

**NM OIL CONSERVATION**  
ARTESIA DISTRICT

FEB 15 2018

Form 3160-3  
(March 2012)

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

UNITED STATES  
DEPARTMENT OF THE INTERIOR **RECEIVED**  
BUREAU OF LAND MANAGEMENT

**APPLICATION FOR PERMIT TO DRILL OR REENTER**

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		7. If Unit or CA Agreement, Name and No.
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		8. Lease Name and Well No. HUBER FEDERAL 16H <b>317243</b>
2. Name of Operator PERCUSSION PETROLEUM OPERATING LLC <b>371755</b>		9. API Well No. <b>30-015-44920</b>
3a. Address 919 Milam Street, Suite 2475 Houston TX 770	3b. Phone No. (include area code) (713)589-2337	10. Field and Pool, or Exploratory N SEVEN RIVERS / GLORIETA-YESO N
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface <b>SESW / 496 FSL / 1673 FWL / LAT 32.611099 / LONG -104.475808</b> At proposed prod. zone <b>SESW / 20 FSL / 1582 FWL / LAT 32.595303 / LONG -104.476135</b>		11. Sec., T. R. M. or Blk. and Survey or Area <b>SEC 34 / T19S / R25E / NMP</b>
14. Distance in miles and direction from nearest town or post office* <b>16 miles</b>		12. County or Parish <b>EDDY</b>
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) <b>496 feet</b>		13. State <b>NM</b>
16. No. of acres in lease <b>360</b>	17. Spacing Unit dedicated to this well <b>160.61</b>	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. <b>151 feet</b>	19. Proposed Depth <b>2875 feet / 8326 feet</b>	20. BLM/BIA Bond No. on file <b>FED: NMB001424</b>
21. Elevations (Show whether DF, KDB, RT, GL, etc.) <b>3521 feet</b>	22. Approximate date work will start* <b>11/01/2017</b>	23. Estimated duration <b>30 days</b>

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.   | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan.  | 5. Operator certification   |
| 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). | 6. Such other site specific information and/or plans as may be required by the BLM.             |

25. Signature (Electronic Submission)	Name (Printed/Typed) <b>Brian Wood / Ph: (505)466-8120</b>	Date <b>09/14/2017</b>
Title <b>President</b>		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) <b>Cody Layton / Ph: (575)234-5959</b>	Date <b>02/02/2018</b>
Title <b>Supervisor Multiple Resources</b>		
Office <b>CARLSBAD</b>		

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.

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)

**APPROVED WITH CONDITIONS**  
Approval Date: 02/02/2018

*NSP/NSL  
Required*

*RUP 2-20-18.*

## INSTRUCTIONS

**GENERAL:** This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

**ITEM 1:** If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

**ITEM 4:** Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

**ITEM 14:** Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal agency offices.

**ITEMS 15 AND 18:** If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective productive zone.

**ITEM 22:** Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

## NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

**AUTHORITY:** 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

**PRINCIPAL PURPOSES:** The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

**ROUTINE USE:** Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

**EFFECT OF NOT PROVIDING INFORMATION:** Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM collects this information to allow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications.

Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease.

The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

**BURDEN HOURS STATEMENT:** Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Collection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

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**Approval Date: 02/02/2018**

## **Additional Operator Remarks**

### **Location of Well**

1. SHL: SESW / 496 FSL / 1673 FWL / TWSP: 19S / RANGE: 25E / SECTION: 34 / LAT: 32.611099 / LONG: -104.475808 ( TVD: 0 feet, MD: 0 feet )  
PPP: NENW / 0 FNL / 1690 FWL / TWSP: 20S / RANGE: 25E / SECTION: 3 / LAT: 32.609695 / LONG: -104.475771 ( TVD: 2840 feet, MD: 3086 feet )  
PPP: SESW / 496 FSL / 1673 FWL / TWSP: 19S / RANGE: 25E / SECTION: 34 / LAT: 32.611099 / LONG: -104.475808 ( TVD: 0 feet, MD: 0 feet )  
BHL: SESW / 20 FSL / 1582 FWL / TWSP: 20S / RANGE: 25E / SECTION: 3 / LAT: 32.595303 / LONG: -104.476135 ( TVD: 2875 feet, MD: 8326 feet )

## **BLM Point of Contact**

Name: Sipra Dahal

Title: Legal Instruments Examiner

Phone: 5752345983

Email: sdahal@blm.gov

## **Review and Appeal Rights**

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

**PECOS DISTRICT  
DRILLING CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	Percussion Petroleum Operating LLC
LEASE NO.:	NMNM15291
WELL NAME & NO.:	16H- Huber Federal
SURFACE HOLE FOOTAGE:	496'S & 1673'W
BOTTOM HOLE FOOTAGE:	20'S & 1582'W
LOCATION:	Section 34, R.25E, T.19 S, NMPM.
COUNTY:	Eddy County, New Mexico.

Potash	<input checked="" type="radio"/> None	<input type="radio"/> Secretary	<input type="radio"/> R-111-P
Cave/Karst Potential	<input type="radio"/> Low	<input type="radio"/> Medium	<input checked="" type="radio"/> High
Variance	<input checked="" type="radio"/> None	<input type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input checked="" type="radio"/> Conventional	<input type="radio"/> Multibowl	
Other	<input type="checkbox"/> 4 String Area	<input type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP

**A. HYDROGEN SULFIDE**

1. Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

**B. CASING**

**HIGH CAVE/KARST – OPERATOR HAS PROPOSED A CONTINGENCY CASING IF LOST CIRCULATION OCCURS WHILE DRILLING THE SURFACE HOLE.**

**IF LOST CIRCULATION OCCURS WHILE DRILLING THE 8-3/4" HOLE, THE CEMENT PROGRAM FOR THE 5-1/2" CASING WILL NEED TO BE MODIFIED AND THE BLM IS TO BE CONTACTED PRIOR TO RUNNING THE CASING. A MINIMUM OF TWO CASING STRINGS CEMENTED TO SURFACE IS REQUIRED IN HIGH CAVE/KARST AREAS. THE CEMENT MUST BE IN A SOLID SHEATH THEREFORE, ONE INCH OPERATIONS WILL NOT BE PERMITTED. A DV TOOL WILL BE REQUIRED.**

### **Contingency Surface Casing Plan:**

1. The **13 3/8** inch contingency surface casing shall be set at approximately **400** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) 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 will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
  - 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 **9 5/8** inch surface casing shall be set at approximately **1286** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) 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 will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
  - 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. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

### **C. PRESSURE CONTROL**

1. **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 **3000 (3M)** psi.
2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8 inch** surface casing shoe shall be **3000 (3M)** psi.

### **D. SPECIAL REQUIREMENT(S)**

#### **Unorthodox Location**

**Operator will need to file a NSL (Non Standard Location) application with NMOCD.**

**MHH 02022018**

## GENERAL 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)

Chaves and Roosevelt Counties  
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.  
During office hours call (575) 627-0272.  
After office hours call (575)

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

Lea County  
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)  
393-3612

1. 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.
  - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
  - b. When the operator proposes to set surface casing with Spudder Rig
    - Notify the BLM when moving in and removing the Spudder Rig.
    - Notify the BLM when moving in the 2<sup>nd</sup> Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
    - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

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

A. CASING

1. 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.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. 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.

8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

**B. 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. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
  - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
  - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
  - c. Manufacturer representative shall install the test plug for the initial BOP test.
  - d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
  - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. 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. In potash areas, 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. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.
- c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- e. The results of the test shall be reported to the appropriate BLM office.
- f. 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.
- g. 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.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. 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.

**PECOS DISTRICT  
SURFACE USE  
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	Percussion Petroleum Operating LLC
LEASE NO.:	NMNM15291
WELL NAME & NO.:	16H- Huber Federal
SURFACE HOLE FOOTAGE:	496'/S & 1673'/W
BOTTOM HOLE FOOTAGE:	20'/S & 1582'/W
LOCATION:	Section 34, R.25E, T.19 S, NMPM.
COUNTY:	Eddy County, New Mexico.

**TABLE OF CONTENTS**

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

- General Provisions**
- Permit Expiration**
- Archaeology, Paleontology, and Historical Sites**
- Noxious Weeds**
- Special Requirements**
  - Cave/Karst
  - Range
  - Watershed/Water Quality
  - Tank Battery
- Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- Road Section Diagram**
- Production (Post Drilling)**
  - Well Structures & Facilities
  - Pipelines
  - Electric Lines
- Interim Reclamation**
- Final Abandonment & Reclamation**

## **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)**

### **Watershed/Water Quality:**

The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.

- The compacted berm shall be constructed at a minimum of 24 inches high with impermeable mineral material (e.g. caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised. (Any access road crossing the berm cannot be lower than the berm height.)

### **Tank Battery:**

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank. Automatic shut off, check valves, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

### **Cave and Karst Conditions of Approval for APDs**

\*\* Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

### **Cave/Karst Surface Mitigation**

The following stipulations will be applied to minimize impacts during construction, drilling and production.

#### **Construction:**

In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

#### **No Blasting:**

No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

**Leak Detection System:**

A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating valves and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

**Automatic Shut-off Systems:**

Automatic shut off, check valves, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

**Cave/Karst Subsurface Mitigation**

The following stipulations will be applied to protect cave/karst and ground water concerns:

**Rotary Drilling with Fresh Water:**

Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

**Directional Drilling:**

Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

**Lost Circulation:**

ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

**Abandonment Cementing:**

Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

**Pressure Testing:**

Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

**Cattle Guard Requirement**

Any new or existing cattle guards on the access 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 cattle guards that are in place and are utilized during lease operations. Once the road is abandoned, the fence would be restored to its prior condition, or better. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

**Livestock Watering Requirement**

Structures that provide water to livestock, such as windmills, pipelines, drinking troughs, and earthen reservoirs, will be avoided by moving the proposed action.

Any damage to fences, cattle guards, and pipelines or structures that provide water to livestock during construction, throughout the life of the project, and caused by its operation, must be immediately corrected by Percussion. Percussion must notify the grazing allottee or the private surface landowner and the BLM-CFO (575-234-5972) if any damage occurs to pipelines or structures that provide water to livestock.

Standard mitigation measures and elements of the Proposed Action are designed to minimize these impacts to wildlife. These include: use of the NTL-RDO 93-1 guidelines (modification of open-vent exhaust stacks to prevent perching and entry from birds and bats), placing nets on open top production tanks, installing raptor-safe electric power lines, conducting interim reclamation, utilizing closed loop systems, using exhaust mufflers, installing berms around collection facilities, minimizing cut and fill, selectively placing roads, and avoiding wildlife waters, stick nests, drainages, playas and dunal features. These practices reduce mortality to wildlife and allow habitat to remain available in the immediate surrounding area; thus reducing stressors on wildlife populations at a localized level.

## **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**

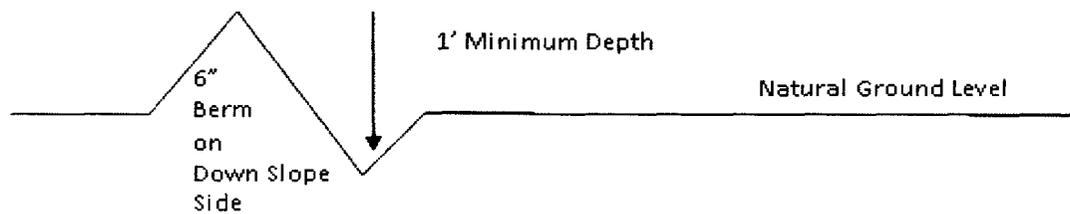
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

**Drainage**

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outloping 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:

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

### Cattle guards

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards 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 cattle guards 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

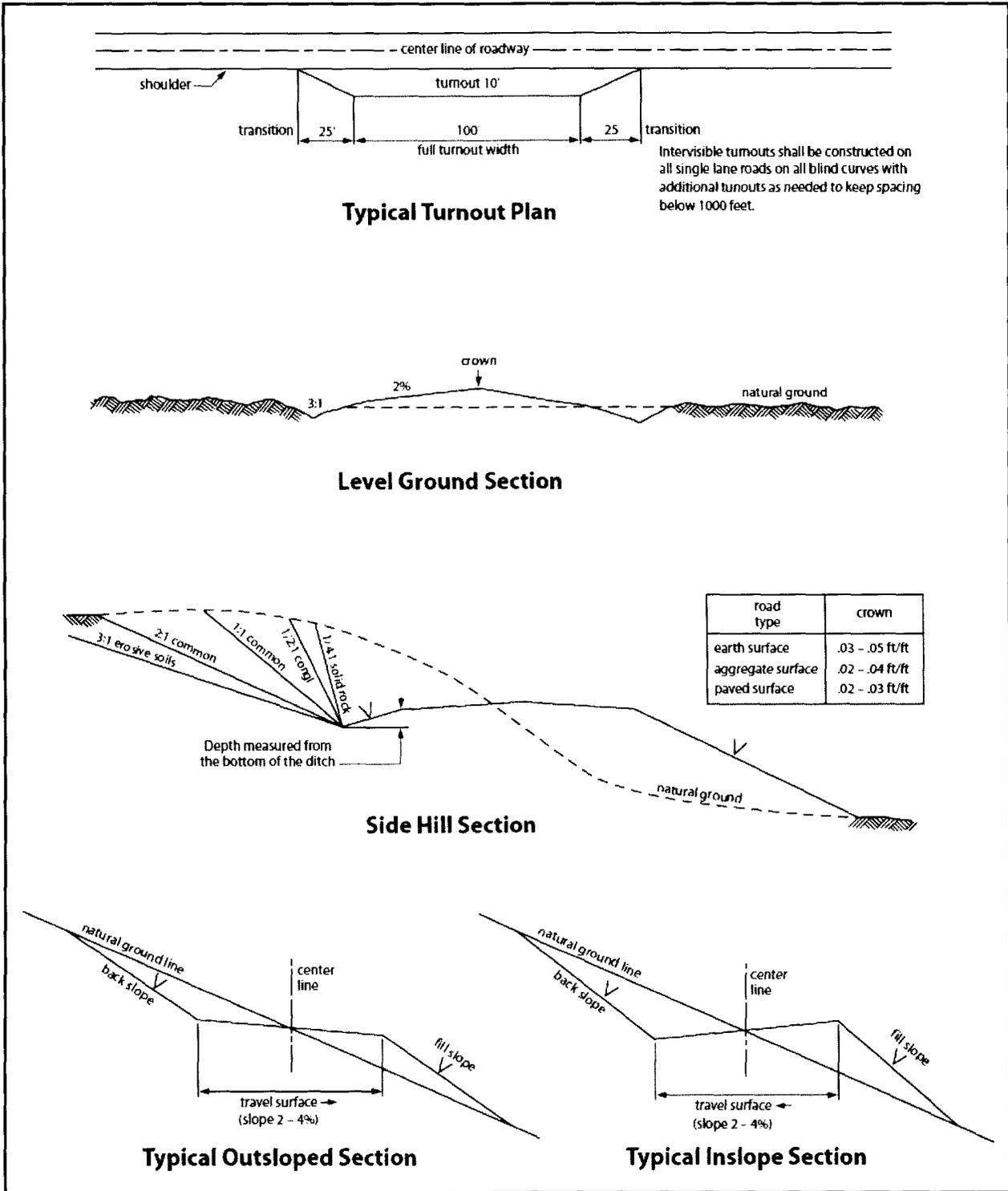


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

## VII. 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.

#### **Enclosure 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 Enclosure 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 enclosure 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 Enclosures**

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 enclosure 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 of 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.

### C. ELECTRIC LINES

#### STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES

**A copy of the grant 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 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. There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.

5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006 . The holder shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrence shall be placed on all vertical poles that extend past the cross arms.

6. 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 the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

7. The BLM serial number assigned to this authorization shall be posted in a permanent, conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.

8. Upon cancellation, relinquishment, or expiration of this grant, the holder shall comply with those abandonment procedures as prescribed by the Authorized Officer.

9. All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this grant, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.

10. 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 actions to prevent the loss of significant 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.

11. Special Stipulations:

- For reclamation remove poles, lines, transformer, etc. and dispose of properly.
- Fill in any holes from the poles removed.

## **VIII. 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).

## **IX. 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).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

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 shall 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 shall be either certified or registered seed. The seed container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

Seed shall 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 shall 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). Holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed shall be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre shall be doubled. The seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may 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

**PECOS DISTRICT  
SURFACE USE  
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	Percussion Petroleum Operating LLC
LEASE NO.:	NMNM15291
WELL NAME & NO.:	16H- Huber Federal
SURFACE HOLE FOOTAGE:	496'/S & 1673'/W
BOTTOM HOLE FOOTAGE:	20'/S & 1582'/W
LOCATION:	Section 34, R.25E, T.19 S, NMPM.
COUNTY:	Eddy County, New Mexico.

**TABLE OF CONTENTS**

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

- General Provisions**
- Permit Expiration**
- Archaeology, Paleontology, and Historical Sites**
- Noxious Weeds**
- Special Requirements**
  - Cave/Karst
  - Range
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- Road Section Diagram**
- Production (Post Drilling)**
  - Well Structures & Facilities
  - Pipelines
  - Electric Lines
- Interim Reclamation**
- Final Abandonment & Reclamation**

## **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)

### **Watershed/Water Quality:**

The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.

- The compacted berm shall be constructed at a minimum of 24 inches high with impermeable mineral material (e.g. caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised. (Any access road crossing the berm cannot be lower than the berm height.)

### **Tank Battery:**

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank. Automatic shut off, check valves, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

### **Cave and Karst Conditions of Approval for APDs**

\*\* Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

### **Cave/Karst Surface Mitigation**

The following stipulations will be applied to minimize impacts during construction, drilling and production.

#### **Construction:**

In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

#### **No Blasting:**

No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

**Leak Detection System:**

A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating valves and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

**Automatic Shut-off Systems:**

Automatic shut off, check valves, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

**Cave/Karst Subsurface Mitigation**

The following stipulations will be applied to protect cave/karst and ground water concerns:

**Rotary Drilling with Fresh Water:**

Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

**Directional Drilling:**

Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

**Lost Circulation:**

ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

**Abandonment Cementing:**

Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

**Pressure Testing:**

Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

**Cattle Guard Requirement**

Any new or existing cattle guards on the access 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 cattle guards that are in place and are utilized during lease operations. Once the road is abandoned, the fence would be restored to its prior condition, or better. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

**Livestock Watering Requirement**

Structures that provide water to livestock, such as windmills, pipelines, drinking troughs, and earthen reservoirs, will be avoided by moving the proposed action.

Any damage to fences, cattle guards, and pipelines or structures that provide water to livestock during construction, throughout the life of the project, and caused by its operation, must be immediately corrected by Percussion. Percussion must notify the grazing allottee or the private surface landowner and the BLM-CFO (575-234-5972) if any damage occurs to pipelines or structures that provide water to livestock.

Standard mitigation measures and elements of the Proposed Action are designed to minimize these impacts to wildlife. These include: use of the NTL-RDO 93-1 guidelines (modification of open-vent exhaust stacks to prevent perching and entry from birds and bats), placing nets on open top production tanks, installing raptor-safe electric power lines, conducting interim reclamation, utilizing closed loop systems, using exhaust mufflers, installing berms around collection facilities, minimizing cut and fill, selectively placing roads, and avoiding wildlife waters, stick nests, drainages, playas and dunal features. These practices reduce mortality to wildlife and allow habitat to remain available in the immediate surrounding area; thus reducing stressors on wildlife populations at a localized level.

## **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**

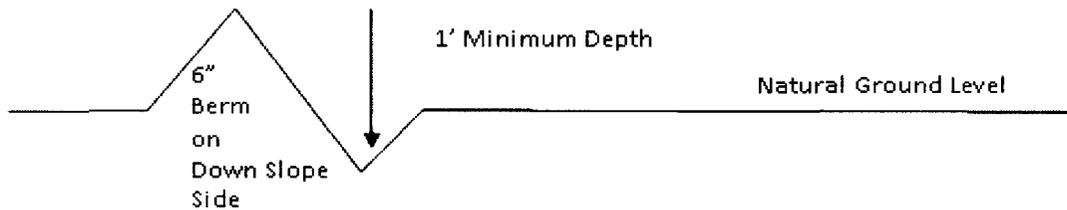
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

**Drainage**

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill out sloping 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:

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

### Cattle guards

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards 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 cattle guards 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

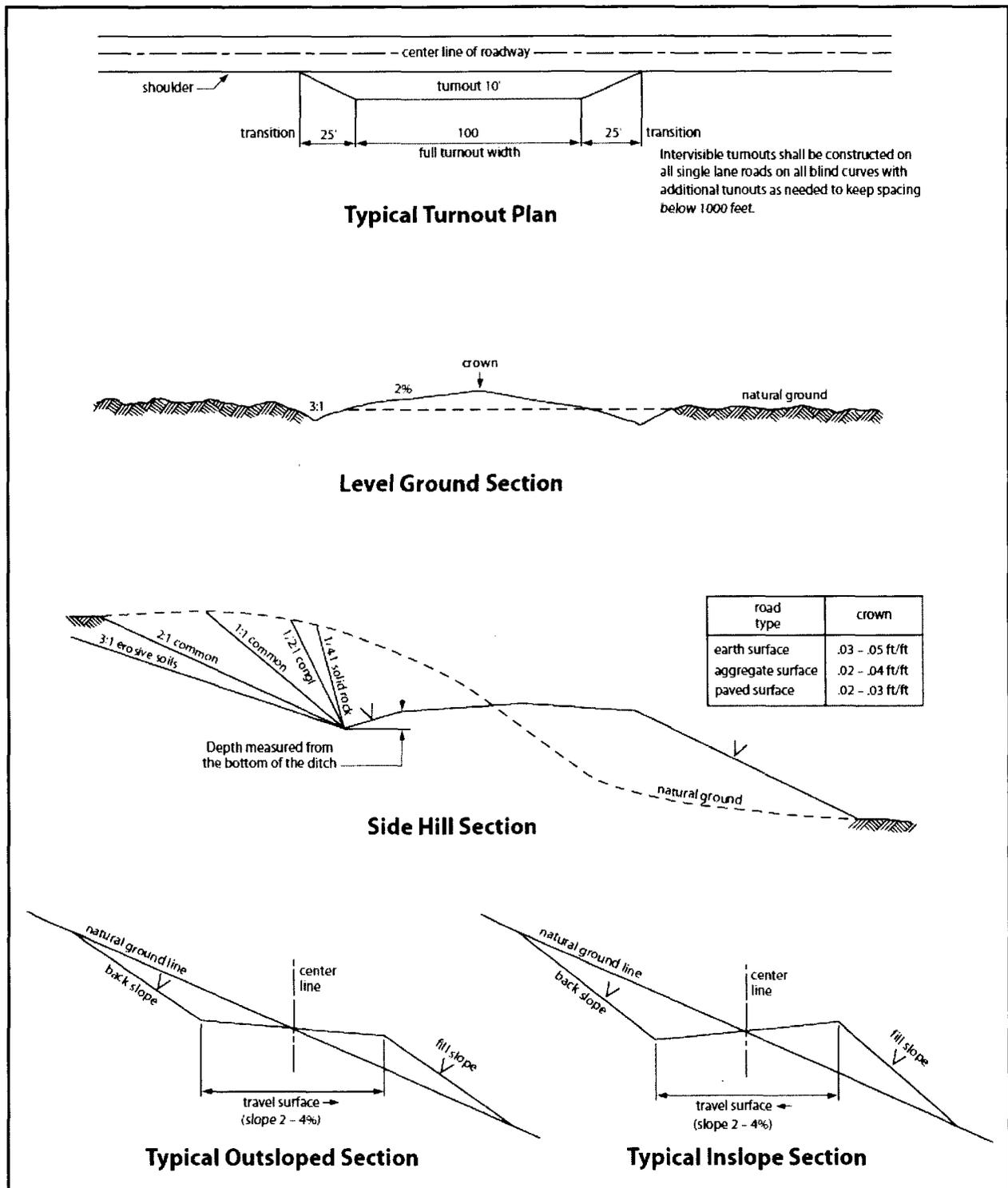


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

## VII. 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 requirements 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.

