

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Avenue, Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources

JUL 30 2009

Form C-101  
June 16, 2008

RM

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Submit to appropriate District Office

☒ AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

<sup>1</sup> Operator Name and Address Enervest Operating LLC 1001 Fannin Street - Suite 800, Houston, TX 77002		<sup>2</sup> OGRID Number 143199
		<sup>3</sup> API Number 30 - 015-36773
<sup>4</sup> Property Code 305088 37486	<sup>5</sup> Property Name WLH G4S UNIT	<sup>6</sup> Well No. 31
<sup>9</sup> Proposed Pool 1 Loco Hills, Queen-Grayburg-San Andres		<sup>10</sup> Proposed Pool 2

<sup>7</sup> Surface Location

UL or lot no	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	11	18S	29E		1309	SOUTH	1980	EAST	EDDY

<sup>8</sup> Proposed Bottom Hole Location If Different From Surface

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

Additional Well Information

<sup>11</sup> Work Type Code N	<sup>12</sup> Well Type Code PO	<sup>13</sup> Cable/Rotary R	<sup>14</sup> Lease Type Code S	<sup>15</sup> Ground Level Elevation 3513'
<sup>16</sup> Multiple No	<sup>17</sup> Proposed Depth 2800'	<sup>18</sup> Formation 7 Rivers Queen Grayburg G4 Sand	<sup>19</sup> Contractor N/A	<sup>20</sup> Spud Date N/A

<sup>21</sup> Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
12-1/4"	8-5/8"	24#	400'	275	Surface
7-7/8"	5-1/2"	15.5#	2,800'	760	Surface

<sup>22</sup> Describe the proposed program. If this application is to DEEPEN or PLUG BACK, give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

1. Prepare surface location. Move in and rig up drilling rig, spud well and drill and set conductor. Install and test BOP's.
2. Drill 12-1/4" surface hole to a minimum depth of 400'. Set 8-5/8" casing and cement.
3. Drill 7-7/8" production hole 2,800' TD and evaluate DLL/LD/GR logs to TD.
4. Set 5-1/2" to TD and cement to surface. Perforate porosity and stimulate as necessary (specific procedure to be determined).
5. Place well on test.
6. The concentration of H2S of wells in this area from surface to TD are low enough that a contingency plan is not required, but we have attached a copy of our Hydrogen Sulfide Drilling Operation Plan.

<sup>23</sup> I hereby certify that the information given above is true and complete to the best of my knowledge and belief.

Signature.

Ronnie Young/bmh

Printed name: Ronnie Young

Title: Regulatory Supervisor

E-mail Address ryoung@enervest.net

Date: 7-22-09

Phone: (713) 4956530

OIL CONSERVATION DIVISION

Approved by:

Jacqui Zee

Title:

Geologist

Approval Date

8/11/2009

Expiration Date

8/11/2011

Conditions of Approval Attached ☐

## State of New Mexico

Energy, Minerals and Natural Resources Department

## DISTRICT I

1625 N. FRENCH DR., HOBBS, NM 88240

## DISTRICT II

1301 W. GRAND AVENUE, ARTESIA, NM 88210

## DISTRICT III

1000 Rio Brazos Rd., Aztec, NM 87410

## DISTRICT IV

1220 S. ST. FRANCIS DR., SANTA FE, NM 87505

## OIL CONSERVATION DIVISION

1220 SOUTH ST. FRANCIS DR.  
Santa Fe, New Mexico 87505

Form C-102

Revised October 12, 2005

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

## WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number		Pool Code	Pool Name
Property Code 37486	Property Name WLH G4S UNIT		Well Number 31
GRID No. 143199	Operator Name ENERVEST OPERATING, LLC		Elevation 3513'

## Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
0	11	18-S	29-E		1309	SOUTH	1980	EAST	EDDY

