

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

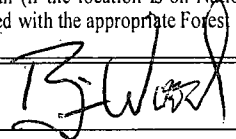
## APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM-048344
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name N/A
2. Name of Operator LRE OPERATING, LLC		7. If Unit or CA Agreement, Name and No. N/A
3a. Address 1111 BAGBY ST., SUITE 4600 HOUSTON, TX 77002	3b. Phone No. (include area code) 713 360-5714	8. Lease Name and Well No. KERSEY WILLIAMS A FEDERAL 12
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 2310' FNL & 1525' FEL At proposed prod. zone 2275' FNL & 1630' FEL		9. API Well No. 30-015- 42837
14. Distance in miles and direction from nearest town or post office* 11 AIR MILES WEST OF LOCO HILLS, NM		10. Field and Pool, or Exploratory ARTESIA; GLORIETA-YESO
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) SHL: 330' BHL: 365'	16. No. of acres in lease 240	11. Sec., T. R. M. or Blk. and Survey or Area SWNE 28-17S-28E
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. SHL: 535' (Kersey #4) BHL: 566' (Oxy #1)	17. Spacing Unit dedicated to this well SWNE	12. County or Parish EDDY
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3,681.1' UNGRADED	19. Proposed Depth TVD: 3,650' & MD: 3,657'	13. State NM
22. Approximate date work will start* 07/31/2014	20. BLM/BIA Bond No. on file NMB-000797 & NMB-000817	23. Estimated duration 1 MONTH


## 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) BRIAN WOOD (PHONE: 505 466-8120)	Date 05/31/2014
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Title  
CONSULTANT (FAX: 505 466-9682)

Approved by (Signature) 	Name (Printed/Typed) Steve Caffey	Date NOV 20 2014
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)

NM OIL CONSERVATION

ARTESIA DISTRICT

Roswell Controlled Water Basin

DEC 08 2014

SEE ATTACHED FOR

Approval Subject to General Requirements  
& Special Stipulations Attached

RECEIVED

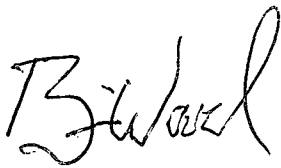
CONDITIONS OF APPROVAL

LRE Operating, LLC  
Kersey Williams A Federal 12  
SHL: 2310' FNL & 1525' FEL  
BHL: 2275' FNL & 1630' FEL  
Sec. 28, T. 17 S., R. 28 E., Eddy County, NM

SURFACE PLAN PAGE 4

REPRESENTATION

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U. S. C. 1001 for the filing of false statements. Executed this 31st day of May, 2014.



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Brian Wood, Consultant  
Permits West, Inc.

37 Verano Loop, Santa Fe, NM 87508

(505) 466-8120

FAX: (505) 466-9682

Cellular: (505) 699-2276

Field representative will be:

Eric McClusky, Production Engineer

LRE Operating, LLC

1111 Bagby St., Suite 4600

Houston, TX 77002

Office: (713) 360-5714

Mobile: (832) 491-3079

FAX: (713) 292-9578

S88°14'30"W 2598.39 FT		S88°13'36"W 2597.70 FT	
NW CORNER SEC. 28 LAT. = 32.8122040°N LONG. = 104.1886738°W	N/4 CORNER SEC. 28 LAT. = 32.8124130°N LONG. = 104.1802222°W	NE CORNER SEC. 28 LAT. = 32.8126233°N LONG. = 104.1717729°W	
S00°39'12"W 2596.51 FT		N00°34'04"E 2612.44 FT	
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p><b>BOTTOM OF HOLE</b>              LAT. = 32.8062347°N              LONG. = 104.1771638°W</p> <p><b>BOTTOM OF HOLE</b></p> </div> <div style="text-align: center;"> <p>1630'</p> <p>1525'</p> </div> </div>			
W/4 CORNER SEC. 28 LAT. = 32.8050694°N LONG. = 104.1887818°W		E/4 CORNER SEC. 28 LAT. = 32.8054448°N LONG. = 104.1718701°W	
SURFACE LOCATION <b>KERSEY WILLIAMS A FEDERAL #12</b> ELEV. = 3681.1' LAT. = 32.8061470°N (NAD27) LONG. = 104.1768233°W			
S00°33'57"W 2598.76 FT			
NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1927 (NAD27), AND ARE IN DECIMAL DEGREE FORMAT.			
SW CORNER SEC. 28 LAT. = 32.7979286°N LONG. = 104.1888769°W		S/4 CORNER SEC. 28 LAT. = 32.7980996°N LONG. = 104.1804411°W	
N88°32'40"E 2593.56 FT		SE CORNER SEC. 28 LAT. = 32.7982679°N LONG. = 104.1719713°W	
N88°34'00"E 2604.01 FT		N00°35'40"E 2611.90 FT	

### "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

Brian Wood

Date

5-31-14

Printed Name

brian@permitswest.com

E-mail Address

### "SURVEYOR CERTIFICATION

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

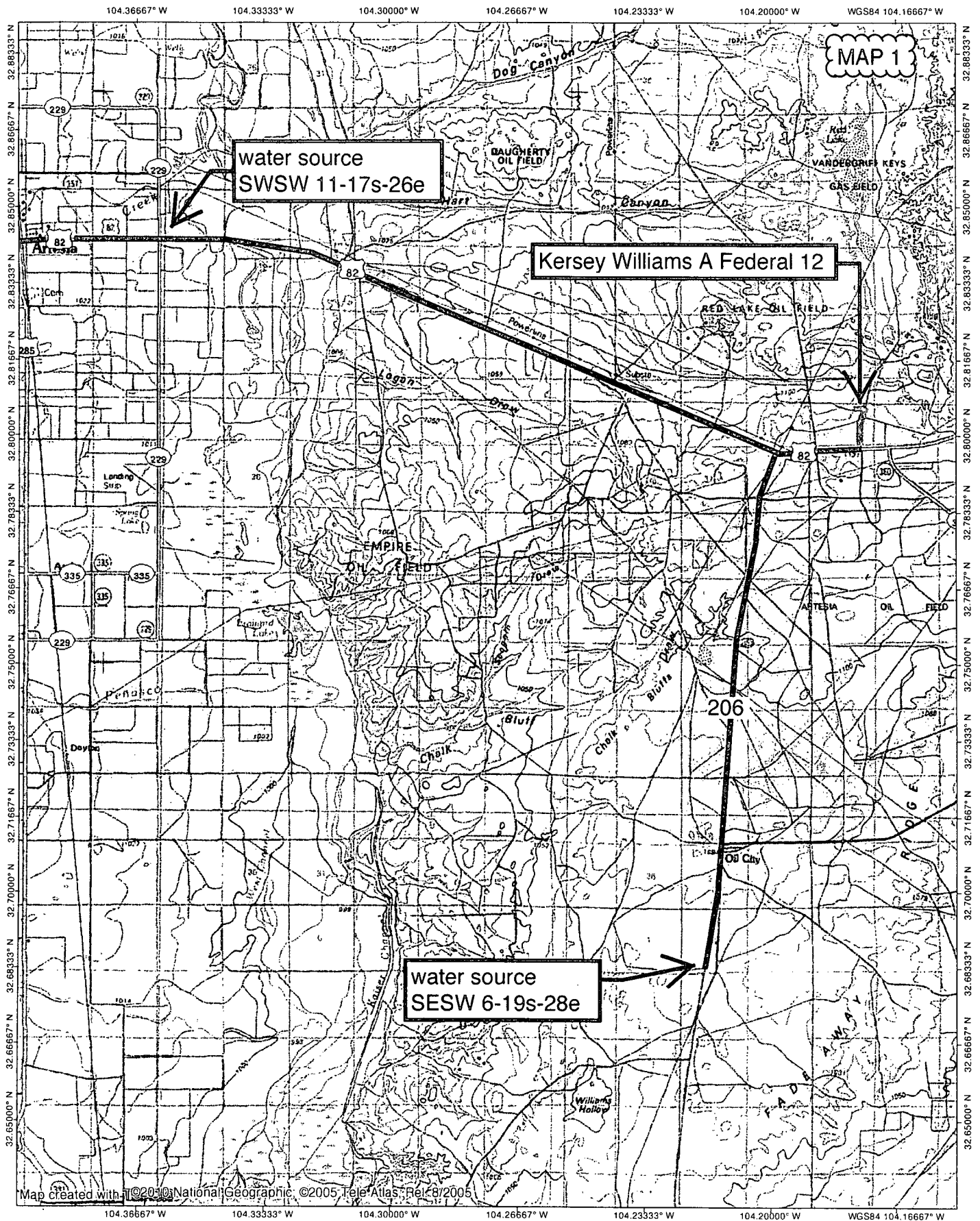
JULY 25, 2014

Date of Survey

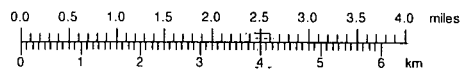
Signature and Seal of Professional Surveyor

