewanee road for approximately 4.5 miles; thence west on an existing lease road 0.30 miles; Thence north on proposed lease road 1,281' arriving at the southeast corner of the proposed well pad.

2.3.2 Plans for improvement and/or statement that existing roads will be maintained in the same or better condition is given below.

The proposed lease road will be new road construction and maintained as described below during the operation activity of the proposed well.

All existing Federal, State and County roadways which may be utilized during the proposed action will be maintained and, where necessary, improved in accordance with the rules and regulations of the applicable Federal, State and/or County transportation department and their governing bodies. Federal, State and County permits will be acquired where necessary.

2.4 Planned Lease Road(s)

2.4.1 New roads are to be centerline flagged at time of location staking.

All new roads have been center lined surveyed. A legible map of all necessary lease roads to be constructed is attached.

2.4.2 All lease roads require a minimum width of 14 feet.

The proposed lease road rights-of-way are approximately 30' wide, while the road surface is approximately 14' wide.

2.4.3 Length of Lease Roads

A proposed lease road commences at the southeast corner of the well pad and traverses 1,281' south to an existing lease road. Total length of the lease road will be 1,281' with a 30' right-of-way (0.88 acres).

2.4.4 Maximum grade of lease road is required to be less than 8%

The proposed lease road has an elevation change of approximately 3' over the 1,281' road length (approximately 0.2%).

2.4.5 Description of Turnouts

No turnouts will be constructed for this project.

2.4.6 Drainage Design

The proposed project location is located in arid grasslands. The surface is leased through the BLM for grazing. All runoff from the project area will flow southeast before reaching road bar ditches.

To mitigate erosion and protect the natural drainage areas, erosion control methods (e.g. cut ratios of 3:1 and fill ratios of 2:1) will be implemented during the construction and production phases of this project. The slopes of the well pad and the pipeline right-of-way will be seeded. Erosion mitigation such as silt fences and hay bales, will be located on as need surrounding the well pads due to the natural drainage slope that exists in relation to the orientation of the pad and its proximity to the natural drainages.

2.4.7 Location and size of culverts

No culverts will be required for this project.

2.4.8 Major cuts and fills

A maximum 1' fill will be required west of the location stake for the well pad. A maximum 2' cut will be required north of the location stake for the well pad. A maximum 3' cut will be required east of the location stake for the well pad. A maximum 2' cut will be required south of the location stake for the well pad. All cut ratios will be 3:1 and all fill ratios will be 2:1.

2.4.9 Stormwater Management Plan

During drilling activities, trenches will surround all pumps, motors and rig such that runoff will be directed to a sump area on the well site and pumped into a haul off tank. During production operations all runoff contained within the tank battery facility will be pumped into the water tank and disposed of according to applicable regulations.

2.4.10 Surfacing Material

Native on-site material will be used for surfacing with gravel furnished from a private commercial source.

2.4.11 Necessary gates, cattle guards, or fence cuts are described as follows:

No fencing is required.

2.4.12 Lease Road Construction

A proposed 1,281' new construction lease road will be utilized to access the Nunlee Federal 009.

All lease roads will provide all weather access to this property. All lease roads will be maintained with a motor grader in a prudent manner as an all weather road. Maintenance activity shall include but not be limited to re-rocking, reshaping, compacting and crowning said location road as necessary. Any ruts, rills, and eroded areas will be filled as necessary. The soils underlying said location road are discussed in Section 2.14 - Other Information.

2.5 Location of Existing Wells within a One-Mile Radius

2.5.1 Abandoned Wells

See attached 1-mile radius plat

2.5.2 Temporary Abandoned or Shut-In Well

See attached 1-mile radius plat

2.5.3 Disposal Wells or Injection Wells

See attached 1-mile radius plat

2.5.4 Producing Wells

See attached 1-mile radius plat

2.6 Location of Production Facilities

According to NTL 87-1 production facilities shall be painted according to stipulations provided by the surface managing agency; the Nunlee Federal 009 is located on BLM surface.

2.7 Location and Type of Water Supply

Water required for drilling and fracturing of the proposed well will be obtained from a private source. There will not be an on-site frac pit.

2.8 Source of Construction Material

Locations will be graded and leveled with existing soil at proposed site. Construction material for both the roads and well pads will be obtained from Sweatt Construction Inc. in Artesia, NM, a commercial private site.

2.9 Methods for Handling Waste Disposal

Drilling fluids will be contained in a closed system. All drill cuttings and liquid mud will be hauled to an approved site for disposal or soil farmed upon receiving appropriate State of New Mexico Oil Conservation Division approval.

All construction related debris will be disposed of in an approved manner. Sewage, garbage and other waste material will be placed in containers kept on the well site and disposed of in accordance with all applicable regulations.

2.9.1 Plans for eventual disposal of drilling fluids and any produced oil or water recovered during testing operations are as follows:

All drilling fluids including but not limited to salts, chemicals, oil residues, water, sewage and all other waste and chemical pollutants, which may be generated during testing operations, will be disposed of according to applicable regulations.

The BLM Carlsbad Field Office, will be notified in writing if any hazardous materials or hazardous substances are used or if any hazardous waste is generated in or from drilling mud or any part of the drilling, completion, recompletion, producing, or plugging and abandonment process, including the construction, operation, or abandonment of any treatment or process facilities. Included will be a list of the name, kind and amount of any such hazardous materials, substances, or waste, the disposal of such waste and the names addresses and telephone numbers of EPA-qualified transporters and disposers that will be used. The BLM will be furnished with a copy of the manifest after delivery and disposal of the hazardous waste. This manifest copy will be signed by the transporter and disposer (see 40 CFR 116 & 262).

2.10 Ancillary Facilities

There are no ancillary facilities associated with the proposed wells.

2.11 Well Site Layout Plat

Please see attached rig layout plat in Exhibit Section.

2.12 Plans for Reclamation of Surface upon Completion of Operations

2.12.1 Tandem Energy Corporation will restore topsoil to its original condition after well pad is downsized during the production phase.

2.12.2 Tandem Energy Corporation will backfill, level and restore to original contours with segregation of spoiled materials as needed.

2.12.3 Well pad site will be downsized from the west edge of the well pad to the deadman anchors to allow maintenance on well to continue after the well is placed into production.

2.12.4 Tandem Energy Corporation will rehabilitate all disturbed areas, including lease roads. All areas of reclamation will be rehabilitated by seeding.

2.12.5 If a well is not a producer, the restoration process would begin within sixty (60) days of the rig release and completed within thirty (30) days, weather permitting.

If a well is a producer, all areas not being used for production purposes (typically within the dimensions of the anchors and the production facilities) would be reclaimed in the interim period (The interim period is forty-five (45) days after the setting of the production casing string or completion of plugging as a dry hole). After a well is no longer in production, the remainder of the restoration process would begin as soon as possible, but in no case longer than sixty (60) days from final plugging of the well. The restoration process would be completed within thirty (30) days, weather permitting.

2.12.6 Upon abandonment of a well, all waste will be hauled away and disposed of in an approved manner. All equipment and salvageable material will be removed from the drill site. All debris generated from the drilling and operating of a well, which is unsuited for burial at an approved landfill, will be disposed of according to applicable regulations. Cleaning operations will commence with completion of drilling activity and should be completed in approximately 10 days. The drill site will be restored as near as practicable to its preconstruction condition and topography. All surface drainage patterns, which may be affected by the proposed action, will be shaped and restored to preconstruction conditions. The soil will be graded and tilled to prepare its surface for seedbed in accordance with the applicable

regulatory and conservation agencies. Erosion control techniques will be implemented when necessary.

2.13 Surface Ownership

The surface ownership at the well location is as follows:

Bureau of Land Management
Carlsbad Field Office
620 E. Greene St.
Carlsbad, NM 88220
(575) 234-5972

2.14 Other Information

The proposed well site, lease road, and pipeline are located in Eddy County, New Mexico. Eddy County is situated in the southeastern part of New Mexico which is largely rural. The principal land usage is oil and gas production with light cattle grazing.

More particularly, the project area are located in arid grasslands. The proposed well pads will be approximately 300' by 300' (2.91 acres). The construction of the well pad will not require the removal of trees.

The proposed well pads are located in arid grasslands. The topography surrounding the well pads is flat.

2.14.1 Noise Abatement

There are no residences within a ¼ mile of the proposed project area. There are no compressor engines, or any other machinery currently planned which may cause noise pollution. However, should any machinery be needed or used which may result in noise pollution, Tandem Energy Corporation will address noise abatement appropriately.

2.14.2 Soil

The Natural Resources Conservation Service (NRCS) Web Soil Survey and the NRCS Soil Survey for Eddy County, New Mexico, was used to determine the soils present in the proposed project areas.

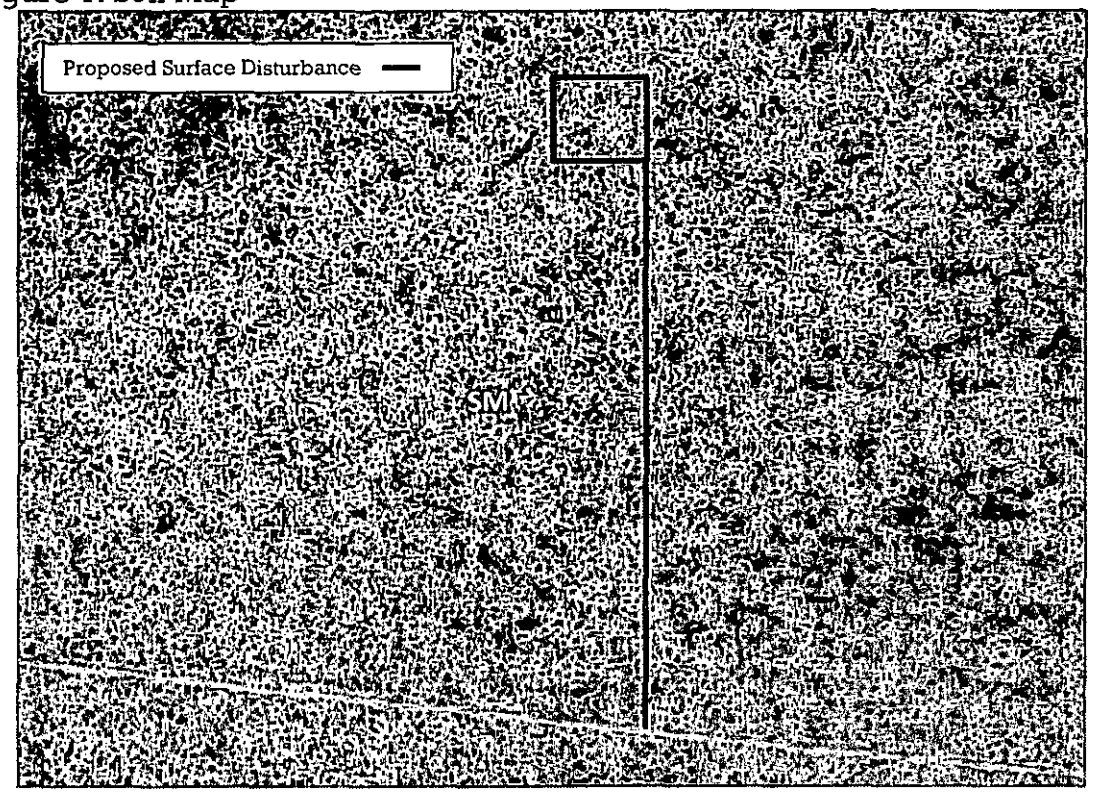
A "Kw" factor has been determined for the soil type. The "Kw" factor relates to erosion caused by water and is based on a scale ranging from 0.02-0.69 with a larger value denoting a higher susceptibility for water

caused erosion. The project area contains soil types with a low rating for erosion susceptibility due to water.

A Wind Erodibility Group has also been determined for the soil type. The Wind Erodibility Group is a parameter used to show a soils susceptibility to erosion caused by wind. The rating scale is based on a 1 to 8 rating with 1 being the most susceptible to wind erosion and 8 being the least susceptible. The project area contains soil types with a high rating for erosion susceptibility due to wind.

However, with implementations of erosion control measures, erosion will not have a major impact on environmental resources in the vicinity of the project area.

Figure 1. Soil Map



Soil Type	Slope	Drainage	Parent Material	Frequency of Flooding	Frequency of Ponding	"Kw" Factor	Wind Erodibility Group
Simona-Bippus complex (SM)	0-5%	Well Drained	Mixed alluvium and/or eolian sands	None	None	0.15	4

Please see attached Biological Evaluation for discussion of wildlife in the area.

2.14.3 Pipeline Construction Plan

The proposed pipeline will be placed above the surface and will run to an existing tank battery.

The BLM will be provided a map indicating the surface pipeline route whenever a route is decided.

2.15 Bond Certification

Tandem Energy Corporation is responsible under the terms and conditions of the lease to conduct lease operations in conjunction with the application. Bond coverage pursuant to CFR 43 for lease activities is being provided by Tandem Energy Corporation under their Statewide Bond BLM Bond No. NMB 00432.

2.16 Certification

I hereby certify, that I, or persons under my direct supervision, have inspected the proposed drill sites and access routes; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and, that the work associated with the operations proposed herein will be performed by Tandem Energy Corporation and its contractors and sub-contractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

Tandem Energy Corporation

_____

Troy Zaikis
Agent for Tandem Energy Corporation

Date: 8/4/14

IV. Lessee's or operator's representative

Ralph W. Schofield
Tandem Energy Corporation
2700 Post Oak Blvd, Suite 1000
Houston, Texas 77056
(713) 364-7822

Please address inquiries, questions, scheduling of meetings and deficiency statements, if any, to Scott St. John and/or Monica Smith Griffin at the address shown below:

Reagan Smith Energy Solutions, Inc.
1219 Classen Drive
Oklahoma City, OK 73103
405-286-9326
sstjohn@rsenergysolutions.com msmith@rsenergysolutions.com

TANDEM ENERGY
corporation

June 18, 2014

Bureau of Land Management – New Mexico
P. O. Box 27115
Santa Fe, New Mexico 87502-0115

To Whom It May Concern:

Tandem Energy Corporation has contracted with REAGAN SMITH Energy Solutions, Inc. to act as its Designated Agent to complete the application process for obtaining drilling permits on Department of Interior - Bureau of Land Management leases within the state of New Mexico.