### **C. ELECTRIC LINES**

#### **STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES**

**A copy of the grant 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 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. There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.

5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006 . The holder shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrence shall be placed on all vertical poles that extend past the cross arms.

6. 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 the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

7. The BLM serial number assigned to this authorization shall be posted in a permanent, conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.

8. Upon cancellation, relinquishment, or expiration of this grant, the holder shall comply with those abandonment procedures as prescribed by the Authorized Officer.

9. All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this grant, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.

10. 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 actions to prevent the loss of significant 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.

11. Special Stipulations:

- For reclamation remove poles, lines, transformer, etc. and dispose of properly.
- Fill in any holes from the poles removed.

### **VIII. 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).

### **IX. 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).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

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 shall 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 shall be either certified or registered seed. The seed container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

Seed shall 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 shall 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). Holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed shall be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre shall be doubled. The seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may 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



U.S. Department of the Interior  
BUREAU OF LAND MANAGEMENT

## Operator Certification Data Report

02/09/2018

### Operator Certification

*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.*

**NAME:** Brian Wood

**Signed on:** 09/14/2017

**Title:** President

**Street Address:** 37 Verano Loop

**City:** Santa Fe

**State:** NM

**Zip:** 87508

**Phone:** (505)466-8120

**Email address:** afmss@permitswest.com

### Field Representative

**Representative Name:**

**Street Address:**

**City:**

**State:**

**Zip:**

**Phone:**

**Email address:**



<b>APD ID:</b> 10400022209	<b>Submission Date:</b> 09/14/2017	Highlighted data reflects the most recent changes <a href="#">Show Final Text</a>
<b>Operator Name:</b> PERCUSSION PETROLEUM OPERATING LLC		
<b>Well Name:</b> HUBER FEDERAL	<b>Well Number:</b> 16H	
<b>Well Type:</b> OIL WELL	<b>Well Work Type:</b> Drill	

**Section 1 - General**

<b>APD ID:</b> 10400022209	<b>Tie to previous NOS?</b>	<b>Submission Date:</b> 09/14/2017
<b>BLM Office:</b> CARLSBAD	<b>User:</b> Brian Wood	<b>Title:</b> President
<b>Federal/Indian APD:</b> FED	<b>Is the first lease penetrated for production Federal or Indian?</b> FED	
<b>Lease number:</b> NMNM15291	<b>Lease Acres:</b> 360	
<b>Surface access agreement in place?</b>	<b>Allotted?</b>	<b>Reservation:</b>
<b>Agreement in place?</b> NO	<b>Federal or Indian agreement:</b>	
<b>Agreement number:</b>		
<b>Agreement name:</b>		
<b>Keep application confidential?</b> NO		
<b>Permitting Agent?</b> YES	<b>APD Operator:</b> PERCUSSION PETROLEUM OPERATING LLC	
<b>Operator letter of designation:</b>		

**Operator Info**

**Operator Organization Name:** PERCUSSION PETROLEUM OPERATING LLC

**Operator Address:** 919 Milam Street, Suite 2475

**Operator PO Box:** Zip: 77002

**Operator City:** Houston      **State:** TX

**Operator Phone:** (713)589-2337

**Operator Internet Address:**

**Section 2 - Well Information**

<b>Well in Master Development Plan?</b> NO	<b>Mater Development Plan name:</b>	
<b>Well in Master SUPO?</b> NO	<b>Master SUPO name:</b>	
<b>Well in Master Drilling Plan?</b> NO	<b>Master Drilling Plan name:</b>	
<b>Well Name:</b> HUBER FEDERAL	<b>Well Number:</b> 16H	<b>Well API Number:</b>
<b>Field/Pool or Exploratory?</b> Field and Pool	<b>Field Name:</b> N SEVEN RIVERS	<b>Pool Name:</b> GLORIETA-YESO NE
<b>Is the proposed well in an area containing other mineral resources?</b> NATURAL GAS,CO2,OIL		

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** HUBER FEDERAL

**Well Number:** 16H

**Describe other minerals:**

**Is the proposed well in a Helium production area?** N    **Use Existing Well Pad?** NO    **New surface disturbance?**

**Type of Well Pad:** MULTIPLE WELL

**Multiple Well Pad Name:**

**Number:** 15H

**Well Class:** HORIZONTAL

HUBER FEDERAL

**Number of Legs:** 1

**Well Work Type:** Drill

**Well Type:** OIL WELL

**Describe Well Type:**

**Well sub-Type:** INFILL

**Describe sub-type:**

**Distance to town:** 16 Miles

**Distance to nearest well:** 151 FT

**Distance to lease line:** 496 FT

**Reservoir well spacing assigned acres Measurement:** 160.61 Acres

**Well plat:** Huber\_16H\_Plat\_20171102100603.pdf

**Well work start Date:** 11/01/2017

**Duration:** 30 DAYS

### Section 3 - Well Location Table

**Survey Type:** RECTANGULAR

**Describe Survey Type:**

**Datum:** NAD83

**Vertical Datum:** NAVD88

**Survey number:** 7977

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	496	FSL	167 3	FWL	19S	25E	34	Aliquot SESW	32.61109 9	- 104.4758 08	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 15291	352 1	0	0
KOP Leg #1	496	FSL	167 3	FWL	19S	25E	34	Aliquot SESW	32.61109 9	- 104.4758 08	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 15291	124 5	227 6	227 6
PPP Leg #1	496	FSL	167 3	FWL	19S	25E	34	Aliquot SESW	32.61109 9	- 104.4758 08	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 15291	352 1	0	0

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** HUBER FEDERAL

**Well Number:** 16H

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
PPP Leg #1	0	FNL	169 0	FWL	20S	25E	3	Aliquot NENW 5	32.60969 5	- 104.4757 71	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 14758	681 6	308 6	284 0
EXIT Leg #1	20	FSL	158 2	FWL	20S	25E	3	Aliquot SESW 3	32.59530 3	- 104.4761 35	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 14758	646 6	832 6	287 5
BHL Leg #1	20	FSL	158 2	FWL	20S	25E	3	Aliquot SESW 3	32.59530 3	- 104.4761 35	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 14758	646 6	832 6	287 5



APD ID: 10400022209

Submission Date: 09/14/2017

Highlighted data reflects the most recent changes

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: HUBER FEDERAL

Well Number: 16H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

### Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	---	3521	0	0	OTHER : Quaternary caliche	USEABLE WATER	No
2	GRAYBURG	2870	651	651	DOLOMITE	NATURAL GAS,CO2,OIL	No
3	SAN ANDRES	2685	836	836	DOLOMITE	NATURAL GAS,CO2,OIL	No
4	GLORIETA	1125	2396	2398	DOLOMITE	NATURAL GAS,CO2,OIL	No
5	YESO	970	2551	2564	DOLOMITE	NATURAL GAS,CO2,OIL	Yes

### Section 2 - Blowout Prevention

Pressure Rating (PSI): 3M

Rating Depth: 5000

**Equipment:** A 3000-psi 5000' rated BOP stack consisting of annular preventer and double (blind and pipe) ram will be used below surface casing to TD.

**Requesting Variance?** NO

**Variance request:**

**Testing Procedure:** A 3000-psi 5000' rated BOP stack consisting of annular preventer and double (blind and pipe) ram will be used below surface casing to TD. See attached BOP and choke manifold diagrams. Pressure tests will be conducted before drilling out from under all casing strings. Third party test crews will conduct all tests. All tests will be recorded for 10-minutes on low pressure (500 psi) and 10-minutes on high pressure (3000-psi). After BOP testing is complete, test casing (without test plug) to 2000-psi for 30 minutes. All tests will be charted on a plot. BOPs will be function tested every day.

**Choke Diagram Attachment:**

Huber\_16H\_BOP\_Choke\_20171102095015.pdf

**BOP Diagram Attachment:**

Huber\_16H\_BOP\_Choke\_20171102095048.pdf

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** HUBER FEDERAL

**Well Number:** 16H

### Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	12.25	9.625	NEW	API	N	0	1286	0	1286	3521		1286	J-55	36	STC	1.125	1.125	DRY	1.8	DRY	1.8
2	PRODUCTION	8.75	5.5	NEW	API	N	0	8327	0	2857	3521		8327	L-80	17	OTHER - BTC	1.125	1.125	DRY	1.8	DRY	1.8

#### Casing Attachments

---

**Casing ID:** 1                    **String Type:** SURFACE

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Huber\_16H\_Casing\_Design\_Assumptions\_20170913142709.pdf

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**Casing ID:** 2                    **String Type:** PRODUCTION

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Huber\_16H\_Casing\_Design\_Assumptions\_20170913142717.pdf

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**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** HUBER FEDERAL

**Well Number:** 16H

### Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	1286	640	1.32	14.8	845	100	Class C	2% CaCl + ¼ pound per sack celloflake

PRODUCTION	Lead		0	8327	495	1.97	12.6	975	50	65/65/6 Class C	6% gel + 5% salt + ¼ #/sack celloflake + 0.2% C41-P
PRODUCTION	Tail		0	8327	1686	1.32	14.8	2225	50	Class C	2% CaCl + ¼ pound per sack celloflake

### Section 5 - Circulating Medium

**Mud System Type:** Closed

**Will an air or gas system be Used?** NO

**Description of the equipment for the circulating system in accordance with Onshore Order #2:**

**Diagram of the equipment for the circulating system in accordance with Onshore Order #2:**

**Describe what will be on location to control well or mitigate other conditions:** All necessary mud products (LCM) will be on site to handle any abnormal hole condition that may be encountered while drilling this well.

**Describe the mud monitoring system utilized:** An electronic/mechanical mud monitor with a minimum pit volume totalizer, stroke counter, and flow sensor will be used.

### Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	1286	OTHER : Fresh water/gel	8.4	9.2							
1286	2300	OTHER : Fresh water/cut brine	8.3	9.2							
2300	8327	OTHER : Cut brine	8.6	9.2							

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** HUBER FEDERAL

**Well Number:** 16H

## Section 6 - Test, Logging, Coring

**List of production tests including testing procedures, equipment and safety measures:**

A mud logger will be used from GL to TD. Samples will be collected every 10' in the lateral pay zone.  
No electric logs are planned at this time.

**List of open and cased hole logs run in the well:**

DS

**Coring operation description for the well:**

No core or drill stem test is planned.

## Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 1227

**Anticipated Surface Pressure:** 1227

**Anticipated Bottom Hole Temperature(F):** 113

**Anticipated abnormal pressures, temperatures, or potential geologic hazards?** NO

**Describe:**

**Contingency Plans geohazards description:**

**Contingency Plans geohazards attachment:**

**Hydrogen Sulfide drilling operations plan required?** YES

**Hydrogen sulfide drilling operations plan:**

Huber\_16H\_H2S\_Plan\_20170913143219.pdf

## Section 8 - Other Information

**Proposed horizontal/directional/multi-lateral plan submission:**

Huber\_16H\_Horizontal\_Drill\_Plan\_20170913143237.pdf

**Other proposed operations facets description:**

Deficiency letter dated 11/21/17 requested:

- 1) Revised BOP- see revised Testing procedure and General Drill Plan;
- 2) Cementing specs for contingency casing - see revised Casing Design Contingency Plan

**Other proposed operations facets attachment:**

Huber\_16H\_General\_Drill\_Plan\_Revised\_20171123104615.pdf

Huber\_16H\_Bottom\_Hole\_Footage\_20171123104628.pdf

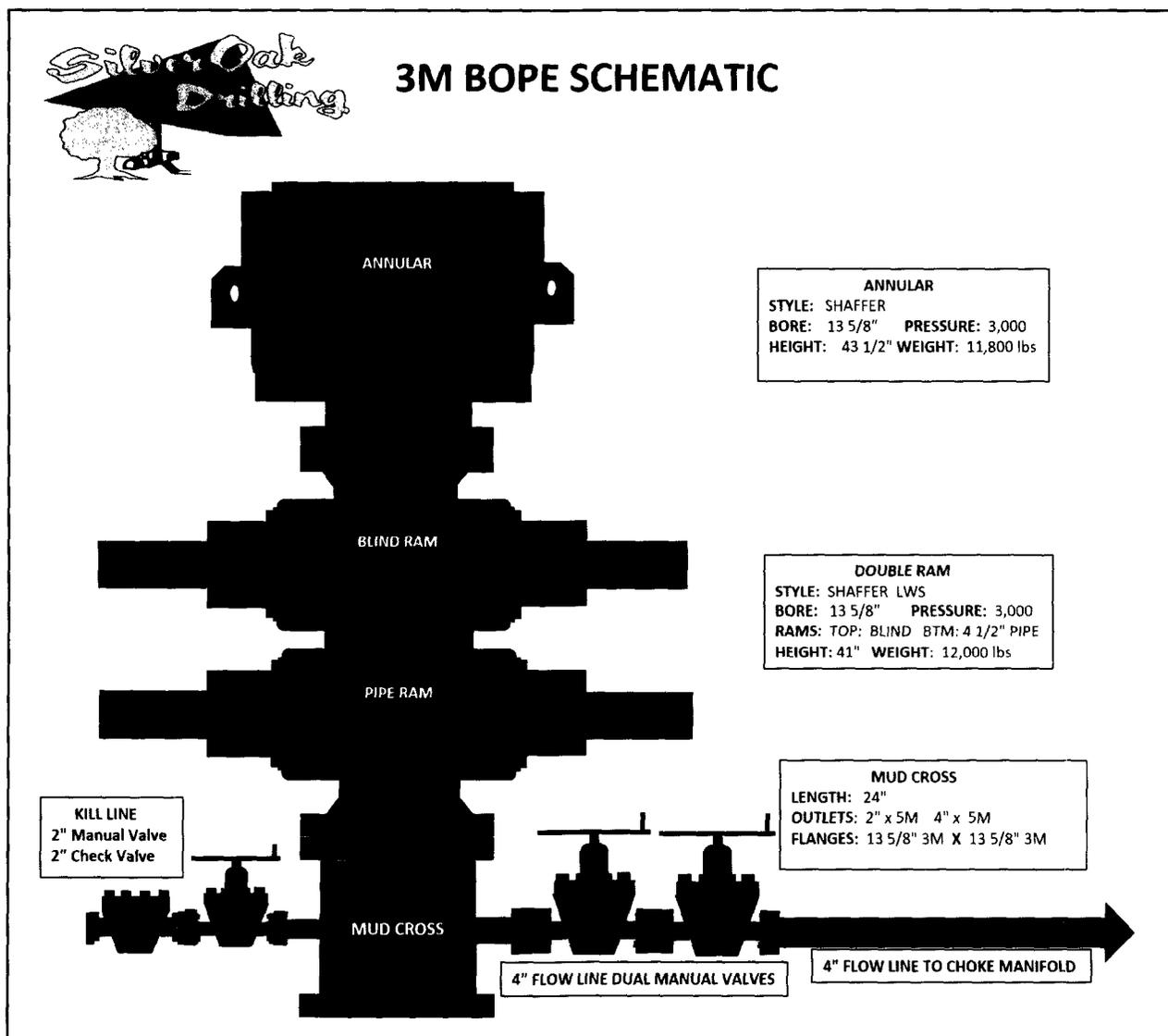
Huber\_16H\_Casing\_Design\_Contingency\_Plan.rev3\_20171127081504.pdf

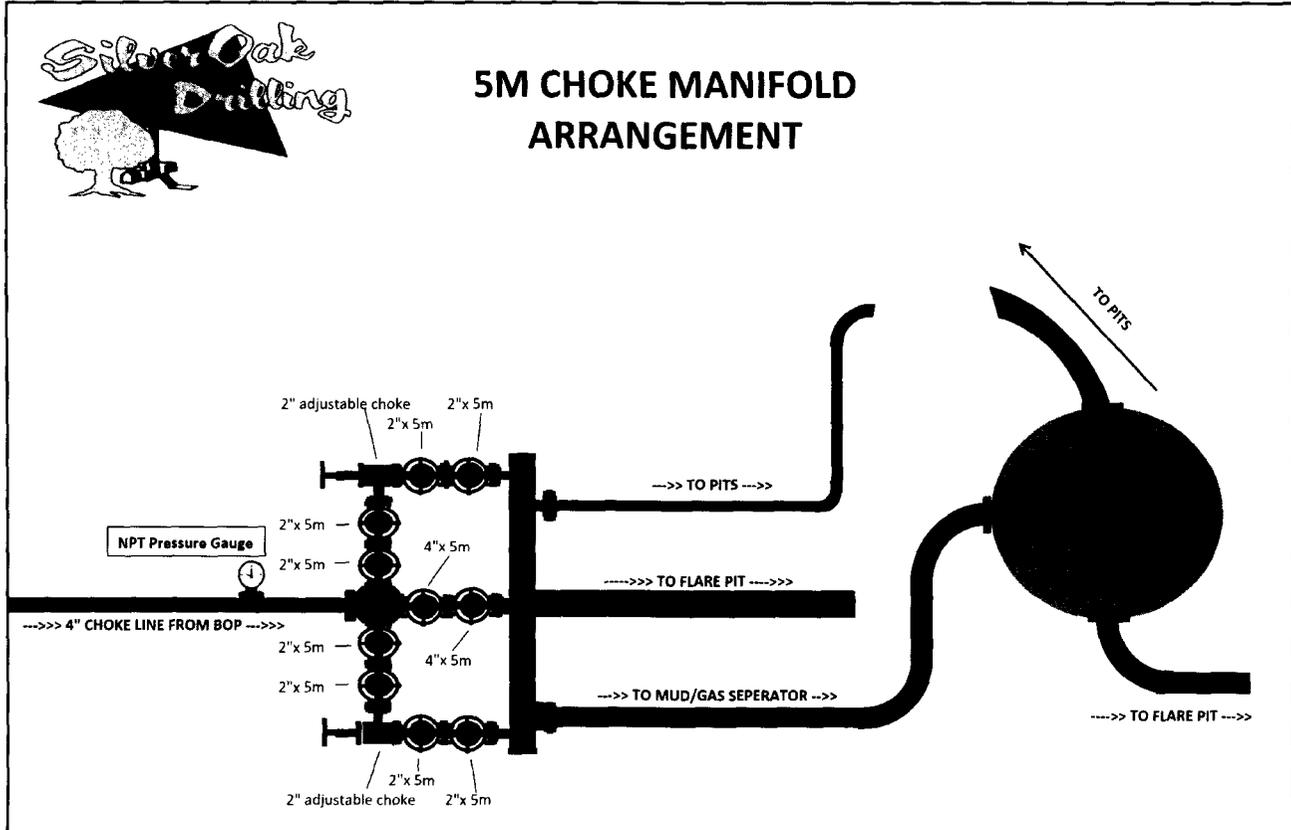
**Other Variance attachment:**



## Nipple-Up

- a. Raise stack and center over the wellhead
- b. Install DSA and ring gaskets
- c. Lower stack onto DSA
- d. Torque DSA flange bolts in a star pattern to the specified torque
- e. Verify BOP is centered to the rotary table
- f. Install rotating head
- g. Install hydraulic lines to BOP
- h. Verify manifold line-up
- i. Test BOP & manifold