Certificate Number: 12797

SURVEY NO. 916



NATIONAL  
GEOGRAPHIC



MAP 2

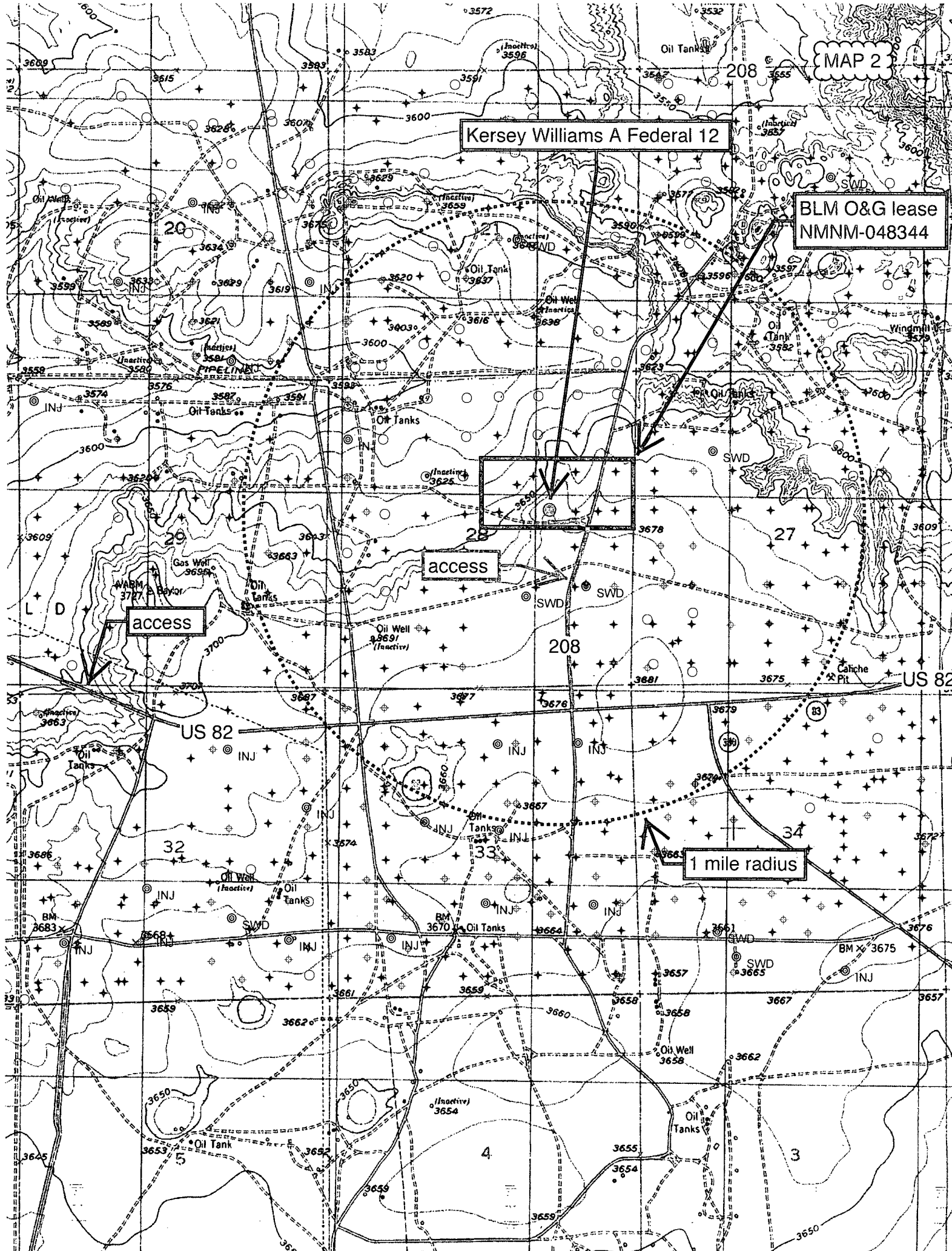
Kersey Williams A Federal 12

BLM O&G lease  
NMNM-048344

access

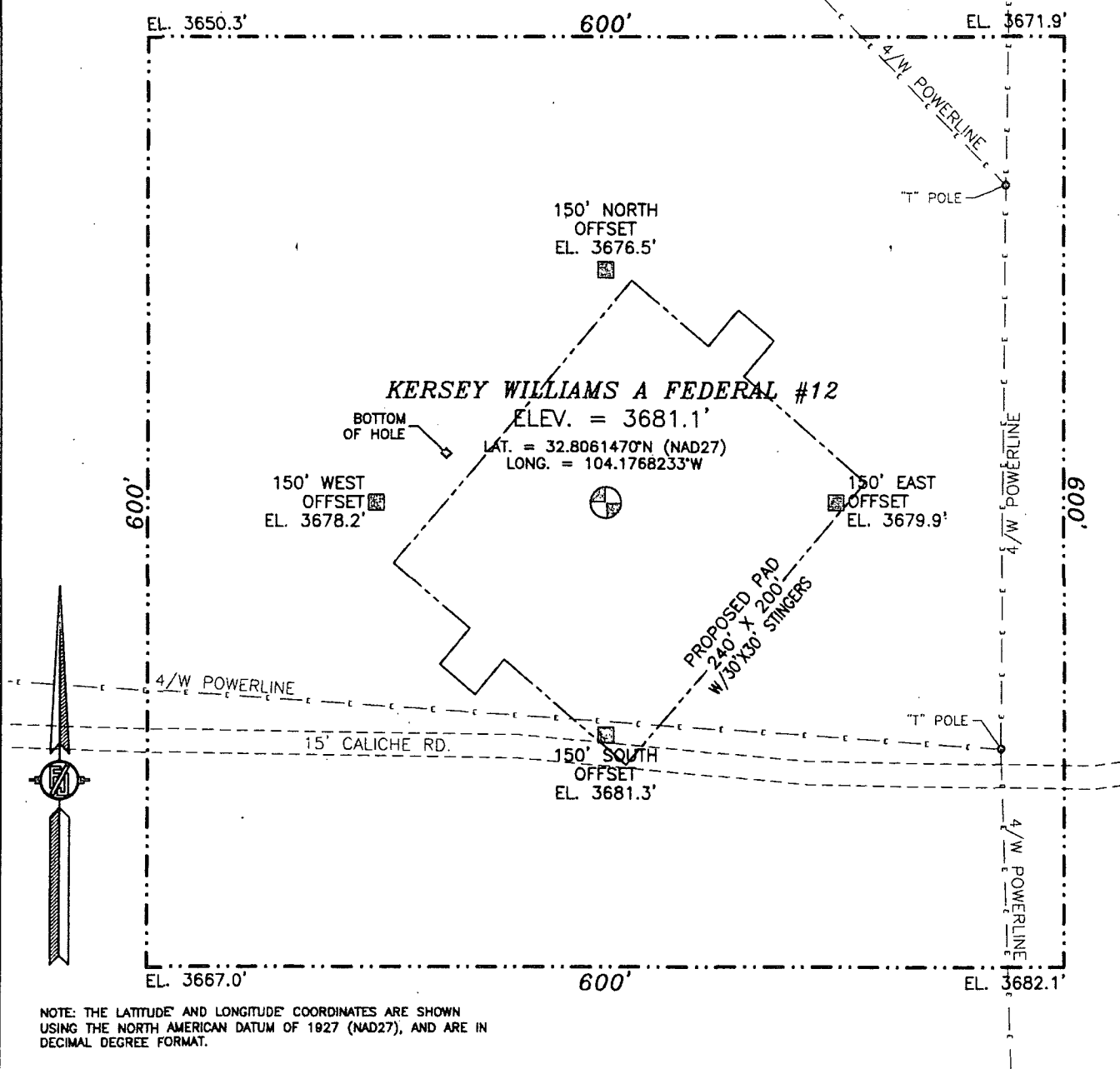
access

1 mile radius



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

MAP 4



NOTE: THE LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1927 (NAD27), AND ARE IN DECIMAL DEGREE FORMAT.

010 50 100 200

SCALE 1" = 100'

**DIRECTIONS TO LOCATION**

FROM STATE HWY. 82 AND CALICHE CR. #208 (RED LAKE RD.) GO NORTH ON CR 208 0.65 MILES, TURN LEFT AND GO WEST 715' AND LOCATION IS ON THE RIGHT (NORTH) 150'.

LRE OPERATING, LLC  
**KERSEY WILLIAMS A FEDERAL #12**  
LOCATED 2310 FT. FROM THE NORTH LINE  
AND 1525 FT. FROM THE EAST LINE OF  
SECTION 28, TOWNSHIP 17 SOUTH,  
RANGE 28 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

JULY 25, 2012

SURVEY NO. 916

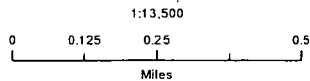
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO





**Kersey Williams A Federal #12  
H<sub>2</sub>S Contingency Plan:  
1 Mile Radius Map**

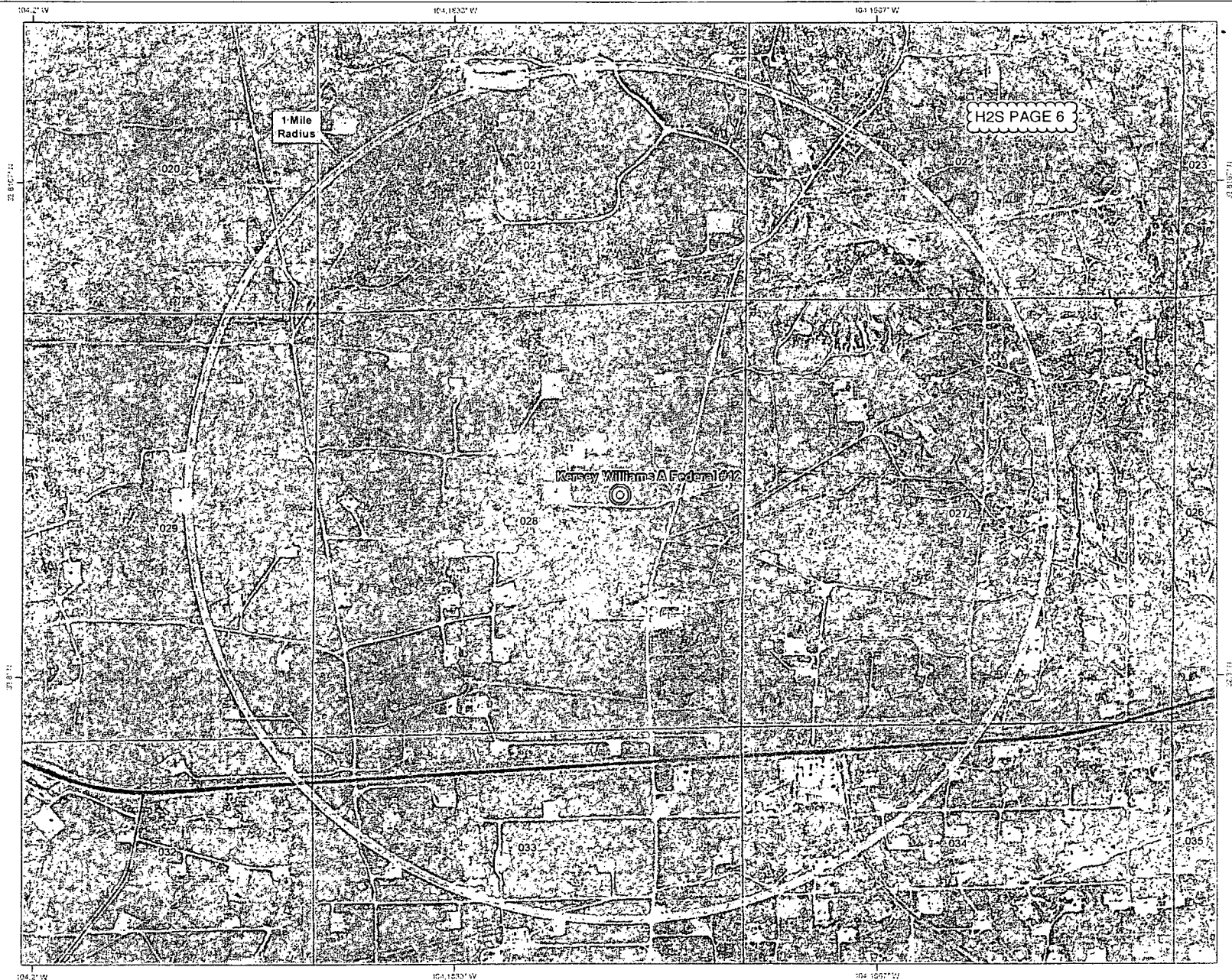
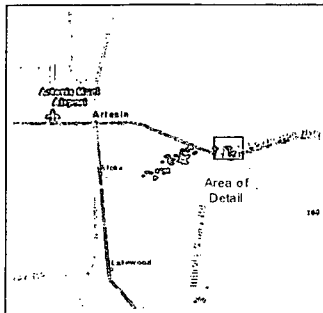
Section 28, Township 17S, Range 28E  
Eddy County, New Mexico