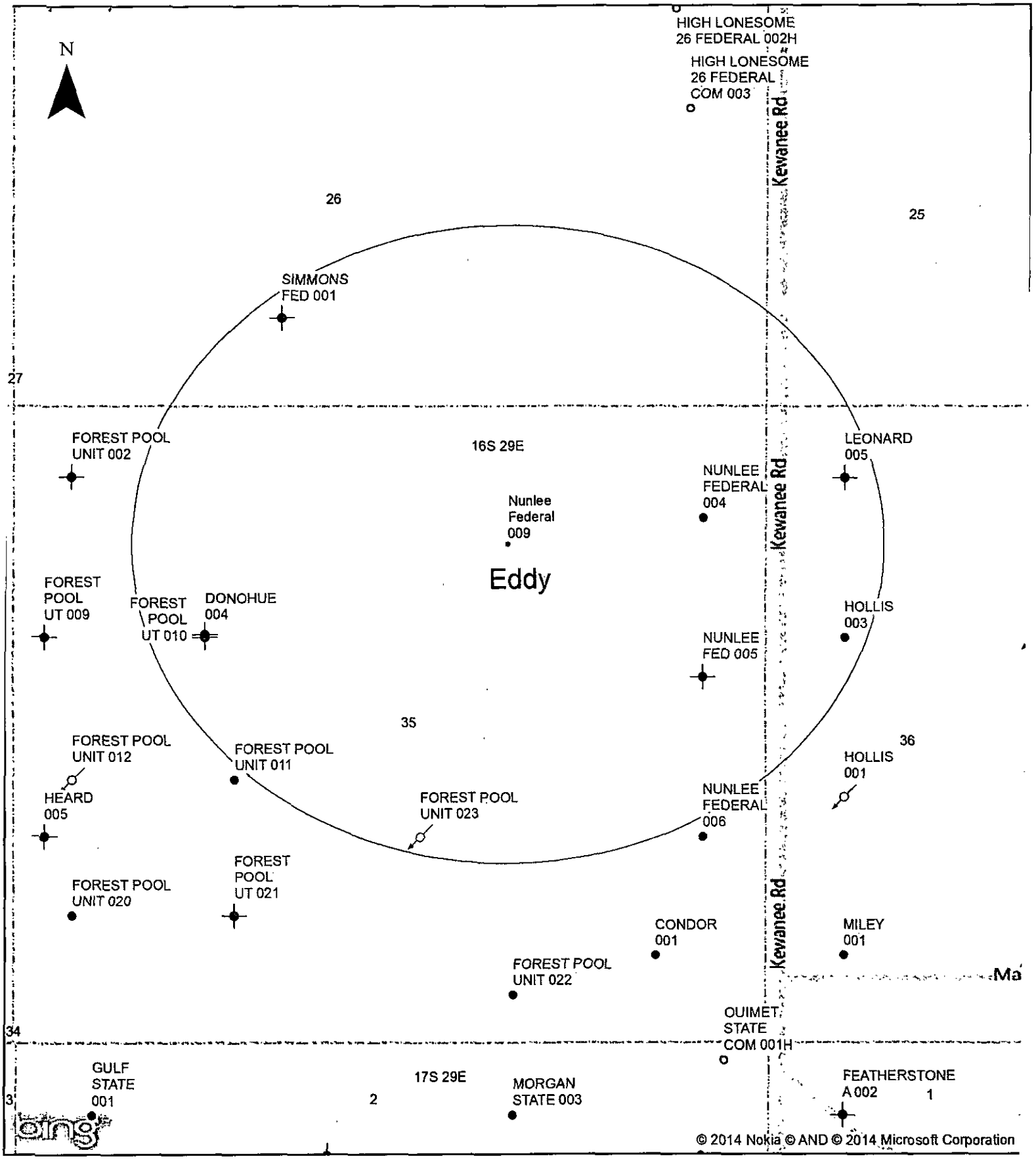
Thank you for your cooperation and assistance in this matter.

Sincerely,

TANDEM ENERGY CORPORATION

Kimmy Watson
Manager, Health, Safety, Environmental and Compliance

Galleria Tower 1 • 2700 Post Oak Blvd • Suite 1000 • Houston, Texas 77056 • Phone: 713.364.7822 • Fax: 713.364.7820



1m Radius Plat

- Proposed Well Hole
- One Mile Radius
- INJ, AC
- OIL, AC
- O, New (Not drilled or compl)
- OIL, PA

Tandem Energy Corporation
NunLee Federal 009
Eddy County, NM
Section 35-16S-29E

REAGAN SMITH ENERGY SOLUTIONS, INC.

Map Created June 2nd, 2014
By: Alex Sherman
ASherman@rsenergysolutions.com

REAGAN SMITH
ENERGY SOLUTIONS, INC.

Biological Evaluation

Operator:
Tandem Energy Corporation

Project Name:
Nunlee Federal 009

Project Location:
Surface Hole: 1,139' FNL & 1,812' FEL of Section 35-16S-29E N.M.

Federal Nexus:
Mineral Estate
Bureau of Land Management Lease: # NMNM 012764
NE/4, NE/4 SE/4 Section 35-T16S-R29E, Eddy County, New Mexico
Containing 1,000.000 acres
Reagan Smith Energy Solutions, Inc.

Date Prepared:
July 22, 2014

Submitted To:
Bureau of Land Management
Carlsbad Field Office

Please address inquiries, questions, scheduling of meetings and deficiency statements, if any, to Scott St. John and/or Monica Smith Griffin at the address shown below:

Reagan Smith Energy Solutions, Inc.
1219 Classen Drive
Oklahoma City, OK 73103
405-286-9326
sstjohn@rsenergysolutions.com msmith@rsenergysolutions.com

BIOLOGICAL EVALUATION

Summary Page

Tandem Energy Corporation proposes to drill the Nunlee Federal 009 oil well. The proposed well is located on Bureau of Land Management surface and will be drilled through and produce from Bureau of Land Management managed minerals in NE/4 of Section 35-16S-29E Eddy County, New Mexico.

The Nunlee Federal well pad will be approximately 300' by 300' (2.07 acres) (See well pad cut/fill plat in exhibit section). A proposed lease road commences at the southeast corner of the well pad and traverses 1,281' south to an existing lease road. Total length of the lease road will be 1,281' with a 30' right-of-way (0.88 acres). The proposed pipeline will be placed above the surface and will run to an existing tank battery. The project area falls in an arid grassland utilized for cattle grazing.

Wetland Analysis: Consultation of the U.S. Fish and Wildlife Service National Wetland Inventory map determined that the project area is not located in a mapped wetland. A Wetland Determination was performed for the project. The project inspection determined that there is no wetland habitat in the project area; therefore, there will be no impact to wetland habitat.

Migratory Bird Analysis: The project area for the well pad and pipeline are located in an arid grassland utilized for cattle grazing. The operator will comply with the requirements of NTL 96-01 in order to minimize the likelihood of accidental death of birds and bats on oil and gas facilities under the jurisdiction of the Bureau of Land Management. Thirty-one (31) Birds of Conservation Concern are listed for the Chihuahuan Desert (Bird Conservation Region 35), where this project is located. Breeding bird surveys conducted near the site (Lakewood Route) documented three (3) species from that list: Burrowing Owl, Loggerhead Shrike & Yellow-billed Cuckoo. Whereas this project may have impacted individuals, it is not likely to adversely impact the populations of this species.

Determination of Effect Summary:

Federally Endangered or Threatened Species:
A determination of **"No Effect"** for all federally listed species has been made for the project.

New Mexico Species of Concern:
A determination of **"May Impact Individuals but not likely to Cause a Trend to Federal Listing or a Loss of Viability"** has been assessed to the following species:

Swift Fox (*Vulpes velox*)

A determination of **"No Impact"** on all other New Mexico Species of Concern has been assessed for this project.

1.1 Biological Evaluation Requirements

Tandem Energy Corporation proposes to drill the Nunlee Federal 009, oil well. The proposed well is located on Bureau of Land Management surface and will be drilled through and produce from Bureau of Land Management managed minerals in NE/4 of Section 35-16S-29E Eddy County, New Mexico. Due to the well producing from Bureau of Land Management managed minerals, the well must be permitted through the Bureau of Land Management. The well will require the construction of a well pad and lease road, hereinafter "project area". The project area falls in an arid grassland utilized for cattle grazing. This Biological Evaluation addresses threatened and endangered species, special status species, migratory birds and wetlands.

1.2 Existing Action

1.2.1 Project Location

From the intersection of U.S. 82 Highway and Kewanee road; thence north on Kewanee road for approximately 4.5 miles; thence west on an existing lease road 0.30 miles; Thence north on proposed lease road 1,281' arriving at the southeast corner of the proposed well pad.

1.2.2 Well Pad Information

A maximum 1' fill will be required west of the location stake for the well pad. A maximum 2' cut will be required north of the location stake for the well pad. A maximum 3' cut will be required east of the location stake for the well pad. A maximum 2' cut will be required south of the location stake for the well pad. All cut ratios will be 3:1 and all fill ratios will be 2:1.

1.2.3 Lease Road Information

A proposed lease road commences at the southeast corner of the well pad and traverses 1,281' south to an existing lease road. Total length of the lease road will be 1,281' with a 30' right-of-way (0.88 acres).

1.2.4 Pipeline Information

The proposed pipeline will be placed above the surface and will run to an existing tank battery.

1.2.5 Additional Information

Major activity, other than described in the permit application and any decision document for the permit not covered by this Biological Evaluation will require a Biological Evaluation prior to future surface disturbance. Minor activities that do not result in significant impacts may be covered by an amendment to this Biological Evaluation.

1.3 Environmental Baseline for Project Area

1.3.1 Land Use

The project area falls in an arid grassland utilized for cattle grazing.

1.3.2 Soils

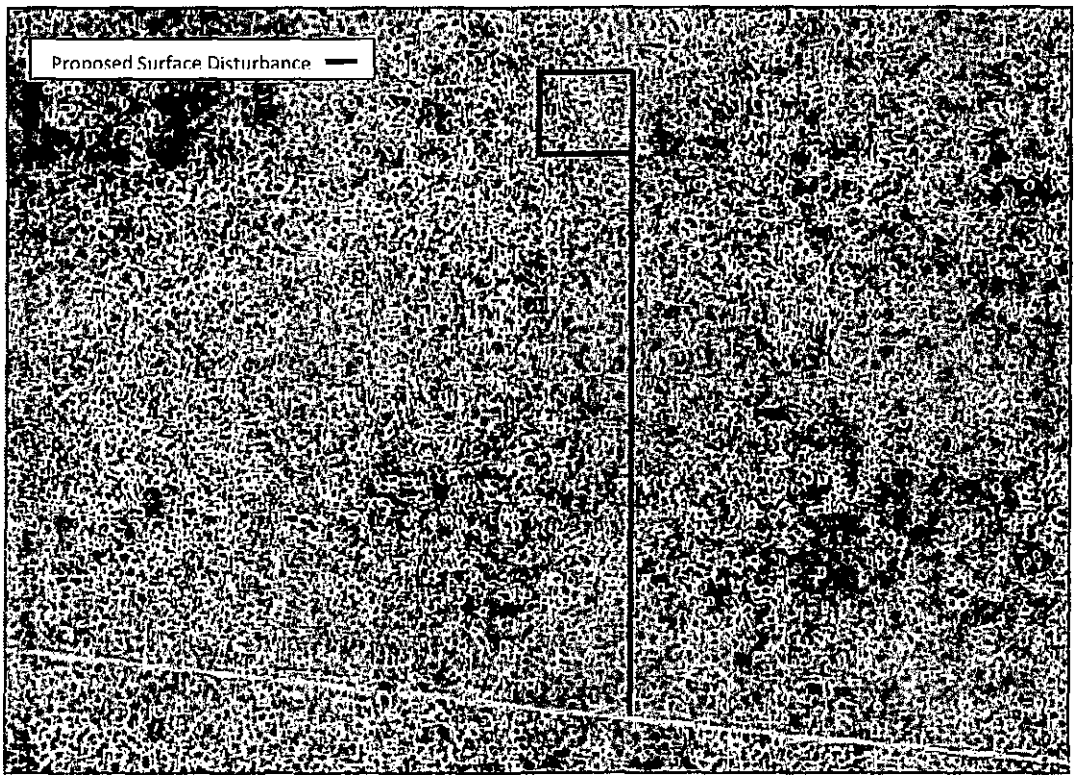
The Natural Resources Conservation Service (NRCS) Web Soil Survey and the NRCS Soil Survey for Eddy County, New Mexico, was used to determine the soils present in the proposed project areas.

A "Kw" factor has been determined for the soil type. The "Kw" factor relates to erosion caused by water and is based on a scale ranging from 0.02-0.69 with a larger value denoting a higher susceptibility for water caused erosion. The project area contains soil types with a low rating for erosion susceptibility due to water.

A Wind Erodibility Group has also been determined for the soil type. The Wind Erodibility Group is a parameter used to show a soils susceptibility to erosion caused by wind. The rating scale is based on a 1 to 8 rating with 1 being the most susceptible to wind erosion and 8 being the least susceptible. The project area contains soil types with a high rating for erosion susceptibility due to wind.

However, with implementations of erosion control measures, erosion will not have a major impact on environmental resources in the vicinity of the project area.

Figure 1. Soil Map



Soil Type	Slope	Drainage	Parent Material	Frequency of Flooding	Frequency of Ponding	"Kw" Factor	Wind Erodibility Group
Simona-Bippus complex (SM)	0-5%	Well Drained	Mixed alluvium and/or eolian sands	None	None	0.15	4

1.3.3 Vegetation

A vegetation survey was completed for the project area on May 13, 2014 by Reagan Smith Energy Solutions, Inc. The project area is located in an arid grassland that is used for grazing livestock.

1.3.4 Aquatic Communities and Drainages

The proposed project is located in arid grasslands, surface leased through the BLM for grazing. All runoff from the project areas would flow south to road bar ditches.

To mitigate erosion and protect the natural drainage areas, erosion control methods will be implemented to BLM regulations for the remainder of the production phases of this project. The primary focus of erosion mitigation will be on the southeast portions of the well pad due to the natural drainage slope that exists in relation to the orientation of the pad.

1.3.5 Wetlands

Under Executive Order 11990, each agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating and licensing activities.

The U.S. Fish and Wildlife Service National Wetland Inventory maps were consulted for the project area. According to the National Wetland Inventory maps, the project area does not fall within a wetland. Furthermore, a wetland and waterway survey was conducted for the project area in order to determine the effect, if any, on aquatic resources. The method used in this Biological Evaluation to determine if an area is a wetland has been described in Section D of the USACE Wetlands Delineation Manual. Generally, in order to be classified as a wetland an area being observed must satisfy three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. These criteria have been described in the following paragraphs.

1.3.5.1 Wetland Definitions

Under Section 7(c) of Executive Order 11990, a wetland is defined as those areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats and natural ponds.

The U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual defines wetlands as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support and that under normal circumstance do support a prevalence of vegetation typically adapted for life in saturate soil conditions.

Hydrophytic Vegetation

During the on-site survey the vegetation in an area of interest are classified into four (4) groups of classification for plant species.

1 - The first group is obligate; these plants occur in wetlands 99% of the time.

2 - The second group is facultative wetland; these plants occur in wetlands 67%-99% of the time.

3 - The third group is facultative; these plants occur in wetlands 34%-66% of the time.

4 - The fourth group is facultative upland; these plants are found in wetlands less than 33% of the time.

For an area to satisfy the hydrophytic vegetation condition, 50% of the dominant vegetation in the area must be classified as facultative or occurring more frequently.

Hydric Soils

When determining if the area has wetland hydrology many factors must be observed. Some of these factors include, but are not limited to, high water marks, drift lines, changes in soil characteristics and erosion lines on the banks. Hydric Soils may also be characterized by oxidation in the soil matrix and soil color. If the area of interest is flooded less than 12.5% of the time the area is not to be considered a wetland.

Wetland Hydrology

The term "wetland hydrology" encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic and reducing conditions, respectively. Such characteristics are usually present in areas that are inundated or have soils that are saturated to the surface for sufficient duration to develop hydric soils and support vegetation typically adapted for life in periodically anaerobic soil conditions. Hydrology is

often the least exact of the parameters, and indicators of wetland hydrology are sometimes difficult to find in the field. However, it is essential to establish that a wetland area is periodically inundated or has saturated soils during the growing season.

1.3.5.2 Determination

Vegetation

A vegetation survey was completed for the project area on May 13, 2013 by Reagan Smith Energy Solutions, Inc. The project area is located in an arid grassland that is used for grazing livestock.

Soil

The Natural Resources Conservation Service (NRCS) Web Soil Survey and the NRCS Soil Survey for Eddy *County, New Mexico, was used to determine the soils* present in the proposed project area. The project area overlays a series of well drained soils with hydric soil groups of A and B (moderate to high infiltration rates). During the on-site inspection no hydric soil indicators were observed.

Hydrology

The project area consists of gently rolling hills with no drift lines. The area does not foster water-impounding *topography. There are no indicators the project area* contains wetland hydrology.

Wetland Determination

There is a lack of all three wetland indicators within the project area. Due to the lack of wetland indicators, a determination of "**no effect**" on wetland habitat has *been assessed for this project.*

1.4 Migratory Bird Analysis

The Migratory Bird Treaty Act of 1918, as amended, authorizes the Secretary of Interior to adopt such measures necessary to protect and preserve migratory raptor and other avian species. Additionally, the BLM is responsible for implementing protective management goals identified in the Nongame Migratory Bird Habitat Conservation Strategy Plan. The

Federal Land Policy and Management Act (FLPMA) declare that the policy of the United States is to manage the public lands in a manner that will protect the quality of scientific, ecological, and environmental values.

The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions between and among the U.S., Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Under the MBTA, incidental, unintentional, and accidental take, killing, or possession of a migratory bird or its parts, nests, eggs or products, manufactured or not, without a permit is unlawful. The MBTA has no provisions for a permitting process which allows for regulated "take" of migratory birds.