## Pressure Testing

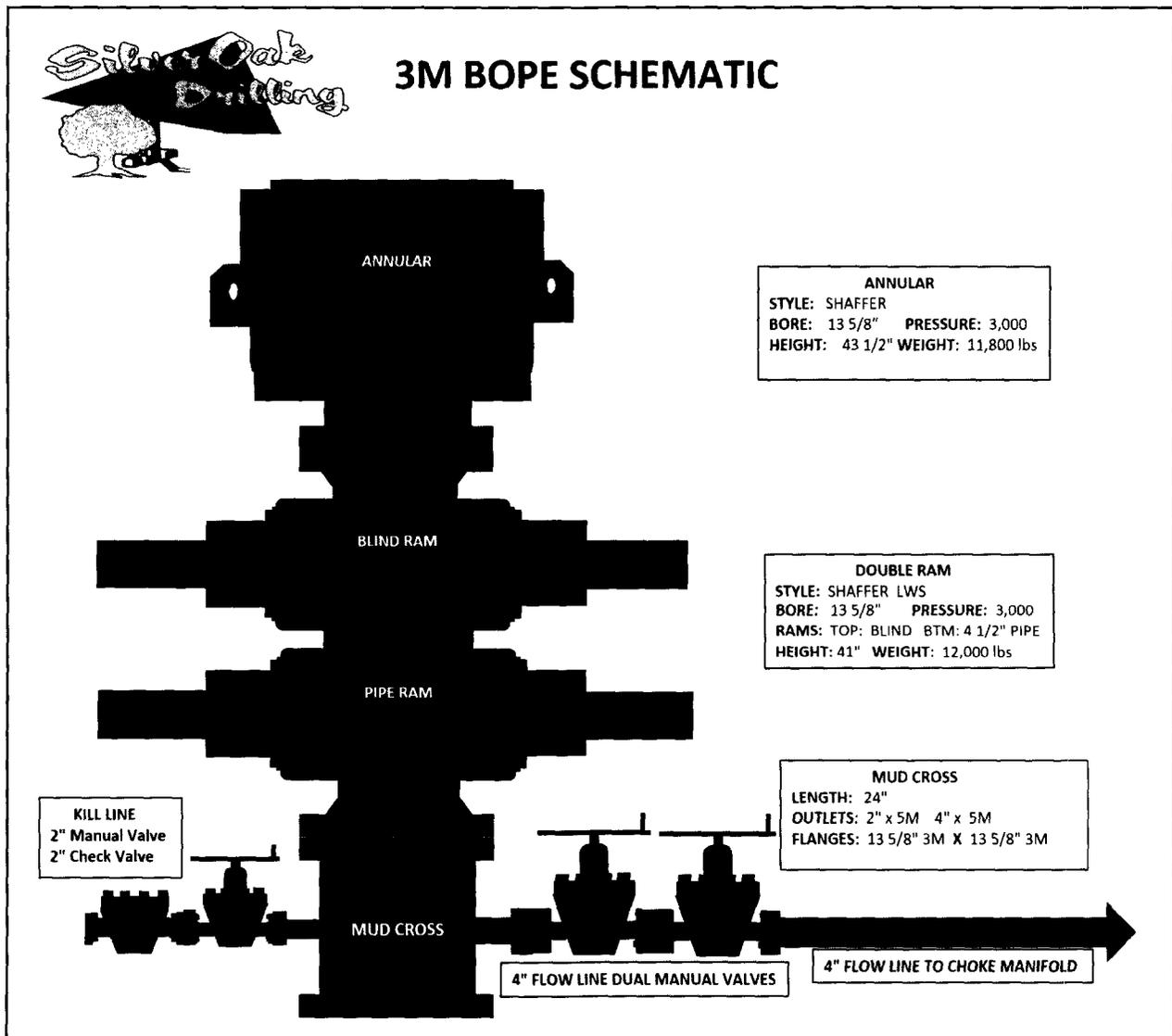
- a. All testing to be done with 3<sup>rd</sup> party testing crews
- b. All tests should be done for each BOP/Valve/Choke Manifold:
  1. Recorded for 10 minutes on low pressure (500 psi)
  2. Recorded for 10 minutes on high pressure (3000 psi)
  3. All BOP testing will be completed with a test plug in place in wellhead
- c. After BOP testing is complete, test casing (without test plug) to 2000 psi for 30 minutes
- d. Company representative to email all copies of all plots to Drilling Engineer as well as save in the well file.
- e. **BOP's shall be function tested every day.**

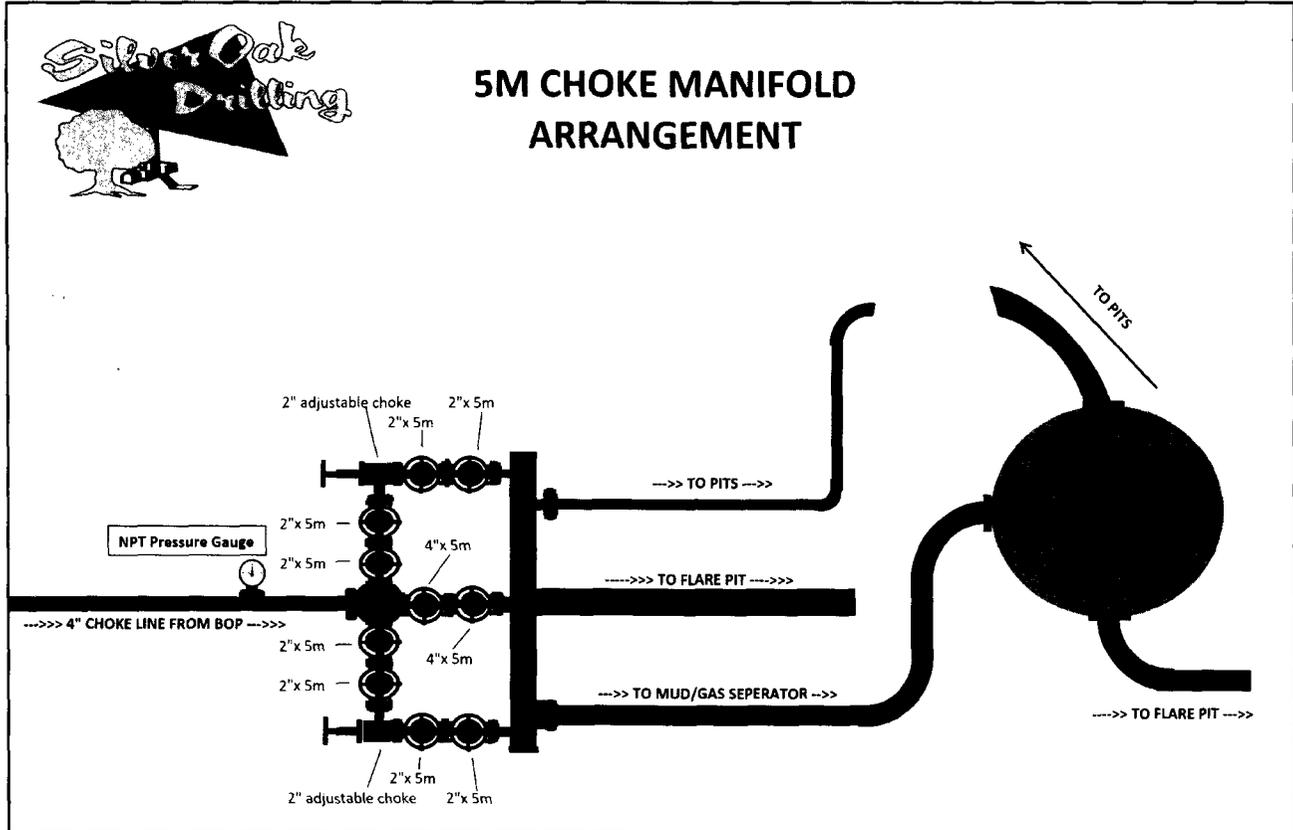
## Gas Buster Operation

- a. Flow should be directed to pits unless choke is needed to control gas
- b. Adjustable choke to adjusted only by Percussion Rep on location
- c. Flare should remain burning (pilot lit) anytime fluid is going through gas buster
- d. Choke needs to be monitored to not overrun gas buster

### Nipple-Up

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## Casing Design Criteria and Load Case Assumptions

### Percussion Petroleum Operating, LLC. – Huber 3 Federal Area Wells

1. Collapse:  $DF_c=1.125$ 
  - a. Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
  - b. Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and minimum mud gradient in which the casing will be run above that (0.65 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft)
2. Burst:  $DF_b=1.125$ 
  - a. Pressure Test: psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
  - b. Injection Down Casing: psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
3. Tensile:  $DF_T=1.8$ 
  - a. Overpull: An overpull force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (8.5 ppg).

Surface Casing Program									
Casing Size (in)	Weight (ppf)	Grade	Connection	ID	ID (drift)	Collapse (psi)	Burst (psi)	Tension (1,000 lbs)	Capacity (bbl/ft)
9-5/8"	36	J-55	STC	8.921	8.765	2,020	3,520	394	0.0773
Safety Factors									
	API Rec. SF	<b>ACTUAL SF</b>	Case	External Fluids			Internal Fluids		
Collapse	1.125	<b>3.30</b>	Lost Circulation	Mud			None		
Burst	1.125	<b>1.46</b>	Plug Bump	Green Cement + 2ksi surf pressure			Displacement Fluid/Mud		
Tension	1.8	<b>2.80</b>	100 klbs Overpull	Mud			Mud		

*Buoyed Casing Weight: 40,798 lbs (assuming 8.4 ppg fluid and 1,300' casing-worst case scenario)*

Production Casing Program									
Casing Size (in)	Weight (ppf)	Grade	Connection	ID	ID (drift)	Collapse (psi)	Burst (psi)	Tension (1,000 lbs)	Capacity (bbl/ft)
5-1/2"	17	L-80	BTC	4.892	4.767	6,280	7,740	348	0.0232
Safety Factors									
	API Rec. SF	<b>ACTUAL SF</b>	Case	External Fluids			Internal Fluids		
Collapse	1.125	<b>3.75</b>	Lost Circulation	Mud			None		
Burst	1.125	<b>2.47</b>	Plug Bump	Green Cement + 2ksi surf pressure			Displacement Fluid/Mud		
Tension	1.8	<b>2.29</b>	100 klbs Overpull	Mud			Mud		

*Buoyed Casing Weight: 51,869 lbs (assuming 8.4 ppg fluid and 3,500' TVD-worst case scenario)*

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Safety Factors									
	API Rec. SF	<b>ACTUAL SF</b>	Case	External Fluids			Internal Fluids		
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Burst	1.125	<b>2.47</b>	Plug Bump	Green Cement + 2ksi surf pressure			Displacement Fluid/Mud		
Tension	1.8	<b>2.29</b>	100 klbs Overpull	Mud			Mud		

*Buoyed Casing Weight: 51,869 lbs (assuming 8.4 ppg fluid and 3,500' TVD-worst case scenario)*

## Hydrogen Sulfide Drilling Operations Plan

Percussion Petroleum Operating, LLC.

1. H<sub>2</sub>S Safety Instructions to the following:
  - Characteristics of H<sub>2</sub>S.
  - Physical effects and hazards.
  - Principal and operation of H<sub>2</sub>S detectors, warning system and briefing areas.
  - Evacuation procedures, routes and First Aid.
  - Proper use of safety equipment and life support systems.
  - Essential personnel meeting medical evaluation criteria will receive additional training on the proper use of 30 min pressure demand air packs.
2. H<sub>2</sub>S Detection & Alarm Systems:
  - H<sub>2</sub>S sensor/detectors to be located on the drilling rig floor, in the base of the sub structure/cellar area, on the mud returns pits by the shale shaker. Additional H<sub>2</sub>S monitors may be placed as deemed necessary.
  - An audio alarm system will be installed on the derrick, the floor, and in the doghouse.
3. Windssocks and Wind Streamers:
  - Windssocks at mud pit area should be high enough to be visible.
  - Windssock on the rig floor/top of doghouse should be high enough to be visible.
4. Condition Flags & Signs:
  - Warning sign on access road to location
  - Flags to be displayed on sign at entrance to location
    - i. Green Flag – Normal Safe Operation Condition
    - ii. Yellow Flag – Potential Pressure and Danger
    - iii. Red Flag – Danger (H<sub>2</sub>S present in dangerous concentrations) Only H<sub>2</sub>S trained personnel admitted on location
5. Well Control Equipment:
  - See attached APD
6. Communications:
  - While working under masks, chalkboards will be used for communications
  - Hand signals will be used where chalk board is inappropriate
  - Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at drilling foreman's trailer or living quarters.
7. Drilling Stem Testing:
  - No Drill Stem Tests or hole coring is planned at this time.
8. Drilling contractor supervisor will be required to be familiar with the effects H<sub>2</sub>S has on tubular goods and other mechanical equipment.
9. If H<sub>2</sub>S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H<sub>2</sub>S scavenger chemicals if necessary.
10. Emergency Contacts:

<b>Emergency Contact Information - H2S Contingency Plan</b>				
<b>Percussion Petroleum Operating, LLC</b>	<b>713-518-1331</b>			
<b>Key Parties at Percussion Petroleum</b>		<b>Office</b>	<b>Mobile</b>	<b>Email</b>
Lelan J. Anders	Vice President of Operations	713-429-1291	281-908-1752	Lelan@PercussionPetroleum.com
Lupe Carrillo	Chief Operating Officer	713-589-9509	832-776-1869	Lupe@PercussionPetroleum.com
John H. Campbell III	Chief Executive Officer	713-589-4683	936-718-6488	John@PercussionPetroleum.com

<b>Artesia, New Mexico:</b>	
Ambulance	911
State Police	575-746-2703
City Police	575-746-2703
Sheriff's Office	575-746-9888
Fire Department	575-746-2701
Local Emergency Planning Committee	575-746-2122
New Mexico Oil Conservation Division	575-748-1283

<b>Carlsbad, New Mexico:</b>	
Ambulance	911
State Police	575-885-3137
City Police	575-885-2111
Sheriff's Office	575-887-7551
Fire Department	575-887-3798
Local Emergency Planning Committee	575-887-6544
New Mexico Oil Conservation Division	575-887-6544

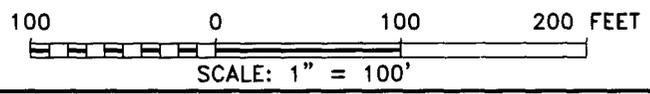
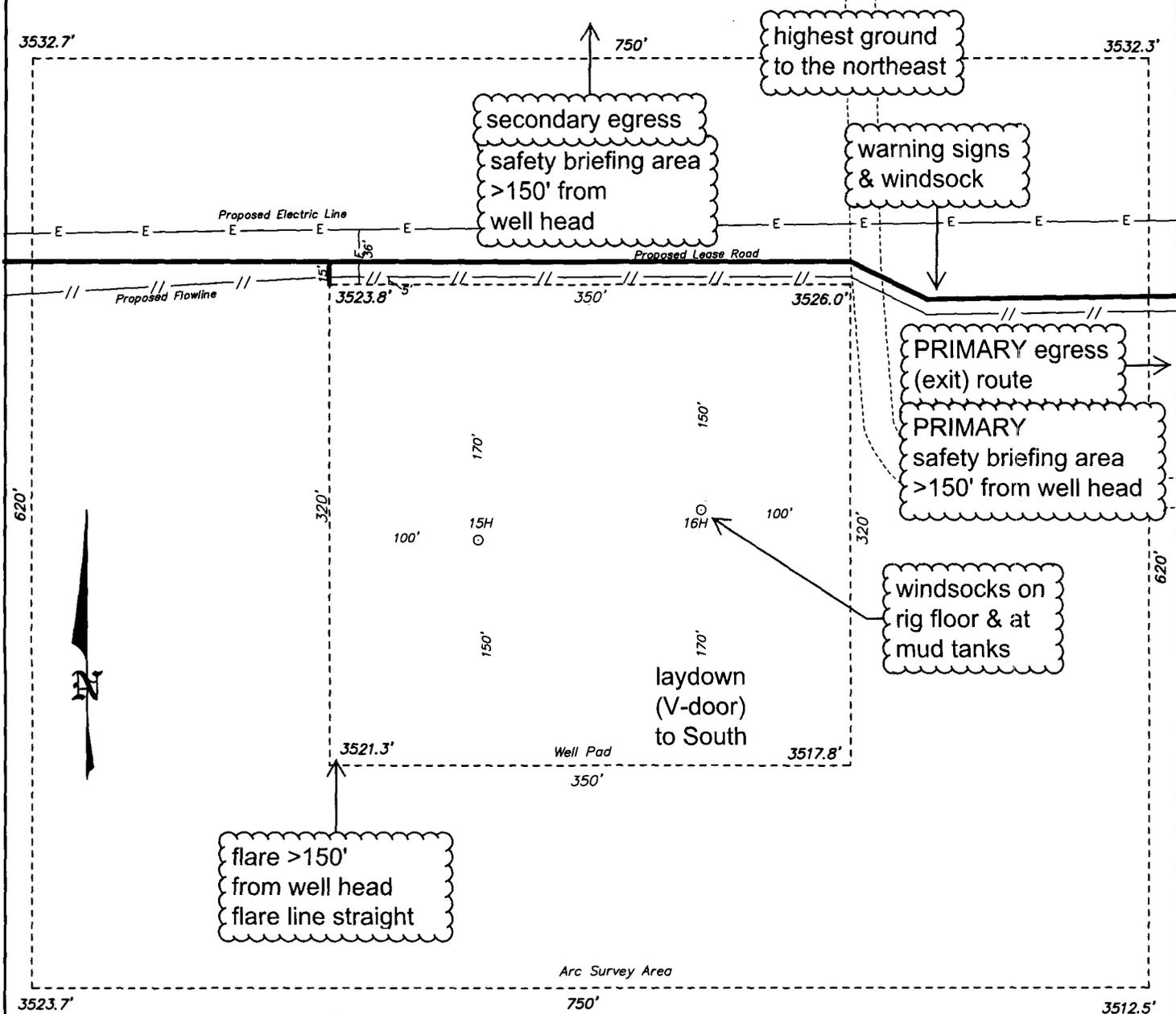
<b>Santa Fe, New Mexico:</b>	
New Mexico Emergency Response Commission	505-476-9600
New Mexico Emergency Response Commission (24 hr)	505-827-9126
New Mexico State Emergency Operations Center	505-476-9635

<b>Federal Contacts:</b>	
Carlsbad BLM Office	575-234-5972
National Emergency Response Center (Washington, DC)	800-424-8802

<b>Medical:</b>	
Flight for Life - Lubbock, TX	806-743-9911
Aero Care - Lubbock, TX	806-747-8923
Med Flight Air Ambulance - Albuquerque, NM	505-842-4433
SB Air Med Service - Albuquerque, NM	505-842-4949

<b>Well Control/Other:</b>	
Wild Well Control	281-784-4700
Boots & Coots IWC	800-256-9688
B.J. Services	575-746-3569
Halliburton	575-746-2757

SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,  
 EDDY COUNTY, NEW MEXICO.



**PERCUSSION PETROLEUM OPERATING, LLC**

REF: HUBER FEDERAL #16H / WELL PAD TOPO

THE HUBER FEDERAL #16H LOCATED 496' FROM  
 THE SOUTH LINE AND 1673' FROM THE WEST LINE OF  
 SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST,  
 N.M.P.M., EDDY COUNTY, NEW MEXICO.



P.O. Box 1766 (575) 393-7316 - Office  
 1120 N. West County Rd. (575) 392-2206 - Fax  
 Hobbs, New Mexico 88241 basinsurveys.com

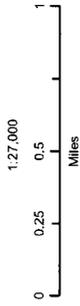
# Percussion Petroleum Operating LLC

Huber Federal #16H  
H<sub>2</sub>S Contingency Plan:  
2 Mile Radius Map

Section 34, Township 19S, Range 25E  
Eddy County, New Mexico



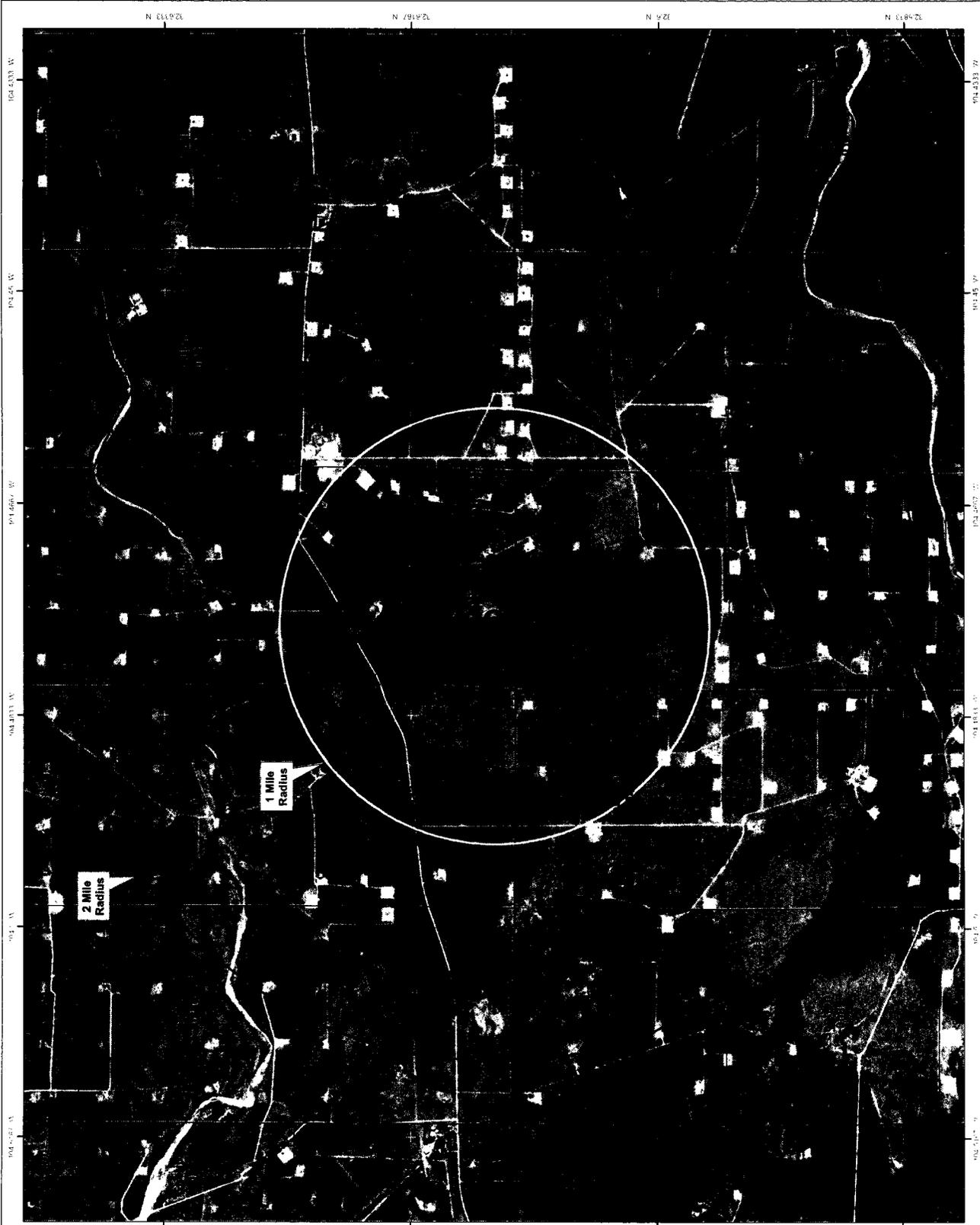
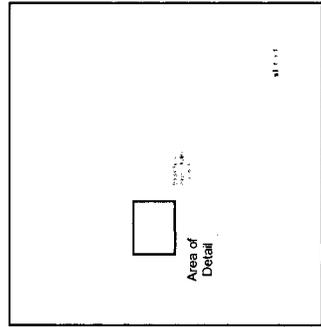
Surface Hole Location



NAD 1983 New Mexico State Plane East  
FIPS 3001 Feet



Prepared by Permits West, Inc., September 11, 2017  
for Percussion Petroleum Operating LLC





**PERCUSSION**  
PETROLEUM  
LLC

## **Percussion Petroleum, LLC**

**Eddy County, NM**

**Huber Fed**

**16H**

**OH**

**Plan: Plan #2**

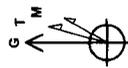
## **Standard Planning Report**

**23 August, 2017**





Azimuths to Grid North  
 True North: 0.08°  
 Magnetic North: 7.46°  
 Magnetic Field  
 Strength: 48049.2nT  
 Dip Angle: 60.27°  
 Date: 8/25/2017  
 Model: IGRF2015



Magnetic North is 7.46° East of Grid North (Magnetic Convergence)

Company: Percussion Petroleum, LLC  
 Project: Eddy County, NM  
 Site: Huber Fed  
 Well: 16H  
 Wellbore: OH  
 Rig: NA  
 Design: Plan #2 / 10:38, August 23 2017

WELL DETAILS: 16H

RKB=25° @ 3546.00usft (NA)  
 3521.00

+N/S	+E/-W	Northing	Eastings	Latitude	Longitude
0.00	0.00	586077.90	497488.00	32.611099	-104.475806

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/S	+E/-W	Dleg	Vsect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	351.00	0.00	0.00	351.00	5.90	0.00	0.00	0.00
3	160.93	3.00	134.18	1010.96	21.66	23.32	0.00	21.37
4	169.89	0.00	0.00	1169.04	-24.40	25.11	0.00	23.78
5	169.89	0.00	0.00	2275.04	-24.40	25.11	0.00	23.78
6	2275.89	89.90	181.34	2848.00	-596.20	11.70	10.00	595.74
7	3174.89	89.90	181.34	2857.00	-5746.50	-105.10	0.00	5747.45
8	8326.61	89.90	181.34	2857.00	-5746.50	-105.10	0.00	5747.45

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

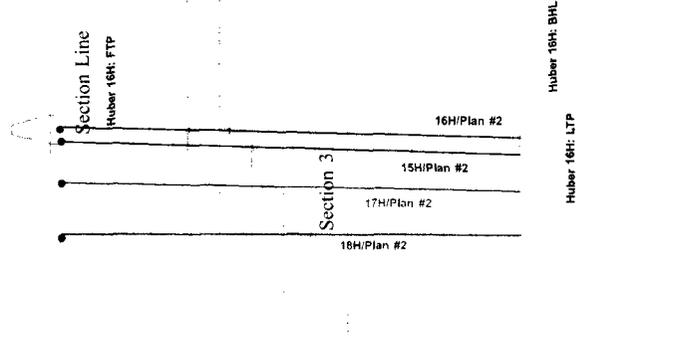
Name	TVD	+N/S	+E/-W	Northing	Eastings	Shape
Huber 16H: FTP	2848.00	-596.20	-105.10	58481.70	497488.00	POINT
Huber 16H: BHL	2857.00	-5666.50	-108.00	58041.40	497360.00	POINT
Huber 16H: LTP	2857.00	-5666.50	-108.00	58041.40	497360.00	POINT

PROJECT DETAILS: Eddy County, NM

Geodetic System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 80  
 System Datum: Mean Sea Level

**Disclaimer:**  
 All Plans are the property of Wellbenders Directional Services and of the well localizer/ survey data is provided by customer and subject to their approval.