## Bottom Hole Location If Different From Surface

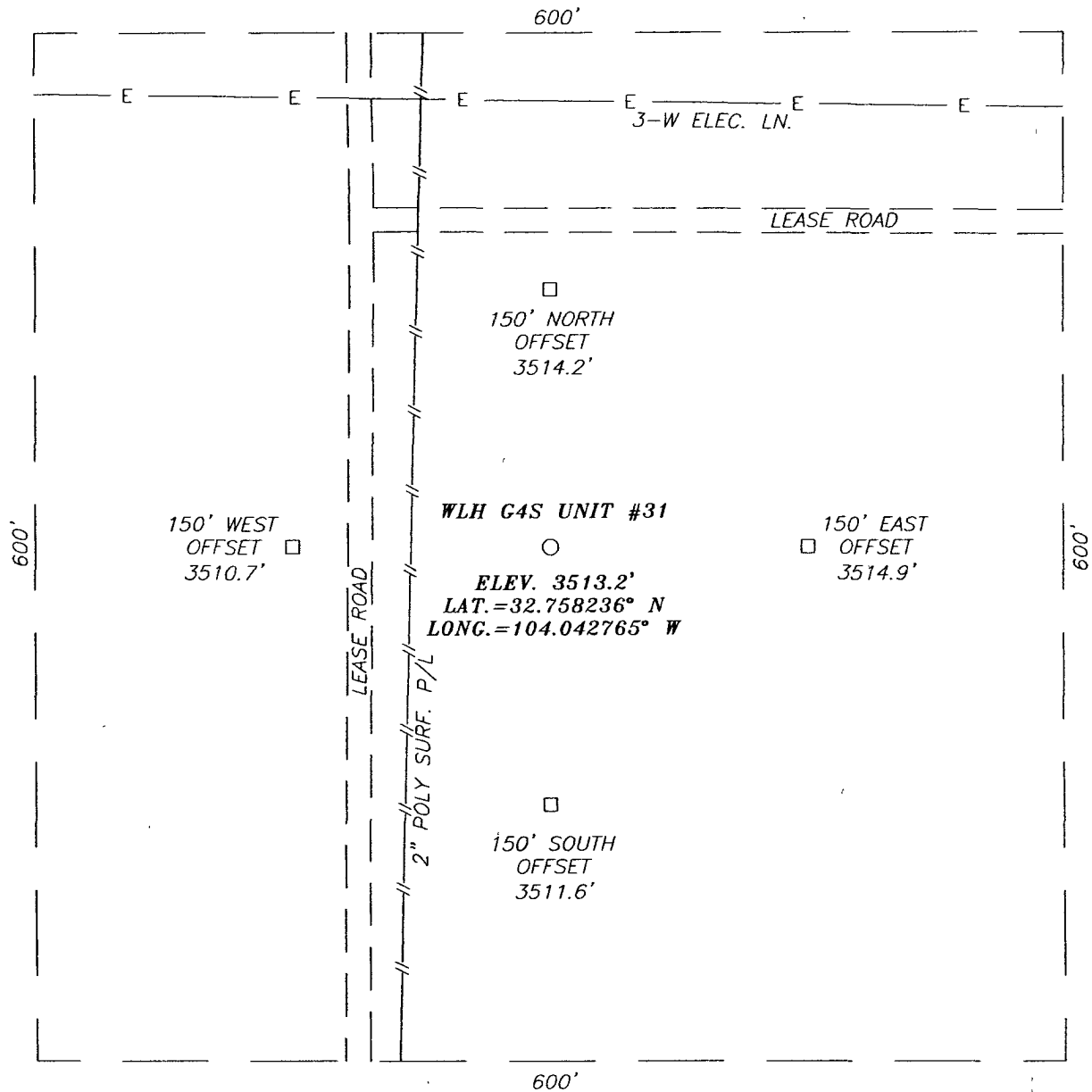
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

Dedicated Acres 5307.73	Joint or Infill YES	Consolidation Code U	Order No. R-2178
----------------------------	------------------------	-------------------------	---------------------

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED  
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