Bureau of Land Management in accordance with the U.S. Fish and Wildlife Service requires a Migratory Bird Habitat Management Plan for all projects in migratory bird habitat requiring an Application for Permit to Drill.

1.4.1 Site Selection

Criteria

During site selection the following criteria were considered:

1. Avoid migratory bird habitat
2. Minimize impacts to migratory bird habitat
3. Mitigate impacts to migratory bird habitat
4. Landowner requirements
5. Avoidance of wetlands
6. Existing surface disturbance area
7. Proximity to existing surface disturbance
8. Cultivated or managed fields
9. Edges of grasslands (in order to decrease habitat fragmentation)
10. Grasslands
11. Edges of wooded areas (to decrease habitat fragmentation)
12. Wooded areas (mitigation required)

The on-site meeting for this project occurred on May 13, 2014, prior to on-site survey and APD approval. Representatives from Reagan Smith Energy Solutions, Bureau of Land Management and Tandem Energy Corporation were in attendance.

Avoidance and Minimizing Impacts to Migratory Bird Habitat

The proposed action must avoid the take of migratory birds and/or minimize the loss, destruction, or degradation of migratory bird habitat while completing the proposed project or action.

The well sites were chosen based on maximizing production while minimizing any environmental impacts. The project site reduces ecological impacts to migratory birds by utilizing existing infrastructure. The project area will upgrade an existing ranch road thus reducing surface disturbance.

1.4.2 Birds of Conservation Concern Survey and Determination Methods

The project area was surveyed for occurrence of species covered by the Migratory Bird Treaty Act utilizing a meander search methodology. In addition, specific habitat types/features utilized by potential special status species were surveyed. Surveys consist of searching for individuals; signs of their presence such as scat, tracks, calls, or nests and/or potential habitat. Trees were present within the project area. Vegetation type, soil type, drainage areas, general forest conditions, and any wetland/drainage areas within the vicinity of/or within project area were noted.

The analysis of possible effects to species identified as known or expected to occur in the vicinity of the proposed project, or likely to be affected by the action includes the following existing information:

1. Data on species/habitat relationships.
2. Species range distribution.
3. Occurrences developed from past field surveys or field observations.
4. The amount, condition, and distribution of suitable habitat.

Effects to species include anticipated effects from implementation of the proposed action. The following table includes an analysis of birds of conservation concern that could occur within the project area (threatened and endangered species can be found in section 1.5 below).

1.4.3 Survey Results

The project area for the well pad and pipeline are located in an arid grassland utilized for cattle grazing. The operator will comply with the requirements of NTL 96-01 in order to minimize the likelihood of accidental death of birds and bats on oil and gas facilities under the jurisdiction of the Bureau of Land Management. Thirty-one (31) Birds of Conservation Concern are listed for the Chihuahuan

Desert (Bird Conservation Region 35), where this project is located. Breeding bird surveys conducted near the site (Lakewood Route) documented three (3) species from that list: Burrowing Owl, Loggerhead Shrike & Yellow-billed Cuckoo. Whereas this project may have impacted individuals, it is not likely to adversely impact the populations of this species.

No evidence of arboreal or ground nesting by migratory birds was observed during the on-site visit.

Species	Status	Environmental Baseline for Potential Habitat	Potential Habitat Presence/Species Potential for Occurrence within the Project Area	Determination of Effect
Burrowing Owl *(Athene cunicularia)*	Birds of Conservation Concern	Lives in dry, open areas with no trees and short grass. Found on golf courses, cemeteries, airports, vacant lots, university campuses, pastures, and prairie dog towns.	Potential habitat in project area. Occurrence is unlikely.	**"No Impact"**
Loggerhead Shrike *(Lanius ludovicianus)*	Birds of Conservation Concern	Found in open country with scattered trees and shrubs, Cropland/hedgerow, Desert, Grassland/herbaceous, Old field, Savanna, Shrubland/chaparral. For nesting it prefers shortgrass prairies; often perching on poles, wire or fencepost. Suitable hunting perches are an important part of the habitat.	Habitat is present in project area. Occurrence is possible. Implementation of project may benefit species.	**"No Impact"**
Yellow-billed cockoo *(Coccyzus americanus)*	Birds of Conservation Concern	Yellow-billed Cuckoos use wooded habitat with dense cover and water nearby, including woodlands with low, scrubby, vegetation, overgrown orchards, abandoned farmland, and dense thickets along streams and marshes. In the Midwest, look for cuckoos in shrublands of mixed willow and dogwood, and in dense stands of small trees such as American elm. In the Southwest, Yellow-Billed Cuckoos are rare breeders in riparian woodlands of willows, cottonwoods and dense stands of mesquite to breed.	No potential habitat in project area. Occurrence is unlikely.	**"No Impact"**

Production Phase

The operator will comply with the requirements of NTL 96-01 in order to minimize the likelihood of accidental death of birds and bats on oil and gas facilities under the jurisdiction of the Bureau of Land Management.

1.5 Species Reviewed

1.5.1 Threatened and Endangered Species

In accordance with the Endangered Species Act of 1973, Federally- listed threatened and endangered species were identified for the project. The group of species referred to in this Biological Evaluation as Special Status Species includes Federal and State listed threatened or endangered plant or animal species, species for listing and species under review by the U.S. Fish and Wildlife Service. These species have the potential to be present in or migrate through Eddy County, NM.

1.5.2 Survey and Determination Methods

The project area was surveyed for occurrence of Special Status Species utilizing a meander search methodology. In addition, specific habitat types/features utilized by potential Special Status Species were surveyed. Surveys consist of searching for individuals; signs of their presence such as scat, tracks, calls, or nests and/or potential habitat. The ground was inspected for dens, cavities, and nests. In the case of vegetative species, soil types were analyzed using USGS Web Soil Survey. Vegetation type, soil type, drainage areas, general forest conditions, and any wetland/drainage areas within the vicinity of/or within project area were noted.

The analysis of possible effects to species identified as known or expected to occur in the vicinity of the project area, was likely to be affected by the action includes the following existing information:

1. Data on species/habitat relationships.
2. Species range distribution.
3. Occurrences developed from past field surveys or field observations.
4. The amount, condition, and distribution of suitable habitat.

Effects to species include effects from implementation of the action. The following table includes an analysis of endangered, threatened and special status species that could occur within the project area.

Endangered, Threatened and Sensitive Species
Eddy County, New Mexico

Species	Status	*Environmental Baseline for Potential Habitat*	Potential Habitat Presence/Species Potential for Occurrence within the Project Area	Species Analysis Required	Determination of Effect
Interior Least Tern *(Sterna antillarum athalassos)*	Endangered (Federal)	**Interior Least Tern** inhabits barren to sparsely vegetated sandbars along rivers, sand and gravel pits, or lake and reservoir shorelines. The premier nesting sites are salt flats, broad sandbars, and barren shores along wide, shallow rivers.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Effect"
Lesser prairie-chicken *(Tympanuchus pallidicinctus)*	Threatened (Federal)	**Lesser Prairie- Chicken (LPC)** breeds on leks, areas of bare short grass slightly elevated above the surrounding landscape. Optimum habitat is dominated by native vegetation such as sand bluestem, big bluestem, little bluestem, indian grass, sand dropseed, sideoats grama, multiple forb species, sagebrush, skunkbush sumac, sand plum and shinnery oak. As a rule, LPC cannot persist in landscapes with greater that 30% cultivation.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	Further analysis will be required for this species.	"No Effect"
Piping Plover *(Charadrius melodus)*	Threatened (Federal)	**Piping Plovers** breed on sandy beaches along the Atlantic Coast from Canada to North Carolina, along the sand and gravel shores of Lakes Michigan, Huron and Superior in Michigan, and along Lakes Superior and Michigan in Wisconsin, and on river sandbars and islands, barren shorelines of inland lakes, and alkali wetlands in the northern Great Plains of Canada and the United States. Wintering primarily along Gulf Coast beaches from Florida to Mexico, along the Atlantic Coast from North Carolina to Florida, and on Caribbean islands. Piping Plovers often roost on beaches huddled down in the sand, or behind driftwood or clumps of seaweed and other debris. They also roost among debris in wash-over passes created by hurricanes and storms on barrier islands and peninsulas.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Effect"
Mexican Spotted owl (Strix occidentalis lucida)	Threatened (Federal)	**Mexican Spotted owl** prefer old-growth or mature forests that possess complex structural components (uneven aged stands, high canopy closure, multi-storied levels, high tree density). Canyons with riparian or conifer communities are also important components.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Effect"
Northern aplomado falcon *(Falco femoralis septentrionalis)*	Experimental Population, Non-Essential (Federal)	**Northern aplomado falcon** Habitat is variable throughout the species range and includes palm and oak savannahs, various desert grassland associations, and open pine woodlands. Within these variations, the essential habitat elements appear to be open terrain with scattered trees, relatively low ground cover, an abundance of insects and small to medium-sized birds, and a supply of nest sites.	Potential habitats exist for this species; therefore, there is potential for this species to be found within the boundaries of the proposed project area	Further analysis will be required for this species.	"No Effect"

Sprague's Pipit *(Anthus spragueii)*	Candidate (Federal)	**Sprague's Pipit** inhabits well-drained native grasslands, usually in patches of at least 145 ha with density increasing with pasture size, especially with sparse to intermediate grass densities, moderate litter depths, few visual obstructions and little woody vegetation. It also breeds in planted grasslands in some parts of its range, predominantly those with similar vegetation characteristics to native grasslands. In particular, planted fields with a low amount of alfalfa and suitable vegetation height (20–30 cm) are likely suitable breeding sites. On migration, it also occurs in stubble and fallow fields, arriving late April to mid-May on the breeding grounds, and late September to early November on the wintering grounds. Its numbers fluctuate from year to year based on precipitation rates from up to three years previously.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Effect"
Southwestern Willow flycatcher *(Empidonax traillii extimus)*	Endangered (Federal)	**Southwestern Willow flycatcher** dense riparian habitats (cottonwood/willow and tamarisk vegetation) with microclimatic conditions dictated by the local surroundings. Saturated soils, standing water, or nearby streams, pools, or cienegas are a component of nesting habitat that also influences the microclimate and density vegetation component. Habitat not suitable for nesting may be used for migration and foraging.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Effect"
Texas Hornshell *(Popenaias popei)*	Candidate (Federal)	**Texas Hornshell** occurs at the head and terminus of shallow, narrow run habitat over travertine bedrock where small-grained substrata (clays, silts, sands, and gravel) collect in undercut riverbanks, crevices, shelves, and at the base of large boulders. It occurs in sand and sand-cobble accumulated in travertine bedrock cracks and at the base of large boulders at depths of 0.25-1.38 m and at flow rates of 0.02-0.75 m/sec; often in colonies; often at the head or lower end of travertine runs	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Effect"
Pecos Bluntnose shiner *(Notropis simus pecosensis)*	Threatened (Federal)	**Pecos Bluntnose shiner** occurs in main river channel (especially after age II), often below obstructions, over substrate of sand, gravel, and silt. Apparently dependent on large flows. Often over sandy bottom in area of low velocity laminar flow at depths of 17-41 cm. Young have been found in backwaters, riffles, and pools.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Effect"
Pecos gambusia *(Gambusia nobilis)*	Endangered (Federal)	**Pecos gambusia** prefers shallow margins of clear vegetated spring waters (pools and outflows) high in calcium carbonate, as well as more adverse gypsum sinkhole habitats.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Effect"
Gypsum wild-buckwheat *(Eriogonum gypsophilum)*	Threatened (Federal)	A perennial herb with a branching flower stalk from 1.2-2 dm tall, arising from a cluster of very dark green basal leaves. The tiny yellow flowers (May and June) are arranged into tight clusters. Live in open, gypsum in grama grassland, at about 1500 m; semi-arid: Eroded gypsum clay hills and fans, creosote bush communities	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Effect"
Kuenzler Hedgehog cactus *(Echinocereus fendleri var. kuenzleri)*	Endangered (Federal)	Kuenzler's hedgehog cactus stems range from 3.0 to 12.0 inches (7.5-30.0 cm) long. Kuenzler's hedgehog cactus generally produces a solitary or few stems, with 7 to 12 ribs/stem. Kuenzler's hedgehog cactus is distinguished by its larger flowers—which are magenta and may reach 4.3 inches (11 cm) in length, softer flower spines, and fewer spines/areole compared with other pinkflower hedgehog cactus	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Effect"

		varieties. Chalky-white spines also characterize this variety. Kuenzler's hedgehog cactus produces 3 to 6 fruits/plant, with each fruit containing about 1,060 seeds. Kuenzler's hedgehog cactus apparently prefers warm aspects, gentle slopes, and rocky soils. In the Guadalupe Mountains, Kuenzler's hedgehog cacti grew most often on gentle, southwest-facing slopes or ridgetops of 0% to 5% slope.			
Lee Pincushion cactus *(Coryphantha sneedii var. leei)*	Threatened (Federal)	Primarily found in cracks in limestone in areas of broken terrain and steep slopes of Chihuahuan desert scrub. Stems forming small dense clusters, the individual stems mostly 1-2 cm thick and to 8 cm tall; tubercles on mature stems with upper surface grooved; spines about 30-90 per areole, typically white often brown at tip, fading to gray, slender and bristle-like, mostly about 1-2.5 mm long, radiating from areole and appressed against plant, sometimes with one to few short porrect centrals; flowers not opening widely, to 1.5 cm wide (usually smaller); tepals pale yellowish to pinkish or nearly white, usually with midribs darker; stigmas white to pink; fruit elongate, 1-1.5 cm long, green to somewhat reddish; seeds about 0.8 mm long, kidney-shaped, pitted, brown, with hilum lateral. Flowers in April.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Effect"
Sneed Pincushion cactus *(Coryphantha sneedii var. sneedii)*	Endangered (Federal)	The cactus is restricted to limestone and grows in cracks on vertical cliffs or ledges in Chihuahuan desert scrub at elevations of 3,900 to 7,700 feet. Common plant communities associated with the cactus include creosote (Larrea tridentata), Torrey yucca (Yucca torreyi), gramma grasses (Bouteloua spp.), sotol (Dasylirion wheeleri), ocotillo (Foquieria spledens), and lechugilla (Agave lechugilla). Several other cactus species may also be found within the range of Sneed's pincushion cactus.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Effect"
Wright's Marsh thistle *(Cirsium wrightii)*	Candidate (Federal)	A perennial herb, up to 2.4 m tall, with numerous small white or pink flower heads in bloom March-August. Marshy wetlands (cienegas) near springs in otherwise semi-arid to arid areas.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Effect"
Headwater Catfish *(Ictalurus lupus)*	Sensitive (NM)	**Headwater Catfish** inhabits clear, headwater streams in the Rio Grande drainage of New Mexico, Texas and Mexico, and Gulf slope streams of northeastern Mexico	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Rio Grande Chub *(Gila pandora)*	Sensitive (NM)	**Rio Grande Chub** is found in pools of small to moderate streams near areas of current. It is found in association with undercut banks, overhanging bank vegetation and aquatic plants.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Greenthroat Darter *(Etheostoma lepidum)*	Threatened (NM)	**Greenthroat Darter** occurs in a variety of non-turbid stream habitats with substrates from bedrock to silt covered. A typical riffle species occurring over gravel and rubble, especially when aquatic vegetation is present. It also lives in spring areas, sometimes in cool vegetated pools. Largest populations occur in vegetated rocky riffles	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"