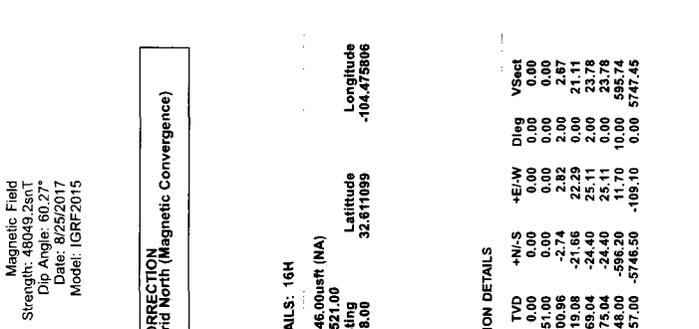
West(-)/East(+) (400 usft/in)  
 -2400 -2000 -1600 -1200 -800 -400 0 400 800 1200 1600 2000 2400 2800 3200 3600



Vertical Section at 181.40° (100 usft/in)  
 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500 2600 2700 2800



Vertical Section at 181.40° (100 usft/in)  
 0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500 2600 2700 2800



Huber 16H: LTP  
 TD at 8326.61  
 Plan: Plan #2 (16H/OH) NA  
 Created By: Daniel Benn Date: 10:38, August 23 2017



Huber 16H: BHL  
 Huber 16H: LTP  
 TD at 8326.61  
 Plan: Plan #2 (16H/OH) NA  
 Created By: Daniel Benn Date: 10:38, August 23 2017







# Wellbenders Planning Report



**Database:** WBDS\_SQL\_2  
**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Site:** Huber Fed  
**Well:** 16H  
**Wellbore:** OH  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**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 (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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
351.00	0.00	0.00	351.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.98	134.18	400.00	-0.29	0.30	0.28	2.00	2.00	0.00
501.03	3.00	134.18	500.96	-2.74	2.82	2.67	2.00	2.00	0.00
600.00	3.00	134.18	599.80	-6.35	6.53	6.19	0.00	0.00	0.00
700.00	3.00	134.18	699.66	-10.00	10.29	9.74	0.00	0.00	0.00
800.00	3.00	134.18	799.52	-13.64	14.04	13.30	0.00	0.00	0.00
900.00	3.00	134.18	899.38	-17.29	17.79	16.85	0.00	0.00	0.00
1,000.00	3.00	134.18	999.25	-20.94	21.55	20.41	0.00	0.00	0.00
1,019.86	3.00	134.18	1,019.08	-21.66	22.29	21.11	0.00	0.00	0.00
1,100.00	1.40	134.18	1,099.16	-23.81	24.50	23.20	2.00	-2.00	0.00
1,169.89	0.00	0.00	1,169.04	-24.40	25.11	23.78	2.00	-2.00	0.00
1,200.00	0.00	0.00	1,199.15	-24.40	25.11	23.78	0.00	0.00	0.00
1,300.00	0.00	0.00	1,299.15	-24.40	25.11	23.78	0.00	0.00	0.00
1,400.00	0.00	0.00	1,399.15	-24.40	25.11	23.78	0.00	0.00	0.00
1,500.00	0.00	0.00	1,499.15	-24.40	25.11	23.78	0.00	0.00	0.00
1,600.00	0.00	0.00	1,599.15	-24.40	25.11	23.78	0.00	0.00	0.00
1,700.00	0.00	0.00	1,699.15	-24.40	25.11	23.78	0.00	0.00	0.00
1,800.00	0.00	0.00	1,799.15	-24.40	25.11	23.78	0.00	0.00	0.00
1,900.00	0.00	0.00	1,899.15	-24.40	25.11	23.78	0.00	0.00	0.00
2,000.00	0.00	0.00	1,999.15	-24.40	25.11	23.78	0.00	0.00	0.00
2,100.00	0.00	0.00	2,099.15	-24.40	25.11	23.78	0.00	0.00	0.00
2,200.00	0.00	0.00	2,199.15	-24.40	25.11	23.78	0.00	0.00	0.00
2,275.89	0.00	0.00	2,275.04	-24.40	25.11	23.78	0.00	0.00	0.00
2,300.00	2.41	181.34	2,299.14	-24.91	25.10	24.29	10.00	10.00	0.00
2,350.00	7.41	181.34	2,348.95	-29.19	25.00	28.57	10.00	10.00	0.00
2,400.00	12.41	181.34	2,398.18	-37.79	24.80	37.17	10.00	10.00	0.00
2,450.00	17.41	181.34	2,446.48	-50.64	24.50	50.03	10.00	10.00	0.00
2,500.00	22.41	181.34	2,493.48	-67.66	24.10	67.05	10.00	10.00	0.00
2,550.00	27.41	181.34	2,538.81	-88.71	23.60	88.11	10.00	10.00	0.00
2,600.00	32.41	181.34	2,582.14	-113.63	23.02	113.03	10.00	10.00	0.00
2,650.00	37.41	181.34	2,623.13	-142.23	22.35	141.64	10.00	10.00	0.00
2,700.00	42.41	181.34	2,661.47	-174.29	21.60	173.71	10.00	10.00	0.00
2,750.00	47.41	181.34	2,696.87	-209.57	20.77	209.00	10.00	10.00	0.00
2,800.00	52.41	181.34	2,729.06	-247.80	19.87	247.24	10.00	10.00	0.00
2,850.00	57.41	181.34	2,757.79	-288.68	18.91	288.14	10.00	10.00	0.00
2,900.00	62.41	181.34	2,782.85	-331.92	17.90	331.38	10.00	10.00	0.00
2,950.00	67.41	181.34	2,804.05	-377.18	16.84	376.65	10.00	10.00	0.00
3,000.00	72.41	181.34	2,821.21	-424.11	15.74	423.60	10.00	10.00	0.00
3,050.00	77.41	181.34	2,834.23	-472.35	14.60	471.86	10.00	10.00	0.00
3,100.00	82.41	181.34	2,842.98	-521.55	13.45	521.07	10.00	10.00	0.00
3,150.00	87.41	181.34	2,847.42	-571.33	12.28	570.86	10.00	10.00	0.00
3,174.89	89.90	181.34	2,848.00	-596.20	11.70	595.74	10.00	10.00	0.00
3,200.00	89.90	181.34	2,848.04	-621.30	11.11	620.85	0.00	0.00	0.00
3,300.00	89.90	181.34	2,848.22	-721.28	8.77	720.85	0.00	0.00	0.00
3,400.00	89.90	181.34	2,848.39	-821.25	6.42	820.85	0.00	0.00	0.00
3,500.00	89.90	181.34	2,848.57	-921.22	4.08	920.85	0.00	0.00	0.00
3,600.00	89.90	181.34	2,848.74	-1,021.19	1.73	1,020.85	0.00	0.00	0.00
3,700.00	89.90	181.34	2,848.92	-1,121.16	-0.61	1,120.85	0.00	0.00	0.00
3,800.00	89.90	181.34	2,849.09	-1,221.14	-2.96	1,220.84	0.00	0.00	0.00
3,900.00	89.90	181.34	2,849.27	-1,321.11	-5.30	1,320.84	0.00	0.00	0.00



# Wellbenders Planning Report



**Database:** WBDS\_SQL\_2  
**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Site:** Huber Fed  
**Well:** 16H  
**Wellbore:** OH  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**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 (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,000.00	89.90	181.34	2,849.44	-1,421.08	-7.65	1,420.84	0.00	0.00	0.00
4,100.00	89.90	181.34	2,849.62	-1,521.05	-9.99	1,520.84	0.00	0.00	0.00
4,200.00	89.90	181.34	2,849.79	-1,621.03	-12.34	1,620.84	0.00	0.00	0.00
4,300.00	89.90	181.34	2,849.97	-1,721.00	-14.68	1,720.84	0.00	0.00	0.00
4,400.00	89.90	181.34	2,850.14	-1,820.97	-17.03	1,820.84	0.00	0.00	0.00
4,500.00	89.90	181.34	2,850.32	-1,920.94	-19.37	1,920.84	0.00	0.00	0.00
4,600.00	89.90	181.34	2,850.49	-2,020.92	-21.72	2,020.84	0.00	0.00	0.00
4,700.00	89.90	181.34	2,850.66	-2,120.89	-24.06	2,120.84	0.00	0.00	0.00
4,800.00	89.90	181.34	2,850.84	-2,220.86	-26.41	2,220.84	0.00	0.00	0.00
4,900.00	89.90	181.34	2,851.01	-2,320.83	-28.75	2,320.84	0.00	0.00	0.00
5,000.00	89.90	181.34	2,851.19	-2,420.81	-31.10	2,420.84	0.00	0.00	0.00
5,100.00	89.90	181.34	2,851.36	-2,520.78	-33.44	2,520.84	0.00	0.00	0.00
5,200.00	89.90	181.34	2,851.54	-2,620.75	-35.79	2,620.84	0.00	0.00	0.00
5,300.00	89.90	181.34	2,851.71	-2,720.72	-38.13	2,720.84	0.00	0.00	0.00
5,400.00	89.90	181.34	2,851.89	-2,820.69	-40.48	2,820.84	0.00	0.00	0.00
5,500.00	89.90	181.34	2,852.06	-2,920.67	-42.82	2,920.84	0.00	0.00	0.00
5,600.00	89.90	181.34	2,852.24	-3,020.64	-45.17	3,020.84	0.00	0.00	0.00
5,700.00	89.90	181.34	2,852.41	-3,120.61	-47.51	3,120.84	0.00	0.00	0.00
5,800.00	89.90	181.34	2,852.59	-3,220.58	-49.85	3,220.84	0.00	0.00	0.00
5,900.00	89.90	181.34	2,852.76	-3,320.56	-52.20	3,320.84	0.00	0.00	0.00
6,000.00	89.90	181.34	2,852.94	-3,420.53	-54.54	3,420.84	0.00	0.00	0.00
6,100.00	89.90	181.34	2,853.11	-3,520.50	-56.89	3,520.84	0.00	0.00	0.00
6,200.00	89.90	181.34	2,853.28	-3,620.47	-59.23	3,620.84	0.00	0.00	0.00
6,300.00	89.90	181.34	2,853.46	-3,720.45	-61.58	3,720.84	0.00	0.00	0.00
6,400.00	89.90	181.34	2,853.63	-3,820.42	-63.92	3,820.84	0.00	0.00	0.00
6,500.00	89.90	181.34	2,853.81	-3,920.39	-66.27	3,920.84	0.00	0.00	0.00
6,600.00	89.90	181.34	2,853.98	-4,020.36	-68.61	4,020.84	0.00	0.00	0.00
6,700.00	89.90	181.34	2,854.16	-4,120.34	-70.96	4,120.84	0.00	0.00	0.00
6,800.00	89.90	181.34	2,854.33	-4,220.31	-73.30	4,220.84	0.00	0.00	0.00
6,900.00	89.90	181.34	2,854.51	-4,320.28	-75.65	4,320.84	0.00	0.00	0.00
7,000.00	89.90	181.34	2,854.68	-4,420.25	-77.99	4,420.84	0.00	0.00	0.00
7,100.00	89.90	181.34	2,854.86	-4,520.22	-80.34	4,520.84	0.00	0.00	0.00
7,200.00	89.90	181.34	2,855.03	-4,620.20	-82.68	4,620.84	0.00	0.00	0.00
7,300.00	89.90	181.34	2,855.21	-4,720.17	-85.03	4,720.84	0.00	0.00	0.00
7,400.00	89.90	181.34	2,855.38	-4,820.14	-87.37	4,820.84	0.00	0.00	0.00
7,500.00	89.90	181.34	2,855.56	-4,920.11	-89.72	4,920.84	0.00	0.00	0.00
7,600.00	89.90	181.34	2,855.73	-5,020.09	-92.06	5,020.84	0.00	0.00	0.00
7,700.00	89.90	181.34	2,855.91	-5,120.06	-94.41	5,120.84	0.00	0.00	0.00
7,800.00	89.90	181.34	2,856.08	-5,220.03	-96.75	5,220.84	0.00	0.00	0.00
7,900.00	89.90	181.34	2,856.25	-5,320.00	-99.10	5,320.84	0.00	0.00	0.00
8,000.00	89.90	181.34	2,856.43	-5,419.98	-101.44	5,420.84	0.00	0.00	0.00
8,100.00	89.90	181.34	2,856.60	-5,519.95	-103.79	5,520.84	0.00	0.00	0.00
8,200.00	89.90	181.34	2,856.78	-5,619.92	-106.13	5,620.84	0.00	0.00	0.00
8,300.00	89.90	181.34	2,856.95	-5,719.89	-108.48	5,720.84	0.00	0.00	0.00
8,326.61	89.90	181.34	2,857.00	-5,746.50	-109.10	5,747.45	0.00	0.00	0.00



# Wellbenders Planning Report



**Database:** WBDS\_SQL\_2  
**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Site:** Huber Fed  
**Well:** 16H  
**Wellbore:** OH  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature

### Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Huber 16H: FTP - plan hits target center - Point	0.00	360.00	2,848.00	-596.20	11.70	585,481.70	497,479.70	32.609460	-104.475766
Huber 16H: LTP - plan misses target center by 0.79usft at 8246.61usft MD (2856.86 TVD, -5666.52 N, -107.22 E) - Point	0.00	360.00	2,857.00	-5,666.50	-108.00	580,411.40	497,360.00	32.595523	-104.476133
Huber 16H: BHL - plan hits target center - Point	0.00	360.00	2,857.00	-5,746.50	-109.10	580,331.40	497,358.90	32.595303	-104.476136



**PERCUSSION**  
PETROLEUM  
LLC

# **Percussion Petroleum, LLC**

**Eddy County, NM**  
**Huber Fed**  
**16H**

**OH**  
**Plan #2**

## **Anticollision Report**

**23 August, 2017**

**WELLBENDERS**  
DIRECTIONAL SERVICES LLC





# Wellbenders

## Anticollision Report



**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Reference Site:** Huber Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 16H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** WBDS\_SQL\_2  
**Offset TVD Reference:** Reference Datum

<b>Reference</b>	Plan #2
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria
<b>Interpolation Method:</b>	MD Interval 25.00usft
<b>Depth Range:</b>	0.00 to 8,326.61usft
<b>Results Limited by:</b>	Maximum separation factor of 50.00
<b>Warning Levels Evaluated at:</b>	2.00 Sigma
<b>Error Model:</b>	ISCWSA
<b>Scan Method:</b>	Closest Approach 3D
<b>Error Surface:</b>	Pedal Curve
<b>Casing Method:</b>	Not applied

**Survey Tool Program**      **Date** 8/23/2017

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	8,326.05	Plan #2 (OH)	MWD+IGRF	OWSG MWD + IGRF or WMM

**Summary**

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
Huber Fed						
15H - OH - Plan #2	650.00	644.48	169.20	165.69	48.167	CC, ES
15H - OH - Plan #2	8,326.61	8,023.32	357.19	209.27	2.415	SF
17H - OH - Plan #2	8,326.61	8,305.84	660.46	440.72	3.006	CC, ES, SF
18H - OH - Plan #2	8,326.61	8,006.12	1,238.31	1,023.90	5.775	CC, ES, SF

Offset Design      Huber Fed - 15H - OH - Plan #2													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error:	0.00 usft
Reference	Offset		Semi Major Axis		Distance								Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
650.00	649.73	644.48	644.23	1.77	1.75	130.23	-24.31	-159.93	169.20	165.69	3.51	48.167	CC, ES	
675.00	674.69	670.91	670.65	1.86	1.85	130.51	-24.62	-160.65	170.75	167.06	3.69	46.214		
700.00	699.66	697.37	697.10	1.95	1.94	130.80	-24.83	-161.14	172.08	168.21	3.88	44.387		
725.00	724.62	723.84	723.58	2.04	2.04	131.12	-24.94	-161.41	173.20	169.14	4.06	42.664		
750.00	749.59	749.85	749.59	2.13	2.13	131.45	-24.96	-161.46	174.12	169.88	4.24	41.062		
775.00	774.56	774.82	774.56	2.22	2.21	131.77	-24.96	-161.46	174.99	170.57	4.42	39.610		
800.00	799.52	800.22	799.52	2.31	2.30	132.09	-24.96	-161.46	175.87	171.27	4.60	38.260		
825.00	824.49	824.75	824.49	2.41	2.39	132.41	-24.96	-161.46	176.75	171.97	4.77	37.028		
850.00	849.45	849.72	849.45	2.50	2.48	132.72	-24.96	-161.46	177.63	172.68	4.95	35.875		
875.00	874.42	874.68	874.42	2.59	2.56	133.03	-24.96	-161.46	178.52	173.39	5.13	34.803		
900.00	899.38	900.35	899.38	2.68	2.65	133.33	-24.96	-161.46	179.42	174.11	5.31	33.788		
925.00	924.35	924.61	924.35	2.77	2.74	133.63	-24.96	-161.46	180.32	174.83	5.49	32.866		
950.00	949.32	949.58	949.32	2.87	2.83	133.93	-24.96	-161.46	181.23	175.56	5.67	31.989		
975.00	974.28	974.54	974.28	2.96	2.91	134.23	-24.96	-161.46	182.14	176.29	5.84	31.167		
1,000.00	999.25	1,000.49	999.25	3.05	3.01	134.52	-24.96	-161.46	183.05	177.03	6.03	30.376		
1,025.00	1,024.21	1,024.48	1,024.21	3.14	3.09	134.81	-24.96	-161.46	183.97	177.77	6.20	29.665		
1,050.00	1,049.19	1,049.45	1,049.19	3.23	3.18	135.08	-24.96	-161.46	184.79	178.41	6.38	28.963		
1,075.00	1,074.17	1,074.43	1,074.17	3.32	3.27	135.29	-24.96	-161.46	185.45	178.89	6.56	28.277		
1,100.00	1,099.16	1,100.58	1,099.16	3.42	3.36	135.46	-24.96	-161.46	185.96	179.22	6.74	27.587		
1,125.00	1,124.15	1,124.42	1,124.15	3.50	3.44	135.57	-24.96	-161.46	186.32	179.41	6.91	26.956		
1,150.00	1,149.15	1,149.42	1,149.15	3.59	3.53	135.63	-24.96	-161.46	186.52	179.44	7.09	26.317		
1,175.00	1,174.15	1,174.41	1,174.15	3.67	3.62	-90.17	-24.96	-161.46	186.57	179.31	7.26	25.690		
1,200.00	1,199.15	1,200.59	1,199.15	3.76	3.71	-90.17	-24.96	-161.46	186.57	179.13	7.44	25.078		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



# Wellbenders Anticollision Report



**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Reference Site:** Huber Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 16H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** WBDS\_SQL\_2  
**Offset TVD Reference:** Reference Datum