NAD 1927 New Mexico State Plane East  
FIPS 3001 Feet



Prepared by Permits West, Inc., June 2, 2014  
for LRE Operating, LLC



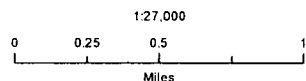


**Kersey Williams A Federal #12  
H<sub>2</sub>S Contingency Plan:  
2 Mile Radius Map**

Section 28, Township 17S, Range 28E  
Eddy County, New Mexico



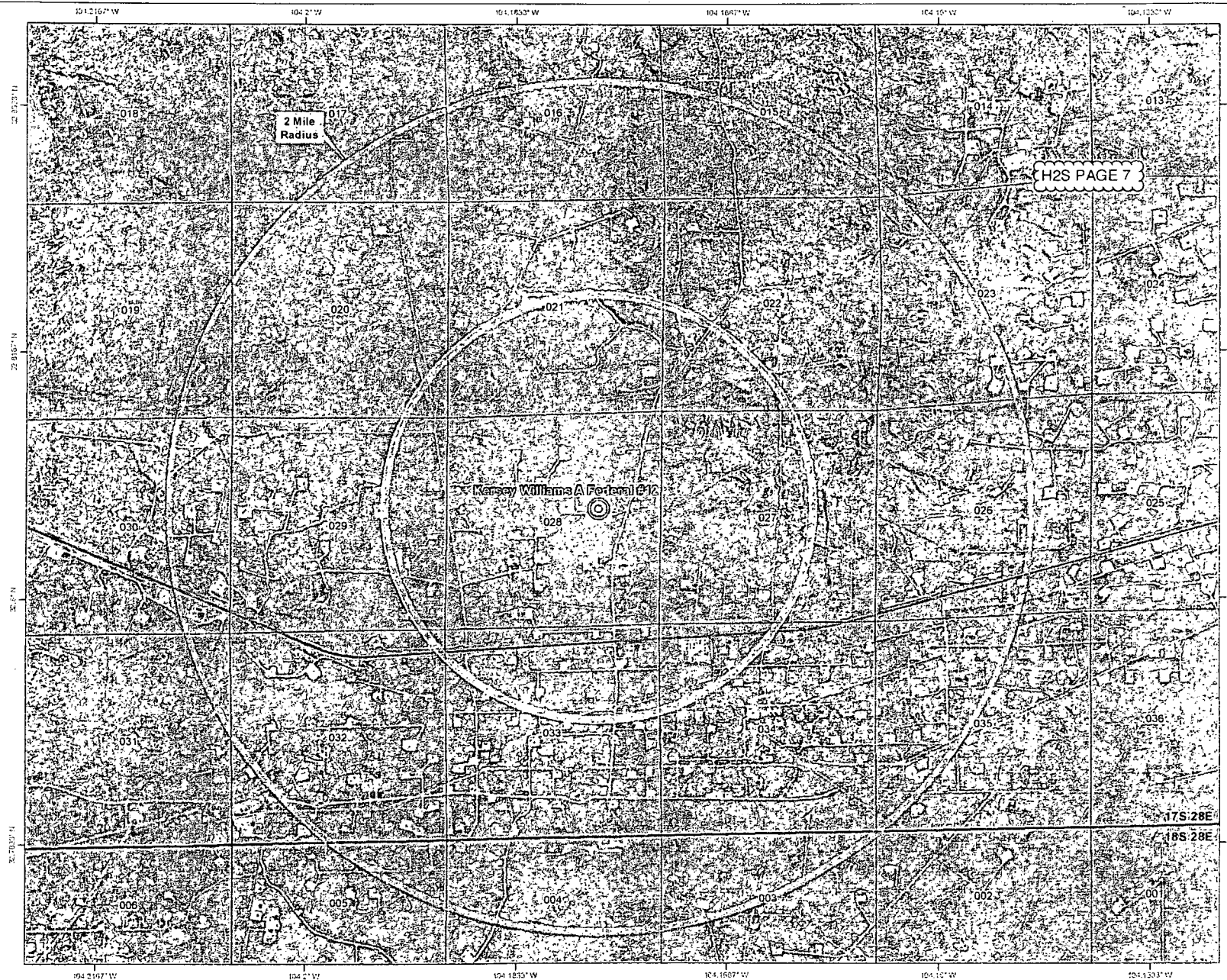
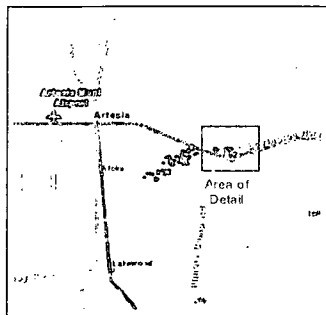
Kersey Williams A Federal #12



NAD 1927 New Mexico State Plane East  
FIPS 3001 Feet

**PERMITS WEST**  
AN IRVING-CLOUD COMPANY

Prepared by Permits West, Inc., June 2, 2014  
for LRE Operating, LLC





LRE Operating, LLC  
Kersey Williams A Federal 12  
SHL: 2310' FNL & 1525' FEL  
BHL: 2275' FNL & 1630' FEL  
Sec. 28, T. 17 S., R. 28 E., Eddy County, NM

DRILLING PLAN PAGE 1

Drilling Program

1. ESTIMATED TOPS

<u>Name</u>	<u>TVD</u>	<u>MD</u>	<u>Content</u>
Quaternary	0'	0'	fresh water
Yates*	350'	350'	oil, gas, saltwater
Seven Rivers	698'	698'	oil, gas, saltwater
Queen	1,230'	1,233'	oil, gas, saltwater
Grayburg	1,655'	1,661'	oil, gas, saltwater
San Andres	1,982'	1,989'	oil, gas, saltwater
Glorieta	3,336'	3,343'	oil, gas, saltwater
Yeso	3,443'	3,450'	oil, gas, saltwater
Total Depth	3,650'	3,657'	---

\* in which surface casing will be set at 450' & contingency string, if needed, will be set at 375'

2. NOTABLE ZONES

Water zones will be protected with casing, cement, and weighted mud. Closest water well (RA 08320) is 6,504' northeast in Section 22. No depth to water has been reported. Water was reported in the (535' east) Kersey Williams A Federal 4 (30-015-21969) at a depth of 344'.

3. PRESSURE CONTROL

A 2,000 psi BOP stack and manifold system will be used. A typical 2,000 system is attached behind the directional plan. If the equipment changes, then a Sundry Notice will be filed. System will meet Onshore Orders 2 (BOP) and 6 (H<sub>2</sub>S) requirements.

LRE Operating, LLC

DRILLING PLAN PAGE 2

Kersey Williams A Federal 12

SHL: 2310' FNL & 1525' FEL

BHL: 2275' FNL & 1630' FEL

Sec. 28, T. 17 S., R. 28 E., Eddy County, NM

The blowout preventer equipment (BOP) will consist of a 2000 psi rated, "XLT" type, National VARCO double ram preventer that will be tested to a maximum pressure of 2000 psi and a low pressure of 300 psi and held for a minimum of 10 minutes with a test plug. The unit will be hydraulically operated and the ram type preventer will be equipped with blind rams on top and drill pipe rams on bottom. The 2M BOP will be installed on the 8-5/8" surface casing and utilized continuously until total depth is reached. All casing strings will be tested as per Onshore Order #2. This also includes a thirty-day (30) test, should the rig still be operating on the same well in thirty days.

Pipe rams will be operated and checked each 24-hour period and each time the drill pipe is out of the hole. These functional tests will be documented on the daily drilling logs.

The BOP equipment will consist of the following:

- Double ram with blind rams (top) and pipe rams (bottom),
- Drilling spool, or blowout preventer with 2 side outlets (choke side and kill side will be at least 2" diameter),
- Kill line (2" minimum),
- At least 2 choke line valves (2" minimum),
- 2" diameter choke line,
- 2 kill valves, one of which will be a check valve (2" minimum),
- 2 chokes, one of which will be capable of remote operation,
- Pressure gauge on choke manifold,
- Upper Kelly cock valve with handle available,
- Safety valve and subs to fit all drill string connections in use,
- All BOPE connections subjected to well pressure will be flanged, welded, or clamped,
- A fill-up line above the uppermost preventer.

LRE Operating, LLC

DRILLING PLAN PAGE 3

Kersey Williams A Federal 12

SHL: 2310' FNL & 1525' FEL

BHL: 2275' FNL & 1630' FEL

Sec. 28, T. 17 S., R. 28 E., Eddy County, NM

#### 4. CASING & CEMENT

Type	Setting Depth	Hole	Casing	#/ft	Grade	Casing Thread	API	Age
Conductor	40'	20"	14"	68.7	B	Weld	No	New
Surface	450'	11"	8.625"	24	J-55	S T & C	Yes	New
Production	3657'	7.785"	5.5"	17	J-55	L T & C	Yes	New

All casing designed with a minimum of:

Burst Safety Factor

Collapse Safety Factor

Tension Safety Factor

1.18

1.20

2.00

casing	depth set	sacks cement	top	gallons per sack	density (ppg)	yield (cu ft per sack)	total cubic feet	% excess	blend
conductor	40'	N/A	GL	ready mix	ready mix	ready mix	ready mix	ready mix	ready mix
surface	450'	300	GL	6.2	14.8	1.35	405	200	1
production lead	3657'	300	GL	9.8	12.8	1.903	571	80	2
production tail	3657'	375	GL	6.2	14.8	1.33	498	50	3

Surface casing blend (1) will be Class C + ¼ pound/sack cello flake + 2% CaCl<sub>2</sub>. Centralizers will be installed as required by Onshore Order 2.

Production casing lead blend (2) will be 35:65 poz Class C + 5% NaCl + 1/4 pound/sack cello flake + 5 pounds per sack LCM-1 + 0.2% R-3 + 6% gel.

Production casing tail blend (3) will be Class C + 0.6% R-3 + ¼ pound/sack cello flake.

LRE Operating, LLC

DRILLING PLAN PAGE 4

Kersey Williams A Federal 12

SHL: 2310' FNL & 1525' FEL

BHL: 2275' FNL & 1630' FEL

Sec. 28, T. 17 S., R. 28 E., Eddy County, NM

Cement volumes will be adjusted based on caliper log volumes and depths of casing and adjusted proportionately for depth changes of the multi stage tool if applicable.

A 13-3/8", 48#, H-40, ST&C, New, API contingency string will be set in the Yates at 375' in a reamed 17-1/2" hole if circulation is lost in cave or karst (cave & karst potential to 350') and not regained. Contingency string will be cemented to the surface with 400 sacks (536 cubic feet) Class C + 1/4 pound per sack cello flake + 2% CaCl<sub>2</sub> mixed to yield 1.34 cubic feet per sack and 14.8 pounds per gallon. Excess >100%

Upon the setting of a 13-3/8" contingency casing string, a 13-5/8" x 13-3/8" weld on wellhead will be installed. A 13-3/8" to 11" adapter flange will be installed and the 11" XLT 2000 psi NOV double ram BOP/BOPE (Schematic attached) will be installed. The BOP will be tested against the casing to 70% of the internal yield pressure of the 13-3/8", 48#, H-40, ST&C (1211 psi) casing and held for 30 minutes before drilling out the 13-3/8" casing shoe. The formation will be drilled with a 10-3/4" bit +/- 50 feet past the 13-3/8" casing shoe into a competent formation and 8-5/8" casing will be set ≈425' in the Yates and cemented with 200 sacks (268 cubic feet) Class C + 1/4 pound per sack cello flake + 2% CaCl<sub>2</sub> mixed to yield 1.34 cubic feet per sack and 14.8 pounds per gallon. Excess >125%

## 5. MUD PROGRAM

An electronic/mechanical mud monitor will with a minimum pit volume totalizer, stroke counter, and flow sensor will be used. All necessary mud products will be on site to handle any abnormal hole condition that could possibly be encountered during the drilling of this well. Circulation could be lost in the Grayburg and San Andres.