Bigscale Logperch *(Percina macrolepida)*	Threatened (NM)	**Bigscale Logperch** prefer gravel and sand runs and pools of small to medium rivers. Prefers gravel raceway conditions of moderate to swift current, avoiding rubble riffles themselves. Also in rivers with low flow and can be abundant in impounded waters. Most abundant in mud-bottomed turbid sloughs in California.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Pecos Pupfish *(Cyprinodon pecosensis)*	Threatened (NM)	**Pecos Pupfish** inhabits saline springs, gypsum sinkholes, and desert streams. Sometimes this species occurs in low salinity waters, but it is most typical and abundant in highly saline habitats that support relatively few species. It can survive in water among gravel where there is no surface water	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Gray Redhorse *(Moxostoma congestum)*	Endangered (NM)	**Gray Redhorse** is found in rock, sand, or gravel bottomed pools and deep runs of creeks and rivers; occurs also in some reservoirs. Young and subadults form loose schools in riffles and gravelly runs. Adults usually found in stream pools with firm substrate of sand or silt, sometimes with moderate turbidity. These stream pools often rather deep with slow-moving currents and little vegetation.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Rio Grande Shiner *(Notropis jemezanus)*	Sensitive (NM)	**Rio Grande Shiner** occurs over substrate of rubble, gravel and sand, often overlain with silt; tends to prefer turbid water. In the Pecos River, New Mexico, they primarily selected mesohabitats with low to moderate velocities.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Blue Sucker *(Cycleptus elongates)*	Endangered (NM)	**Blue suckers** prefer deep, swift water in pools and channels of large rivers with sand, gravel, or rubble bottoms. They are often associated with wing dams in the Mississippi River and with woody snags in the St. Croix River. Blue suckers are tolerant of high turbidities if currents are swift enough to prevent siltation.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Mexican Tetra *(Astyanax mexicanus)*	Threatened (NM)	**Mexican tetra** inhabits a wide range of freshwater habitats. Adults show a preference for rocky and sandy bottomed pools in creeks, streams and rivers, while young Mexican tetras are found in shallower waters, often near vegetation that overhangs the bank of a river or stream.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Western River Cooter *(Pseudemys gorzugi)*	Threatened (NM)	**Western River Cooter** prefers rivers and their more permanent tributary streams, particularly larger, deeper stream pools with relatively clear water and sandy or rocky bottoms. Occupied waters may have a muddy, sandy, or rocky bottom, and may or may not contain aquatic vegetation.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Dunes Sagebrush lizard *(Sceloporus arenicolus)*	Endangered (NM)	**Dunes Sagebrush lizard** occurs in the vicinity of active and semi stabilized sand dunes; vegetation consists of scattered stands of Shinnery oak and sand sagebrush. It seeks shelter in burrows, under leaf litter, or by burrowing into loose sand. The lizard is absent where hummocks, topographic relief, or shin-oak are lacking	Potential habitats exist for this species; therefore, there is potential for this species to be found within the boundaries of the proposed project area	Further analysis will be required for this species.	"No Impact"
Arid Land Ribbonsnake *(Thamnophis proximus)*	Threatened (NM)	**Arid Land Ribbonsnake** is a semiaquatic species, the western ribbon snake is most commonly associated with brushy or grassy areas close to water. It may be found close to swamps, marshes, ponds, rivers, streams, lakes, or damp meadows, and has even been found around cattle tanks and ditches	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"

Mottled Rock Rattlesnake *(Crotalus lepidus Lepidus)*	Threatened (NM)	**Mottled Rock Rattlesnake** prefers rocky mountainous areas; talus slopes, gorges, rimrock, limestone outcrops, and rocky streambeds.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Gray-banded Kingsnake *(Lampropeltis alterna)*	Threatened (NM)	**Gray-banded Kingsnake** rocky canyons and arroyos, limestone ridges, talus slopes and boulder piles are preferred, although specimens are occasionally found in desert flats.	Potential habitats exist for this species; therefore, there is potential for this species to be found within the boundaries of the proposed project area. There is not preferred habitat within the project area.	No further analysis will be required for this species.	"No Impact"
Plainbelly Water Snake *(Nerodia erythrogaster)*	Endangered (NM)	**Plain-bellied water snakes** are semi-aquatic snakes, using both terrestrial and freshwater aquatic habitats. Most subspecies are found in warm temperate regions, but the range of Mexican subspecies extends into tropical climates. Terrestrial habitats used include forests, grasslands, and scrublands. Terrestrial habitats are used as travel corridors, aestivation sites, hibernation sites and occasional feeding sites. Aquatic habitats include ephemeral ponds or temporary pools, permanent lakes and ponds, swamps, bogs, marshes, small rivers, and riverine sloughs.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
N. Beardless Tyrannulet *(Camptostoma imberbe)*	Endangered (NM)	**N. Beardless Tyrannulet** is largely a gleaner of insects, although at times flying prey is taken. In the Southwest, the species typically occurs at lower elevations in dense stands of mesquite and associated growth--typically along stream courses. It is easily overlooked, except when calling; the voice is surprisingly loud for such a small bird. This flycatcher builds a globular nest, with the entrance on the side; the 2-3 eggs are white with dark speckles. A nest in the Arizona portion of Guadalupe Canyon in 1980 was 9 m from the ground in an Arizona sycamore. Northern beardless-tyrannulets prefer dense stands of brushy vegetation such as mesquite and associated growth, typically along stream courses.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Common Black-Hawk *(Buteogallus anthracinus)*	Threatened (NM)	**Common Black-Hawk** live in desert riparian deciduous woodland, marsh, woodlands, especially of cottonwoods, that occur where desert streams provide sufficient moisture for a narrow band of trees and shrubs along the margins. Breeding common black-hawks require mature, well-developed riparian forest stands (e.g., cottonwood bosques) that are located near permanent streams where principal prey species are available	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Varied Bunting *(Passerina versicolor)*	Threatened (NM)	**Varied Buntings** inhabit deserts and xeric shrublands, preferring thorny brush thickets, thorn forests, scrubby woodlands, and overgrown clearings. They forage on the ground for insects, fruit, and seeds. Varied Buntings weave open-cup nests of grass and spider webs in the outer branches of thorny shrubs, usually near water.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Neotropic Cormorant *(Phalacrocorax brasilianus)*	Theatened (NM)	**Cormorants** are generally found on larger bodies of water such as reservoirs, where they prey on fish--probably mainly "rough" species in New Mexico. They nest near or over water, in vegetation such as dead snags or trees.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"

Yellow-billed Cuckoo *(Coccyzus americanus occidentalis)*	Sensitive (NM)	**Yellow-billed cuckoo** (C. a. occidentalis) is associated with lowland deciduous woodlands, willow and alder thickets, second-growth woods, deserted farmlands, and orchards.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Bald Eagle *(Haliaeetus leucocephalus)*	Threatened (NM)	**Bald Eagle** is primarily water-oriented, and the majority of the populations occurring in New Mexico are found near streams and lakes. On the other hand, there are some "dry land" areas where these eagles occur regularly most notably in the region between the Pecos Valley and the Sandia, Manzano, Capitan, and Sacramento mountains, plus on the Mogollon Plateau. The birds typically night-roost in groups in trees, usually in protected sites such as canyons	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Peregrine Falcon *(Falco peregrinus anatum)*	Threatened (NM)	**Peregrine Falcon** breeding territories center on cliffs that are in wooded/forested habitats, with large "gulfs" of air nearby in which these predators can forage. The nest sites are typically ledges or potholes, with the 3-4 eggs being laid directly on the bare substrate.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Arctic Peregrine Falcon *(Falco peregrinus tundrius)*	Threatened (NM)	***Arctic Peregrine Falcon** breeding territories center on cliffs* that are in wooded/forested habitats, with large "gulfs" of air nearby in which these predators can forage	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Northern Goshawk *(Accipiter gentilis)*	Sensitive (NM)	**Northern goshawk** inhabits mature woodland, both coniferous and deciduous, from lowlands into mountainous, subalpine areas. It particularly favors woodland edges that border open areas, and sometimes occurs in town parks	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Common Ground-dove *(Columbina passerine)*	Endangered (NM)	**Common Ground Dove** lives in open areas that have trees and bushes. They are also found in forests with sandy areas, farmlands, and savannahs and near human infrastructure. Common ground doves seem to hold territories but they are rarely aggressive when dealing with intruders.	Potential habitats exist for this species; therefore, there is potential for this species to be found within the boundaries of the proposed project area. The species is a habitat generalist therefore no impacts are anticipated.	No further analysis will be required for this species.	"No Impact"
Broad-billed Hummingbird *(Cynanthus latirostris)*	Threatened (NM)	**Broad-billed Hummingbird** is common in Mexico as well as in south-western United States. They tend to live and nest in areas such as canyons, foothills and streambeds. Their distribution in any particular area is closely tied to the availability and abundance of appropriate food plants.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Lucifer Hummingbird *(Calothorax Lucifer)*	Threatened (NM)	**Lucifer Hummingbird** habitats vary widely depending on the geographic location. The Lucifer hummingbird can be found in the plains, foothills, and on the sides of rocky hillsides throughout its range.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Thick-billed Kingbird *(Tyrannus crassirostris)*	Endangered (NM)	**Thick-billed kingbirds** usually occur in arid or partly arid areas in streamside riparian canyons, or open areas near water. They are particularly fond of sycamore woodland edges. They make a nest in a	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required	"No Impact"

		tree branch, usually close to the trunk above 6 meters high. The female lays 3-5 eggs.		for this species.	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Brown Pelican *(Pelecanus occidentalis)*	Endangered (NM)	**Pelicans** are strictly coastal, rarely living more than 20 miles or 32 km from the shoreline. They are found in warm coastal waters or marine estuaries during the non-breeding season. They require dry areas that are not subjected to frequent disturbance. They roost offshore at night and loaf during the day after or while foraging. Typical loaf and roost sites include sandbars, pilings, jetties, breakwaters, mangrove islets, and offshore rocks or islands.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Baird's Sparrow *(Ammodramus bairdii)*	Threatened (NM)	**Baird's Sparrow** breeds in native mixed-grass and fescue prairie. Winters in grasslands; specific winter habitat requirements not well described. Baird's Sparrow does not inhabit prairie lands where fire suppression and changes in natural grazing patterns have allowed woody vegetation to grow excessively. Some hayfields or pastures may support Baird's Sparrow where native grasses occur in sufficient quantity, but generally cultivated land is far inferior habitat relative to true prairie.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Black Tern *(Chlidonias niger)*	Tracked by NM	**Black tern** occupies very different habitats during the breeding and non-breeding seasons. During the breeding season, it is a bird of freshwater and brackish wetlands, breeding on well-vegetated inland pools, lakes, marshes, ditches, peat bogs, swampy meadows, quiet stretches of rivers and in rice fields. It shows a preference for areas with sparse, open vegetation such as sedges, reeds, cattails or floating water lilies, usually where the water is one to two metres deep. In contrast, the black tern uses coastal habitats in winter, including estuaries, salt marshes, bays and coastal lagoons, and will even feed up to 600 kilometres offshore. During migration, this species uses both inland wetlands and more coastal habitats.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Bell's Vireo *(Vireo bellii)*	Threatened (NM)	**Bell's Vireo** prefers dense brush, willow thickets, mesquite, streamside thickets, and scrub oak, in arid regions often near water, also adjoining uplands. Nests in shrub or low tree, usually averaging	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required	"No Impact"

		about one meter above ground, usually in horizontal or downsloping twig fork, typically near edge of thicket.		for this species.	
Gray Vireo *(Vireo vicinior)*	Threatened (NM)	**Gray Vireo** is found in desert scrub, mixed juniper or pinyon pine and oak scrub associations, and chaparral, in hot, arid mountains and high plains scrubland.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Pale Townsend's Big-eared Bat *(Corynorhinus townsendii)*	Sensitive (NM)	**Pale Townsend's Big-eared Bat** lives in montane forest. This type of forest is thick with pine, fir and aspen trees and is bounded by shrub and grasslands. At higher elevations, the surrounding vegetation is subalpine. Corynorhinus townsendii pallescens lives in an arid habitats with limited desert scrub vegetation, but stops short of living in extreme desert environments. Corynorhinus townsendii townsendii inhabit the humid coastal area of the Pacific Northwest. Eastern populations of Corynorhinus townsendii are generally found in oak-hickory forests.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Cave Myotis *(Myotis velifer)*	Sensitive (NM)	**Cave Myotis** is a colonial, cave dwelling bat. They may also roost in rock crevices, old buildings, carports, under bridges, and even in abandoned cliff swallow nests.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Big Free-tailed Bat *(Nyctinomops macrotis)*	Sensitive (NM)	**N. macrotis** appears to be mainly an inhabitant of rugged, rocky habitats in arid landscapes. It has been found in a variety of plant associations, including desert shrub, woodlands, and evergreen forests. It appears to be associated with lowlands, but has been documented at around 8,000 ft in New Mexico.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Fringed Myotis *(Myotis thysanodes)*	Sensitive (NM)	**Fringed Myotis** has been found in hot desert scrubland, grassland, xeric woodland, sage-grass steppe, mesic old-growth forest, and multi-aged subalpine coniferous and mixed-deciduous forest. Xeric woodlands (oak and pinyon-juniper) appear to be the most commonly used.	Potential habitats exist for this species; therefore, there is potential for this species to be found within the boundaries of the proposed project area. The habitat is not preferred and therefore there should be no impacts.	No further analysis will be required for this species.	"No Impact"
Long-legged Myotis *(Myotis volans)*	Sensitive (NM)	**M. volans** are found in forested regions. They establish roosts in trees, rock crevices, fissures in stream banks, and buildings. Caves and mines are not used in the day, but **M. volans** can be captured there at night.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Eastern Red Bat *(Lasiurus borealis)*	Sensitive (NM)	**Lasiurus borealis** are fast flying bats that live throughout the Americas. They tend to choose habitats that are sparsely to moderately populated by humans and are rare in heavily urbanized areas.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Western Small-footed Myotis *(Myotis ciliolabrum)*	Sensitive (NM)	**Western Small-footed Myotis** has a wide ecological range, from rock outcrops on open grasslands to canyons in the foothills to lower mountains with yellow pine woodlands. Day roosts are variable, but include cracks and crevices in cliffs, beneath tree bark, in mines and	Potential habitats exist for this species; therefore, there is potential for this species to be found within the boundaries of the proposed project area. The habitat is	No further analysis will be required.	"No Impact"

		caves, and occasionally in dwellings of humans. Night roosts are under a variety of natural and human-induced structures. Hibernacula include caves, mines, and tunnels.	not preferred and therefore there should be no impacts.	for this species.	
Spotted Bat *(Euderma maculatum)*	Threatened (NM)	**Spotted bat** prefers arid regions; desert scrub, and open forest in rugged landscapes. They roost on vertical cliffs and in open canyons. Their habitat always seems to be associated with a water source such as a spring, creek, river or lake.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Yuma Myotis *(Myotis yumanensis)*	Sensitive (NM)	**Yuma Myotis** is found in a variety of habitats, ranging from juniper and riparian woodlands to desert regions near open water. One is almost guaranteed to find this species wherever there are rivers, streams, ponds, lakes, etc. In fact, it is more closely associated with water than any other North American species of bat. When not near water over which to forage, these animals can be found in the thousands roosting in caves, attics, buildings, mines, underneath bridges, and other similar structures.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Black-tailed Prairie Dog *(Cynomys ludovicianus ludovicianus)*	Sensitive (NM)	**Black-tailed Prairie Dog** occupies a relatively restricted range of open, level, arid, short-grass plains. These prairie dogs are commonly found near river flats or in coulee bottomlands where sagebrush, greasewood, and prickly pear grow. They are never found in moist areas.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
AZ Black-tailed Prairie Dog *(Cynomys ludovicianus arizonensis)*	Sensitive (NM)	**AZ Black-tailed Prairie Dog** is primarily a Great Plains species, originally occurring from extreme southern Saskatchewan in Canada (Frenchman River Valley), and Montana south through the western and central Great Plains to the desert grasslands of western Texas, New Mexico, southeastern Arizona (formerly) in the United States, and northeastern Sonora, and northern Chihuahua in Mexico. The species is now extirpated from southeastern Arizona, southwestern New Mexico, and locally in many other areas throughout its range.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Red Fox *(Vulpes vulpes)*	Sensitive (NM)	**Red fox** makes its home in wooded areas, prairies and farmland.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Swift Fox *(Vulpes velox)*	Sensitive (NM)	**Swift foxes** live primarily in shortgrass prairies and deserts. They often form their dens in sandy soils on open prairies, along fences or in plowed fields	Potential habitats exist for this species; therefore, there is potential for this species to be found within the boundaries of the proposed project area	Further analysis will be required for this species.	"May Impact individuals but not likely to cause a Trend to Federal listing or a Loss of Viability"
Guadalupe Pocket Gopher *(Thomomys bottae guadalupensis)*	Sensitive (NM)	**Pocket gophers** of this species are extremely adaptable as regards habitat. They occur in soils ranging from loose sands and silts to tight clays and in vegetative zones grading from dry deserts to montane meadows. Perhaps one reason why they can tolerate such environmental extremes is that they spend fully 90% of their lives in underground burrows, secure from the elements	Potential habitats exist for this species; therefore, there is potential for this species to be found within the boundaries of the proposed project area. The species is a habitat generalist therefore no impacts are anticipated.	No further analysis will be required for this species.	"No Impact"