Offset Design Huber Fed - 15H - OH - Plan #2													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error:	0.00 usft
Reference				Offset		Semi Major Axis			Distance				Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
1,225.00	1,224.15	1,224.41	1,224.15	3.84	3.80	-90.17	-24.96	-161.46	186.57	178.96	7.61	24.520		
1,250.00	1,249.15	1,249.41	1,249.15	3.93	3.89	-90.17	-24.96	-161.46	186.57	178.79	7.78	23.972		
1,275.00	1,274.15	1,274.41	1,274.15	4.01	3.98	-90.17	-24.96	-161.46	186.57	178.62	7.96	23.449		
1,300.00	1,299.15	1,300.59	1,299.15	4.10	4.07	-90.17	-24.96	-161.46	186.57	178.44	8.13	22.936		
1,325.00	1,324.15	1,324.41	1,324.15	4.18	4.15	-90.17	-24.96	-161.46	186.57	178.27	8.30	22.465		
1,350.00	1,349.15	1,349.41	1,349.15	4.27	4.24	-90.17	-24.96	-161.46	186.57	178.09	8.48	22.003		
1,375.00	1,374.15	1,374.41	1,374.15	4.35	4.33	-90.17	-24.96	-161.46	186.57	177.92	8.65	21.559		
1,400.00	1,399.15	1,400.59	1,399.15	4.44	4.43	-90.17	-24.96	-161.46	186.57	177.74	8.83	21.122		
1,425.00	1,424.15	1,424.41	1,424.15	4.52	4.51	-90.17	-24.96	-161.46	186.57	177.57	9.00	20.721		
1,450.00	1,449.15	1,449.41	1,449.15	4.61	4.60	-90.17	-24.96	-161.46	186.57	177.39	9.18	20.325		
1,475.00	1,474.15	1,474.41	1,474.15	4.70	4.69	-90.17	-24.96	-161.46	186.57	177.22	9.35	19.944		
1,500.00	1,499.15	1,500.59	1,499.15	4.78	4.78	-90.17	-24.96	-161.46	186.57	177.04	9.53	19.569		
1,525.00	1,524.15	1,524.41	1,524.15	4.87	4.87	-90.17	-24.96	-161.46	186.57	176.87	9.71	19.223		
1,550.00	1,549.15	1,549.41	1,549.15	4.95	4.96	-90.17	-24.96	-161.46	186.57	176.69	9.88	18.881		
1,575.00	1,574.15	1,574.41	1,574.15	5.04	5.05	-90.17	-24.96	-161.46	186.57	176.52	10.06	18.551		
1,600.00	1,599.15	1,600.59	1,599.15	5.13	5.14	-90.17	-24.96	-161.46	186.57	176.34	10.24	18.224		
1,625.00	1,624.15	1,624.41	1,624.15	5.21	5.22	-90.17	-24.96	-161.46	186.57	176.16	10.41	17.923		
1,650.00	1,649.15	1,649.41	1,649.15	5.30	5.31	-90.17	-24.96	-161.46	186.57	175.99	10.59	17.625		
1,675.00	1,674.15	1,674.41	1,674.15	5.39	5.40	-90.17	-24.96	-161.46	186.57	175.81	10.76	17.336		
1,700.00	1,699.15	1,700.59	1,699.15	5.47	5.50	-90.17	-24.96	-161.46	186.57	175.63	10.94	17.050		
1,725.00	1,724.15	1,724.41	1,724.15	5.56	5.58	-90.17	-24.96	-161.46	186.57	175.46	11.12	16.785		
1,750.00	1,749.15	1,749.41	1,749.15	5.65	5.67	-90.17	-24.96	-161.46	186.57	175.28	11.29	16.523		
1,775.00	1,774.15	1,774.41	1,774.15	5.74	5.76	-90.17	-24.96	-161.46	186.57	175.10	11.47	16.268		
1,800.00	1,799.15	1,800.59	1,799.15	5.82	5.85	-90.17	-24.96	-161.46	186.57	174.92	11.65	16.016		
1,825.00	1,824.15	1,824.41	1,824.15	5.91	5.94	-90.17	-24.96	-161.46	186.57	174.75	11.82	15.782		
1,850.00	1,849.15	1,849.41	1,849.15	6.00	6.03	-90.17	-24.96	-161.46	186.57	174.57	12.00	15.549		
1,875.00	1,874.15	1,874.41	1,874.15	6.09	6.12	-90.17	-24.96	-161.46	186.57	174.40	12.18	15.323		
1,900.00	1,899.15	1,900.59	1,899.15	6.17	6.21	-90.17	-24.96	-161.46	186.57	174.22	12.36	15.099		
1,925.00	1,924.15	1,924.41	1,924.15	6.26	6.29	-90.17	-24.96	-161.46	186.57	174.04	12.53	14.890		
1,950.00	1,949.15	1,949.41	1,949.15	6.35	6.38	-90.17	-24.96	-161.46	186.57	173.87	12.71	14.682		
1,975.00	1,974.15	1,974.41	1,974.15	6.44	6.47	-90.17	-24.96	-161.46	186.57	173.69	12.88	14.481		
2,000.00	1,999.15	1,999.19	1,998.92	6.52	6.56	-90.30	-25.38	-161.47	186.59	173.53	13.06	14.289		
2,025.00	2,024.15	2,023.85	2,023.53	6.61	6.64	-90.75	-26.85	-161.51	186.64	173.41	13.23	14.110		
2,050.00	2,049.15	2,048.33	2,047.89	6.70	6.72	-91.52	-29.36	-161.58	186.76	173.37	13.40	13.941		
2,075.00	2,074.15	2,072.56	2,071.86	6.79	6.81	-92.59	-32.86	-161.68	187.00	173.43	13.57	13.785		
2,100.00	2,099.15	2,096.46	2,095.34	6.88	6.89	-93.95	-37.30	-161.80	187.40	173.67	13.73	13.646		
2,125.00	2,124.15	2,119.94	2,118.20	6.96	6.97	-95.56	-42.62	-161.95	188.04	174.14	13.90	13.529		
2,150.00	2,149.15	2,142.94	2,140.38	7.05	7.06	-97.40	-48.73	-162.12	189.01	174.95	14.06	13.442		
2,175.00	2,174.15	2,165.40	2,161.78	7.14	7.14	-99.44	-55.55	-162.31	190.39	176.18	14.22	13.390		
2,200.00	2,199.15	2,187.28	2,182.35	7.23	7.21	-101.62	-62.99	-162.52	192.29	177.92	14.37	13.383		
2,225.00	2,224.15	2,208.54	2,202.05	7.32	7.30	-103.92	-70.97	-162.74	194.79	180.29	14.51	13.428		
2,250.00	2,249.15	2,229.14	2,220.85	7.40	7.38	-106.30	-79.40	-162.97	197.99	183.36	14.63	13.532		
2,275.00	2,274.15	2,249.07	2,238.73	7.49	7.46	-108.71	-88.19	-163.22	201.97	187.23	14.74	13.706		
2,300.00	2,299.14	2,268.52	2,255.88	7.58	7.55	67.18	-97.36	-163.47	206.59	191.77	14.82	13.935		
2,325.00	2,324.09	2,287.74	2,272.51	7.67	7.64	64.53	-106.99	-163.74	211.62	196.73	14.89	14.209		
2,350.00	2,348.95	2,306.75	2,288.63	7.75	7.73	62.02	-117.06	-164.02	216.99	202.05	14.95	14.517		
2,375.00	2,373.66	2,325.55	2,304.24	7.84	7.84	59.65	-127.53	-164.31	222.64	207.65	14.99	14.855		
2,400.00	2,398.18	2,344.16	2,319.34	7.94	7.94	57.41	-138.40	-164.61	228.51	213.49	15.01	15.222		
2,425.00	2,422.47	2,362.60	2,333.95	8.03	8.05	55.32	-149.65	-164.92	234.53	219.50	15.03	15.603		
2,450.00	2,446.48	2,380.87	2,348.06	8.12	8.17	53.35	-161.25	-165.24	240.67	225.64	15.03	16.008		
2,475.00	2,470.17	2,400.00	2,362.43	8.22	8.29	51.44	-173.88	-165.59	246.88	231.83	15.05	16.399		
2,500.00	2,493.48	2,416.97	2,374.81	8.32	8.41	49.79	-185.47	-165.92	253.11	238.09	15.02	16.850		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Wellbenders Anticollision Report



**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Reference Site:** Huber Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 16H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** WBDS\_SQL\_2  
**Offset TVD Reference:** Reference Datum

Offset Design Huber Fed - 15H - OH - Plan #2													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error:	0.00 usft
Reference				Offset		Semi Major Axis		Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
2,525.00	2,516.38	2,434.81	2,387.46	8.43	8.54	48.19	-198.05	-166.26	259.33	244.33	15.01	17.282		
2,550.00	2,538.81	2,452.53	2,399.62	8.54	8.68	46.70	-210.93	-166.62	265.51	250.53	14.98	17.719		
2,575.00	2,560.75	2,470.13	2,411.31	8.66	8.82	45.32	-224.08	-166.99	271.61	256.65	14.97	18.146		
2,600.00	2,582.14	2,487.62	2,422.52	8.79	8.97	44.03	-237.51	-167.36	277.62	262.67	14.94	18.578		
2,625.00	2,602.95	2,505.02	2,433.25	8.93	9.12	42.84	-251.19	-167.74	283.49	268.57	14.92	18.996		
2,650.00	2,623.13	2,522.31	2,443.50	9.07	9.29	41.73	-265.11	-168.13	289.22	274.31	14.91	19.404		
2,675.00	2,642.65	2,539.52	2,453.28	9.23	9.45	40.71	-279.27	-168.52	294.78	279.89	14.89	19.794		
2,700.00	2,661.47	2,556.65	2,462.59	9.39	9.62	39.76	-293.64	-168.92	300.15	285.27	14.88	20.172		
2,725.00	2,679.55	2,573.70	2,471.43	9.57	9.81	38.89	-308.21	-169.32	305.33	290.44	14.88	20.515		
2,750.00	2,696.87	2,590.68	2,479.79	9.75	9.99	38.09	-322.99	-169.73	310.28	295.40	14.89	20.845		
2,775.00	2,713.38	2,607.60	2,487.69	9.96	10.18	37.35	-337.94	-170.15	315.01	300.11	14.90	21.136		
2,800.00	2,729.06	2,624.45	2,495.11	10.17	10.37	36.68	-353.07	-170.57	319.50	304.57	14.93	21.400		
2,825.00	2,743.87	2,641.25	2,502.06	10.41	10.57	36.06	-368.35	-170.99	323.74	308.77	14.97	21.623		
2,850.00	2,757.79	2,658.00	2,508.54	10.64	10.77	35.50	-383.79	-171.42	327.71	312.69	15.02	21.817		
2,875.00	2,770.79	2,674.71	2,514.55	10.90	10.99	34.99	-399.37	-171.85	331.42	316.33	15.09	21.956		
2,900.00	2,782.85	2,691.37	2,520.10	11.16	11.20	34.54	-415.07	-172.29	334.85	319.68	15.17	22.068		
2,925.00	2,793.94	2,707.99	2,525.17	11.44	11.41	34.13	-430.90	-172.73	338.00	322.72	15.28	22.123		
2,950.00	2,804.05	2,724.58	2,529.77	11.73	11.64	33.76	-446.83	-173.17	340.86	325.46	15.39	22.142		
2,975.00	2,813.14	2,741.13	2,533.90	12.03	11.86	33.45	-462.86	-173.62	343.42	327.88	15.53	22.108		
3,000.00	2,821.21	2,757.67	2,537.56	12.34	12.09	33.17	-478.97	-174.06	345.68	329.99	15.69	22.037		
3,025.00	2,828.25	2,774.17	2,540.75	12.67	12.33	32.94	-495.16	-174.51	347.64	331.77	15.87	21.909		
3,050.00	2,834.23	2,790.66	2,543.47	13.00	12.56	32.75	-511.42	-174.96	349.29	333.23	16.06	21.748		
3,075.00	2,839.14	2,807.14	2,545.71	13.34	12.80	32.59	-527.73	-175.42	350.63	334.35	16.28	21.536		
3,100.00	2,842.98	2,823.60	2,547.49	13.68	13.04	32.48	-544.09	-175.87	351.66	335.14	16.52	21.289		
3,125.00	2,845.74	2,840.05	2,548.79	14.04	13.29	32.41	-560.48	-176.33	352.38	335.60	16.78	20.999		
3,150.00	2,847.42	2,856.50	2,549.63	14.40	13.53	32.37	-576.90	-176.78	352.78	335.72	17.06	20.678		
3,175.00	2,848.00	2,875.21	2,550.00	14.76	13.81	32.38	-593.60	-177.30	352.88	335.47	17.41	20.274		
3,175.99	2,848.00	2,877.66	2,549.99	14.78	13.85	32.38	-593.15	-177.23	352.86	335.46	17.41	20.271		
3,200.00	2,848.04	2,903.23	2,550.08	15.13	14.24	32.39	-617.15	-177.90	352.88	335.00	17.88	19.737		
3,225.00	2,848.09	2,921.77	2,550.17	15.52	14.53	32.41	-642.14	-178.59	352.90	334.59	18.31	19.273		
3,250.00	2,848.13	2,946.77	2,550.26	15.90	14.93	32.43	-667.13	-179.29	352.92	334.11	18.81	18.766		
3,275.00	2,848.17	2,971.77	2,550.35	16.29	15.33	32.45	-692.12	-179.98	352.93	333.63	19.30	18.285		
3,300.00	2,848.22	3,003.23	2,550.45	16.67	15.83	32.47	-717.11	-180.67	352.95	333.09	19.86	17.768		
3,325.00	2,848.26	3,021.76	2,550.54	17.07	16.13	32.49	-742.10	-181.37	352.97	332.65	20.32	17.372		
3,350.00	2,848.31	3,046.76	2,550.63	17.48	16.54	32.51	-767.09	-182.06	352.98	332.15	20.84	16.939		
3,375.00	2,848.35	3,071.76	2,550.72	17.88	16.96	32.53	-792.08	-182.75	353.00	331.64	21.36	16.526		
3,400.00	2,848.39	3,103.24	2,550.81	18.28	17.48	32.55	-817.07	-183.45	353.02	331.07	21.95	16.082		
3,425.00	2,848.44	3,121.76	2,550.90	18.70	17.79	32.56	-842.06	-184.14	353.04	330.61	22.42	15.746		
3,450.00	2,848.48	3,146.76	2,551.00	19.11	18.22	32.58	-867.05	-184.83	353.05	330.09	22.96	15.376		
3,475.00	2,848.52	3,171.76	2,551.09	19.53	18.64	32.60	-892.04	-185.53	353.07	329.57	23.50	15.023		
3,500.00	2,848.57	3,203.24	2,551.18	19.94	19.18	32.62	-917.03	-186.22	353.09	328.97	24.11	14.642		
3,525.00	2,848.61	3,221.76	2,551.27	20.37	19.50	32.64	-942.02	-186.92	353.11	328.51	24.60	14.355		
3,550.00	2,848.66	3,246.76	2,551.36	20.80	19.93	32.66	-967.01	-187.61	353.12	327.97	25.15	14.039		
3,575.00	2,848.70	3,271.76	2,551.45	21.22	20.37	32.68	-992.00	-188.30	353.14	327.43	25.71	13.736		
3,600.00	2,848.74	3,303.24	2,551.55	21.65	20.91	32.70	-1,016.99	-189.00	353.16	326.82	26.34	13.409		
3,625.00	2,848.79	3,321.76	2,551.64	22.08	21.24	32.72	-1,041.98	-189.69	353.18	326.35	26.83	13.163		
3,650.00	2,848.83	3,346.76	2,551.73	22.51	21.68	32.73	-1,066.97	-190.38	353.19	325.80	27.40	12.891		
3,675.00	2,848.87	3,371.76	2,551.82	22.95	22.12	32.75	-1,091.96	-191.08	353.21	325.25	27.97	12.630		
3,700.00	2,848.92	3,396.76	2,551.91	23.38	22.56	32.77	-1,116.95	-191.77	353.23	324.70	28.53	12.379		
3,725.00	2,848.96	3,421.76	2,552.00	23.82	23.01	32.79	-1,141.94	-192.47	353.25	324.14	29.11	12.135		
3,750.00	2,849.00	3,446.76	2,552.09	24.26	23.45	32.81	-1,166.93	-193.16	353.27	323.58	29.69	11.899		
3,775.00	2,849.05	3,471.76	2,552.19	24.70	23.90	32.83	-1,191.92	-193.85	353.28	323.02	30.27	11.673		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Wellbenders Anticollision Report



**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Reference Site:** Huber Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 16H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** WBDS\_SQL\_2  
**Offset TVD Reference:** Reference Datum

Offset Design Huber Fed - 15H - OH - Plan #2													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
3,800.00	2,849.09	3,503.24	2,552.28	25.14	24.46	32.85	-1,216.91	-194.55	353.30	322.39	30.92	11.427		
3,825.00	2,849.14	3,521.76	2,552.37	25.59	24.79	32.87	-1,241.90	-195.24	353.32	321.89	31.43	11.243		
3,850.00	2,849.18	3,546.76	2,552.46	26.03	25.24	32.89	-1,266.89	-195.93	353.34	321.33	32.01	11.038		
3,875.00	2,849.22	3,571.76	2,552.55	26.48	25.69	32.90	-1,291.88	-196.63	353.36	320.76	32.60	10.840		
3,900.00	2,849.27	3,603.24	2,552.64	26.92	26.26	32.92	-1,316.87	-197.32	353.37	320.12	33.26	10.625		
3,925.00	2,849.31	3,621.76	2,552.74	27.37	26.60	32.94	-1,341.86	-198.01	353.39	319.62	33.77	10.464		
3,950.00	2,849.35	3,646.76	2,552.83	27.82	27.05	32.96	-1,366.85	-198.71	353.41	319.05	34.36	10.284		
3,975.00	2,849.40	3,671.76	2,552.92	28.27	27.51	32.98	-1,391.84	-199.40	353.43	318.47	34.96	10.110		
4,000.00	2,849.44	3,703.24	2,553.01	28.72	28.08	33.00	-1,416.83	-200.10	353.45	317.82	35.62	9.921		
4,025.00	2,849.49	3,721.76	2,553.10	29.17	28.42	33.02	-1,441.82	-200.79	353.47	317.32	36.15	9.779		
4,050.00	2,849.53	3,746.76	2,553.19	29.63	28.87	33.04	-1,466.81	-201.48	353.48	316.74	36.74	9.620		
4,075.00	2,849.57	3,771.76	2,553.29	30.08	29.33	33.06	-1,491.80	-202.18	353.50	316.16	37.34	9.467		
4,100.00	2,849.62	3,803.24	2,553.38	30.53	29.91	33.07	-1,516.79	-202.87	353.52	315.51	38.01	9.300		
4,125.00	2,849.66	3,821.76	2,553.47	30.99	30.25	33.09	-1,541.78	-203.56	353.54	315.00	38.54	9.173		
4,150.00	2,849.70	3,846.76	2,553.56	31.44	30.71	33.11	-1,566.77	-204.26	353.56	314.42	39.14	9.033		
4,175.00	2,849.75	3,871.76	2,553.65	31.90	31.16	33.13	-1,591.76	-204.95	353.58	313.83	39.74	8.896		
4,200.00	2,849.79	3,903.24	2,553.74	32.35	31.74	33.15	-1,616.75	-205.64	353.60	313.17	40.42	8.747		
4,225.00	2,849.83	3,921.76	2,553.84	32.81	32.08	33.17	-1,641.74	-206.34	353.61	312.66	40.95	8.634		
4,250.00	2,849.88	3,946.76	2,553.93	33.27	32.55	33.19	-1,666.73	-207.03	353.63	312.07	41.56	8.509		
4,275.00	2,849.92	3,971.76	2,554.02	33.73	33.01	33.21	-1,691.72	-207.73	353.65	311.48	42.17	8.387		
4,300.00	2,849.97	4,003.25	2,554.11	34.19	33.59	33.22	-1,716.71	-208.42	353.67	310.82	42.85	8.253		
4,325.00	2,850.01	4,021.75	2,554.20	34.65	33.93	33.24	-1,741.70	-209.11	353.69	310.30	43.39	8.152		
4,350.00	2,850.05	4,046.75	2,554.29	35.10	34.39	33.26	-1,766.69	-209.81	353.71	309.71	44.00	8.040		
4,375.00	2,850.10	4,071.75	2,554.39	35.56	34.86	33.28	-1,791.68	-210.50	353.73	309.12	44.61	7.930		
4,400.00	2,850.14	4,103.25	2,554.48	36.02	35.44	33.30	-1,816.67	-211.19	353.75	308.45	45.30	7.810		
4,425.00	2,850.18	4,121.75	2,554.57	36.49	35.78	33.32	-1,841.66	-211.89	353.76	307.93	45.83	7.719		
4,450.00	2,850.23	4,146.75	2,554.66	36.95	36.25	33.34	-1,866.65	-212.58	353.78	307.34	46.45	7.617		
4,475.00	2,850.27	4,171.75	2,554.75	37.41	36.71	33.36	-1,891.64	-213.28	353.80	306.74	47.06	7.518		
4,500.00	2,850.32	4,203.25	2,554.84	37.87	37.30	33.38	-1,916.63	-213.97	353.82	306.07	47.75	7.409		
4,525.00	2,850.36	4,221.75	2,554.94	38.33	37.64	33.39	-1,941.62	-214.66	353.84	305.55	48.29	7.327		
4,550.00	2,850.40	4,246.75	2,555.03	38.80	38.11	33.41	-1,966.61	-215.36	353.86	304.95	48.91	7.235		
4,575.00	2,850.45	4,271.75	2,555.12	39.26	38.57	33.43	-1,991.60	-216.05	353.88	304.35	49.53	7.145		
4,600.00	2,850.49	4,303.25	2,555.21	39.72	39.16	33.45	-2,016.59	-216.74	353.90	303.67	50.22	7.046		
4,625.00	2,850.53	4,321.75	2,555.30	40.19	39.51	33.47	-2,041.58	-217.44	353.92	303.15	50.77	6.972		
4,650.00	2,850.58	4,346.75	2,555.39	40.65	39.97	33.49	-2,066.57	-218.13	353.94	302.55	51.39	6.888		
4,675.00	2,850.62	4,371.75	2,555.49	41.12	40.44	33.51	-2,091.55	-218.82	353.96	301.95	52.01	6.806		
4,700.00	2,850.66	4,403.25	2,555.58	41.58	41.03	33.53	-2,116.54	-219.52	353.98	301.27	52.71	6.716		
4,725.00	2,850.71	4,421.75	2,555.67	42.05	41.37	33.54	-2,141.53	-220.21	354.00	300.75	53.25	6.648		
4,750.00	2,850.75	4,446.75	2,555.76	42.51	41.84	33.56	-2,166.52	-220.91	354.01	300.14	53.87	6.571		
4,775.00	2,850.80	4,471.75	2,555.85	42.98	42.31	33.58	-2,191.51	-221.60	354.03	299.54	54.50	6.496		
4,800.00	2,850.84	4,503.25	2,555.94	43.44	42.90	33.60	-2,216.50	-222.29	354.05	298.85	55.20	6.414		
4,825.00	2,850.88	4,521.75	2,556.03	43.91	43.24	33.62	-2,241.49	-222.99	354.07	298.33	55.75	6.352		
4,850.00	2,850.93	4,546.75	2,556.13	44.38	43.71	33.64	-2,266.48	-223.68	354.09	297.72	56.37	6.281		
4,875.00	2,850.97	4,571.75	2,556.22	44.84	44.18	33.66	-2,291.47	-224.37	354.11	297.11	57.00	6.213		
4,900.00	2,851.01	4,596.75	2,556.31	45.31	44.65	33.68	-2,316.46	-225.07	354.13	296.51	57.63	6.145		
4,925.00	2,851.06	4,621.75	2,556.40	45.78	45.12	33.69	-2,341.45	-225.76	354.15	295.90	58.25	6.080		
4,950.00	2,851.10	4,646.75	2,556.49	46.24	45.59	33.71	-2,366.44	-226.45	354.17	295.29	58.88	6.015		
4,975.00	2,851.14	4,671.75	2,556.58	46.71	46.06	33.73	-2,391.43	-227.15	354.19	294.68	59.51	5.952		
5,000.00	2,851.19	4,703.25	2,556.68	47.18	46.65	33.75	-2,416.42	-227.84	354.21	293.99	60.22	5.882		
5,025.00	2,851.23	4,721.75	2,556.77	47.65	47.00	33.77	-2,441.41	-228.54	354.23	293.46	60.77	5.829		
5,050.00	2,851.28	4,746.75	2,556.86	48.12	47.47	33.79	-2,466.40	-229.23	354.25	292.85	61.40	5.770		
5,075.00	2,851.32	4,771.75	2,556.95	48.58	47.94	33.81	-2,491.39	-229.92	354.27	292.24	62.03	5.711		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Wellbenders Anticollision Report