LRE Operating, LLC

DRILLING PLAN PAGE 5

Kersey Williams A Federal 12

SHL: 2310' FNL & 1525' FEL

BHL: 2275' FNL & 1630' FEL

Sec. 28, T. 17 S., R. 28 E., Eddy County, NM

Interval	0' - 450'	450' - 3507'	3507' - TD
Type	fresh water	brine	brine with gel & starch
weight	8.5 - 9.2	9.9 - 10.2	9.9 - 10.2
pH	10	10 - 11.5	10 - 11.5
WL	NC	NC	15 - 20
viscosity	28 - 34	30 - 32	32 - 35
MC	NC	NV	1
solids	NC	<2%	<3%
pump rate	300 - 350 gpm	350 - 400 gpm	400 - 450 gpm
other	LCM as needed	salt gel & MF as needed, pump high viscosity sweeps to control solids	salt gel, acid, & MF as needed; pump high viscosity sweeps to control solids

## 6. CORES, TESTS, & LOGS

No core or drill stem test is planned. A triple combo with spectral GR - dual lateral log, micro spherical focused log, & spectral density log will be run after tagging total depth. Will log from total depth to surface. A dual spaced neutron log and compensated spectral natural GR log will be run from total depth to surface.

## 7. DOWN HOLE CONDITIONS

No abnormal pressure or temperature is expected. Maximum expected bottom hole pressure is 1,580 psi. No H<sub>2</sub>S is expected during the drilling phase. Nevertheless, H<sub>2</sub>S monitoring equipment will be on the rig floor and air packs will be available before drilling out of the surface casing. The mud logger will be warned to use a gas trap to detect H<sub>2</sub>S. If any H<sub>2</sub>S is detected, then the mud weight will be increased and H<sub>2</sub>S inhibitors will be added to control the gas. An H<sub>2</sub>S drilling operations contingency plan is attached.



LRE Operating, LLC

DRILLING PLAN PAGE 6

Kersey Williams A Federal 12

SHL: 2310' FNL & 1525' FEL

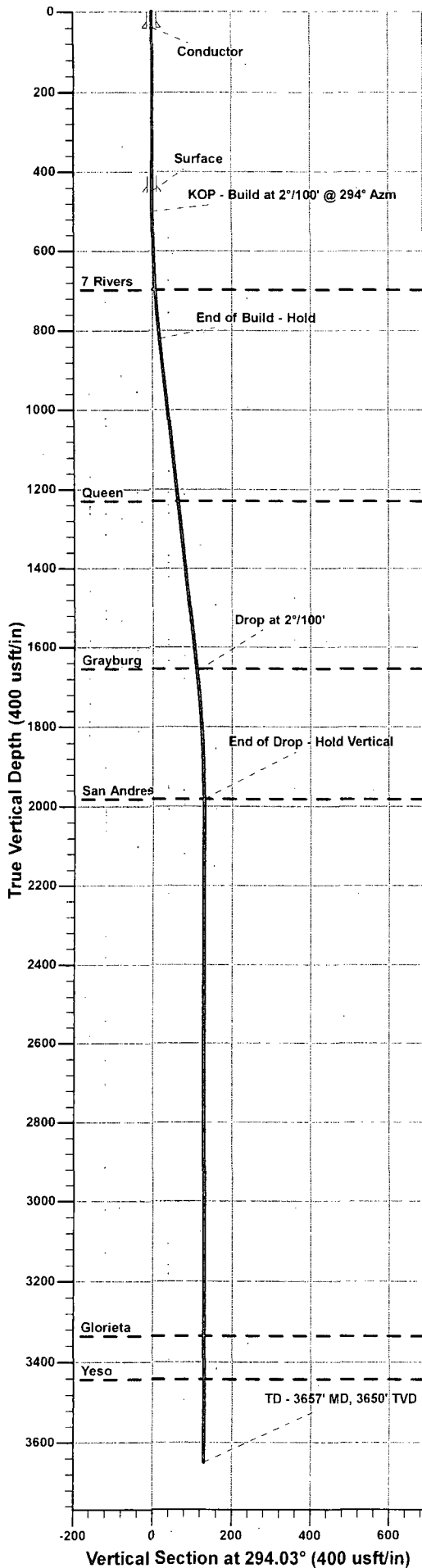
BHL: 2275' FNL & 1630' FEL

Sec. 28, T. 17 S., R. 28 E., Eddy County, NM

The well is located in a potential cave or karst area. Thus, lost circulation is possible down to 350'. See the contingency casing string and cement plan on Page 4.

#### 8. OTHER INFORMATION

The anticipated spud date is upon approval. It is expected it will take  $\approx$ 1 month to drill and complete the well.



**ANNOTATIONS**

MD	TVD	Inc	Azi	+N/-S	+E/-W	VS	Departure	Annotation
500.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	KOP - Build at 2°/100' @ 294° Azm
821.49	820.82	6.43	294.03	7.34	-16.46	18.02	18.02	End of Build - Hold
1667.18	1661.18	6.43	294.03	45.90	-102.96	112.73	112.73	Drop at 2°/100'
1988.67	1982.00	0.00	0.00	53.24	-119.41	130.75	130.75	End of Drop - Hold Vertical
3656.67	3650.00	0.00	0.00	53.24	-119.41	130.75	130.75	TD - 3657' MD, 3650' TVD, 53° N & 119° W of SHL

**WELL DETAILS: Kersey Williams A Federal #12**

+N/-S	+E/-W	Northing	Ground Level: Easting	3681.10 Latitude	Longitude
0.00	0.00	657022.90	548088.03	32° 48' 22.129 N	104° 10' 36.564 W

**DESIGN TARGET DETAILS**

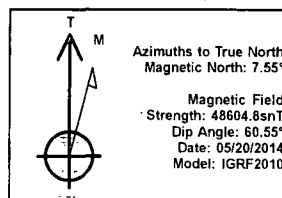
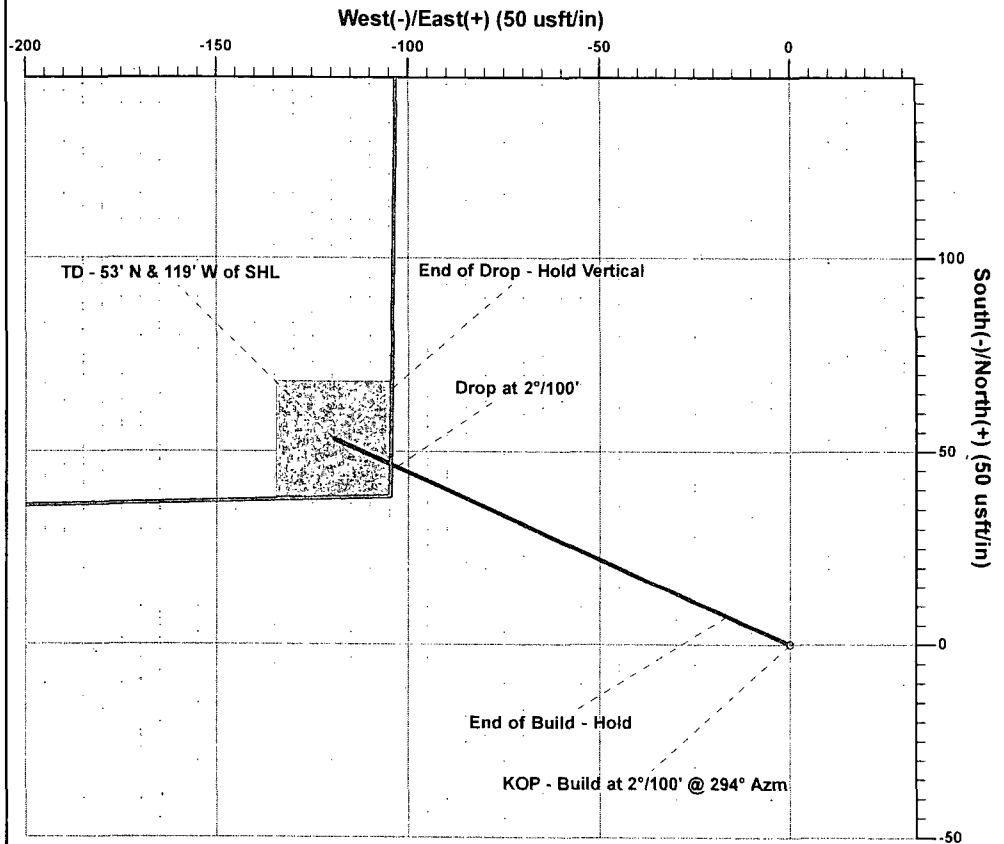
Name	TVD	+N/-S	+E/-W	Northing	Easting
KWAF #12 - BHL	3650.00	53.24	-119.41	657075.96	547968.54

**FORMATION TOP DETAILS**

TVDPath	MDPath	Formation
698.00	698.16	7 Rivers
1230.00	1233.26	Queen
1655.00	1660.95	Grayburg
1982.00	1988.67	San Andres
3336.00	3342.67	Glorieta
3443.00	3449.67	Yeso

**CASING DETAILS**

TVD	MD	Name	Size
40.00	40.00	Conductor	14,000
450.00	450.00	Surface	8,625



To convert a Magnetic Direction to a True Direction, Add 7.55° East  
Magnetic North is 7.55° East of True North (Magnetic Declination)

Database: EDM 5000.1 Single User Db  
 Company: Lime Rock Resources  
 Project: EDDY COUNTY, NM (NAD 27)  
 Site: Sec 28-T17S-R28E  
 Well: Kersey Williams A Federal #12  
 Wellbore: Wellbore #1  
 Design: Plan #1

Local Co-ordinate Reference: Well Kersey Williams A Federal #12  
 TVD Reference: KB @ 3692.90usft  
 MD Reference: KB @ 3692.90usft  
 North Reference: True  
 Survey Calculation Method: Minimum Curvature

Project	EDDY COUNTY, NM (NAD 27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Sec 28-T17S-R28E		
Site Position:		Northing:	657,070.30 usft
From:	Lat/Long	Easting:	544,749.30 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in
		Latitude:	32° 48' 22.645 N
		Longitude:	104° 11' 15.682 W
		Grid Convergence:	0.08 °

Well	Kersey Williams A Federal #12		
Well Position	+N-S	-52.00 usft	Northing:
	+E-W	3,338.67 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 48' 22.129 N
		Longitude:	104° 10' 36.564 W
		Ground Level:	3,681.10 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	05/20/14	7.55
		Dip Angle	60.55
		Field Strength	48,605
		(nT)	