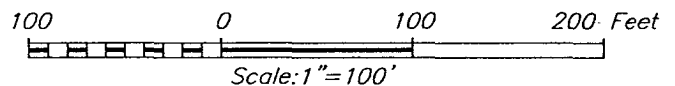
<p>GEODETIC COORDINATES NAD 27 NME</p> <p>Y=639679.9 N X=589325.6 E</p> <p>LAT.=32.758236° N LONG.=104.042765° W</p> <p>1980'</p> <p>1309'</p>	<p><b>OPERATOR CERTIFICATION</b></p> <p>I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p><i>[Signature]</i> 7-21-09 Signature Date <i>Gary Miller</i> Printed Name Agent</p>
	<p><b>SURVEYOR CERTIFICATION</b></p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p>
	<p>Date Surveyed: JUNE 25, 2009</p> <p>Signature &amp; Seal of Professional Surveyor: <i>Ronald J. Eidson</i> 7-01-09</p>
	<p>Certificate No. GARY EIDSON 12641 RONALD J. EIDSON 3239</p>

**SECTION 11, TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.,**  
 EDDY COUNTY, NEW MEXICO



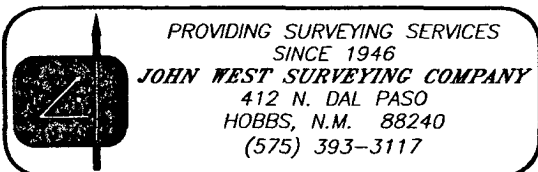
**DIRECTIONS TO LOCATION**

FROM THE INTERSECTION OF CO. RD. #217  
 (HAGERMAN CUTOFF) AND CO. RD. #212 (VALLEY  
 GAS) GO EAST ON CO. RD. #217 APPROX. 0.5  
 MILES. TURN RIGHT AND GO SOUTH APPROX. 0.3  
 MILES. TURN LEFT AND GO EAST APPROX. 0.2  
 MILES. TURN RIGHT AND GO SOUTH APPROX. 0.7  
 MILES. THIS LOCATION IS EAST APPROX. 100 FEET.