**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Reference Site:** Huber Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 16H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** WBDS\_SQL\_2  
**Offset TVD Reference:** Reference Datum

Offset Design Huber Fed - 15H - OH - Plan #2													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,100.00	2,851.36	4,803.25	2,557.04	49.05	48.53	33.83	-2,516.38	-230.62	354.29	291.55	62.74	5.647		
5,125.00	2,851.41	4,821.75	2,557.13	49.52	48.88	33.84	-2,541.37	-231.31	354.31	291.02	63.30	5.598		
5,150.00	2,851.45	4,846.74	2,557.23	49.99	49.35	33.86	-2,566.36	-232.00	354.33	290.40	63.93	5.543		
5,175.00	2,851.49	4,871.74	2,557.32	50.46	49.82	33.88	-2,591.35	-232.70	354.35	289.79	64.56	5.489		
5,200.00	2,851.54	4,903.26	2,557.41	50.93	50.41	33.90	-2,616.34	-233.39	354.37	289.10	65.28	5.429		
5,225.00	2,851.58	4,921.74	2,557.50	51.40	50.76	33.92	-2,641.33	-234.09	354.39	288.56	65.83	5.383		
5,250.00	2,851.63	4,946.74	2,557.59	51.87	51.23	33.94	-2,666.32	-234.78	354.41	287.95	66.47	5.332		
5,275.00	2,851.67	4,971.74	2,557.68	52.34	51.70	33.96	-2,691.31	-235.47	354.43	287.33	67.10	5.282		
5,300.00	2,851.71	5,003.26	2,557.78	52.81	52.29	33.98	-2,716.30	-236.17	354.45	286.64	67.82	5.227		
5,325.00	2,851.76	5,021.74	2,557.87	53.28	52.64	33.99	-2,741.29	-236.86	354.47	286.10	68.37	5.184		
5,350.00	2,851.80	5,046.74	2,557.96	53.75	53.11	34.01	-2,766.28	-237.55	354.49	285.48	69.01	5.137		
5,375.00	2,851.84	5,071.74	2,558.05	54.22	53.58	34.03	-2,791.27	-238.25	354.51	284.87	69.65	5.090		
5,400.00	2,851.89	5,103.26	2,558.14	54.69	54.18	34.05	-2,816.26	-238.94	354.53	284.17	70.37	5.038		
5,425.00	2,851.93	5,121.74	2,558.23	55.16	54.53	34.07	-2,841.25	-239.63	354.55	283.63	70.93	4.999		
5,450.00	2,851.97	5,146.74	2,558.33	55.63	55.00	34.09	-2,866.24	-240.33	354.57	283.01	71.56	4.955		
5,475.00	2,852.02	5,171.74	2,558.42	56.10	55.47	34.11	-2,891.23	-241.02	354.60	282.39	72.20	4.911		
5,500.00	2,852.06	5,203.26	2,558.51	56.57	56.06	34.13	-2,916.22	-241.72	354.62	281.69	72.92	4.863		
5,525.00	2,852.11	5,221.74	2,558.60	57.04	56.41	34.14	-2,941.21	-242.41	354.64	281.15	73.49	4.826		
5,550.00	2,852.15	5,246.74	2,558.69	57.51	56.88	34.16	-2,966.20	-243.10	354.66	280.53	74.13	4.784		
5,575.00	2,852.19	5,271.74	2,558.78	57.98	57.36	34.18	-2,991.19	-243.80	354.68	279.91	74.77	4.744		
5,600.00	2,852.24	5,303.26	2,558.88	58.45	57.95	34.20	-3,016.18	-244.49	354.70	279.21	75.49	4.699		
5,625.00	2,852.28	5,321.74	2,558.97	58.92	58.30	34.22	-3,041.17	-245.18	354.72	278.67	76.05	4.664		
5,650.00	2,852.32	5,346.74	2,559.06	59.39	58.77	34.24	-3,066.16	-245.88	354.74	278.04	76.70	4.625		
5,675.00	2,852.37	5,371.74	2,559.15	59.86	59.25	34.26	-3,091.15	-246.57	354.76	277.42	77.34	4.587		
5,700.00	2,852.41	5,403.26	2,559.24	60.34	59.84	34.28	-3,116.14	-247.26	354.78	276.72	78.06	4.545		
5,725.00	2,852.46	5,421.74	2,559.33	60.81	60.19	34.29	-3,141.13	-247.96	354.80	276.17	78.63	4.512		
5,750.00	2,852.50	5,446.74	2,559.43	61.28	60.66	34.31	-3,166.12	-248.65	354.82	275.55	79.27	4.476		
5,775.00	2,852.54	5,471.74	2,559.52	61.75	61.14	34.33	-3,191.11	-249.35	354.85	274.93	79.92	4.440		
5,800.00	2,852.59	5,503.26	2,559.61	62.22	61.73	34.35	-3,216.10	-250.04	354.87	274.22	80.65	4.400		
5,825.00	2,852.63	5,521.74	2,559.70	62.70	62.08	34.37	-3,241.09	-250.73	354.89	273.68	81.21	4.370		
5,850.00	2,852.67	5,546.74	2,559.79	63.17	62.55	34.39	-3,266.08	-251.43	354.91	273.05	81.86	4.336		
5,875.00	2,852.72	5,571.74	2,559.88	63.64	63.03	34.41	-3,291.07	-252.12	354.93	272.42	82.51	4.302		
5,900.00	2,852.76	5,603.26	2,559.97	64.11	63.62	34.43	-3,316.06	-252.81	354.95	271.72	83.23	4.264		
5,925.00	2,852.80	5,621.74	2,560.07	64.58	63.97	34.44	-3,341.05	-253.51	354.97	271.17	83.80	4.236		
5,950.00	2,852.85	5,646.74	2,560.16	65.06	64.45	34.46	-3,366.04	-254.20	354.99	270.54	84.45	4.204		
5,975.00	2,852.89	5,671.74	2,560.25	65.53	64.92	34.48	-3,391.03	-254.90	355.01	269.92	85.10	4.172		
6,000.00	2,852.94	5,703.26	2,560.34	66.00	65.52	34.50	-3,416.02	-255.59	355.04	269.21	85.83	4.137		
6,025.00	2,852.98	5,721.74	2,560.43	66.47	65.87	34.52	-3,441.01	-256.28	355.06	268.66	86.40	4.110		
6,050.00	2,853.02	5,746.74	2,560.52	66.95	66.34	34.54	-3,466.00	-256.98	355.08	268.03	87.05	4.079		
6,075.00	2,853.07	5,771.74	2,560.62	67.42	66.81	34.56	-3,490.99	-257.67	355.10	267.40	87.70	4.049		
6,100.00	2,853.11	5,803.27	2,560.71	67.89	67.41	34.57	-3,515.98	-258.36	355.12	266.69	88.43	4.016		
6,125.00	2,853.15	5,821.73	2,560.80	68.36	67.76	34.59	-3,540.97	-259.06	355.14	266.14	89.00	3.990		
6,150.00	2,853.20	5,846.73	2,560.89	68.84	68.23	34.61	-3,565.96	-259.75	355.16	265.51	89.66	3.961		
6,175.00	2,853.24	5,871.73	2,560.98	69.31	68.71	34.63	-3,590.95	-260.44	355.19	264.88	90.31	3.933		
6,200.00	2,853.28	5,903.27	2,561.07	69.78	69.30	34.65	-3,615.94	-261.14	355.21	264.17	91.04	3.902		
6,225.00	2,853.33	5,921.73	2,561.17	70.26	69.65	34.67	-3,640.93	-261.83	355.23	263.62	91.61	3.877		
6,250.00	2,853.37	5,946.73	2,561.26	70.73	70.13	34.69	-3,665.92	-262.53	355.25	262.98	92.27	3.850		
6,275.00	2,853.42	5,971.73	2,561.35	71.20	70.60	34.71	-3,690.91	-263.22	355.27	262.35	92.92	3.823		
6,300.00	2,853.46	5,996.73	2,561.44	71.67	71.08	34.72	-3,715.90	-263.91	355.29	261.72	93.58	3.797		
6,325.00	2,853.50	6,021.73	2,561.53	72.15	71.55	34.74	-3,740.89	-264.61	355.32	261.08	94.23	3.771		
6,350.00	2,853.55	6,046.73	2,561.62	72.62	72.02	34.76	-3,765.88	-265.30	355.34	260.45	94.89	3.745		
6,375.00	2,853.59	6,071.73	2,561.72	73.09	72.50	34.78	-3,790.87	-265.99	355.36	259.82	95.54	3.719		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Wellbenders Anticollision Report



**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Reference Site:** Huber Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 16H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** WBDS\_SQL\_2  
**Offset TVD Reference:** Reference Datum

Offset Design Huber Fed - 15H - OH - Plan #2													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
6,400.00	2,853.63	6,103.27	2,561.81	73.57	73.09	34.80	-3,815.86	-266.69	355.38	259.10	96.28	3.691		
6,425.00	2,853.68	6,121.73	2,561.90	74.04	73.44	34.82	-3,840.85	-267.38	355.40	258.55	96.86	3.669		
6,450.00	2,853.72	6,146.73	2,561.99	74.52	73.92	34.84	-3,865.84	-268.07	355.43	257.91	97.51	3.645		
6,475.00	2,853.77	6,171.73	2,562.08	74.99	74.39	34.85	-3,890.83	-268.77	355.45	257.28	98.17	3.621		
6,500.00	2,853.81	6,203.27	2,562.17	75.46	74.99	34.87	-3,915.82	-269.46	355.47	256.56	98.91	3.594		
6,525.00	2,853.85	6,221.73	2,562.27	75.94	75.34	34.89	-3,940.81	-270.16	355.49	256.00	99.49	3.573		
6,550.00	2,853.90	6,246.73	2,562.36	76.41	75.82	34.91	-3,965.80	-270.85	355.52	255.37	100.15	3.550		
6,575.00	2,853.94	6,271.73	2,562.45	76.88	76.29	34.93	-3,990.79	-271.54	355.54	254.73	100.81	3.527		
6,600.00	2,853.98	6,303.27	2,562.54	77.36	76.89	34.95	-4,015.78	-272.24	355.56	254.01	101.55	3.501		
6,625.00	2,854.03	6,321.73	2,562.63	77.83	77.24	34.97	-4,040.77	-272.93	355.58	253.45	102.13	3.482		
6,650.00	2,854.07	6,346.73	2,562.72	78.31	77.71	34.99	-4,065.76	-273.62	355.60	252.82	102.79	3.460		
6,675.00	2,854.11	6,371.73	2,562.82	78.78	78.19	35.00	-4,090.75	-274.32	355.63	252.18	103.45	3.438		
6,700.00	2,854.16	6,403.27	2,562.91	79.25	78.79	35.02	-4,115.74	-275.01	355.65	251.46	104.19	3.413		
6,725.00	2,854.20	6,421.73	2,563.00	79.73	79.14	35.04	-4,140.73	-275.71	355.67	250.90	104.77	3.395		
6,750.00	2,854.25	6,446.73	2,563.09	80.20	79.61	35.06	-4,165.72	-276.40	355.69	250.26	105.43	3.374		
6,775.00	2,854.29	6,471.73	2,563.18	80.68	80.09	35.08	-4,190.71	-277.09	355.72	249.62	106.10	3.353		
6,800.00	2,854.33	6,503.27	2,563.27	81.15	80.68	35.10	-4,215.70	-277.79	355.74	248.90	106.84	3.330		
6,825.00	2,854.38	6,521.73	2,563.37	81.62	81.03	35.12	-4,240.69	-278.48	355.76	248.34	107.42	3.312		
6,850.00	2,854.42	6,546.73	2,563.46	82.10	81.51	35.13	-4,265.68	-279.17	355.78	247.70	108.09	3.292		
6,875.00	2,854.46	6,571.73	2,563.55	82.57	81.98	35.15	-4,290.67	-279.87	355.81	247.06	108.75	3.272		
6,900.00	2,854.51	6,603.27	2,563.64	83.05	82.58	35.17	-4,315.66	-280.56	355.83	246.33	109.50	3.250		
6,925.00	2,854.55	6,621.73	2,563.73	83.52	82.93	35.19	-4,340.65	-281.25	355.85	245.77	110.08	3.233		
6,950.00	2,854.60	6,646.72	2,563.82	83.99	83.41	35.21	-4,365.64	-281.95	355.88	245.13	110.75	3.213		
6,975.00	2,854.64	6,671.72	2,563.91	84.47	83.88	35.23	-4,390.63	-282.64	355.90	244.49	111.41	3.194		
7,000.00	2,854.68	6,703.28	2,564.01	84.94	84.48	35.25	-4,415.62	-283.34	355.92	243.76	112.16	3.173		
7,025.00	2,854.73	6,721.72	2,564.10	85.42	84.83	35.26	-4,440.61	-284.03	355.94	243.20	112.74	3.157		
7,050.00	2,854.77	6,746.72	2,564.19	85.89	85.31	35.28	-4,465.60	-284.72	355.97	242.55	113.41	3.139		
7,075.00	2,854.81	6,771.72	2,564.28	86.37	85.78	35.30	-4,490.59	-285.42	355.99	241.91	114.08	3.121		
7,100.00	2,854.86	6,803.28	2,564.37	86.84	86.38	35.32	-4,515.58	-286.11	356.01	241.18	114.83	3.100		
7,125.00	2,854.90	6,821.72	2,564.46	87.32	86.73	35.34	-4,540.57	-286.80	356.04	240.62	115.41	3.085		
7,150.00	2,854.94	6,846.72	2,564.56	87.79	87.21	35.36	-4,565.56	-287.50	356.06	239.98	116.08	3.067		
7,175.00	2,854.99	6,871.72	2,564.65	88.26	87.68	35.38	-4,590.55	-288.19	356.08	239.33	116.75	3.050		
7,200.00	2,855.03	6,903.28	2,564.74	88.74	88.28	35.39	-4,615.54	-288.88	356.10	238.60	117.51	3.031		
7,225.00	2,855.08	6,921.72	2,564.83	89.21	88.63	35.41	-4,640.53	-289.58	356.13	238.04	118.09	3.016		
7,250.00	2,855.12	6,946.72	2,564.92	89.69	89.11	35.43	-4,665.52	-290.27	356.15	237.39	118.76	2.999		
7,275.00	2,855.16	6,971.72	2,565.01	90.16	89.58	35.45	-4,690.51	-290.97	356.17	236.74	119.43	2.982		
7,300.00	2,855.21	6,996.72	2,565.11	90.64	90.06	35.47	-4,715.50	-291.66	356.20	236.09	120.10	2.966		
7,325.00	2,855.25	7,021.72	2,565.20	91.11	90.53	35.49	-4,740.49	-292.35	356.22	235.45	120.77	2.949		
7,350.00	2,855.29	7,046.72	2,565.29	91.59	91.01	35.51	-4,765.48	-293.05	356.24	234.80	121.45	2.933		
7,375.00	2,855.34	7,071.72	2,565.38	92.06	91.48	35.52	-4,790.47	-293.74	356.27	234.15	122.12	2.917		
7,400.00	2,855.38	7,103.28	2,565.47	92.54	92.08	35.54	-4,815.46	-294.43	356.29	233.42	122.87	2.900		
7,425.00	2,855.42	7,121.72	2,565.56	93.01	92.43	35.56	-4,840.45	-295.13	356.31	232.85	123.46	2.886		
7,450.00	2,855.47	7,146.72	2,565.66	93.49	92.91	35.58	-4,865.44	-295.82	356.34	232.20	124.14	2.871		
7,475.00	2,855.51	7,171.72	2,565.75	93.96	93.38	35.60	-4,890.43	-296.52	356.36	231.55	124.81	2.855		
7,500.00	2,855.56	7,196.72	2,565.84	94.44	93.86	35.62	-4,915.42	-297.21	356.39	230.90	125.48	2.840		
7,525.00	2,855.60	7,221.72	2,565.93	94.91	94.33	35.64	-4,940.41	-297.90	356.41	230.25	126.16	2.825		
7,550.00	2,855.64	7,246.72	2,566.02	95.39	94.81	35.65	-4,965.40	-298.60	356.43	229.60	126.83	2.810		
7,575.00	2,855.69	7,271.72	2,566.11	95.86	95.28	35.67	-4,990.39	-299.29	356.46	228.95	127.51	2.796		
7,600.00	2,855.73	7,303.28	2,566.21	96.34	95.88	35.69	-5,015.38	-299.98	356.48	228.21	128.27	2.779		
7,625.00	2,855.77	7,321.72	2,566.30	96.81	96.23	35.71	-5,040.37	-300.68	356.50	227.64	128.86	2.767		
7,650.00	2,855.82	7,346.72	2,566.39	97.29	96.71	35.73	-5,065.36	-301.37	356.53	226.99	129.54	2.752		
7,675.00	2,855.86	7,371.72	2,566.48	97.76	97.19	35.75	-5,090.35	-302.06	356.55	226.34	130.21	2.738		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Wellbenders

## Anticollision Report



**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Reference Site:** Huber Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 16H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** WBDS\_SQL\_2  
**Offset TVD Reference:** Reference Datum

Offset Design Huber Fed - 15H - OH - Plan #2														Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance				Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
7,700.00	2,855.91	7,403.28	2,566.57	98.24	97.79	35.76	-5,115.34	-302.76	356.58	225.60	130.97	2.723			
7,725.00	2,855.95	7,421.72	2,566.66	98.71	98.14	35.78	-5,140.33	-303.45	356.60	225.03	131.57	2.710			
7,750.00	2,855.99	7,446.72	2,566.76	99.19	98.61	35.80	-5,165.32	-304.15	356.62	224.38	132.24	2.697			
7,775.00	2,856.04	7,471.72	2,566.85	99.66	99.09	35.82	-5,190.31	-304.84	356.65	223.73	132.92	2.683			
7,800.00	2,856.08	7,503.28	2,566.94	100.14	99.69	35.84	-5,215.30	-305.53	356.67	222.99	133.69	2.668			
7,825.00	2,856.12	7,521.72	2,567.03	100.61	100.04	35.86	-5,240.29	-306.23	356.70	222.42	134.28	2.656			
7,850.00	2,856.17	7,546.71	2,567.12	101.09	100.51	35.88	-5,265.28	-306.92	356.72	221.76	134.96	2.643			
7,875.00	2,856.21	7,571.71	2,567.21	101.56	100.99	35.89	-5,290.27	-307.61	356.74	221.11	135.64	2.630			
7,900.00	2,856.25	7,603.29	2,567.31	102.04	101.59	35.91	-5,315.26	-308.31	356.77	220.37	136.40	2.616			
7,925.00	2,856.30	7,621.71	2,567.40	102.52	101.94	35.93	-5,340.25	-309.00	356.79	219.79	137.00	2.604			
7,950.00	2,856.34	7,646.71	2,567.49	102.99	102.42	35.95	-5,365.24	-309.69	356.82	219.14	137.68	2.592			
7,975.00	2,856.39	7,671.71	2,567.58	103.47	102.89	35.97	-5,390.23	-310.39	356.84	218.48	138.36	2.579			
8,000.00	2,856.43	7,703.29	2,567.67	103.94	103.49	35.99	-5,415.22	-311.08	356.87	217.74	139.13	2.565			
8,025.00	2,856.47	7,721.71	2,567.76	104.42	103.84	36.01	-5,440.21	-311.78	356.89	217.17	139.72	2.554			
8,050.00	2,856.52	7,746.71	2,567.86	104.89	104.32	36.02	-5,465.20	-312.47	356.91	216.51	140.41	2.542			
8,075.00	2,856.56	7,771.71	2,567.95	105.37	104.79	36.04	-5,490.19	-313.16	356.94	215.85	141.09	2.530			
8,100.00	2,856.60	7,803.29	2,568.04	105.84	105.39	36.06	-5,515.18	-313.86	356.96	215.11	141.86	2.516			
8,125.00	2,856.65	7,821.71	2,568.13	106.32	105.74	36.08	-5,540.17	-314.55	356.99	214.53	142.46	2.506			
8,150.00	2,856.69	7,846.71	2,568.22	106.79	106.22	36.10	-5,565.16	-315.24	357.01	213.87	143.14	2.494			
8,175.00	2,856.74	7,871.71	2,568.31	107.27	106.70	36.12	-5,590.15	-315.94	357.04	213.21	143.82	2.482			
8,200.00	2,856.78	7,903.29	2,568.40	107.74	107.30	36.13	-5,615.14	-316.63	357.06	212.47	144.59	2.469			
8,225.00	2,856.82	7,921.71	2,568.50	108.22	107.65	36.15	-5,640.13	-317.33	357.09	211.89	145.19	2.459			
8,250.00	2,856.87	7,946.71	2,568.59	108.70	108.12	36.17	-5,665.11	-318.02	357.11	211.23	145.88	2.448			
8,275.00	2,856.91	7,971.71	2,568.68	109.17	108.60	36.19	-5,690.10	-318.71	357.14	210.57	146.56	2.437			
8,300.00	2,856.95	7,996.71	2,568.77	109.65	109.07	36.21	-5,715.09	-319.41	357.16	209.91	147.25	2.426			
8,325.00	2,857.00	8,021.71	2,568.86	110.08	109.55	36.23	-5,740.08	-320.10	357.19	209.31	147.88	2.415			
8,326.61	2,857.00	8,023.32	2,568.87	110.11	109.58	36.23	-5,741.70	-320.14	357.19	209.27	147.92	2.415 SF			