Design	Plan #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.00
Vertical Section:	Depth From (TVD)	+N-S	+E-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction
			(°)
			294.03

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N-S	+E-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(°)	
(usft)			(usft)			(°/100usft)	(°/100usft)	(°/100usft)		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
821.49	6.43	294.03	820.82	7.34	-16.46	2.00	2.00	0.00	294.03	
1,667.18	6.43	294.03	1,661.18	45.90	-102.96	0.00	0.00	0.00	0.00	
1,988.67	0.00	0.00	1,982.00	53.24	-119.41	2.00	-2.00	0.00	180.00	
3,656.67	0.00	0.00	3,650.00	53.24	-119.41	0.00	0.00	0.00	0.00	KWAF #12 - BHL

Database: EDM 5000.1 Single User Db  
 Company: Lime Rock Resources  
 Project: EDDY COUNTY, NM (NAD 27)  
 Site: Sec 28-T17S-R28E  
 Well: Kersey Williams A Federal #12  
 Wellbore: Wellbore #1  
 Design: Plan #1

Local Co-ordinate Reference:  
 TVD Reference:  
 MD Reference:  
 North Reference:  
 Survey Calculation Method:

Well Kersey Williams A Federal #12  
 KB @ 3692.90usft  
 KB @ 3692.90usft  
 True  
 Minimum Curvature

**Planned Survey**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40.00	0.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Conductor</b>									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
450.00	0.00	0.00	450.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Surface</b>									
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>KOP - Build at 2°/100' @ 294° Azm</b>									
600.00	2.00	294.03	599.98	0.71	-1.59	1.75	2.00	2.00	0.00
698.16	3.96	294.03	698.00	2.79	-6.26	6.85	2.00	2.00	0.00
<b>7 Rivers</b>									
700.00	4.00	294.03	699.84	2.84	-6.37	6.98	2.00	2.00	0.00
800.00	6.00	294.03	799.45	6.39	-14.33	15.69	2.00	2.00	0.00
821.49	6.43	294.03	820.82	7.34	-16.46	18.02	2.00	2.00	0.00
<b>End of Build - Hold</b>									
900.00	6.43	294.03	898.83	10.92	-24.49	26.81	0.00	0.00	0.00
1,000.00	6.43	294.03	998.20	15.48	-34.72	38.01	0.00	0.00	0.00
1,100.00	6.43	294.03	1,097.57	20.04	-44.94	49.21	0.00	0.00	0.00
1,200.00	6.43	294.03	1,196.94	24.60	-55.17	60.41	0.00	0.00	0.00
1,233.26	6.43	294.03	1,230.00	26.12	-58.57	64.13	0.00	0.00	0.00
<b>Queen</b>									
1,300.00	6.43	294.03	1,296.32	29.16	-65.40	71.61	0.00	0.00	0.00
1,400.00	6.43	294.03	1,395.69	33.72	-75.63	82.81	0.00	0.00	0.00
1,500.00	6.43	294.03	1,495.06	38.28	-85.86	94.00	0.00	0.00	0.00
1,600.00	6.43	294.03	1,594.43	42.84	-96.08	105.20	0.00	0.00	0.00
1,660.95	6.43	294.03	1,655.00	45.62	-102.32	112.03	0.00	0.00	0.00
<b>Grayburg</b>									
1,667.18	6.43	294.03	1,661.18	45.90	-102.96	112.73	0.00	0.00	0.00
<b>Drop at 2°/100'</b>									
1,700.00	5.77	294.03	1,693.82	47.32	-106.14	116.21	2.00	-2.00	0.00
1,800.00	3.77	294.03	1,793.47	50.71	-113.74	124.53	2.00	-2.00	0.00
1,900.00	1.77	294.03	1,893.35	52.68	-118.16	129.37	2.00	-2.00	0.00
1,988.67	0.00	0.00	1,982.00	53.24	-119.41	130.75	2.00	-2.00	74.40
<b>End of Drop - Hold Vertical - San Andres</b>									
2,000.00	0.00	0.00	1,993.33	53.24	-119.41	130.75	0.00	0.00	0.00
2,100.00	0.00	0.00	2,093.33	53.24	-119.41	130.75	0.00	0.00	0.00
2,200.00	0.00	0.00	2,193.33	53.24	-119.41	130.75	0.00	0.00	0.00
2,300.00	0.00	0.00	2,293.33	53.24	-119.41	130.75	0.00	0.00	0.00
2,400.00	0.00	0.00	2,393.33	53.24	-119.41	130.75	0.00	0.00	0.00
2,500.00	0.00	0.00	2,493.33	53.24	-119.41	130.75	0.00	0.00	0.00
2,600.00	0.00	0.00	2,593.33	53.24	-119.41	130.75	0.00	0.00	0.00
2,700.00	0.00	0.00	2,693.33	53.24	-119.41	130.75	0.00	0.00	0.00
2,800.00	0.00	0.00	2,793.33	53.24	-119.41	130.75	0.00	0.00	0.00
2,900.00	0.00	0.00	2,893.33	53.24	-119.41	130.75	0.00	0.00	0.00
3,000.00	0.00	0.00	2,993.33	53.24	-119.41	130.75	0.00	0.00	0.00
3,100.00	0.00	0.00	3,093.33	53.24	-119.41	130.75	0.00	0.00	0.00
3,200.00	0.00	0.00	3,193.33	53.24	-119.41	130.75	0.00	0.00	0.00
3,300.00	0.00	0.00	3,293.33	53.24	-119.41	130.75	0.00	0.00	0.00
3,342.67	0.00	0.00	3,336.00	53.24	-119.41	130.75	0.00	0.00	0.00

**Glorieta**

**Database:** EDM 5000.1 Single User Db  
**Company:** Lime Rock Resources  
**Project:** EDDY COUNTY, NM (NAD 27)  
**Site:** Sec 28-T17S-R28E  
**Well:** Kersey Williams A Federal #12  
**Wellbore:** Wellbore #1  
**Design:** Plan #1

**Local Co-ordinate Reference:** Well Kersey Williams A Federal #12  
**TVD Reference:** KB @ 3692.90usft  
**MD Reference:** KB @ 3692.90usft  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

**Planned Survey**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,400.00	0.00	0.00	3,393.33	53.24	-119.41	130.75	0.00	0.00	0.00
3,449.67	0.00	0.00	3,443.00	53.24	-119.41	130.75	0.00	0.00	0.00
<b>Yeso</b>									
3,500.00	0.00	0.00	3,493.33	53.24	-119.41	130.75	0.00	0.00	0.00
3,600.00	0.00	0.00	3,593.33	53.24	-119.41	130.75	0.00	0.00	0.00
3,656.67	0.00	0.00	3,650.00	53.24	-119.41	130.75	0.00	0.00	0.00

TD - 3657' MD, 3650' TVD, 53' N &amp; 119' W of SHL

**Design Targets**

Target Name	hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N-S (usft)	+E-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
KWAF #12 - BHL	-	0.00	0.00	3,650.00	53.24	-119.41	657,075.96	547,968.54	32° 48' 22.656 N	104° 10' 37.963 W
- plan hits target center - Rectangle (sides W30.00 H30.00 D0.00)										

**Casing Points**

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
40.00	40.00	Conductor	14.000	20.000
450.00	450.00	Surface	8.625	11.000

**Formations**

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
698.16	698.00	7 Rivers		0.00	
1,233.26	1,230.00	Queen		0.00	
1,660.95	1,655.00	Grayburg		0.00	
1,988.67	1,982.00	San Andres		0.00	
3,342.67	3,336.00	Glorieta		0.00	
3,449.67	3,443.00	Yeso		0.00	

**Plan Annotations**

Measured Depth (usft)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Comment
500.00	500.00	0.00	0.00	KOP - Build at 2°/100' @ 294° Azm
821.49	820.82	7.34	-16.46	End of Build - Hold
1,667.18	1,661.18	45.90	-102.96	Drop at 2°/100'
1,988.67	1,982.00	53.24	-119.41	End of Drop - Hold Vertical
3,656.67	3,650.00	53.24	-119.41	TD - 3657' MD, 3650' TVD, 53' N & 119' W of SHL



# **LRE Operating, LLC**

## **Kersey Williams A Federal 12**

### **Section 28, T. 17 S., R. 28 E., Eddy County, NM**

#### **Design: Closed Loop System with roll-off steel bins (pits)**

**CRI/HOBBS** will supply (2) bins (100 bbl) volume, rails and transportation relating to the Close Loop System. Specification of the Closed Loop System is attached.

Contacts: Gary Wallace (432) 638-4076 Cell (575) 393-1079 Office

#### **Scomi Oil Tool: Supervisor – Armando Soto (432) 553-7979 Hobbs, NM**

Monitoring 24 Hour service

Equipment: Centrifuges – Derrick Brand  
Rig Shakers – Brandt Brand  
D-watering Unit  
Air pumps on location for immediate remediation process  
Layout of Close Loop System with bins, centrifuges and shakers attached.

Cuttings and associated liquids will be hauled to a State regulated third party disposal site (CRI or Controlled Recovery, Inc.). The disposal site permit is DFP = #R9166.