Nelson's Pocket Mouse *(Chaetodipus nelson)*	Sensitive (NM)	**Nelson's Pocket Mouse** occurs in desert shrub vegetation, where it is associated with rocky soils on slopes with scattered shrub cover. This rodent has strong preference for rocky places in Chihuahuan desert shrub vegetation. It prefers rocky soils or slopes where cactus, creosote, stool, and lechuguilla provide scattered cover. It is seldom found on sandy or other fine soils.	Potential habitats exist for this species; therefore, there is potential for this species to be found within the boundaries of the proposed project area. The habitat is not preferred due to sandy soil type and therefore there should be no impacts.	No further analysis will be required for this species.	"No Impact"
Pecos River Muskrat *(Ondatra zibethicus ripensis)*	Sensitive (NM)	**Muskrats** are found in brackish and fresh water lakes, ponds, streams, rivers, and marshes. Depending on the location, they will either dig burrows into waterside banks, or construct houses of vegitation.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area	No further analysis will be required for this species.	"No Impact"
Ringtail *(Bassariscus astutus)*	Sensitive (NM)	**Ringtails** live in many different habitats, but they prefer rocky areas such as rock piles, stone fences, canyon walls, and talus slopes. Ringtails are expert climbers, capable of climbing vertical walls to find the most protected crevices, crannies, and hollows in which to build their dens. In woodland areas, where they are less common, they den in hollow trees and logs. They have also been observed living in buildings.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area.	No further analysis will be required for this species.	"No Impact"
Common Hog-nosed Skunk *(Conepatus leuconotus)*	Sensitive (NM)	**Common Hog-nosed Skunks** inhabits a wide variety of habitats within their range, including woodlands, grasslands, deserts, brushy areas, and rocky canyons in mountainous regions.	Potential habitats exist for this species; therefore, there is potential for this species to be found within the boundaries of the proposed project area. The species is a habitat generalist therefore no impacts are anticipated.	No further analysis will be required for this species.	"No Impact"
Western Spotted Skunk *(Spilogale gracilis)*	Sensitive (NM)	**Western spotted skunk** has been recorded in a big spectrum of habitats varying from open lowlands to mountainous areas, streams to rocky places, beaches to human buildings and other disturbed areas, chaparral among others.	Potential habitats exist for this species; therefore, there is potential for this species to be found within the boundaries of the proposed project area. The species is a habitat generalist therefore no impacts are anticipated.	No further analysis will be required for this species.	"No Impact"
Pecos Springsnail *(Pyrgulopsis pecosensis)*	Threatened (NM)	**Pecos Springsnail** is currently restricted to less than three miles of a single spring run and associated marsh; Blue Spring, tributary to the Black River, tributary to the Pecos River, Carlsbad area of Pecos River valley, Eddy County, New Mexico. Historically found in an adjacent spring, Castle Spring, as well.	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area	No further analysis will be required for this species.	"No Impact"
Ovate Vertigo Snail *(Vertigo ovate)*	Threatened (NM)	**Ovate Vertigo Snail** are primarily found in graminoid litter and on cattail leaves in swamps, sedge meadows, wet and mesic prairie, low calcareous meadows, river banks, lakeshores, roadside ditches, and wooded wetlands. It is also occasionally found on bedrock outcrops, upland forest, and upland grassland habitats	No potential habitats exist for this species; therefore, there is no potential for this species to be found within the boundaries of the proposed project area	No further analysis will be required for this species.	"No Impact"

1.6 Federal Species of Concern

Lesser Prairie Chicken (*Tympanuchus pallidicinctus*)
Northern Aplomado Falcon (*Falco femoralis septentrionalis*)

1.6.1 Lesser Prairie Chicken (*Tympanuchus pallidicinctus*)

LPC Summary for Proposed Project Area	
Covered by current surveys	Yes
Known or assumed lek within 1.25 miles of project area	No
CHAT Rating	3
Enrolled in CCAA	Yes
Mitigation Fees Paid	Prior to Construction
Determination	No effect

Environmental Baseline: The Lesser Prairie Chicken (LPC) is a North American grouse species that occupies sand sagebrush (*Artemisia filifolia*), sand shinnery oak (*Quercus havardii*) and mixed grass vegetation communities of the southern Great Plains within portions of Colorado, Kansas, New Mexico, Oklahoma and Texas. During the breeding season (primarily mid-March through May), male LPC congregate on lek sites and perform courtship displays to attract females for mating. Nests are initiated mid-April through late May, typically within two weeks of lek attendance and copulation (Bent 1932, Copelin 1963, Snyder 1967, Merchant 1982, Haukos 1988, Behney et al. 2010). Hatching peaks in late May through mid-June throughout the range (Copelin 1963, Merchant 1982). Re-nests (following nest depredation or abandonment of the initial clutch) are initiated mid-May through early June, with hatching mid-June through early July (Merchant 1982, Pitman et al. 2006). After hatching there is a period of time during which chicks are brooded by the female. This means the critical reproduction period for LPC range-wide is from March 1-July 15, with some variation due to latitude. In autumn and winter, birds assemble into mixed flocks, feeding primarily in sand sagebrush, sand shinnery oak, or mixed-grass prairies, but also often in waste grain fields (Hagen and Giesen 2005). Habitat components necessary to fulfill LPC life history needs include nesting habitat, brood-rearing and summer habitat, and autumn/winter habitat.

The LPC inhabits native rangeland in different stages of plant succession and consisting of a diversity of native, short- to mid-height grasses and forbs interspersed with low-growing shrubby cover comprise optimum LPC habitat. Sand sagebrush

communities dominated by sand dropseed, side oats grama, and little bluestem make up the most preferred LPC habitat in Kansas, Colorado, Texas and northern Oklahoma.

Texas, New Mexico, and western Oklahoma provide shinnery oak/bluestem habitat dominated by sand bluestem, little bluestem, Indiangrass, switchgrass, buffalo grass, sand dropseed, and sand sagebrush. Sand plum and skunkbush sumac are valuable shrubs for providing shade and brood-rearing cover as well.

Crucial Habitat Assessment Tool (CHAT) -- an accessible online system of maps displaying crucial wildlife habitat and corridors in the Southern Great Plains. The Southern Great Plains CHAT is a spatial model put together to designate and prioritize areas for LPC conservation activities and industry development. As such, it plays a dual role in that it is used to encourage development activities to occur outside of high priority areas as well as monitor activities that occur in each of the categories. In many ways, it is the spatial representation of the Lesser Prairie Chicken Range-wide Conservation Plan. Another purpose of this dataset is to create an online tool usable by conservation managers, industry, and the public that identifies priority habitat, including connecting corridors that can be used in the early stages of development or conservation planning. By providing a consistent layer, used by all, we help target both conservation and development in areas that provide the greatest overall benefits to LPC.

Below is a description of each category:

a. CHAT 1 - This category is comprised of the focal areas for LEPC conservation. The focal areas were designated by teams in each state that prioritized and identified intact LEPC habitat. The goal in this category is to have 70% of the area within, managed under LEPC conservation plans. They were defined using GIS layers such as landscape integrity models, aerial photos, soil maps, anthropogenic disturbances, land cover, and expert opinion.

b. CHAT 2 - This category is comprised of the corridors for LEPC conservation. The corridor areas were designated by teams in each state that prioritized and identified intact LEPC habitat. The goal in this category is to have 40% of the area within, managed under LEPC conservation plans. They were defined using GIS layers such as landscape integrity models, aerial photos, soil maps, anthropogenic disturbances, land cover, and expert opinion.

c. CHAT 3 - This category is comprised on the lek Maxent models. Maxent is short for maximum entropy classifier and is an ecological niche model used for describing available and potential habitat. The model uses base layers (e.g., lek, nests, Conservation Reserve Program, land cover, abiotic site condition) in a manner that allows for the results to characterize that habitat on the landscape.

d. CHAT 4 - This category is comprised of the estimated occupied range (EOR) for the LEPC plus 10 miles. The EOR is an expert derived delineation that has had 10 miles added to it for range expansion and planning.

Un-improved roads do not show the same avoidance distance as improved roads so co-locating increases with un-improved roads increases the LPC avoidance and potentially increase fragmentation. All new power lines associated with this project should be buried or co-located with improved roads.

Project Habitat Evaluation: The project area is located in the LPC Mixed Grass Prairie Ecoregion. The project area is located in CHAT 3. The project area is enrolled in the WAFWA Candidate Conservation Agreement with Assurances (CCAA).

The project area is located in an arid grassland that is used for grazing livestock.

Project Survey Information: In order to determine if a proposed project is within in 1.25 miles of an LPC lek a ground-based or aerial survey must be conducted between April 1st and April 30th. Survey results are valid for five years. If the project area has not been surveyed for leks than leks must be assumed to be within 1.25 miles of the proposed project area.

The entire 1.25 mile area surrounding the project area has been surveyed within the last five years according to the Southern Great Plains CHAT. According to the CHAT there are no leks within 1.25 miles of the project area.

Direct, Indirect and Cumulative Effects: The proposed project area is not located in a CHAT 1 focal area and/or CHAT 2 corridor and is not located within 1.25 miles of a known lek that has been active at least once within the previous five years, therefore there should be no direct effects to the Lesser Prairie Chicken.

The project area is located in CHAT 3. There may be indirect effects of habitat fragmentation or habitat loss. However, all mitigation fees will be paid prior to construction.

Determination: A determination of **"No Effect"** has been made based on the fact that there are no leks within 1.25 miles of the proposed project area and all mitigation fees will be paid prior to construction.

1.6.2 Northern Aplomado Falcon *(Falco femoralis septentrionalis)*

Environmental Baseline: Habitat is variable throughout the species range and includes palm and oak savannahs, various desert grassland associations, and open pine woodlands. Within these variations, the essential habitat elements appear to be open terrain with scattered trees, relatively low ground cover, an abundance of insects and small to medium-sized birds, and a supply of nest sites.

Project Analysis: The project area falls in an arid grassland utilized for cattle grazing. The dominant vegetation in the project area consists of various forbs with a scattering of grasses.

Direct, Indirect and Cumulative Effects: *No trees or adequate* roost areas exist in or around the project area. Therefore, no direct, indirect or cumulative effects are expected

Determination: The immediate project area does not impede habitat favored by this species. Therefore, it is unlikely the Northern Aplomado Falcon will be present at the project location. A determination of **"No Effect"** has been assessed to the project area.

1.7 New Mexico Species of Concern

Burrowing Owl *(Athene cunicularia)*
Dunes Sagebrush Lizard (*Sceloporus arenicolus*)
Swift Fox *(Vulpes velox)*
Loggerhead Shrike *(Lanius ludovicianus)*

1.7.1 Burrowing Owl *(Athene cunicularia)*

Environmental Baseline: The Burrowing Owl collects mammal dung and puts it in and around its burrow. Burrowing Owls are generally active at dusk and dawn, but sometimes at night also. They are highly terrestrial, and are often seen perched on a mound of dirt, telegraph or fence post - frequently on one foot.

Burrowing Owls are found in open, dry grasslands, agricultural and range lands, and desert habitats often associated with burrowing animals, particularly prairie dogs, ground squirrels and badgers. They can also inhabit grass, forb, and shrub stages of pinyon and ponderosa pine habitats.

Project Analysis: The project area falls in an arid grassland utilized for cattle grazing. The dominant vegetation in the project area consists of various forbs with a scattering of grasses.

Direct, Indirect and Cumulative Effects: Due to the fact that no burrows or burrowing mammals were observed in the project are, direct effects are not expected. Indirect or cumulative effects to the Burrowing Owl may occur from implementation of this project by removing potential burrowing mammal habitat.

Determination: The immediate project area does not impede habitat favored by this species. No abandoned prairie dog towns, ground squirrels or badgers were observed. Therefore, it is unlikely the Burrowing Owl will be present at the project location. A determination of **"No Impact"** has been assessed to the project area.

1.7.2 Dunes Sagebrush Lizard (*Sceloporus arenicolus*)

Environmental Baseline: Dunes Sagebrush Lizard occurs in the vicinity of active and semi-stabilized sand dunes; vegetation consists of scattered stands of Shinnery oak and sand sagebrush; it seeks shelter in burrows, under leaf litter, or by burrowing into loose sand. The lizard is absent where blow-outs, topographic relief, or shin-oak are lacking.

Project Analysis: The project area falls in an arid grassland utilized for cattle grazing. The dominant vegetation in the project area consists of various forbs with a scattering of grasses. There are no shin-oak, blowouts or topographic relief within the project area.

Direct, Indirect and Cumulative Effects: Due to the fact that no shin-oak, blowouts or topographic relief within the project area, direct, indirect or cumulative effects are expected.

Determination: The habitat in the project area is somewhat suitable, however, due to the absence of shin-oak, blowouts or topographic relief it is unlikely this species will be present within the project area. Therefore, a determination of **"No Impact"** has been assessed to the project area.

1.7.3 Swift Fox (*Vulpes velox*)

Environmental Baseline: Swift foxes live primarily in short grass prairies and deserts. They often form their dens in sandy soils on open prairies, along fences or in plowed fields.

Project Analysis: The project area falls in an arid grassland utilized for cattle grazing. The dominant vegetation in the project area consists of various forbs with a scattering of grasses.

Direct, Indirect and Cumulative Effects: Due to the project being located in an arid grassland with sandy soil it is possible this species may utilize the project area. Direct and indirect effects include but are not limited to displacement of individuals or possibility of mortality due to increased vehicle traffic within the project area. Cumulative effects may include further displacement or loss of habitat due to future oil operations.

Determination: The habitat in the project area is suitable. However, this species is highly mobile and able to avoid most adverse impacts. Therefore, a determination of **"May Impact Individuals but not likely to Cause a Trend to Federal Listing or a Loss of Viability"** has been assessed to the project area.

1.7.4 Loggerhead Shrike (*Lanius ludovicianus*)

Environmental Baseline: Loggerhead Shrike prefers open country with scattered shrubs and trees, but the species can also be found in more heavily wooded habitats with large openings and in very short habitats with few or no trees.

Project Analysis: The project area falls in an arid grassland utilized for cattle grazing. The dominant vegetation in the project area consists of various forbs with a scattering of grasses.

Direct, Indirect and Cumulative Effects: Due to the project being located in an arid grassland with a majority shrub coverage. Direct, cumulative and indirect effects include but are not limited a loss of foraging habitat.

Determination: The habitat in the project area is suitable. However, due to the lack of trees adequate shrubs it is unlikely this habitat would be highly utilized. Therefore, a determination of **"No Impact"** has been assessed to the project area.

1.8 Determination of Effect

Federally Endangered or Threatened Species:
A determination of **"No Effect"** for all federally listed species has been made for the project.

New Mexico Species of Concern:
A determination of **"May Impact Individuals but not likely to Cause a Trend to Federal Listing or a Loss of Viability"** has been assessed to the following species:

Swift Fox (*Vulpes velox*)

A determination of **"No Impact"** on all other New Mexico Species of Concern has been assessed for this project.

Prepared By: _____

Troy Zaikis
Lead Wildlife Biologist/Environmental Ecologist

Dated: 3/4/14

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New Mexico Ecological Services Field Office
2105 OSUNA ROAD NE
ALBUQUERQUE, NM 87113
PHONE: (505)346-2525 FAX: (505)346-2542
URL: www.fws.gov/southwest/es/NewMexico/

Consultation Tracking Number: 02ENNM00-2014-SLI-0425 July 14, 2014
Project Name: Nunlee Federal 009

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project.