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



# Wellbenders Anticollision Report



**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Reference Site:** Huber Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 16H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** WBDS\_SQL\_2  
**Offset TVD Reference:** Reference Datum

Offset Design Huber Fed - 17H - OH - Plan #2													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Tooface (")	Offset Wellbore Centre +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
2,100.00	2,099.15	2,108.33	2,099.15	6.88	6.94	-89.85	-22.64	-662.63	687.74	673.94	13.80	49.841		
2,125.00	2,124.15	2,133.33	2,124.15	6.96	7.03	-89.85	-22.64	-662.63	687.74	673.77	13.98	49.208		
2,150.00	2,149.15	2,158.33	2,149.15	7.05	7.12	-89.85	-22.64	-662.63	687.74	673.59	14.15	48.590		
2,175.00	2,174.15	2,183.33	2,174.15	7.14	7.21	-89.85	-22.64	-662.63	687.74	673.41	14.33	47.988		
2,200.00	2,199.15	2,208.33	2,199.15	7.23	7.30	-89.85	-22.64	-662.63	687.74	673.23	14.51	47.400		
2,225.00	2,224.15	2,233.33	2,224.15	7.32	7.39	-89.85	-22.64	-662.63	687.74	673.06	14.69	46.827		
2,250.00	2,249.15	2,258.33	2,249.15	7.40	7.48	-89.85	-22.64	-662.63	687.74	672.88	14.86	46.267		
2,275.00	2,274.15	2,283.00	2,273.82	7.49	7.57	-89.87	-22.89	-662.63	687.75	672.71	15.04	45.731		
2,300.00	2,299.14	2,307.49	2,298.27	7.58	7.65	88.72	-24.13	-662.66	687.76	672.55	15.21	45.220		
2,325.00	2,324.09	2,331.95	2,322.62	7.67	7.73	88.66	-26.41	-662.70	687.76	672.39	15.38	44.727		
2,350.00	2,348.95	2,356.37	2,346.82	7.75	7.82	88.60	-29.72	-662.76	687.76	672.22	15.54	44.244		
2,375.00	2,373.66	2,380.77	2,370.83	7.84	7.90	88.55	-34.05	-662.84	687.76	672.04	15.72	43.761		
2,400.00	2,398.18	2,405.15	2,394.61	7.94	7.98	88.49	-39.40	-662.94	687.75	671.86	15.89	43.286		
2,425.00	2,422.47	2,429.49	2,418.11	8.03	8.07	88.44	-45.74	-663.06	687.74	671.67	16.07	42.802		
2,450.00	2,446.48	2,453.81	2,441.30	8.12	8.15	88.40	-53.07	-663.20	687.72	671.47	16.25	42.327		
2,475.00	2,470.17	2,478.11	2,464.13	8.22	8.24	88.35	-61.37	-663.35	687.69	671.25	16.44	41.832		
2,500.00	2,493.48	2,502.38	2,486.57	8.32	8.33	88.31	-70.62	-663.52	687.66	671.03	16.63	41.346		
2,525.00	2,516.38	2,526.64	2,508.58	8.43	8.43	88.27	-80.80	-663.71	687.63	670.78	16.84	40.826		
2,550.00	2,538.81	2,550.87	2,530.13	8.54	8.53	88.24	-91.90	-663.92	687.59	670.53	17.05	40.319		
2,575.00	2,560.75	2,575.09	2,551.17	8.66	8.64	88.21	-103.88	-664.15	687.54	670.25	17.29	39.764		
2,600.00	2,582.14	2,599.29	2,571.66	8.79	8.76	88.18	-116.74	-664.39	687.49	669.96	17.53	39.224		
2,625.00	2,602.95	2,623.47	2,591.59	8.93	8.89	88.15	-130.44	-664.64	687.44	669.64	17.80	38.627		
2,650.00	2,623.13	2,647.64	2,610.91	9.07	9.01	88.13	-144.96	-664.91	687.38	669.31	18.07	38.046		
2,675.00	2,642.65	2,671.80	2,629.59	9.23	9.16	88.12	-160.27	-665.20	687.31	668.93	18.37	37.405		
2,700.00	2,661.47	2,695.95	2,647.60	9.39	9.31	88.10	-176.35	-665.50	687.24	668.55	18.68	36.781		
2,725.00	2,679.55	2,720.08	2,664.91	9.57	9.48	88.09	-193.17	-665.81	687.16	668.13	19.04	36.098		
2,750.00	2,696.87	2,744.21	2,681.48	9.75	9.65	88.08	-210.69	-666.14	687.08	667.69	19.39	35.433		
2,775.00	2,713.38	2,768.33	2,697.31	9.96	9.84	88.08	-228.89	-666.48	687.00	667.21	19.79	34.716		
2,800.00	2,729.06	2,792.45	2,712.35	10.17	10.04	88.08	-247.74	-666.83	686.91	666.71	20.19	34.017		
2,825.00	2,743.87	2,816.56	2,726.58	10.41	10.25	88.08	-267.20	-667.20	686.81	666.17	20.64	33.275		
2,850.00	2,757.79	2,840.67	2,739.98	10.64	10.47	88.09	-287.24	-667.57	686.72	665.62	21.10	32.553		
2,875.00	2,770.79	2,864.78	2,752.52	10.90	10.71	88.10	-307.82	-667.96	686.61	665.02	21.59	31.800		
2,900.00	2,782.85	2,888.89	2,764.18	11.16	10.95	88.11	-328.92	-668.35	686.51	664.41	22.10	31.067		
2,925.00	2,793.94	2,913.01	2,774.95	11.44	11.21	88.13	-350.49	-668.75	686.40	663.76	22.64	30.316		
2,950.00	2,804.05	2,937.13	2,784.81	11.73	11.49	88.15	-372.50	-669.16	686.29	663.09	23.20	29.585		
2,975.00	2,813.14	2,961.25	2,793.73	12.03	11.77	88.17	-394.90	-669.58	686.17	662.38	23.79	28.849		
3,000.00	2,821.21	2,985.38	2,801.70	12.34	12.06	88.20	-417.67	-670.01	686.05	661.67	24.39	28.134		
3,025.00	2,828.25	3,009.52	2,808.71	12.67	12.36	88.23	-440.77	-670.44	685.93	660.92	25.01	27.422		
3,050.00	2,834.23	3,033.67	2,814.74	13.00	12.68	88.27	-464.14	-670.87	685.81	660.15	25.65	26.733		
3,075.00	2,839.14	3,057.83	2,819.78	13.34	12.99	88.30	-487.77	-671.32	685.68	659.36	26.32	26.055		
3,100.00	2,842.98	3,082.00	2,823.82	13.68	13.32	88.35	-511.59	-671.76	685.55	658.56	26.99	25.399		
3,125.00	2,845.74	3,106.19	2,826.86	14.04	13.66	88.39	-535.58	-672.21	685.42	657.74	27.68	24.761		
3,150.00	2,847.42	3,130.39	2,828.88	14.40	14.00	88.44	-559.69	-672.66	685.29	656.91	28.38	24.145		
3,175.00	2,848.00	3,154.61	2,829.88	14.76	14.35	88.48	-583.89	-673.11	685.16	656.07	29.09	23.552		
3,200.00	2,848.04	3,179.29	2,830.04	15.13	14.71	88.49	-608.56	-673.57	685.04	655.22	29.82	22.972		
3,225.00	2,848.09	3,204.29	2,830.10	15.52	15.08	88.49	-633.56	-674.04	684.92	654.34	30.58	22.401		
3,250.00	2,848.13	3,229.29	2,830.17	15.90	15.46	88.50	-658.55	-674.51	684.80	653.45	31.34	21.848		
3,275.00	2,848.17	3,254.29	2,830.23	16.29	15.84	88.50	-683.55	-674.97	684.68	652.57	32.11	21.321		
3,300.00	2,848.22	3,279.29	2,830.30	16.67	16.23	88.50	-708.54	-675.44	684.56	651.68	32.88	20.819		
3,325.00	2,848.26	3,304.29	2,830.37	17.07	16.61	88.50	-733.54	-675.91	684.44	650.77	33.67	20.328		
3,350.00	2,848.31	3,329.29	2,830.43	17.48	17.02	88.50	-758.53	-676.37	684.32	649.84	34.47	19.850		
3,375.00	2,848.35	3,354.29	2,830.50	17.88	17.42	88.50	-783.53	-676.84	684.20	648.92	35.28	19.394		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Wellbenders

## Anticollision Report



**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Reference Site:** Huber Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 16H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** WBDS\_SQL\_2  
**Offset TVD Reference:** Reference Datum

Offset Design Huber Fed - 17H - OH - Plan #2													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error:	0.00 usft
Reference				Offset		Semi Major Axis		Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
3,400.00	2,848.39	3,379.29	2,830.56	18.28	17.82	88.51	-808.52	-677.31	684.08	648.00	36.08	18.959		
3,425.00	2,848.44	3,404.29	2,830.63	18.70	18.22	88.51	-833.52	-677.77	683.96	647.06	36.90	18.534		
3,450.00	2,848.48	3,429.29	2,830.69	19.11	18.64	88.51	-858.51	-678.24	683.84	646.11	37.73	18.123		
3,475.00	2,848.52	3,454.29	2,830.76	19.53	19.05	88.51	-883.51	-678.71	683.72	645.16	38.56	17.730		
3,500.00	2,848.57	3,479.29	2,830.82	19.94	19.47	88.51	-908.51	-679.17	683.60	644.21	39.39	17.353		
3,525.00	2,848.61	3,504.29	2,830.89	20.37	19.88	88.51	-933.50	-679.64	683.48	643.24	40.23	16.987		
3,550.00	2,848.66	3,529.28	2,830.95	20.80	20.31	88.52	-958.50	-680.11	683.36	642.27	41.09	16.632		
3,575.00	2,848.70	3,554.28	2,831.02	21.22	20.74	88.52	-983.49	-680.57	683.24	641.30	41.94	16.291		
3,600.00	2,848.74	3,579.28	2,831.09	21.65	21.16	88.52	-1,008.49	-681.04	683.12	640.33	42.79	15.964		
3,625.00	2,848.79	3,604.28	2,831.15	22.08	21.59	88.52	-1,033.48	-681.51	683.00	639.35	43.65	15.647		
3,650.00	2,848.83	3,629.28	2,831.22	22.51	22.02	88.52	-1,058.48	-681.98	682.88	638.36	44.52	15.339		
3,675.00	2,848.87	3,654.28	2,831.28	22.95	22.46	88.52	-1,083.47	-682.44	682.76	637.37	45.39	15.044		
3,700.00	2,848.92	3,679.28	2,831.35	23.38	22.89	88.52	-1,108.47	-682.91	682.64	636.39	46.25	14.759		
3,725.00	2,848.96	3,704.28	2,831.41	23.82	23.33	88.53	-1,133.46	-683.38	682.52	635.39	47.13	14.482		
3,750.00	2,849.00	3,729.28	2,831.48	24.26	23.77	88.53	-1,158.46	-683.84	682.40	634.39	48.01	14.214		
3,775.00	2,849.05	3,754.28	2,831.54	24.70	24.21	88.53	-1,183.45	-684.31	682.28	633.39	48.89	13.956		
3,800.00	2,849.09	3,779.28	2,831.61	25.14	24.65	88.53	-1,208.45	-684.78	682.16	632.39	49.77	13.707		
3,825.00	2,849.14	3,804.28	2,831.67	25.59	25.09	88.53	-1,233.44	-685.24	682.04	631.39	50.65	13.465		
3,850.00	2,849.18	3,829.28	2,831.74	26.03	25.53	88.53	-1,258.44	-685.71	681.92	630.38	51.54	13.230		
3,875.00	2,849.22	3,854.28	2,831.81	26.48	25.98	88.54	-1,283.43	-686.18	681.80	629.37	52.43	13.003		
3,900.00	2,849.27	3,879.28	2,831.87	26.92	26.42	88.54	-1,308.43	-686.64	681.68	628.36	53.32	12.784		
3,925.00	2,849.31	3,904.28	2,831.94	27.37	26.87	88.54	-1,333.42	-687.11	681.56	627.34	54.22	12.571		
3,950.00	2,849.35	3,929.28	2,832.00	27.82	27.32	88.54	-1,358.42	-687.58	681.44	626.32	55.12	12.363		
3,975.00	2,849.40	3,954.28	2,832.07	28.27	27.77	88.54	-1,383.42	-688.04	681.32	625.31	56.02	12.163		
4,000.00	2,849.44	3,979.28	2,832.13	28.72	28.22	88.54	-1,408.41	-688.51	681.20	624.29	56.91	11.969		
4,025.00	2,849.49	4,004.28	2,832.20	29.17	28.67	88.55	-1,433.41	-688.98	681.08	623.26	57.82	11.780		
4,050.00	2,849.53	4,029.28	2,832.26	29.63	29.12	88.55	-1,458.40	-689.44	680.96	622.24	58.72	11.596		
4,075.00	2,849.57	4,054.28	2,832.33	30.08	29.57	88.55	-1,483.40	-689.91	680.84	621.21	59.63	11.418		
4,100.00	2,849.62	4,079.28	2,832.39	30.53	30.02	88.55	-1,508.39	-690.38	680.72	620.19	60.53	11.245		
4,125.00	2,849.66	4,104.28	2,832.46	30.99	30.48	88.55	-1,533.39	-690.85	680.60	619.16	61.44	11.077		
4,150.00	2,849.70	4,129.28	2,832.53	31.44	30.93	88.55	-1,558.38	-691.31	680.48	618.13	62.35	10.913		
4,175.00	2,849.75	4,154.28	2,832.59	31.90	31.39	88.55	-1,583.38	-691.78	680.36	617.10	63.26	10.754		
4,200.00	2,849.79	4,179.28	2,832.66	32.35	31.84	88.56	-1,608.37	-692.25	680.24	616.07	64.18	10.600		
4,225.00	2,849.83	4,204.28	2,832.72	32.81	32.30	88.56	-1,633.37	-692.71	680.12	615.03	65.09	10.449		
4,250.00	2,849.88	4,229.28	2,832.79	33.27	32.76	88.56	-1,658.36	-693.18	680.00	614.00	66.00	10.302		
4,275.00	2,849.92	4,254.28	2,832.85	33.73	33.22	88.56	-1,683.36	-693.65	679.88	612.96	66.92	10.160		
4,300.00	2,849.97	4,279.28	2,832.92	34.19	33.67	88.56	-1,708.35	-694.11	679.76	611.93	67.84	10.021		
4,325.00	2,850.01	4,304.28	2,832.98	34.65	34.13	88.56	-1,733.35	-694.58	679.64	610.89	68.75	9.885		
4,350.00	2,850.05	4,329.28	2,833.05	35.10	34.59	88.57	-1,758.34	-695.05	679.52	609.85	69.67	9.753		
4,375.00	2,850.10	4,354.28	2,833.11	35.56	35.05	88.57	-1,783.34	-695.51	679.40	608.81	70.59	9.624		
4,400.00	2,850.14	4,379.27	2,833.18	36.02	35.51	88.57	-1,808.33	-695.98	679.28	607.77	71.51	9.499		
4,425.00	2,850.18	4,404.27	2,833.25	36.49	35.97	88.57	-1,833.33	-696.45	679.16	606.73	72.44	9.376		
4,450.00	2,850.23	4,429.27	2,833.31	36.95	36.44	88.57	-1,858.33	-696.91	679.04	605.68	73.36	9.256		
4,475.00	2,850.27	4,454.27	2,833.38	37.41	36.90	88.57	-1,883.32	-697.38	678.92	604.64	74.28	9.140		
4,500.00	2,850.32	4,479.27	2,833.44	37.87	37.36	88.58	-1,908.32	-697.85	678.80	603.60	75.21	9.026		
4,525.00	2,850.36	4,504.27	2,833.51	38.33	37.82	88.58	-1,933.31	-698.31	678.68	602.55	76.13	8.915		
4,550.00	2,850.40	4,529.27	2,833.57	38.80	38.28	88.58	-1,958.31	-698.78	678.56	601.51	77.06	8.806		
4,575.00	2,850.45	4,554.27	2,833.64	39.26	38.75	88.58	-1,983.30	-699.25	678.44	600.46	77.98	8.700		
4,600.00	2,850.49	4,579.27	2,833.70	39.72	39.21	88.58	-2,008.30	-699.72	678.32	599.41	78.91	8.596		
4,625.00	2,850.53	4,604.27	2,833.77	40.19	39.67	88.58	-2,033.29	-700.18	678.20	598.37	79.84	8.495		
4,650.00	2,850.58	4,629.27	2,833.83	40.65	40.14	88.58	-2,058.29	-700.65	678.08	597.32	80.77	8.396		
4,675.00	2,850.62	4,654.27	2,833.90	41.12	40.60	88.59	-2,083.28	-701.12	677.96	596.27	81.70	8.299		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Wellbenders Anticollision Report



**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Reference Site:** Huber Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 16H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** WBDS\_SQL\_2  
**Offset TVD Reference:** Reference Datum

Offset Design Huber Fed - 17H - OH - Plan #2													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Tooface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,700.00	2,850.66	4,679.27	2,833.97	41.58	41.07	88.59	-2,108.28	-701.58	677.84	595.22	82.62	8.204		
4,725.00	2,850.71	4,704.27	2,834.03	42.05	41.53	88.59	-2,133.27	-702.05	677.72	594.17	83.55	8.111		
4,750.00	2,850.75	4,729.27	2,834.10	42.51	42.00	88.59	-2,158.27	-702.52	677.60	593.12	84.49	8.020		
4,775.00	2,850.80	4,754.27	2,834.16	42.98	42.46	88.59	-2,183.26	-702.98	677.48	592.07	85.42	7.931		
4,800.00	2,850.84	4,779.27	2,834.23	43.44	42.93	88.59	-2,208.26	-703.45	677.36	591.02	86.35	7.845		
4,825.00	2,850.88	4,804.27	2,834.29	43.91	43.40	88.60	-2,233.25	-703.92	677.24	589.96	87.28	7.759		
4,850.00	2,850.93	4,829.27	2,834.36	44.38	43.86	88.60	-2,258.25	-704.38	677.12	588.91	88.21	7.676		
4,875.00	2,850.97	4,854.27	2,834.42	44.84	44.33	88.60	-2,283.24	-704.85	677.00	587.86	89.15	7.594		
4,900.00	2,851.01	4,879.27	2,834.49	45.31	44.80	88.60	-2,308.24	-705.32	676.88	586.81	90.08	7.514		
4,925.00	2,851.06	4,904.27	2,834.55	45.78	45.26	88.60	-2,333.24	-705.78	676.77	585.75	91.01	7.436		
4,950.00	2,851.10	4,929.27	2,834.62	46.24	45.73	88.60	-2,358.23	-706.25	676.65	584.70	91.95	7.359		
4,975.00	2,851.14	4,954.27	2,834.69	46.71	46.20	88.61	-2,383.23	-706.72	676.53	583.64	92.88	7.284		
5,000.00	2,851.19	4,979.27	2,834.75	47.18	46.67	88.61	-2,408.22	-707.18	676.41	582.59	93.82	7.210		
5,025.00	2,851.23	5,004.27	2,834.82	47.65	47.13	88.61	-2,433.22	-707.65	676.29	581.53	94.75	7.137		
5,050.00	2,851.28	5,029.27	2,834.88	48.12	47.60	88.61	-2,458.21	-708.12	676.17	580.48	95.69	7.066		
5,075.00	2,851.32	5,054.27	2,834.95	48.58	48.07	88.61	-2,483.21	-708.59	676.05	579.42	96.63	6.996		
5,100.00	2,851.36	5,079.27	2,835.01	49.05	48.54	88.61	-2,508.20	-709.05	675.93	578.36	97.56	6.928		
5,125.00	2,851.41	5,104.27	2,835.08	49.52	49.01	88.61	-2,533.20	-709.52	675.81	577.31	98.50	6.861		
5,150.00	2,851.45	5,129.27	2,835.14	49.99	49.48	88.62	-2,558.19	-709.99	675.69	576.25	99.44	6.795		
5,175.00	2,851.49	5,154.27	2,835.21	50.46	49.95	88.62	-2,583.19	-710.45	675.57	575.19	100.38	6.730		
5,200.00	2,851.54	5,179.27	2,835.27	50.93	50.42	88.62	-2,608.18	-710.92	675.45	574.13	101.31	6.667		
5,225.00	2,851.58	5,204.27	2,835.34	51.40	50.88	88.62	-2,633.18	-711.39	675.33	573.07	102.25	6.605		
5,250.00	2,851.63	5,229.26	2,835.41	51.87	51.35	88.62	-2,658.17	-711.85	675.21	572.02	103.19	6.543		
5,275.00	2,851.67	5,254.26	2,835.47	52.34	51.82	88.62	-2,683.17	-712.32	675.09	570.96	104.13	6.483		
5,300.00	2,851.71	5,279.26	2,835.54	52.81	52.29	88.63	-2,708.16	-712.79	674.97	569.90	105.07	6.424		
5,325.00	2,851.76	5,304.26	2,835.60	53.28	52.76	88.63	-2,733.16	-713.25	674.85	568.84	106.01	6.366		
5,350.00	2,851.80	5,329.26	2,835.67	53.75	53.23	88.63	-2,758.15	-713.72	674.73	567.78	106.95	6.309		
5,375.00	2,851.84	5,354.26	2,835.73	54.22	53.70	88.63	-2,783.15	-714.19	674.61	566.72	107.89	6.253		
5,400.00	2,851.89	5,379.26	2,835.80	54.69	54.17	88.63	-2,808.15	-714.65	674.49	565.66	108.83	6.198		
5,425.00	2,851.93	5,404.26	2,835.86	55.16	54.64	88.63	-2,833.14	-715.12	674.37	564.60	109.77	6.143		
5,450.00	2,851.97	5,429.26	2,835.93	55.63	55.11	88.64	-2,858.14	-715.59	674.25	563.54	110.71	6.090		
5,475.00	2,852.02	5,454.26	2,835.99	56.10	55.59	88.64	-2,883.13	-716.05	674.13	562.48	111.65	6.038		
5,500.00	2,852.06	5,479.26	2,836.06	56.57	56.06	88.64	-2,908.13	-716.52	674.01	561.42	112.59	5.986		
5,525.00	2,852.11	5,504.26	2,836.12	57.04	56.53	88.64	-2,933.12	-716.99	673.89	560.35	113.53	5.936		
5,550.00	2,852.15	5,529.26	2,836.19	57.51	57.00	88.64	-2,958.12	-717.46	673.77	559.29	114.48	5.886		
5,575.00	2,852.19	5,554.26	2,836.26	57.98	57.47	88.64	-2,983.11	-717.92	673.65	558.23	115.42	5.837		
5,600.00	2,852.24	5,579.26	2,836.32	58.45	57.94	88.65	-3,008.11	-718.39	673.53	557.17	116.36	5.788		
5,625.00	2,852.28	5,604.26	2,836.39	58.92	58.41	88.65	-3,033.10	-718.86	673.41	556.11	117.30	5.741		
5,650.00	2,852.32	5,629.26	2,836.45	59.39	58.88	88.65	-3,058.10	-719.32	673.29	555.04	118.25	5.694		
5,675.00	2,852.37	5,654.26	2,836.52	59.86	59.35	88.65	-3,083.09	-719.79	673.17	553.98	119.19	5.648		
5,700.00	2,852.41	5,679.26	2,836.58	60.34	59.83	88.65	-3,108.09	-720.26	673.05	552.92	120.13	5.603		
5,725.00	2,852.46	5,704.26	2,836.65	60.81	60.30	88.65	-3,133.08	-720.72	672.93	551.86	121.07	5.558		
5,750.00	2,852.50	5,729.26	2,836.71	61.28	60.77	88.66	-3,158.08	-721.19	672.81	550.79	122.02	5.514		
5,775.00	2,852.54	5,754.26	2,836.78	61.75	61.24	88.66	-3,183.07	-721.66	672.69	549.73	122.96	5.471		
5,800.00	2,852.59	5,779.26	2,836.84	62.22	61.71	88.66	-3,208.07	-722.12	672.57	548.67	123.90	5.428		
5,825.00	2,852.63	5,804.26	2,836.91	62.70	62.19	88.66	-3,233.06	-722.59	672.45	547.60	124.85	5.386		
5,850.00	2,852.67	5,829.26	2,836.98	63.17	62.66	88.66	-3,258.06	-723.06	672.33	546.54	125.79	5.345		
5,875.00	2,852.72	5,854.26	2,837.04	63.64	63.13	88.66	-3,283.06	-723.52	672.21	545.47	126.74	5.304		
5,900.00	2,852.76	5,879.26	2,837.11	64.11	63.60	88.66	-3,308.05	-723.99	672.09	544.41	127.68	5.264		
5,925.00	2,852.80	5,904.26	2,837.17	64.58	64.07	88.67	-3,333.05	-724.46	671.97	543.34	128.63	5.224		
5,950.00	2,852.85	5,929.26	2,837.24	65.06	64.55	88.67	-3,358.04	-724.92	671.85	542.28	129.57	5.185		
5,975.00	2,852.89	5,954.26	2,837.30	65.53	65.02	88.67	-3,383.04	-725.39	671.73	541.22	130.51	5.147		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Wellbenders Anticollision Report