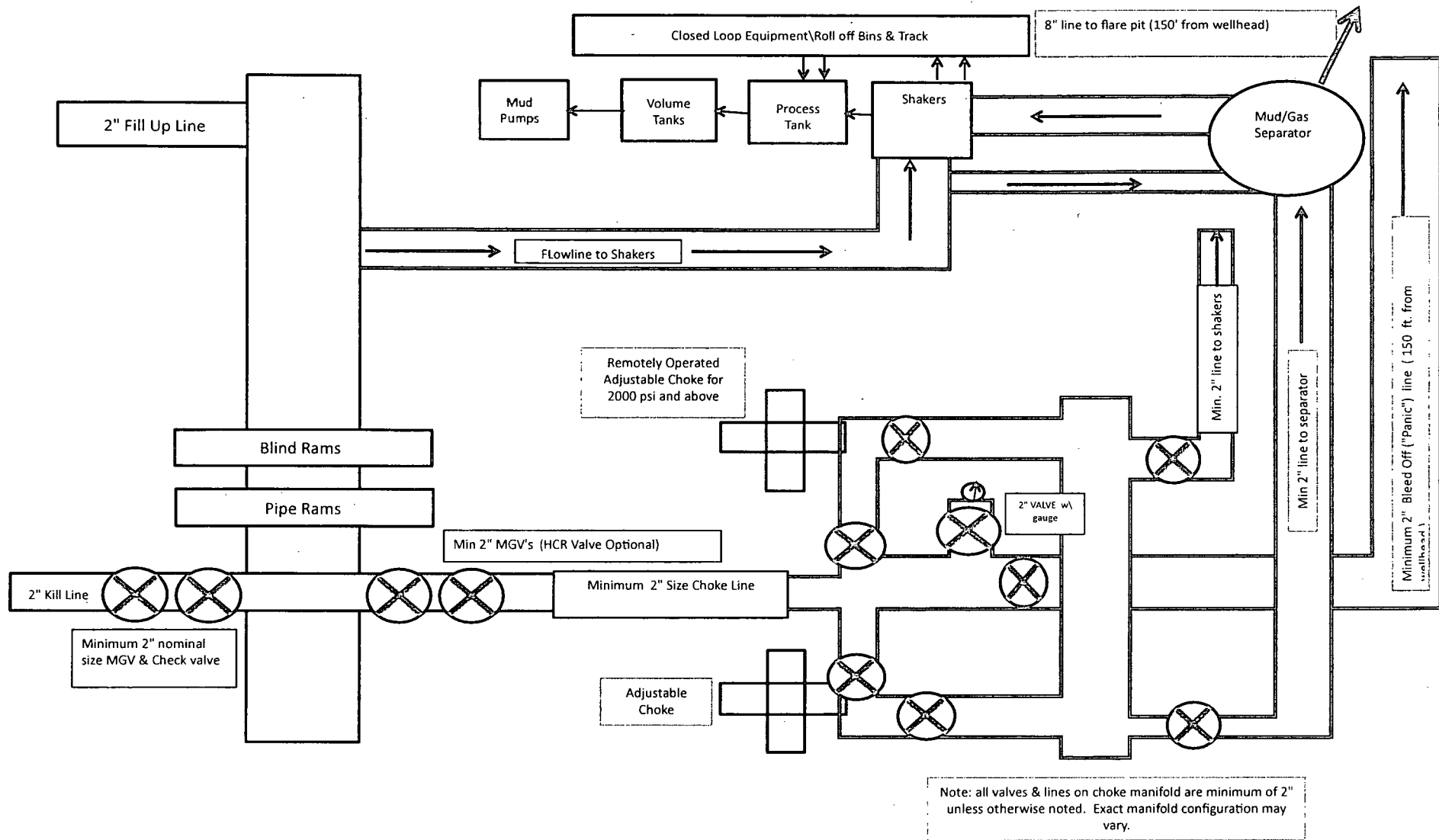
2- (250 bbl) tanks to hold fluid  
2-CRI bins with track system  
1-500 bbl frac tanks with fresh water  
1-500 bbl frac tanks for brine water

#### **Operations:**

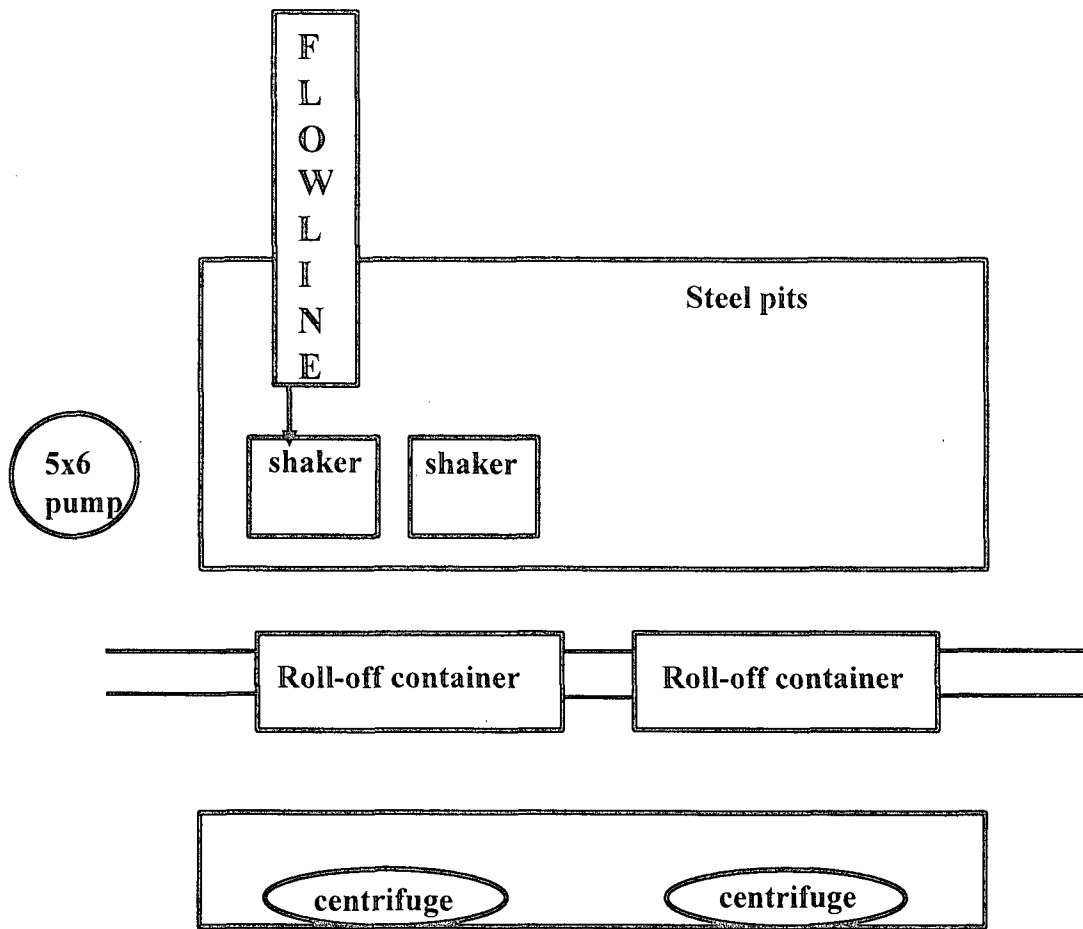
Closed Loop System equipment will be inspected daily by each tour and any necessary maintenance performed. Any leak in system will be repaired and/or contained immediately. OCD will be notified within 48 hours of any spill. Remediation process will start immediately.

#### **Closure:**

During drilling operations all liquids, drilling fluids and cuttings will be hauled off via CRI equipment to Disposal Facility Permit NM-01-0006.



**11" Minimum 2000 psi BOP and  
Minimum 2000 psi BOPE System Schematic  
W/ Closed Loop System Equipment**



This will be maintained by 24 hour solids control personnel that stay on location.

# Hydrogen Sulfide Drilling Plan Summary

- A. All personnel shall receive proper H<sub>2</sub>S training in accordance with Onshore Order 6 III.C.3.a.
- B. Briefing Area: two perpendicular areas will be designated by signs and readily accessible.
- C. Required Emergency Equipment:

- Well control equipment

- a. Flare line 150' from wellhead to be ignited by flare gun.
- b. Choke manifold with a remotely operated choke.
- c. Mud/gas separator

- Protective equipment for essential personnel.

Breathing apparatus:

- a. Rescue Packs (SCBA) — 1 unit shall be placed at each breathing area, 2 shall be stored in the safety trailer.
- b. Work/Escape packs — 4 packs shall be stored on the rig floor and contain sufficiently long air hoses as to not restrict work activity.
- c. Emergency Escape Packs — 4 packs shall be stored in the doghouse for emergency evacuation.

Auxiliary Rescue Equipment:

- a. Stretcher
- b. Two OSHA full body harness
- c. 100 ft 5/8 inch OSHA approved rope
- d. 1-20# class ABC fire extinguisher

- H<sub>2</sub>S detection and monitoring equipment:

The stationary detector with three sensors will be placed in the upper dog house if equipped, set to visually alarm @ 10 ppm and audible @ 14 ppm. Calibrate a minimum of every 30 days or as needed. The sensors will be placed in the following places: Rig floor / Bell nipple / End of flow line or where well bore fluid is being discharged.

(Gas sample tubes will be stored in the safety trailer)

- Visual warning systems.

- a. One color code condition sign will be placed at the entrance to the site reflecting the possible conditions at the site.
- b. A colored condition flag will be on display, reflecting the current condition at the site at the time.
- c. Two windsocks will be placed in strategic locations, visible from all angles.

- Mud program:

The mud program has been designed to minimize the volume of H<sub>2</sub>S circulated to surface. The operator will have the necessary mud products to minimize hazards while drilling in H<sub>2</sub>S bearing zones.

☑ Metallurgy:

- a. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.
- b. All elastomers used for packing and seals shall be H2S trim.

☑ Communication:

Communication will be via two-way radio in emergency and company vehicles. Cell phones and land lines where available.

## H2S CONTINGENCY DRILLING PLAN EMERGENCY CONTACTS

<b><u>Company Offices -</u></b>	LRE Lime Rock Houston Office Answering Service (After Hours) Artesia, NM Office Roswell, NM	713-292-9510 713-292-9555 575-748-9724 575-623-8424
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KEY PERSONNEL					
Name	Title	Location	Office #	Cell #	Home #
MIKE LOUDERMILK	OPERATIONS MANAGER	HOUSTON	713-292-9526	832-331-7367	SAME AS CELL
SPENCER COX	PRODUCTION ENGINEER	HOUSTON	713-292-9528	432-254-5140	SAME AS CELL
ERIC MCCLUSKY	PRODUCTION ENGINEER	HOUSTON	713-360-5714	405-821-0534	832-491-3079
JERRY SMITH	ASSISTANT PRODUCTION SUPERVISOR	ARTESIA	575-748-9724	505-918-0556	575-746-2478
MICHAEL BARRETT	PRODUCTION SUPERVISOR	ROSWELL	575-623-8424	505-353-2644	575-623-4707
DALE KENNARD	WELL SITE SUPERVISOR	ROTATES ON SITE	NA	575-420-1651	NA
GARY MCCCELLAND	WELL SITE SUPERVISOR	ROTATES ON SITE	NA	903-503-8997	NA
BRAD TATE	WELL SITE SUPERVISOR	ROTATES ON SITE	NA	575-441-1966	NA
DAVE WILLIAMSON	WELL SITE SUPERVISOR	ROTATES ON SITE	NA	575-308-9980	NA