To Whom It May Concern:

Thank you for your recent request for information on federally listed species and important wildlife habitats that may occur in your project area. The U.S. Fish and Wildlife Service (Service) has responsibility for certain species of New Mexico wildlife under the Endangered Species Act (ESA) of 1973 as amended (16 USC 1531 et seq.), the Migratory Bird Treaty Act (MBTA) as amended (16 USC 701-715), and the Bald and Golden Eagle Protection Act (BGEPA) as amended (16 USC 668-668c). We are providing the following guidance to assist you in determining which federally imperiled species may or may not occur within your project area and to recommend some conservation measures that can be included in your project design.

FEDERALLY-LISTED SPECIES AND DESIGNATED CRITICAL HABITAT

Attached is a list of endangered, threatened, and proposed species that may occur in your project area. Your project area may not necessarily include all or any of these species. Under the ESA, it is the responsibility of the Federal action agency or its designated representative to determine if a proposed action "may affect" endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with the Service further. Similarly, it is the responsibility of the Federal action agency or project proponent, not the Service, to make "no effect" determinations. If you determine that your proposed action will have "no effect" on threatened or endangered species or their respective critical habitat, you do not need to seek concurrence with the Service. Nevertheless, it is a violation of Federal law to harm or harass any federally-listed threatened or endangered fish or wildlife species without the appropriate permit.

If you determine that your proposed action may affect federally-listed species, consultation with the Service will be necessary. Through the consultation process, we will analyze information contained in a biological assessment that you provide. If your proposed action is associated with Federal funding or permitting, consultation will occur with the Federal agency under section

7(a)(2) of the ESA. Otherwise, an incidental take permit pursuant to section 10(a)(1)(B) of the ESA (also known as a habitat conservation plan) is necessary to harm or harass federally listed threatened or endangered fish or wildlife species. In either case, there is no mechanism for authorizing incidental take "after-the-fact." For more information regarding formal consultation and HCPs, please see the Service’s Consultation Handbook and Habitat Conservation Plans at www.fws.gov/endangered/esa-library/index.html#consultations.

The scope of federally listed species compliance not only includes direct effects, but also any interrelated or interdependent project activities (e.g., equipment staging areas, offsite borrow material areas, or utility relocations) and any indirect or cumulative effects that may occur in the action area. The action area includes all areas to be affected, not merely the immediate area involved in the action. Large projects may have effects outside the immediate area to species not listed here that should be addressed. If your action area has suitable habitat for any of the attached species, we recommend that species-specific surveys be conducted during the flowering season for plants and at the appropriate time for wildlife to evaluate any possible project-related impacts.

Candidate Species and Other Sensitive Species

A list of candidate and other sensitive species in your area is also attached. Candidate species and other sensitive species are species that have no legal protection under the ESA, although we recommend that candidate and other sensitive species be included in your surveys and considered for planning purposes. The Service monitors the status of these species. If significant declines occur, these species could potentially be listed. Therefore, actions that may contribute to their decline should be avoided.

Lists of sensitive species including State-listed endangered and threatened species are compiled by New Mexico state agencies. These lists, along with species information, can be found at the following websites:

Biota Information System of New Mexico (BISON-M): www.bison-m.org

New Mexico State Forestry. The New Mexico Endangered Plant Program: www.emnrd.state.nm.us/SFD/ForestMgt/Endangered.html

New Mexico Rare Plant Technical Council, New Mexico Rare Plants: nmrareplants.unm.edu

Natural Heritage New Mexico, online species database: nhnm.unm.edu

WETLANDS AND FLOODPLAINS

Under Executive Orders 11988 and 11990, Federal agencies are required to minimize the destruction, loss, or degradation of wetlands and floodplains, and preserve and enhance their natural and beneficial values. These habitats should be conserved through avoidance, or mitigated to ensure that there would be no net loss of wetlands function and value.

We encourage you to use the National Wetland Inventory (NWI) maps in conjunction with ground-truthing to identify wetlands occurring in your project area. The Service's NWI program

website, www.fws.gov/wetlands/Data/Mapper.html integrates digital map data with other resource information. We also recommend you contact the U.S. Army Corps of Engineers for permitting requirements under section 404 of the Clean Water Act if your proposed action could impact floodplains or wetlands.

MIGRATORY BIRDS

The MBTA prohibits the taking of migratory birds, nests, and eggs, except as permitted by the Service's Migratory Bird Office. To minimize the likelihood of adverse impacts to migratory birds, we recommend construction activities occur outside the general bird nesting season from March through August, or that areas proposed for construction during the nesting season be surveyed, and when occupied, avoided until the young have fledged.

We recommend review of Birds of Conservation Concern at website www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BCC.html to fully evaluate the effects to the birds at your site. This list identifies birds that are potentially threatened by disturbance and construction.

BALD AND GOLDEN EAGLES

The bald eagle (*Haliaeetus leucocephalus*) was delisted under the ESA on August 9, 2007. Both the bald eagle and golden eagle (*Aquila chrysaetos*) are still protected under the MBTA and BGEPA. The BGEPA affords both eagles protection in addition to that provided by the MBTA, in particular, by making it unlawful to "disturb" eagles. Under the BGEPA, the Service may issue limited permits to incidentally "take" eagles (e.g., injury, interfering with normal breeding, feeding, or sheltering behavior nest abandonment). For information on bald and golden eagle management guidelines, we recommend you review information provided at www.fws.gov/midwest/eagle/guidelines/bgepa.html.

On our web site www.fws.gov/southwest/es/NewMexico/SBC_intro.cfm, we have included conservation measures that can minimize impacts to federally listed and other sensitive species. These include measures for communication towers, power line safety for raptors, road and highway improvements, spring developments and livestock watering facilities, wastewater facilities, and trenching operations.

We also suggest you contact the New Mexico Department of Game and Fish, and the New Mexico Energy, Minerals, and Natural Resources Department, Forestry Division for information regarding State fish, wildlife, and plants.

Thank you for your concern for endangered and threatened species and New Mexico’s wildlife habitats. We appreciate your efforts to identify and avoid impacts to listed and sensitive species in your project area. For further consultation on your proposed activity, please call 505-346-2525 or email nmesfo@fws.gov and reference your Service Consultation Tracking Number.

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Nunlee Federal 009

Official Species List

Provided by:

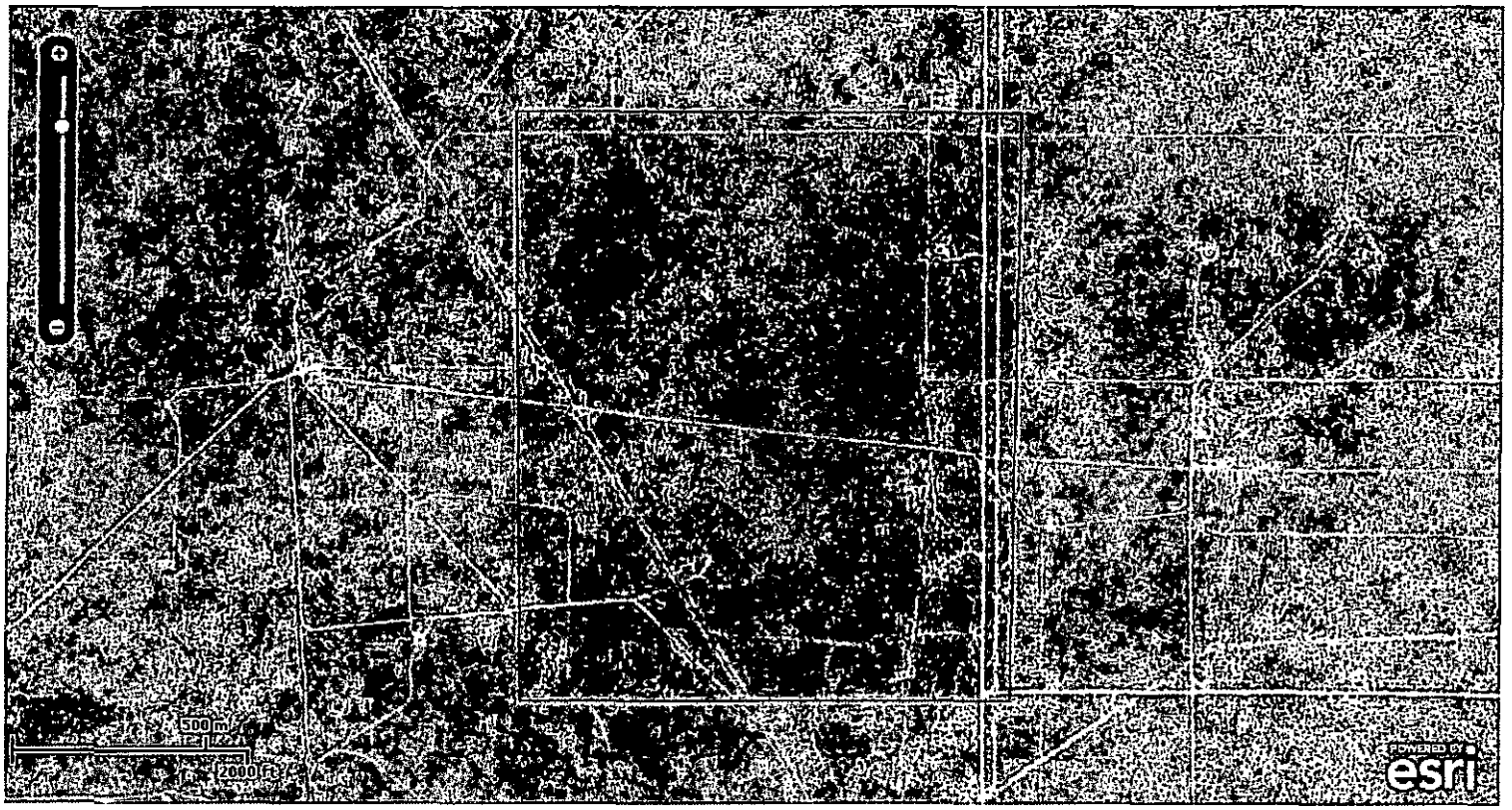
New Mexico Ecological Services Field Office
2105 OSUNA ROAD NE
ALBUQUERQUE, NM 87113
(505) 346-2525
http://www.fws.gov/southwest/es/NewMexico/

Consultation Tracking Number: 02ENNM00-2014-SLI-0425
Project Type: Oil Or Gas
Project Description: well pad & lease road

United States Department of Interior
Fish and Wildlife Service

Project name: Nunlee Federal 009

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-104.0497585 32.8858753, -104.0355965 32.8858032, -104.035854 32.8721797, -104.0495869 32.8721797, -104.0497585 32.8858753)))

Project Counties: Eddy, NM

United States Department of Interior
Fish and Wildlife Service

Project name: Nunlee Federal 009

Endangered Species Act Species List

There are a total of 15 threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Birds	Status	Has Critical Habitat	Condition(s)
Least tern *(Sterna antillarum)* Population: interior pop.	Endangered		
Lesser prairie-chicken *(Tympanuchus pallidicinctus)*	Threatened		
Mexican Spotted owl *(Strix occidentalis lucida)* Population: Entire	Threatened	Final designated	
northern aplomado falcon *(Falco femoralis septentrionalis)* Population: U.S.A (AZ, NM)	Experimental Population, Non-Essential		
Piping Plover *(Charadrius melodus)* Population: except Great Lakes watershed	Threatened	Final designated	
Southwestern Willow flycatcher *(Empidonax traillii extimus)* Population: Entire	Endangered	Final designated	
Sprague's Pipit *(Anthus spragueii)*	Candidate		
Clams			
Texas Hornshell *(Popenaias popei)*	Candidate		

Fishes			
Pecos Bluntnose shiner *(Notropis simus pecosensis)* Population: Entire	Threatened	Final designated	
Pecos gambusia *(Gambusia nobilis)* Population: Entire	Endangered		
Flowering Plants			
Gypsum wild-buckwheat *(Eriogonum gypsophilum)*	Threatened	Final designated	
Kuenzler Hedgehog cactus *(Echinocereus fendleri var. kuenzleri)*	Endangered		
Lee Pincushion cactus *(Coryphantha sneedii var. leei)*	Threatened		
Sneed Pincushion cactus *(Coryphantha sneedii var. sneedii)*	Endangered		
Wright's Marsh thistle *(Cirsium wrightii)*	Candidate		

United States Department of Interior
Fish and Wildlife Service

Project name: Nunlee Federal 009

Critical habitats that lie within your project area

There are no critical habitats within your project area.

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., Sante 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.
Sante Fe, NM 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1]API Number	[2]Pool Code	[3]Pool Name

[4]Property Code	[5]Property Name	[6]Well Number
	NUNLEE FEDERAL	#009

[7]OGRID No.	[8]Operator Name	[9]Elevation
	TANDEM ENERGY CORP.	3672'

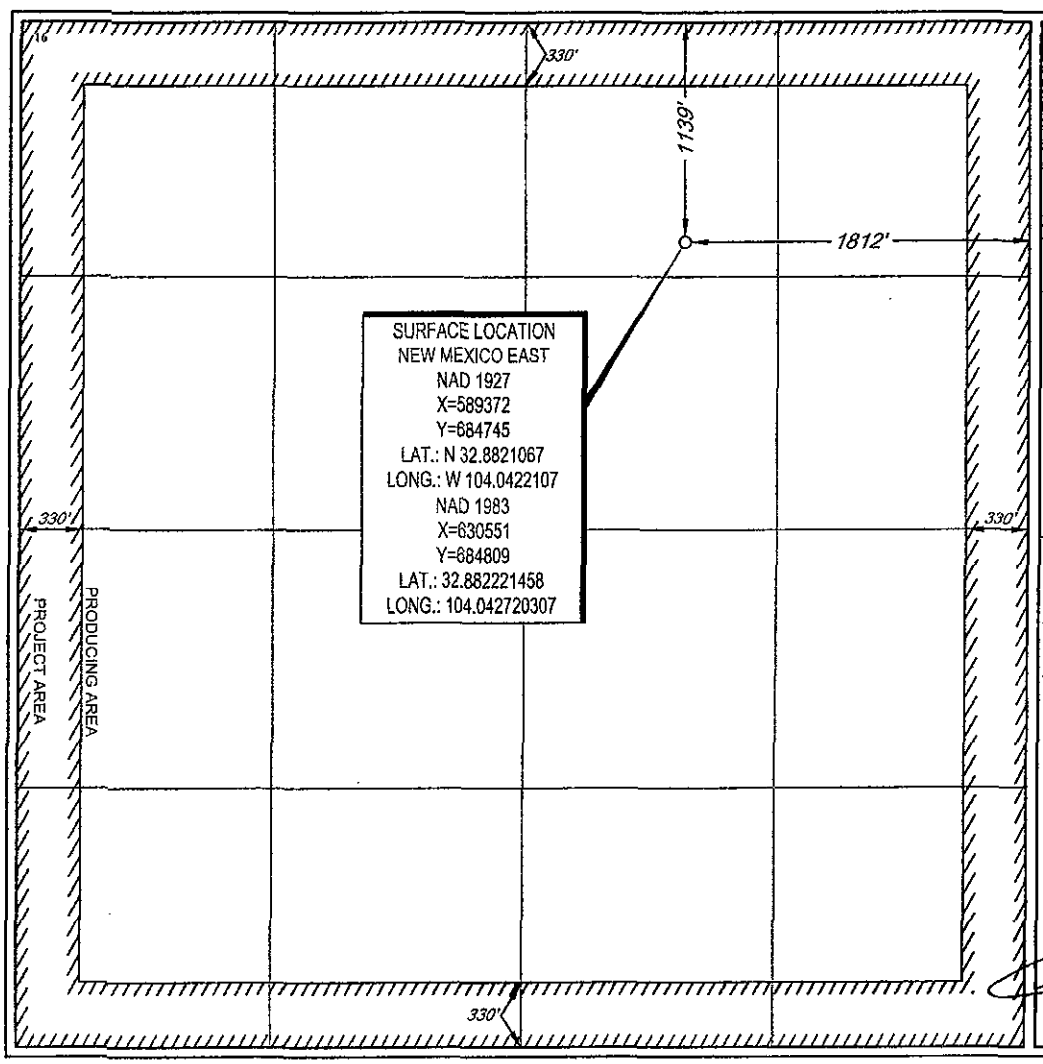
[10]Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	35	16-S	29-E	-	1139'	NORTH	1812'	EAST	EDDY

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
-	-	-	-	-	-	-	-	-	-

[12]Dedicated Acres	[13]Joint or Infill	[14]Consolidation Code	[15]Order No.
640.00			

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.