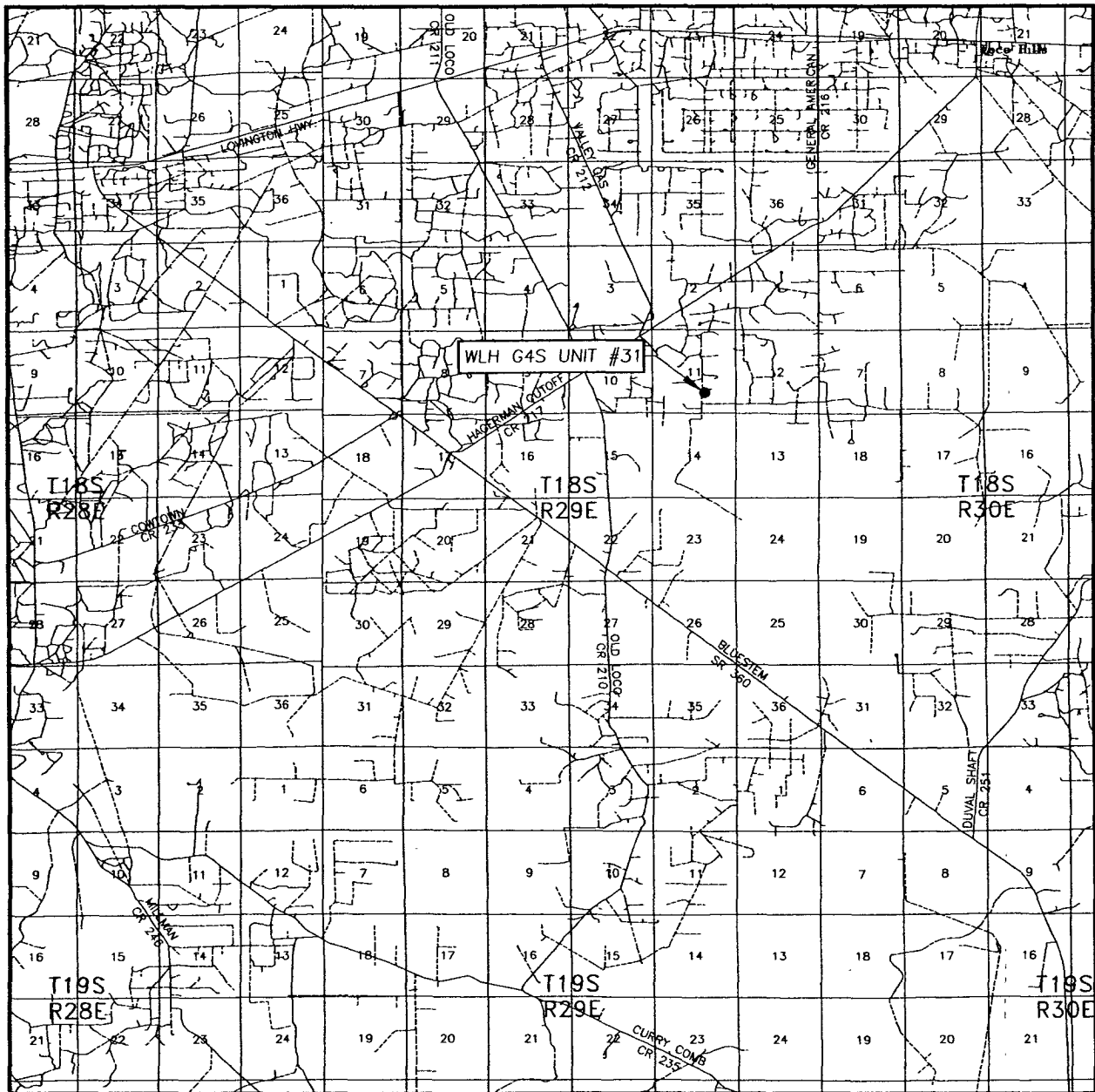
**ENERVEST OPERATING, LLC**

WLH GAS UNIT #31 WELL  
 LOCATED 1309 FEET FROM THE SOUTH LINE  
 AND 1980 FEET FROM THE EAST LINE OF SECTION 11,  
 TOWNSHIP 18 SOUTH, RANGE 29 EAST, N.M.P.M.,  
 EDDY COUNTY, NEW MEXICO.



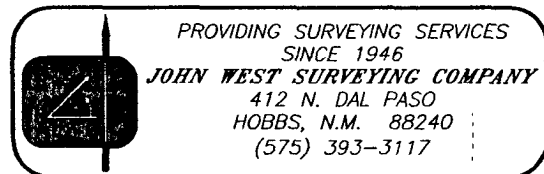
Survey Date: 6/25/09	Sheet 1 of 1 Sheets
W.O. Number: 09.11.0553	Dr By: LA
Date: 6/30/09	09110553
	Scale: 1"=100'