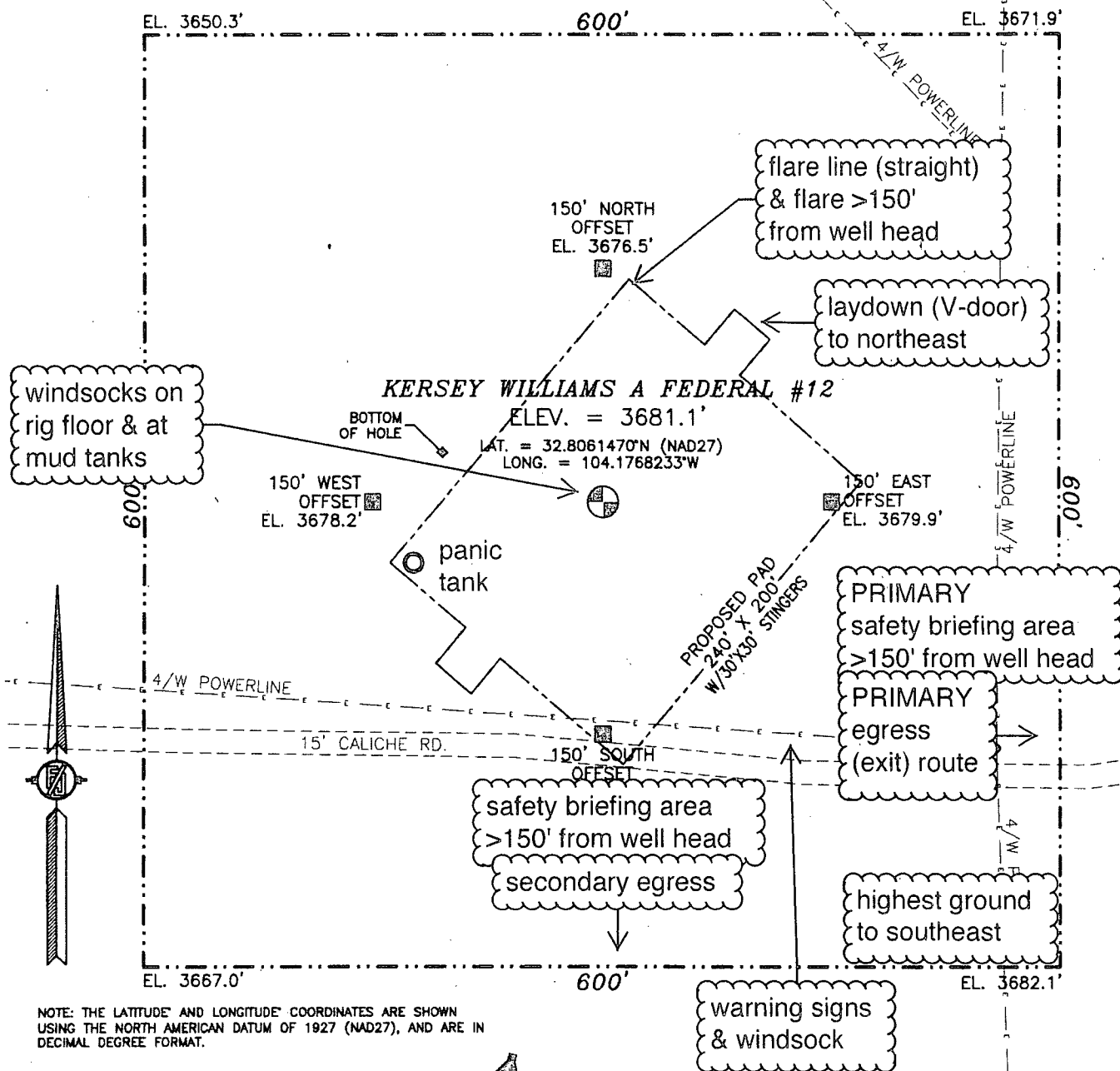
Agency Call List		
City	Agency or Office	Telephone Number
Artesia	Ambulance	911
Artesia	State Police	575-746-2703
Artesia	Sheriff's Office	575-746-9888
Artesia	City Police	575-746-2703
Artesia	Fire Department	575-746-2701
Artesia	Local Emergency Planning Committee	575-746-2122
Artesia	New Mexico OCD District II	575-748-1283
Carlsbad	Ambulance	911
Carlsbad	State Police	575-885-3137
Carlsbad	Sheriff's Office	575-887-7551
Carlsbad	City Police	575-885-2111
Carlsbad	Fire Department	575-885-2111
Carlsbad	Local Emergency Planning Committee	575-887-3798
Carlsbad	US DOI Bureau of Land Management	575-887-6544
State Wide	New Mexico Emergency Response Commission ("NMERC")	505-476-9600
State Wide	NMERC 24 hour Number	505-827-9126
State Wide	New Mexico State Emergency Operations Center	505-476-9635
National	National Emergency Response Center (Washington, D.C.)	800-424-8802

## H2S CONTINGENCY DRILLING PLAN EMERGENCY CONTACTS

Emergency Services				
Name	Service	Location	Telephone Number	Alternate Number
Boots & Coots International Well Control	Well Control	Houston / Odessa	1-800-256-9688	281-931-8884
Cudd Pressure Control	Well Control & Pumping	Odessa	915-699-0139	915-563-3356
Baker Hughes Inc.	Pumping Service	Artesia, Hobbs and Odessa	575-746-2757	SAME
Total Safety	Safety Equipment and Personnel	Artesia	575-746-2847	SAME
Cutter Oilfield Services	Drilling Systems Equipment	Midland	432-488-6707	SAME
Assurance Fire & Safety	Safety Equipment and Personnel	Artesia	575-396-9702	575-441-2224
Flight for Life	Emergency Helicopter Evacuation	Lubbock	806-743-9911	SAME
Aerocare	Emergency Helicopter Evacuation	Lubbock	806-747-8923	SAME
Med Flight Air Ambulance	Emergency Helicopter Evacuation	Albuquerque	505-842-4433	SAME
Artesia General Hospital	Emergency Medical Care	Artesia	575-748-3333	702 North 13 Street

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

H2S PAGE 5



010 50 100 200

SCALE 1" = 100'

DIRECTIONS TO LOCATION

FROM STATE HWY. 82 AND CALICHE CR. #208 (RED LAKE RD.) GO NORTH ON CR 208 0.65 MILES, TURN LEFT AND GO WEST 715' AND LOCATION IS ON THE RIGHT (NORTH) 150'.

prevailing wind blows from SSW

LRE OPERATING, LLC  
**KERSEY WILLIAMS A FEDERAL #12**  
LOCATED 2310 FT. FROM THE NORTH LINE  
AND 1525 FT. FROM THE EAST LINE OF  
SECTION 28, TOWNSHIP 17 SOUTH,  
RANGE 28 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

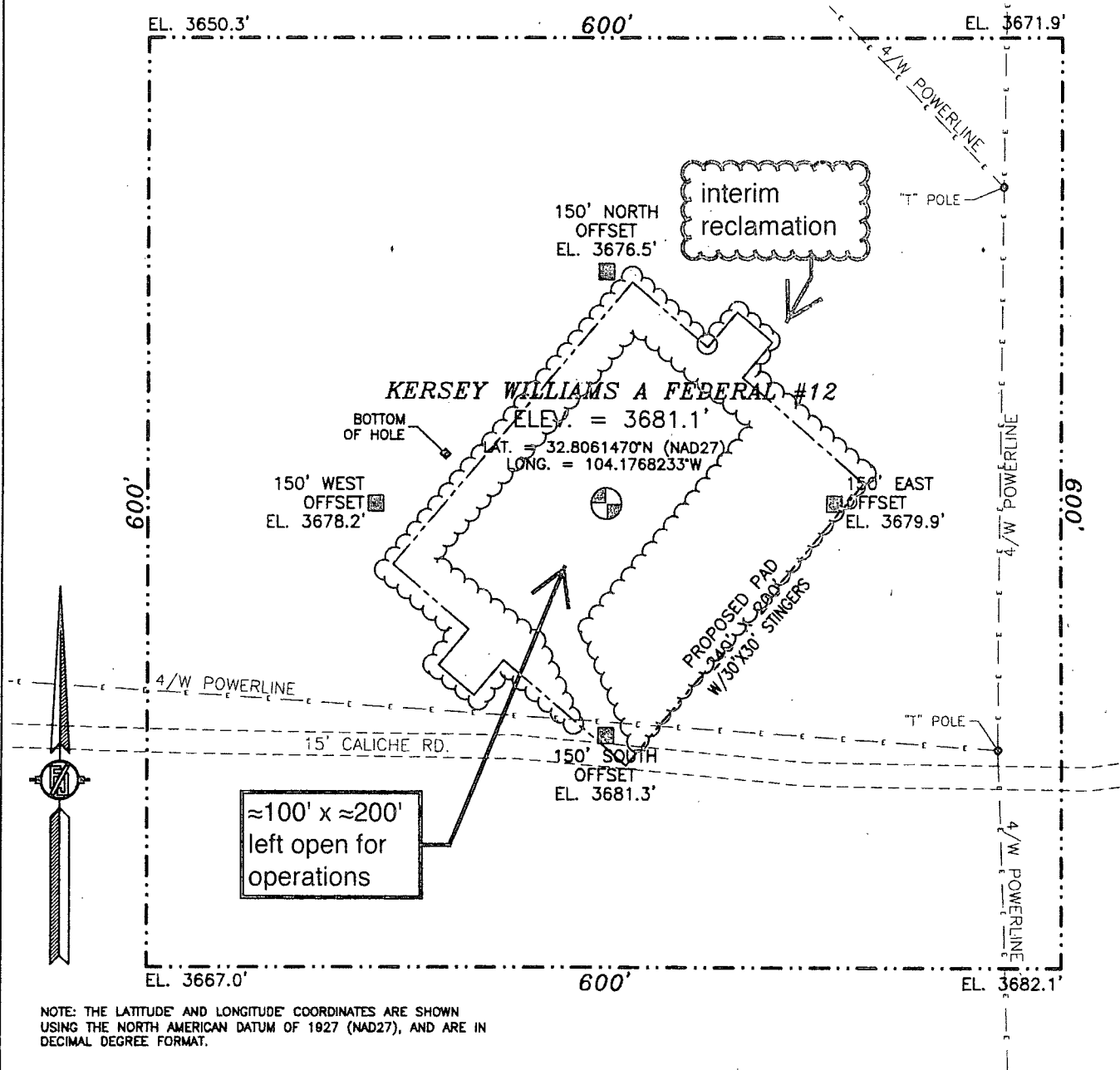
JULY 25, 2012

SURVEY NO. 916

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

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

INTERIM RECLAMATION DIAGRAM



NOTE: THE LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1927 (NAD27), AND ARE IN DECIMAL DEGREE FORMAT.

0 10 50 100 200

SCALE 1" = 100'

DIRECTIONS TO LOCATION

FROM STATE HWY. 82 AND CALICHE CR. #208 (RED LAKE RD.) GO NORTH ON CR 208 0.65 MILES, TURN LEFT AND GO WEST 715' AND LOCATION IS ON THE RIGHT (NORTH) 150'.

LRE OPERATING, LLC  
**KERSEY WILLIAMS A FEDERAL #12**  
LOCATED 2310 FT. FROM THE NORTH LINE  
AND 1525 FT. FROM THE EAST LINE OF  
SECTION 28, TOWNSHIP 17 SOUTH,  
RANGE 28 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

JULY 25, 2012

SURVEY NO. 916

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

LRE Operating, LLC  
Kersey Williams A Federal 12  
SHL: 2310' FNL & 1525' FEL  
BHL: 2275' FNL & 1630' FEL  
Sec. 28, T. 17 S., R. 28 E., Eddy County, NM

SURFACE PLAN PAGE 1

Surface Use Plan

1. ROAD DIRECTIONS & DESCRIPTIONS (See MAPS 1 – 4)

From the center of Artesia...

Go East 13-1/4 miles on US 82 to the equivalent of Mile Post 120.7

Then turn left and go North 0.6 mile on caliche County Road 208 (Red Lake)

Then turn left and go West 715' on a caliche road to the South pad corner

Roads will be maintained to a standard at least equal to or better than their present condition.

2. ROAD TO BE BUILT OR UPGRADED (See MAP 3)

No new road will be built. The proposed pad overlaps the existing road. Existing road upgrading will consist of surfacing with caliche where needed.