[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 Date

Printed Name

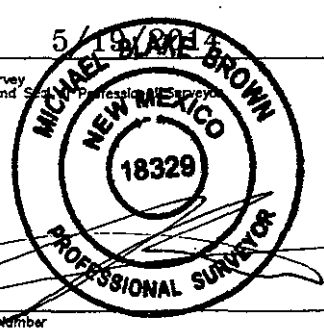
E-mail Address

[18]SURVEYOR CERTIFICATION

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

5/19/2004

Date of Survey
Signature and Seal of Professional Surveyor

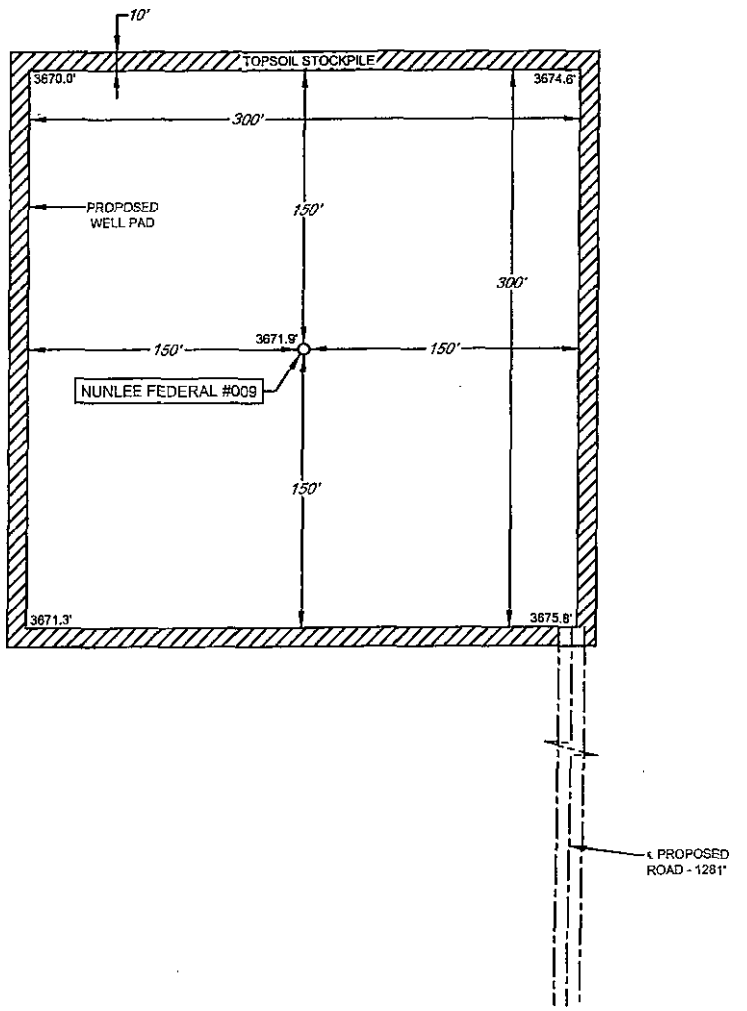


Certificate Number

TANDEM ENERGY CORP.

SECTION 35, TOWNSHIP 16 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, NEW MEXICO

DETAIL VIEW
SCALE: 1" = 100'



LEASE NAME & WELL NO.: NUNLEE FEDERAL #009

#009 LATITUDE N 32.8822214 #009 LONGITUDE W 104.0427203

LEGEND

EXISTING ROAD
SECTION LINE
EXISTING PIPELINE

N

SCALE: 1" = 100'

0' 50' 100'

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE OF THE *NORTH AMERICAN DATUM 1983, U.S. SURVEY FEET*

THIS PROPOSED PAD SITE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY TANDEM ENERGY CORP. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

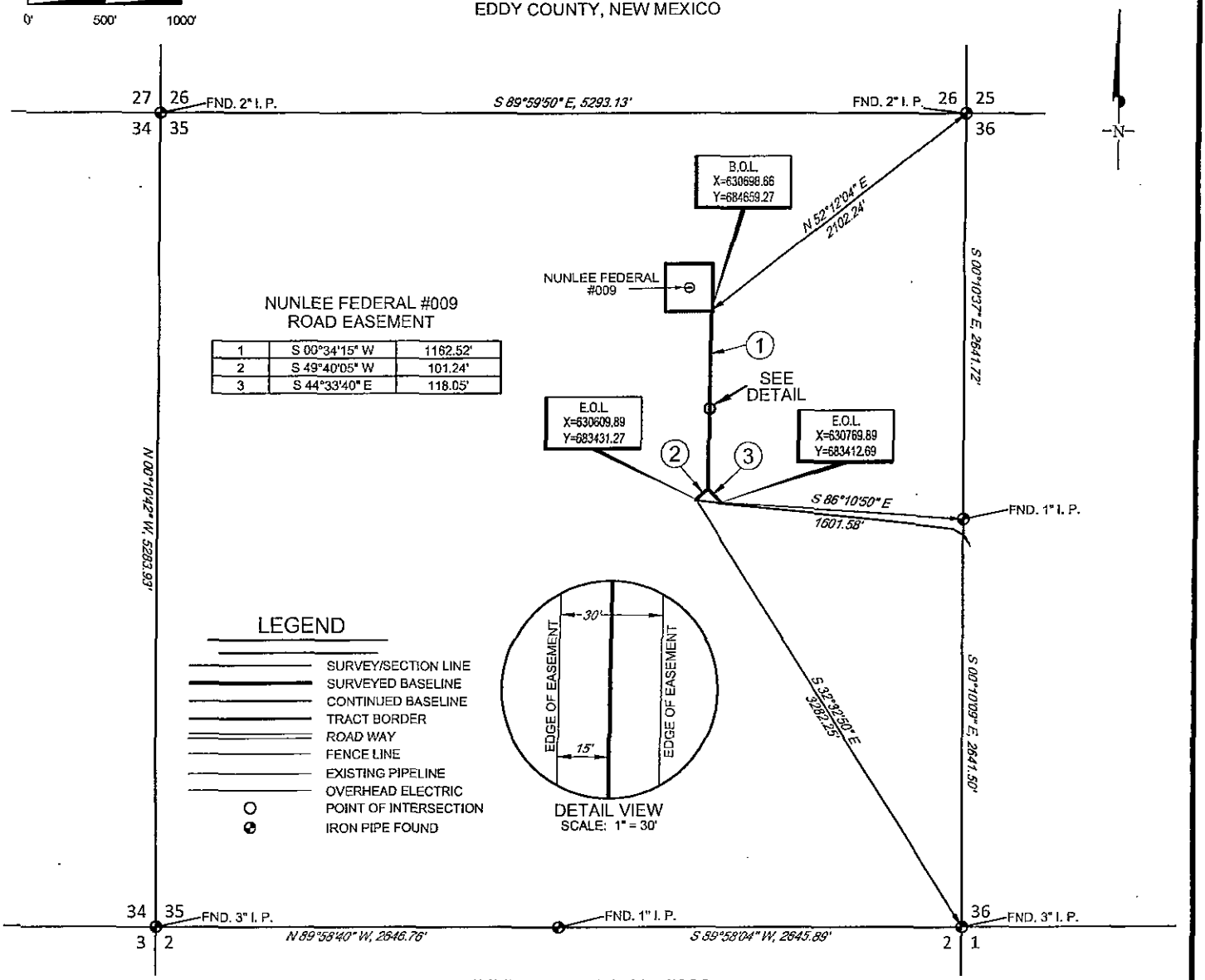
TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, Ste. 197 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7548
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

ORIGINAL DOCUMENT SIZE: 8.5" X 11"

SCALE: 1" = 1000'

0' 500' 1000'

SECTION 35, TOWNSHIP 16 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, NEW MEXICO



NUNLEE FEDERAL #009
ROAD EASEMENT

Being a proposed road easement being 30 feet in width, 15 feet left, and 15 feet right of the above platted centerline total line footage containing 1381.83 feet or 83.75 rods, containing 0.94 acres more or less.

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, Ste. 197 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7548
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

"PRELIMINARY, THIS DOCUMENT SHALL NOT BE RECORDED FOR ANY PURPOSE."

Michael Blake Brown, P.S. No. 18329
JUNE 24, 2014

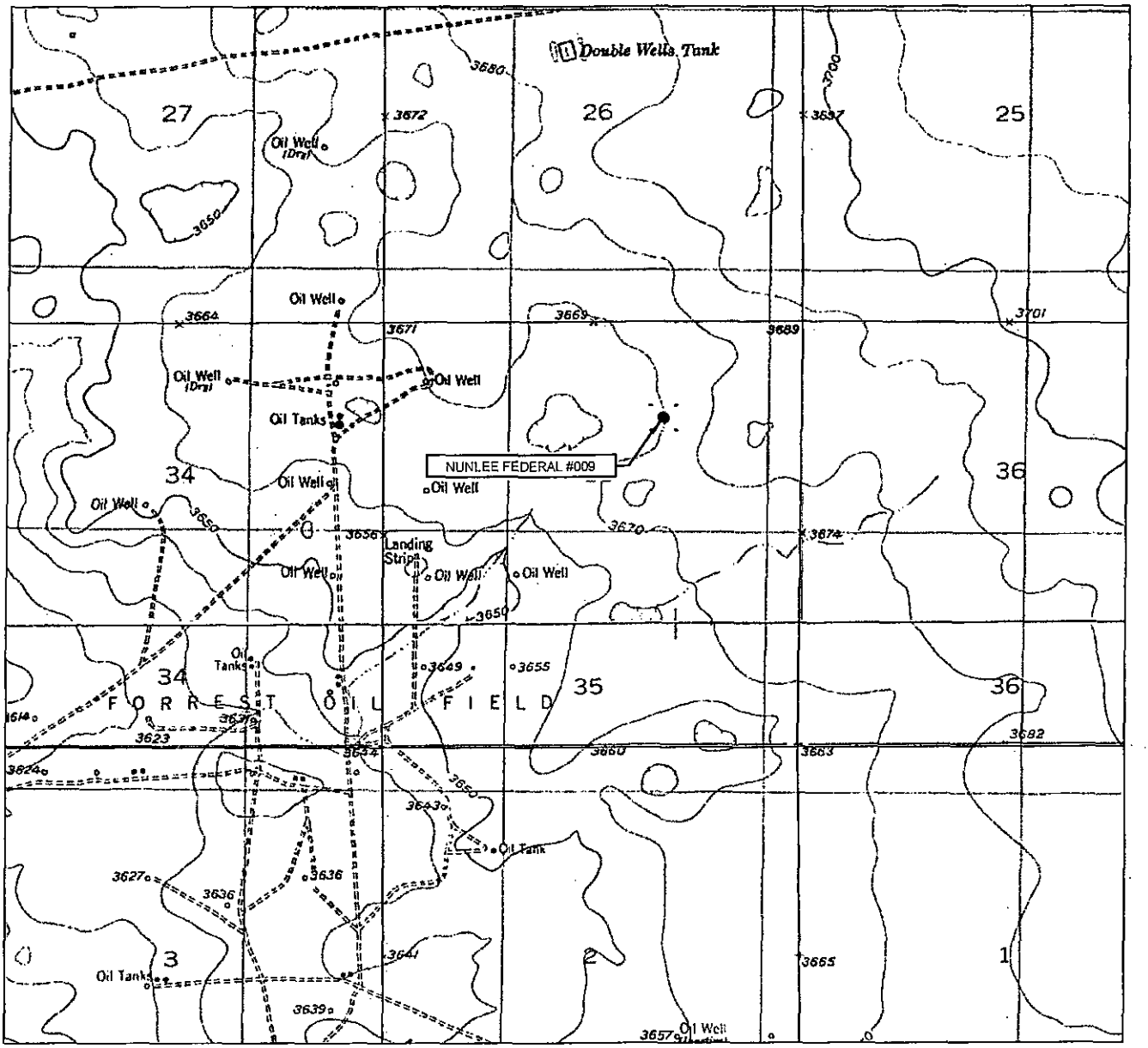
TANDEM ENERGY CORP.

NUNLEE FEDERAL #009 ROAD EASEMENT	REVISION: INT	DATE
DATE: 06/24/14		
FILE: EP_NUNLEE_FEDERAL_009_ROAD		
DRAWN BY: C.W.N		
SHEET: 1 OF 1		

NOTES:
1. ORIGINAL DOCUMENT SIZE: 8.5" X 1 1"
2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE, U.S. SURVEY FEET, NORTH AMERICAN DATUM 19 27.
3. CERTIFICATION IS MADE ONLY TO THE LOCATION OF THIS EASEMENT, IN RELATION TO THE EVIDENCE FOUND DURING A FIELD SURVEY, MADE ON THE GROUND, UNDER MY SUPERVISION, AND USING DOCUMENTATION PROVIDED BY EOG RESOURCES, INC . ONLY UTILITIES/EASEMENTS THAT WERE VISIBLE ON THE DATE OF THIS SURVEY, WITHIN/ADJOINING THIS EASEMENT, HAVE BEEN LOCATED AS SHOWN HEREON OF WHICH I HAVE KNOWLEDGE. THIS CERTIFICATION IS LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE, AND MADE FOR THIS TRANSACTION ONLY.
4. B.O.L./P.O.B. = BEGINNING OF LINE/POINT OF BEGINNING
5. E.O.L./P.O.E. = END OF LINE/POINT OF EXIT

S:\SURVEY\TANDEM_ENERGY_CORP\NUNLEE_FEDERAL\FINAL_PRODUCTS\EP_NUNLEE_FEDERAL_009_ROAD.DWG 6/24/2014 1:56:16 PM cnewmark

LOCATION & ELEVATION VERIFICATION MAP



TANDEM ENERGY CORP.

LEASE NAME & WELL NO.: NUNLEE FEDERAL #009

SECTION 35 TWP 16-S RGE 29-E SURVEY N.M.P.M.
COUNTY EDDY STATE NM ELEVATION 3672'
DESCRIPTION 1139' FNL & 1812' FEL

LATITUDE N 32.8822214 LONGITUDE W 104.0427203

-N-

SCALE: 1" = 2000'
0' 1000' 2000'

THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY TANDEM ENEGY CORP. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE OF THE NORTH AMERICAN DATUM 1983, U.S. SURVEY FEET.