# VICINITY MAP

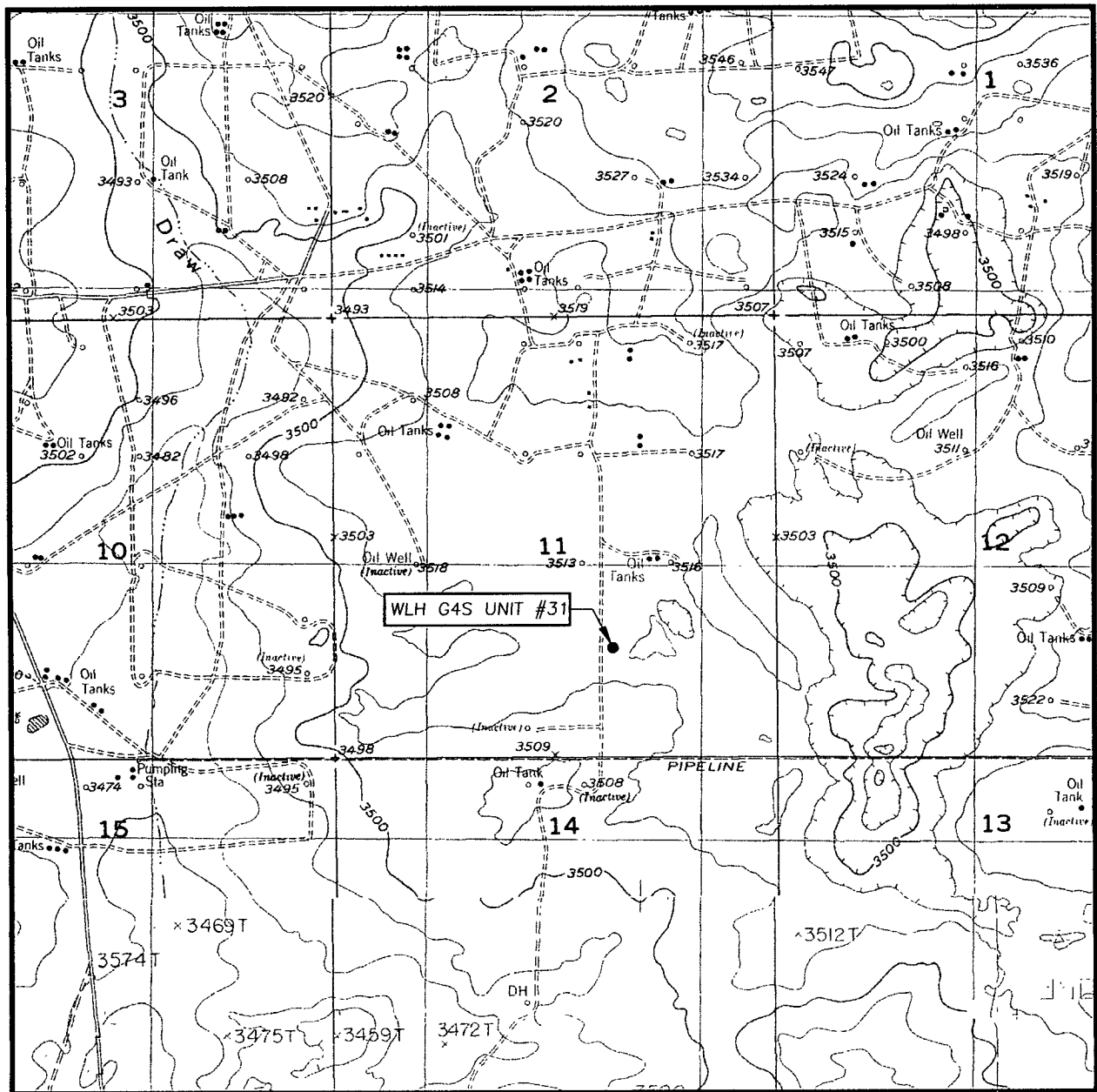


SCALE: 1" = 2 MILES

SEC. 11 TWP. 18-S RGE. 29-E  
 SURVEY \_\_\_\_\_ N.M.P.M. \_\_\_\_\_  
 COUNTY EDDY STATE NEW MEXICO  
 DESCRIPTION 1309' FSL & 1980' FEL  
 ELEVATION 3513'  
 OPERATOR ENERVEST OPERATING, LLC  
 LEASE WLH G4S UNIT



# LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:  
RED LAKE SE, N.M. - 10'

SEC. 11 TWP. 18-S RGE. 29-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

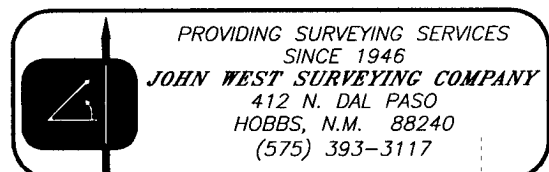
DESCRIPTION 1309' FSL & 1980' FEL

ELEVATION 3513'

OPERATOR ENERVEST OPERATING, LLC

LEASE WLH G4S UNIT

U.S.G.S. TOPOGRAPHIC MAP  
RED LAKE SE, N.M.