3. EXISTING WELLS (See MAP 2)

Existing oil, gas, injection, disposal, and P & A wells are within a mile. No water well is within a mile.

4. PROPOSED PRODUCTION FACILITIES (See MAP 3)

Two 3" poly surface pipelines (gas and production) will be laid east, north, east, and south  $\approx$  1,275' to LRE's existing Kersey Williams A Federal battery in the SENE 28-17s-28e. Pipelines will operate at  $\approx$  50 psi. The entire route is on lease and parallels roads, power lines, and other pipelines.



LRE Operating, LLC  
Kersey Williams A Federal 12  
SHL: 2310' FNL & 1525' FEL  
BHL: 2275' FNL & 1630' FEL  
Sec. 28, T. 17 S., R. 28 E., Eddy County, NM

## SURFACE PLAN PAGE 2

### 5. WATER SUPPLY (See MAP 1)

Water will be trucked from private land east of Artesia or from Alfadale.

### 6. CONSTRUCTION MATERIALS & METHODS

NM One Call (1-800-321-ALERT) will be notified before construction starts. A CVE power pole on NMNM-122145 will be moved or protected with a concrete barrier before construction starts. Topsoil and brush will be stockpiled northeast of the pad. V door will be to the northeast. A closed loop drilling system will be used. Caliche will be bought and hauled from an existing approved caliche pit. Dirt contractor will be responsible for caliche.

### 7. WASTE DISPOSAL

All trash will be placed in a portable trash cage. It will be hauled to a county landfill. There will be no trash burning. Contents (drill cuttings, mud, salts, and other chemicals) of the mud tanks will be hauled to state approved disposal sites. Human waste will be disposed of in chemical toilets and hauled to an approved dump station.

### 8. ANCILLARY FACILITIES

There will be no airstrip or camp. Camper trailers will be on location for the company man, tool pusher, or mud logger.

### 9. WELL SITE LAYOUT

See rig layout for depictions of the well pad, trash cage, access onto the location, parking, living facilities, and rig orientation.

LRE Operating, LLC  
Kersey Williams A Federal 12  
SHL: 2310' FNL & 1525' FEL  
BHL: 2275' FNL & 1630' FEL  
Sec. 28, T. 17 S., R. 28 E., Eddy County, NM

SURFACE PLAN PAGE 3

#### 10. RECLAMATION

Interim reclamation will consist of reclaiming stingers and all four sides of the pad. A  $\approx 100'$  x  $\approx 200'$  area around the wellhead will be left open. Disturbed areas will be contoured to a natural shape and no steeper than 3:1. Soil and brush will be evenly spread over disturbed areas. Seeded areas will be ripped or harrowed. A BLM approved seed mix will be sown in a BLM approved manner. Enough stockpiled topsoil will be retained to cover the remainder of the pad when the well is plugged. Once the well is plugged, then the remainder of the pad will be similarly reclaimed. Noxious weeds will be controlled.

#### 11. SURFACE OWNER

All construction will be on BLM.

#### 12. OTHER INFORMATION

On site inspection was held with John Fast (BLM) on June 21 or 28, 2012.

Boone filed archaeology report NMCRS 125565 on October 29, 2012.

# PECOS DISTRICT

## CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	<b>LRE Operating, LLC.</b>
<b>LEASE NO.:</b>	<b>NMNM-048344</b>
<b>WELL NAME &amp; NO.:</b>	<b>Kersey Williams A Federal 12</b>
<b>SURFACE HOLE FOOTAGE:</b>	<b>2310' FNL &amp; 1525' FEL</b>
<b>BOTTOM HOLE FOOTAGE:</b>	<b>2275' FNL &amp; 1630' FEL</b>
<b>LOCATION:</b>	<b>Section 28, T. 17 S., R 28 E., NMPM</b>
<b>COUNTY:</b>	<b>Eddy County, New Mexico</b>

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

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## **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)**

## **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**

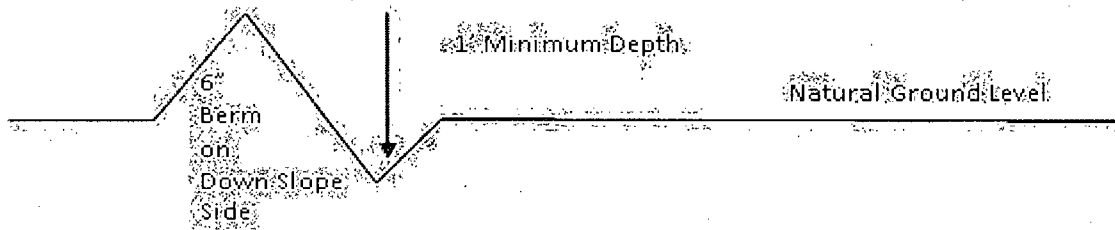
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

### **Drainage**

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

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

#### **Cross Section of a Typical Lead-off Ditch**



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

#### **Formula for Spacing Interval of Lead-off Ditches**

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

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

### **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

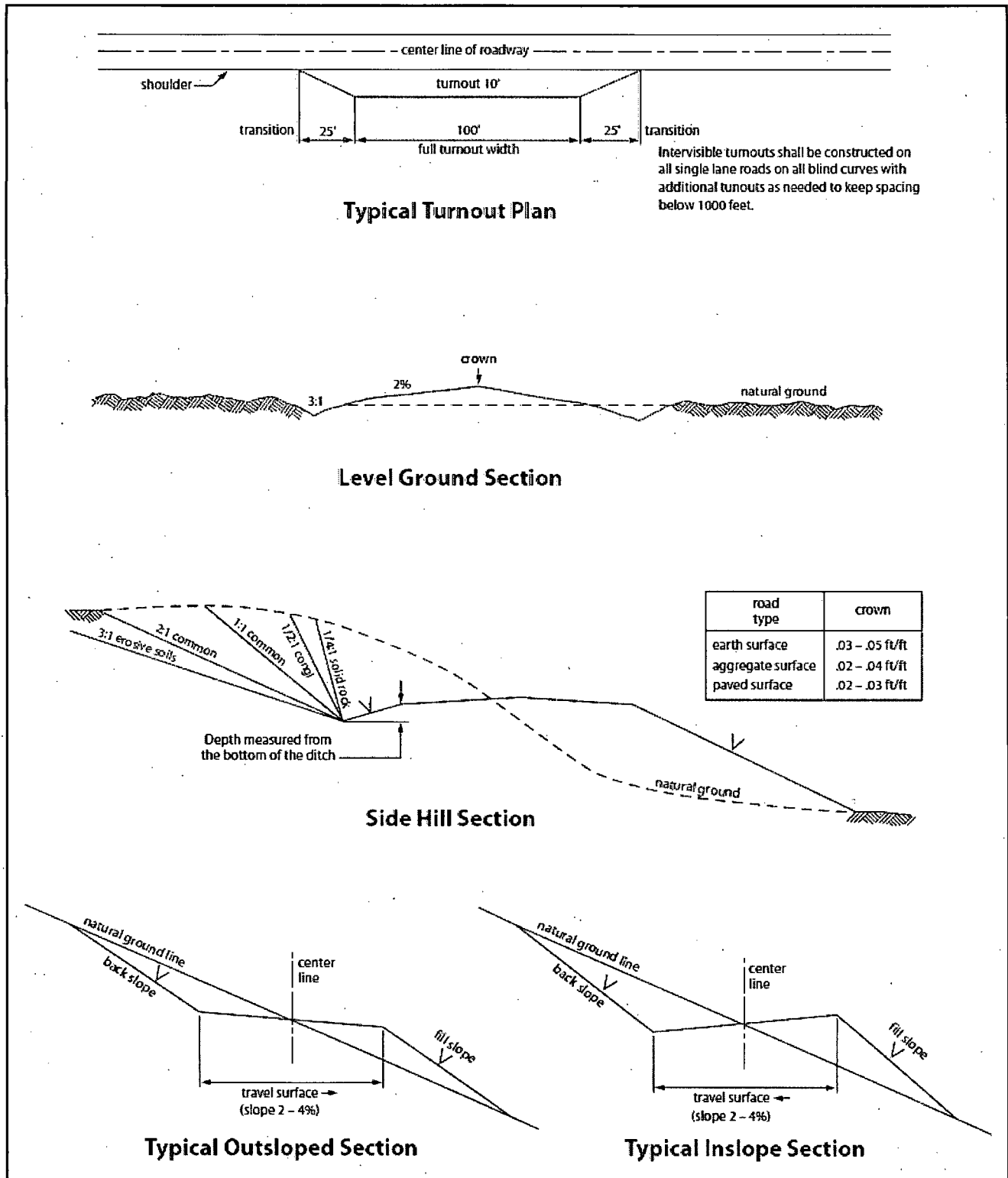


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

## 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. **Although Hydrogen Sulfide has not been reported in the area, it is always a potential hazard. If Hydrogen Sulfide is encountered, report measured amounts 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. **The record of the drilling rate along with the GR/N well log run from TD to surface 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.**

### 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. IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS. See individual casing strings for details regarding lead cement slurry requirements.**

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

**Possible water flows in the Artesia Group and Queen.**

**Possible lost circulation in the Artesia Group, Grayburg, and San Andres.**

**Contingency Surface Casing Plan:**

1. The 13-3/8 inch contingency surface casing shall be set at approximately 375 feet and cemented to the surface.
  - 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.

### **Casing Plan without Contingency:**

2. The **8-5/8** inch surface casing shall be set at approximately **450** feet and cemented to the surface. **(If contingency casing is used set 8-5/8" casing 50 feet below 13-3/8" shoe.)**
  - 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.
3. 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.
4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

### **C. PRESSURE CONTROL**

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. **Contingency** - Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **13-3/8 inch** surface casing shoe shall be **2000 (2M)** psi. Operator is approved to test against the casing for the contingency plan.

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **8-5/8 inch** 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.
  - 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.

**JAM 111914**

## **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).

### **B. PIPELINES**

#### **STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES**

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

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

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to activity of the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.



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

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

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

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

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

6. All construction and maintenance activity will be confined to the authorized right-of-way width of 20 feet. If the pipeline route follows an existing road or buried pipeline right-of-way, the surface pipeline must be installed no farther than 10 feet from the edge of the road or buried pipeline right-of-way. If existing surface pipelines prevent this distance, the proposed surface pipeline must be installed immediately adjacent to the outer surface pipeline. All construction and maintenance activity will be confined to existing roads or right-of-ways.

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

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

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

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

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

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

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

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

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

measures will be made by the authorized officer after consulting with the holder.

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

17. Surface pipelines must be less than or equal to 4 inches and a working pressure below 125 psi.

## **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 1, for Loamy Sites

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

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

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

<u>Species</u>	<u>lb/acre</u>
Plains lovegrass ( <i>Eragrostis intermedia</i> )	0.5
Sand dropseed ( <i>Sporobolus cryptandrus</i> )	1.0
Sideoats grama ( <i>Bouteloua curtipendula</i> )	5.0
Plains bristlegrass ( <i>Setaria macrostachya</i> )	2.0

\*Pounds of pure live seed:

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