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, Ste. 197 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7548
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
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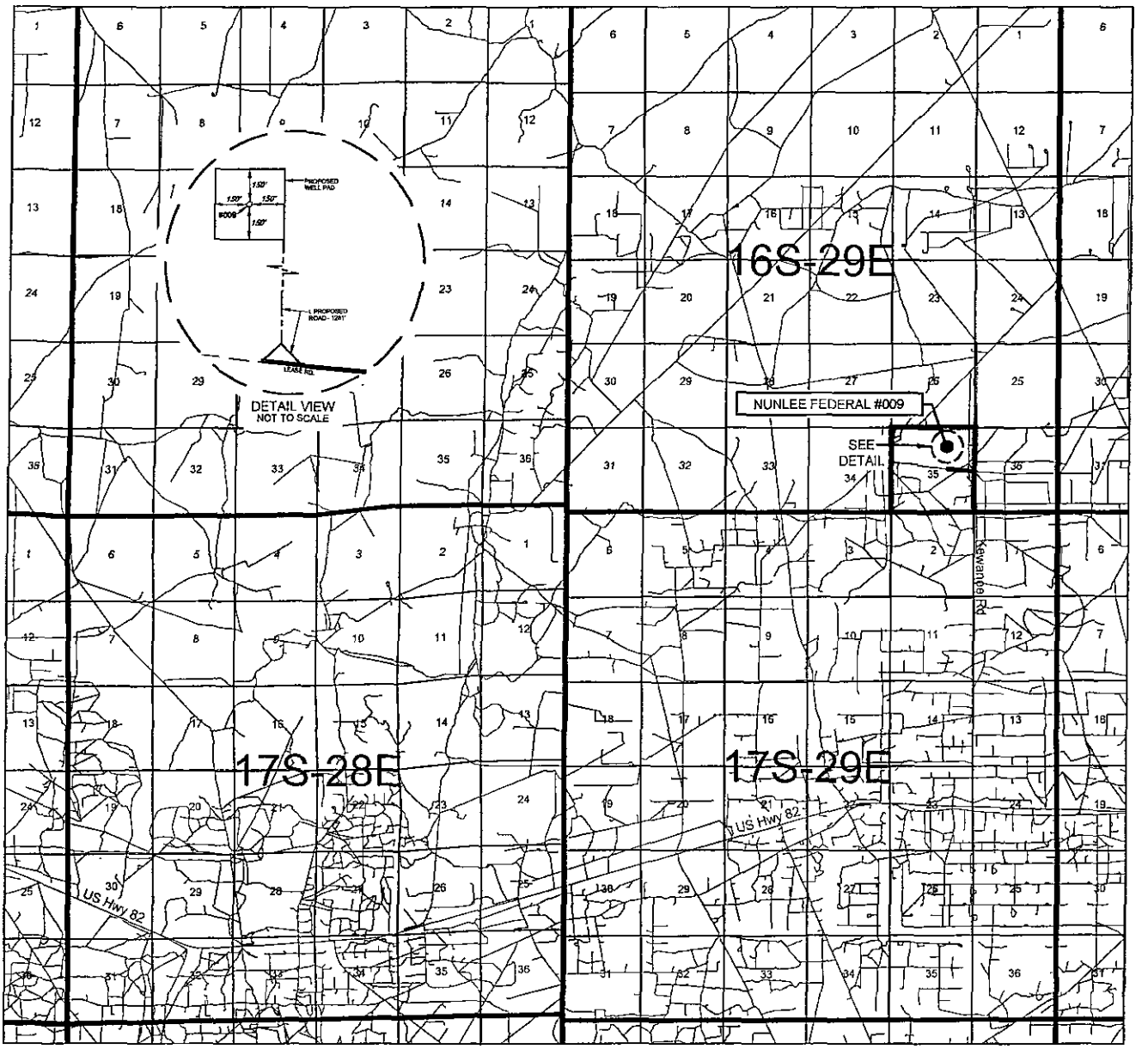
VICINITY MAP



TANDEM ENERGY CORP.

LEASE NAME & WELL NO.: NUNLEE FEDERAL #009

SECTION 35 TWP 16-S RGE 29-E SURVEY N.M.P.M.
COUNTY EDDY STATE NM
DESCRIPTION 1139' FNL & 1812' FEL

DISTANCE & DIRECTION FROM INT. OF US-82 E & E MAIN ST., GO EAST ON US-82 E ±21.8 MILES, THENCE NORTH (LEFT) ON KEWANEE RD. ±4.0 MILES, THENCE WEST (LEFT) ON LEASE RD. ±0.35 MILES TO A POINT ±1281 FEET SOUTH OF THE LOCATION.

-N-

SCALE: 1" = 10000'

0' 5000' 10000'

THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY TANDEM ENERGY CORP. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR *ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS* TRANSACTION ONLY.

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED UPON THE NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE OF THE NORTH AMERICAN DATUM 1927, U.S. SURVEY FEET.

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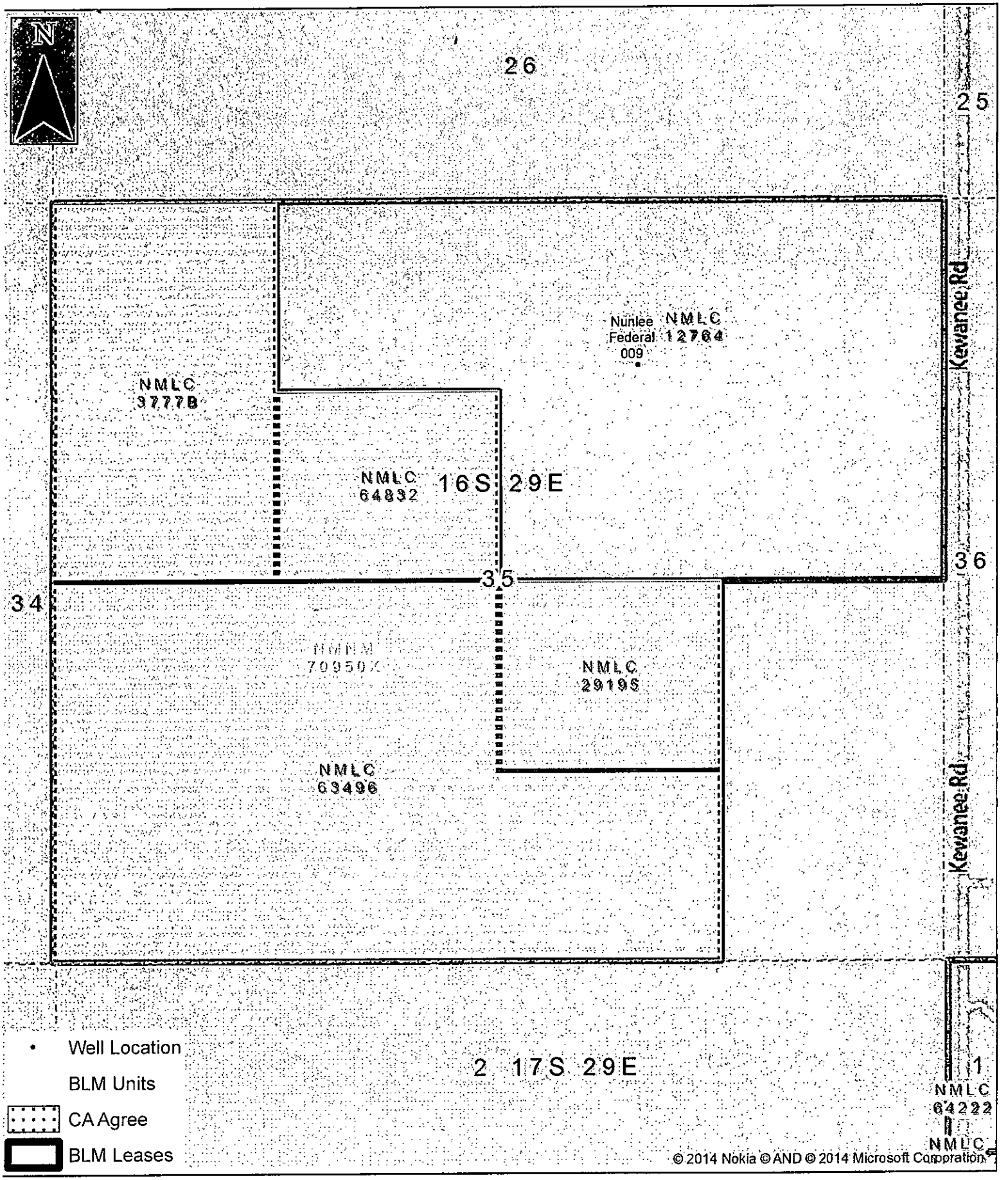


Lease Plat

Tandem Energy Corporation
Nunlee Federal 009
Section 35-16S-29E
Eddy County, NM

Map Created July 24th, 2014
By: Alex Sherman
ASherman@rsenergysolutions

REAGAN SMITH ENERGY SOLUTIONS, INC.

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Tandem Energy Corp
LEASE NO.:	NM12764
WELL NAME & NO.:	9-Nunlee Federal
SURFACE HOLE FOOTAGE:	1139'/N & 1812'/E
BOTTOM HOLE FOOTAGE	'/ & '/
LOCATION:	Section 35, T. 16 S., R. 29 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

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

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

IV. NOXIOUS WEEDS

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

V. SPECIAL REQUIREMENT(S)

Drilling portion:

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

ON TWO STRING DESIGN – CONTINGENCY CASING WILL BE REQUIRED IF LOST CIRCULATION (TOTAL LOSS) OCCURS WHILE DRILLING THE SURFACE HOLE. THE SURFACE HOLE WILL HAVE TO BE REAMED AND A LARGER CASING INSTALLED AND THE BLM IS TO BE CONTACTED PRIOR TO RUNNING THE CASING. NOTE: A DEEP CONDUCTOR WILL BE TREATED AND CEMENTED AS A CONTINGENCY CASING.

ON TWO STRING DESIGN WHERE THE SURACE CASING HAD A SUCCESSFUL CEMENT JOB; IF LOST CIRCULATION (TOTAL LOSS) OCCURS WHILE DRILLING THE PRODUCTION HOLE, THE CEMENT PROGRAM FOR THE PRODUCTION 5-21/2" CASING WILL NEED TO BE MODIFIED AND THE BLM IS TO BE CONTACTED PRIOR TO RUNNING THE CASING. A DV TOOL WILL BE REQUIRED.

VI. CONSTRUCTION

A. NOTIFICATION

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

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

B. TOPSOIL

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

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

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

D. FEDERAL MINERAL MATERIALS PIT

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

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

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

F. EXCLOSURE FENCING (CELLARS & PITS)

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

G. ON LEASE ACCESS ROADS

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

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

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

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

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

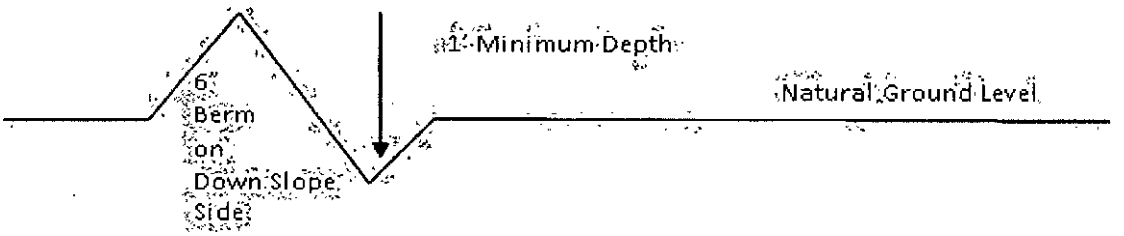
Ditching
Ditching shall be required on both sides of the road.

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

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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

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

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

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

Public Access

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

Construction Steps

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

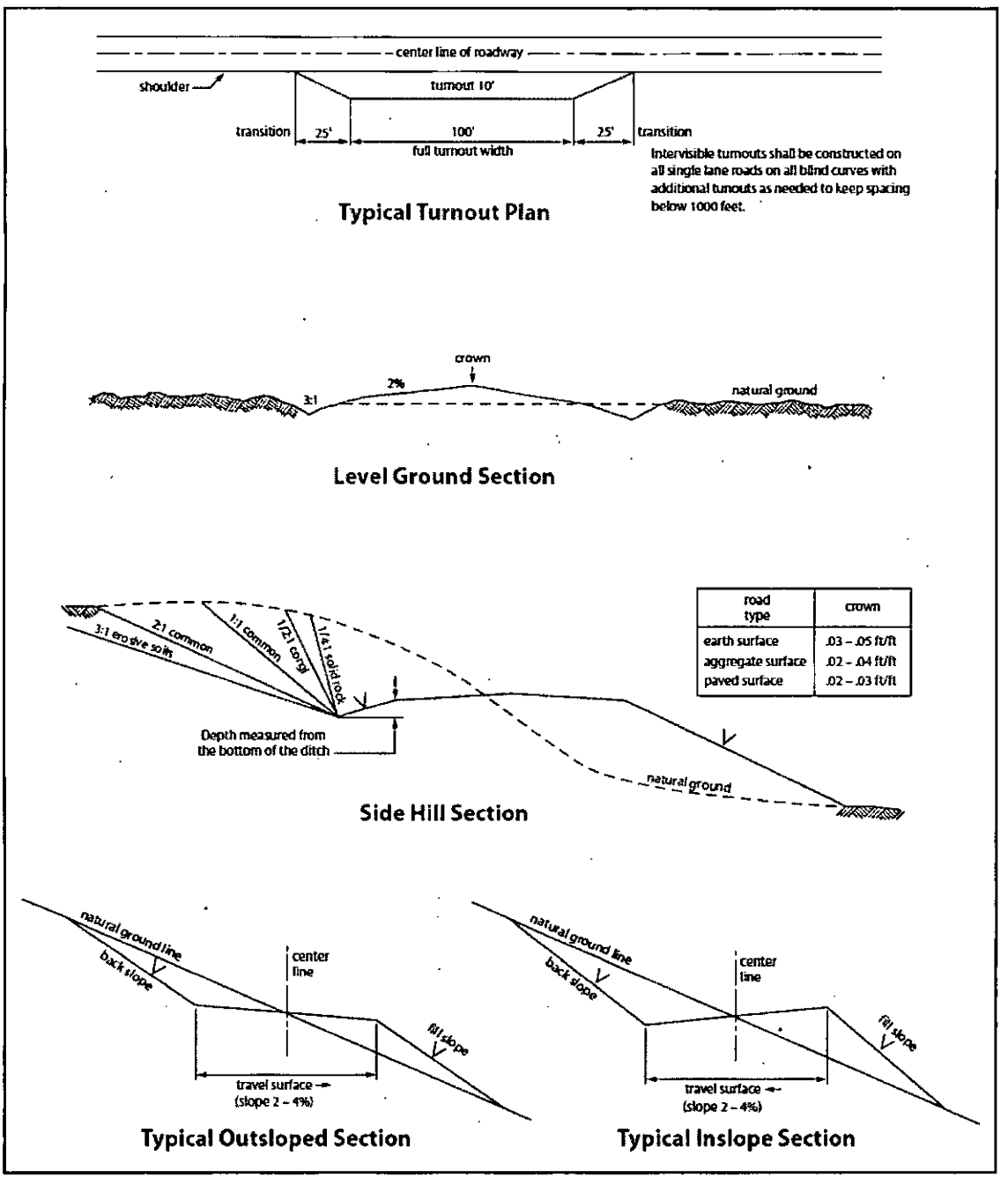


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

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

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

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

1. A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Grayburg** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**

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

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

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

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the

approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

The initial wellhead installed on the well will remain on the well with spools used as needed.

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.

High Cave/Karst
Possibility of water flows in the Salado and Queen.
Possibility of lost circulation in the Artesia Group, Rustler, San Andres, and Grayburg.

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

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ON TWO STRING DESIGN WHERE THE SURACE CASING HAD A SUCCESSFUL CEMENT JOB; IF LOST CIRCULATION (TOTAL LOSS) OCCURS WHILE DRILLING THE PRODUCTION (use proposed hole size) HOLE, THE CEMENT PROGRAM FOR THE PRODUCTION 5-21/2" CASING WILL NEED TO BE MODIFIED AND THE BLM IS TO BE CONTACTED PRIOR TO RUNNING THE CASING. A DV TOOL WILL BE REQUIRED.

1. The **13-3/8** inch surface casing shall be set at approximately **350** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

    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. Drilled with an 8-3/4" hole, the minimum required fill of cement behind the **5-1/2** inch production casing is:

    ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.

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. **In the case where the only BOP installed is an annular preventer, it shall be tested to a minimum of 2000 psi (which may require upgrading to 3M or 5M annular).**

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

4. 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**.

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

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

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

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

D. DRILL STEM TEST

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

E. WASTE MATERIAL AND FLUIDS

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

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

EGF 052015

VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

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

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

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

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

Containment Structures

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

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

IX. INTERIM RECLAMATION

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

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

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

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

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

X. FINAL ABANDONMENT & RECLAMATION

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

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

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by

drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

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

SEED MIXTURE 2 (SANDY LOCATIONS)

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 months prior to purchase. Commercial seed will be 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 to 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 double the amounts listed below. 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 (note: if broadcasting seed, amounts are to be doubled):

Species	**Pound/acre**
Plains Bristlegrass (*Setaria macrostachya*)	2.0
Sand Lovegrass (*Eragrostis trichodes*)	1.0
Sand Dropseed (*Sporobolus cryptandrus*)	1.0

* Pounds of pure live seed = (Pounds of seed) x (Percent purity) x (Percent germination)