EnerVest Operating, Ltd.  
Master Drilling Plan  
West Loco Hills Field  
Location - NA  
Eddy County, NM

Rig - TBD  
Rig Telephone # - TBD

## West Loco Hills - MASTER DRILLING PROGRAM

### 1 Geologic Name of Surface Formation & Directions to Well

Quaternary

Directions to well: NA

### 2 Estimated Tops of Important Geologic Markers

MD	SS	Formation	Objective	Rock Type
400	3,100	Salt		Salt
920	2,580	Base Salt		Salt
1,045	2,455	Yates		Anhydrite & Limestone
1,925	1,575	7 Rivers		Anhydrite & Dolomite
2,135	1,365	Queen		Anhydrite & Dolomite
2,510	990	Grayburg		Limestone & Sandstone
2,635	865	G4 Sand	Primary	Sandstone

### 3 Estimated Depths of Anticipated Fresh Water, Oil and Gas

MD	SS	Formation	Objective	Fluid Type
150	3,350	Quaternary		(Fresh Water)
2,635	865	G4 Sand	Primary	(Oil)

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 8-5/8" casing to 400' and circulating cement back to the surface will protect the surface fresh water sand.

Cement volumes will be pumped to provide cement back to surface.

### 4 Casing Program (With alternate casing plans for 5-1/2" or 4-1/2" casing)

Hole Size	Interval	OD Casing	Weight	Grade	Conn./New?	Bur/Col/Tens
12-1/4"	0-400'	8-5/8"	24#	J-55	STC/New	14.02 / 4.44 / 39.73
7-7/8"	0-2,800'	5-1/2"	15.50#	J-55	LTC/New	3.27 / 1.87 / 5.72
7-7/8"	0-2,800'	4-1/2"	9.50#	J-55	LTC/New	2.98 / 1.54 / 5.72



EnerVest Operating, Ltd.  
Master Drilling Plan  
West Loco Hills Field  
Location - NA  
Eddy County, NM

Rig - TBD  
Rig Telephone # - TBD

## 5 Cement Program

8-5/8" Surface Casing 100% XS	BLEND 275 Sks Class "C" 2% CaCl <sub>2</sub> (1.32 YLD, 14.8 PPG)
5-1/2" Production Csg 20% XS	LEAD 415 SKS 50:50 POZ:C & 2% CaCl <sub>2</sub> (11.8 PPG 2.56 CF/SK) TAIL 345 SKS CLASS "C" (14.8 PPG 1.33 CF/SK)
4-1/2" Production Csg 20% XS	LEAD 410 SKS 50:50 POZ:C & 2% CaCl <sub>2</sub> (11.8 PPG 2.56 CF/SK) TAIL 340 SKS CLASS "C" (14.8 PPG 1.33 CF/SK)

## 6 Minimum Specifications for Pressure Control & Wellhead Equipment

The blowout preventer equipment (BOPE) shown in the BOPE Diagram will consist of an annular preventer (5000 psi WP). This unit will be hydraulically operated and will be nipped up on the 8 5/8" surface casing and tested to 2000 psi by a third party. The BOPE will be checked daily and these checks will be noted in the tour sheets. Other accessories to the BOPE will include a kelly cock and floor safety valve, choke lines and a choke manifold and will have a 2000 psi WP rating.

A 2,000 psi WP Larkin Type Wellhead will be used.

## 7 Types and Characteristics of the Proposed Mud System

The surface hole will be drilled with native.

The production hole will be drilled with saturated brine water.

DEPTH	TYPE	WEIGHT	VISCOSITY	WATER LOSS
0 - 400'	Native	8.4-8.6	28-30	N.C.
400' - TD	Brine	9.8-10.1	28-30	12 cc

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

## 8 Auxillary Well Control and Monitoring Equipment

A. Kelly cock will be kept in the drill string at all times.

B. A full opening drill pipe-stabbing valve with proper drill pipe



EnerVest Operating, Ltd.  
Master Drilling Plan  
West Loco Hills Field  
Location - NA  
Eddy County, NM

Rig - TBD  
Rig Telephone # - TBD

---

connections will be on the rig floor at all times.

## **9 Logging, Testing and Coring Program**

- A. The electric logging program will consist of a GR-Dual Laterolog Litho Density log run from TD to the surface casing shoe.
- B. A GR-Neutron will be run to surface.
- C. No mud logger will be used.
- D. No conventional coring is anticipated.

## **10 Abnormal conditions, Pressure, Temperatures and Potential Hazards**

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 95°F and the estimated maximum bottom hole pressure is 1,000 psi. This well is to be drilled in a pre-existing water flood.

## **11 Anticipated Starting Date and Duration of Operations**

Road and location work will not begin until approval has been received from the BLM. Anticipated Start Date is January 10, 2009. Once commenced, drilling operations should be finished in approximately 5 days. An additional 30 days will be required for completion, testing and installation of permanent production facilities.

## **12 Safety**

Conduct Tour Safety Meetings with all crews and record topics of these meetings on the IADC and morning reports. Document all personnel in attendance and topics of these Safety Meetings. Keep these documents on file in company representative's office for inspection.

## **13 Notes**

Stamp, Code and Sign all Invoices

H<sub>2</sub>S Area? If yes, attach contingency plan.

Inclinations: Survey every 500' or bit trip  
Drop Totco every trip out to check the angle. Max inclination = 3°





EnerVest Operating, Ltd.  
Master Drilling Plan  
West Loco Hills Field  
Location - NA  
Eddy County, NM

Rig - TBD  
Rig Telephone # - TBD

---

Call Houston if survey is  $\geq 3^\circ$

Mud Disposal. Closed Loop system will be used. Haul off all cuttings and fluids.

BHA #1          Surface    Slick

BHA #2          Production Slick

**BIT PROGRAM**

			RPM	WOB
Surface	12-1/4"	SEC EBXSC1C	80-100	35k
Production	7-7/8"	SEC EBXS20SR	80-90	40k

## EnerVest Operating, Ltd

### Hydrogen Sulfide Drilling Operation Plan

#### I. HYDROGEN SULFIDE TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

1. The hazards and characteristics of hydrogen sulfide (H<sub>2</sub>S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H<sub>2</sub>S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
4. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

1. The effects of H<sub>2</sub>S on metal components. If high tensile tubular are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H<sub>2</sub>S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H<sub>2</sub>S zone (within 3 days or 500 feet) and weekly H<sub>2</sub>S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H<sub>2</sub>S Drilling Operations Plan and the Public Protection Plan. **The concentrations of H<sub>2</sub>S of wells in this area from surface to TD are low enough that a contingency plan is not required.**

## II. H2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonable expected to contain H2S.

### 1. Well Control Equipment:

- A. Flare line.
- B. Choke manifold.
- C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
- D. Auxiliary equipment may include if applicable: annular preventer & rotating head.

### 2. Protective equipment for essential personnel:

- A. Mark II Survive air 30-minute units located in the doghouse and at briefing areas, as indicated on well site diagram.

### 3. H2S detection and monitoring equipment:

- A. 1 portable H2S monitors positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 PPM are reached.

### 4. Visual warning systems:

- A. Wind direction indicators as shown on well site diagram (Exhibit #8).
- B. Caution/Danger signs (Exhibit #7) shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.

### 5. Mud program:

- A. The mud program has been designed to minimize the volume of H2S circulated to surface. Proper mud weight, safe drilling practices and the use of H2S scavengers will minimize hazards when penetrating H2S bearing zones.

**6. Metallurgy:**

- A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H<sub>2</sub>S service.
- B. All elastomers used for packing and seals shall be H<sub>2</sub>S trim.

**7. Communication:**

- A. Radio communications in company vehicles including cellular telephone and 2-way radio.
- B. Land line (telephone) communication at Office.

**8. Well testing:**

- A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safely and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H<sub>2</sub>S environment will use the closed chamber method of testing.
- B. There will be no drill stem testing.

**EXHIBIT #7**

**WARNING**

**YOU ARE ENTERING AN H<sub>2</sub>S AREA**

**AUTHORIZED PERSONNEL ONLY**

- 1. BEARDS OR CONTACT LENSES NOT ALLOWED**
- 2. HARD HATS REQUIRED**
- 3. SMOKING IN DESIGNATED AREAS ONLY**
- 4. BE WIND CONSCIOUS AT ALL TIMES**
- 5. CHECK WITH ENERVEST DRILLING MANAGER AT**

**EnerVest Operating, Ltd**

**1-713-659-3500**

# DRILLING LOCATION H<sub>2</sub>S SAFETY EQUIPMENT Exhibit # 8