**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Reference Site:** Huber Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 16H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** WBDS\_SQL\_2  
**Offset TVD Reference:** Reference Datum

Offset Design Huber Fed - 17H - OH - Plan #2													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error:	0.00 usft
Reference				Offset			Semi Major Axis			Distance				Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
6,000.00	2,852.94	5,979.26	2,837.37	66.00	65.49	88.67	-3,408.03	-725.86	671.61	540.15	131.46	5.109		
6,025.00	2,852.98	6,004.26	2,837.43	66.47	65.97	88.67	-3,433.03	-726.33	671.49	539.09	132.40	5.072		
6,050.00	2,853.02	6,029.26	2,837.50	66.95	66.44	88.67	-3,458.02	-726.79	671.37	538.02	133.35	5.035		
6,075.00	2,853.07	6,054.26	2,837.56	67.42	66.91	88.68	-3,483.02	-727.26	671.25	536.96	134.30	4.998		
6,100.00	2,853.11	6,079.25	2,837.63	67.89	67.38	88.68	-3,508.01	-727.73	671.13	535.89	135.24	4.962		
6,125.00	2,853.15	6,104.25	2,837.70	68.36	67.86	88.68	-3,533.01	-728.19	671.01	534.82	136.19	4.927		
6,150.00	2,853.20	6,129.25	2,837.76	68.84	68.33	88.68	-3,558.00	-728.66	670.89	533.76	137.13	4.892		
6,175.00	2,853.24	6,154.25	2,837.83	69.31	68.80	88.68	-3,583.00	-729.13	670.77	532.69	138.08	4.858		
6,200.00	2,853.28	6,179.25	2,837.89	69.78	69.28	88.68	-3,607.99	-729.59	670.65	531.63	139.02	4.824		
6,225.00	2,853.33	6,204.25	2,837.96	70.26	69.75	88.69	-3,632.99	-730.06	670.53	530.56	139.97	4.791		
6,250.00	2,853.37	6,229.25	2,838.02	70.73	70.22	88.69	-3,657.98	-730.53	670.41	529.50	140.92	4.758		
6,275.00	2,853.42	6,254.25	2,838.09	71.20	70.70	88.69	-3,682.98	-730.99	670.29	528.43	141.86	4.725		
6,300.00	2,853.46	6,279.25	2,838.15	71.67	71.17	88.69	-3,707.97	-731.46	670.17	527.36	142.81	4.693		
6,325.00	2,853.50	6,304.25	2,838.22	72.15	71.64	88.69	-3,732.97	-731.93	670.05	526.30	143.76	4.661		
6,350.00	2,853.55	6,329.25	2,838.28	72.62	72.12	88.69	-3,757.97	-732.39	669.93	525.23	144.70	4.630		
6,375.00	2,853.59	6,354.25	2,838.35	73.09	72.59	88.70	-3,782.96	-732.86	669.81	524.16	145.65	4.599		
6,400.00	2,853.63	6,379.25	2,838.42	73.57	73.06	88.70	-3,807.96	-733.33	669.69	523.10	146.60	4.568		
6,425.00	2,853.68	6,404.25	2,838.48	74.04	73.54	88.70	-3,832.95	-733.79	669.57	522.03	147.54	4.538		
6,450.00	2,853.72	6,429.25	2,838.55	74.52	74.01	88.70	-3,857.95	-734.26	669.45	520.96	148.49	4.508		
6,475.00	2,853.77	6,454.25	2,838.61	74.99	74.48	88.70	-3,882.94	-734.73	669.33	519.90	149.44	4.479		
6,500.00	2,853.81	6,479.25	2,838.68	75.46	74.96	88.70	-3,907.94	-735.20	669.21	518.83	150.38	4.450		
6,525.00	2,853.85	6,504.25	2,838.74	75.94	75.43	88.71	-3,932.93	-735.66	669.09	517.76	151.33	4.421		
6,550.00	2,853.90	6,529.25	2,838.81	76.41	75.91	88.71	-3,957.93	-736.13	668.97	516.69	152.28	4.393		
6,575.00	2,853.94	6,554.25	2,838.87	76.88	76.38	88.71	-3,982.92	-736.60	668.85	515.63	153.23	4.365		
6,600.00	2,853.98	6,579.25	2,838.94	77.36	76.85	88.71	-4,007.92	-737.06	668.73	514.56	154.17	4.338		
6,625.00	2,854.03	6,604.25	2,839.00	77.83	77.33	88.71	-4,032.91	-737.53	668.61	513.49	155.12	4.310		
6,650.00	2,854.07	6,629.25	2,839.07	78.31	77.80	88.71	-4,057.91	-738.00	668.49	512.42	156.07	4.283		
6,675.00	2,854.11	6,654.25	2,839.14	78.78	78.28	88.72	-4,082.90	-738.46	668.37	511.36	157.02	4.257		
6,700.00	2,854.16	6,679.25	2,839.20	79.25	78.75	88.72	-4,107.90	-738.93	668.25	510.29	157.97	4.230		
6,725.00	2,854.20	6,704.25	2,839.27	79.73	79.22	88.72	-4,132.89	-739.40	668.13	509.22	158.91	4.204		
6,750.00	2,854.25	6,729.25	2,839.33	80.20	79.70	88.72	-4,157.89	-739.86	668.01	508.15	159.86	4.179		
6,775.00	2,854.29	6,754.25	2,839.40	80.68	80.17	88.72	-4,182.88	-740.33	667.90	507.08	160.81	4.153		
6,800.00	2,854.33	6,779.25	2,839.46	81.15	80.65	88.72	-4,207.88	-740.80	667.78	506.02	161.76	4.128		
6,825.00	2,854.38	6,804.25	2,839.53	81.62	81.12	88.73	-4,232.88	-741.26	667.66	504.95	162.71	4.103		
6,850.00	2,854.42	6,829.25	2,839.59	82.10	81.60	88.73	-4,257.87	-741.73	667.54	503.88	163.66	4.079		
6,875.00	2,854.46	6,854.25	2,839.66	82.57	82.07	88.73	-4,282.87	-742.20	667.42	502.81	164.60	4.055		
6,900.00	2,854.51	6,879.25	2,839.72	83.05	82.54	88.73	-4,307.86	-742.66	667.30	501.74	165.55	4.031		
6,925.00	2,854.55	6,904.25	2,839.79	83.52	83.02	88.73	-4,332.86	-743.13	667.18	500.67	166.50	4.007		
6,950.00	2,854.60	6,929.24	2,839.86	83.99	83.49	88.73	-4,357.85	-743.60	667.06	499.61	167.45	3.984		
6,975.00	2,854.64	6,954.24	2,839.92	84.47	83.97	88.74	-4,382.85	-744.07	666.94	498.54	168.40	3.960		
7,000.00	2,854.68	6,979.24	2,839.99	84.94	84.44	88.74	-4,407.84	-744.53	666.82	497.47	169.35	3.938		
7,025.00	2,854.73	7,004.24	2,840.05	85.42	84.92	88.74	-4,432.84	-745.00	666.70	496.40	170.30	3.915		
7,050.00	2,854.77	7,029.24	2,840.12	85.89	85.39	88.74	-4,457.83	-745.47	666.58	495.33	171.25	3.893		
7,075.00	2,854.81	7,054.24	2,840.18	86.37	85.87	88.74	-4,482.83	-745.93	666.46	494.26	172.20	3.870		
7,100.00	2,854.86	7,079.24	2,840.25	86.84	86.34	88.74	-4,507.82	-746.40	666.34	493.19	173.14	3.848		
7,125.00	2,854.90	7,104.24	2,840.31	87.32	86.82	88.74	-4,532.82	-746.87	666.22	492.12	174.09	3.827		
7,150.00	2,854.94	7,129.24	2,840.38	87.79	87.29	88.75	-4,557.81	-747.33	666.10	491.05	175.04	3.805		
7,175.00	2,854.99	7,154.24	2,840.44	88.26	87.77	88.75	-4,582.81	-747.80	665.98	489.99	175.99	3.784		
7,200.00	2,855.03	7,179.24	2,840.51	88.74	88.24	88.75	-4,607.80	-748.27	665.86	488.92	176.94	3.763		
7,225.00	2,855.08	7,204.24	2,840.58	89.21	88.72	88.75	-4,632.80	-748.73	665.74	487.85	177.89	3.742		
7,250.00	2,855.12	7,229.24	2,840.64	89.69	89.19	88.75	-4,657.79	-749.20	665.62	486.78	178.84	3.722		
7,275.00	2,855.16	7,254.24	2,840.71	90.16	89.67	88.75	-4,682.79	-749.67	665.50	485.71	179.79	3.702		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Wellbenders Anticollision Report



**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Reference Site:** Huber Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 16H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** WBDS\_SQL\_2  
**Offset TVD Reference:** Reference Datum

Offset Design Huber Fed - 17H - OH - Plan #2													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
7,300.00	2,855.21	7,279.24	2,840.77	90.64	90.14	88.76	-4,707.79	-750.13	665.38	484.64	180.74	3.681		
7,325.00	2,855.25	7,304.24	2,840.84	91.11	90.62	88.76	-4,732.78	-750.60	665.26	483.57	181.69	3.662		
7,350.00	2,855.29	7,329.24	2,840.90	91.59	91.09	88.76	-4,757.78	-751.07	665.14	482.50	182.64	3.642		
7,375.00	2,855.34	7,354.24	2,840.97	92.06	91.57	88.76	-4,782.77	-751.53	665.02	481.43	183.59	3.622		
7,400.00	2,855.38	7,379.24	2,841.03	92.54	92.04	88.76	-4,807.77	-752.00	664.90	480.36	184.54	3.603		
7,425.00	2,855.42	7,404.24	2,841.10	93.01	92.52	88.76	-4,832.76	-752.47	664.78	479.29	185.49	3.584		
7,450.00	2,855.47	7,429.24	2,841.16	93.49	92.99	88.77	-4,857.76	-752.94	664.66	478.22	186.44	3.565		
7,475.00	2,855.51	7,454.24	2,841.23	93.96	93.47	88.77	-4,882.75	-753.40	664.54	477.15	187.39	3.546		
7,500.00	2,855.56	7,479.24	2,841.30	94.44	93.94	88.77	-4,907.75	-753.87	664.42	476.08	188.34	3.526		
7,525.00	2,855.60	7,504.24	2,841.36	94.91	94.42	88.77	-4,932.74	-754.34	664.30	475.01	189.29	3.509		
7,550.00	2,855.64	7,529.24	2,841.43	95.39	94.89	88.77	-4,957.74	-754.80	664.18	473.94	190.24	3.491		
7,575.00	2,855.69	7,554.24	2,841.49	95.86	95.37	88.77	-4,982.73	-755.27	664.06	472.87	191.19	3.473		
7,600.00	2,855.73	7,579.24	2,841.56	96.34	95.84	88.78	-5,007.73	-755.74	663.94	471.80	192.14	3.456		
7,625.00	2,855.77	7,604.24	2,841.62	96.81	96.32	88.78	-5,032.72	-756.20	663.82	470.73	193.09	3.438		
7,650.00	2,855.82	7,629.24	2,841.69	97.29	96.79	88.78	-5,057.72	-756.67	663.70	469.66	194.04	3.420		
7,675.00	2,855.86	7,654.24	2,841.75	97.76	97.27	88.78	-5,082.71	-757.14	663.58	468.59	194.99	3.403		
7,700.00	2,855.91	7,679.24	2,841.82	98.24	97.74	88.78	-5,107.71	-757.60	663.46	467.52	195.94	3.386		
7,725.00	2,855.95	7,704.24	2,841.88	98.71	98.22	88.78	-5,132.70	-758.07	663.34	466.45	196.89	3.369		
7,750.00	2,855.99	7,729.24	2,841.95	99.19	98.69	88.79	-5,157.70	-758.54	663.22	465.38	197.84	3.352		
7,775.00	2,856.04	7,754.24	2,842.02	99.66	99.17	88.79	-5,182.70	-759.00	663.10	464.31	198.79	3.336		
7,800.00	2,856.08	7,779.23	2,842.08	100.14	99.65	88.79	-5,207.69	-759.47	662.98	463.24	199.74	3.319		
7,825.00	2,856.12	7,804.23	2,842.15	100.61	100.12	88.79	-5,232.69	-759.94	662.86	462.17	200.69	3.303		
7,850.00	2,856.17	7,829.23	2,842.21	101.09	100.60	88.79	-5,257.68	-760.40	662.74	461.10	201.64	3.287		
7,875.00	2,856.21	7,854.23	2,842.28	101.56	101.07	88.79	-5,282.68	-760.87	662.62	460.03	202.60	3.271		
7,900.00	2,856.25	7,879.23	2,842.34	102.04	101.55	88.80	-5,307.67	-761.34	662.50	458.96	203.55	3.255		
7,925.00	2,856.30	7,904.23	2,842.41	102.52	102.02	88.80	-5,332.67	-761.81	662.38	457.89	204.50	3.239		
7,950.00	2,856.34	7,929.23	2,842.47	102.99	102.50	88.80	-5,357.66	-762.27	662.26	456.82	205.45	3.224		
7,975.00	2,856.39	7,954.23	2,842.54	103.47	102.97	88.80	-5,382.66	-762.74	662.14	455.74	206.40	3.208		
8,000.00	2,856.43	7,979.23	2,842.60	103.94	103.45	88.80	-5,407.65	-763.21	662.02	454.67	207.35	3.193		
8,025.00	2,856.47	8,004.23	2,842.67	104.42	103.93	88.80	-5,432.65	-763.67	661.90	453.60	208.30	3.178		
8,050.00	2,856.52	8,029.23	2,842.74	104.89	104.40	88.81	-5,457.64	-764.14	661.78	452.53	209.25	3.163		
8,075.00	2,856.56	8,054.23	2,842.80	105.37	104.88	88.81	-5,482.64	-764.61	661.66	451.46	210.20	3.148		
8,100.00	2,856.60	8,079.23	2,842.87	105.84	105.35	88.81	-5,507.63	-765.07	661.54	450.39	211.15	3.133		
8,125.00	2,856.65	8,104.23	2,842.93	106.32	105.83	88.81	-5,532.63	-765.54	661.42	449.32	212.10	3.118		
8,150.00	2,856.69	8,129.23	2,843.00	106.79	106.30	88.81	-5,557.62	-766.01	661.30	448.25	213.06	3.104		
8,175.00	2,856.74	8,154.23	2,843.06	107.27	106.78	88.81	-5,582.62	-766.47	661.18	447.18	214.01	3.090		
8,200.00	2,856.78	8,179.23	2,843.13	107.74	107.26	88.82	-5,607.61	-766.94	661.06	446.11	214.96	3.075		
8,225.00	2,856.82	8,204.23	2,843.19	108.22	107.73	88.82	-5,632.61	-767.41	660.94	445.04	215.91	3.061		
8,250.00	2,856.87	8,229.23	2,843.26	108.70	108.21	88.82	-5,657.61	-767.87	660.83	443.96	216.86	3.047		
8,275.00	2,856.91	8,254.23	2,843.32	109.17	108.68	88.82	-5,682.60	-768.34	660.71	442.89	217.81	3.033		
8,300.00	2,856.95	8,279.23	2,843.39	109.65	109.16	88.82	-5,707.60	-768.81	660.59	441.82	218.76	3.020		
8,325.00	2,857.00	8,304.23	2,843.46	110.08	109.63	88.82	-5,732.59	-769.27	660.47	440.79	219.67	3.007		
8,326.61	2,857.00	8,305.84	2,843.46	110.11	109.66	88.82	-5,734.20	-769.30	660.46	440.72	219.73	3.006	CC, ES, SF	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Wellbenders Anticollision Report



**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Reference Site:** Huber Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 16H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** WBDS\_SQL\_2  
**Offset TVD Reference:** Reference Datum

Offset Design Huber Fed - 18H - OH - Plan #2													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
3,150.00	2,847.42	2,838.63	2,531.76	14.40	13.61	76.39	-577.46	-1,297.26	1,347.07	1,319.83	27.24	49.452		
3,175.00	2,848.00	2,855.66	2,532.01	14.76	13.87	76.42	-594.49	-1,297.31	1,346.60	1,318.77	27.84	48.373		
3,200.00	2,848.04	2,880.66	2,532.12	15.13	14.25	76.42	-619.48	-1,297.37	1,346.08	1,317.50	28.58	47.105		
3,225.00	2,848.09	2,905.65	2,532.23	15.52	14.64	76.42	-644.48	-1,297.43	1,345.55	1,316.22	29.33	45.872		
3,250.00	2,848.13	2,930.64	2,532.34	15.90	15.05	76.42	-669.47	-1,297.49	1,345.03	1,314.93	30.10	44.683		
3,275.00	2,848.17	2,955.64	2,532.45	16.29	15.45	76.41	-694.47	-1,297.55	1,344.50	1,313.63	30.87	43.554		
3,300.00	2,848.22	2,980.63	2,532.56	16.67	15.85	76.41	-719.46	-1,297.61	1,343.98	1,312.34	31.64	42.479		
3,325.00	2,848.26	3,005.63	2,532.67	17.07	16.26	76.41	-744.45	-1,297.67	1,343.45	1,311.02	32.43	41.429		
3,350.00	2,848.31	3,030.62	2,532.77	17.48	16.67	76.41	-769.45	-1,297.73	1,342.92	1,309.70	33.23	40.416		
3,375.00	2,848.35	3,055.62	2,532.88	17.88	17.09	76.40	-794.44	-1,297.79	1,342.40	1,308.37	34.03	39.449		
3,400.00	2,848.39	3,080.61	2,532.99	18.28	17.51	76.40	-819.44	-1,297.86	1,341.87	1,307.04	34.83	38.528		
3,425.00	2,848.44	3,105.61	2,533.10	18.70	17.93	76.40	-844.43	-1,297.92	1,341.35	1,305.70	35.64	37.631		
3,450.00	2,848.48	3,130.60	2,533.21	19.11	18.36	76.40	-869.43	-1,297.98	1,340.82	1,304.35	36.47	36.766		
3,475.00	2,848.52	3,155.59	2,533.32	19.53	18.78	76.39	-894.42	-1,298.04	1,340.29	1,303.00	37.29	35.940		
3,500.00	2,848.57	3,180.59	2,533.43	19.94	19.21	76.39	-919.41	-1,298.10	1,339.77	1,301.65	38.12	35.149		
3,525.00	2,848.61	3,205.58	2,533.54	20.37	19.64	76.39	-944.41	-1,298.16	1,339.24	1,300.29	38.95	34.381		
3,550.00	2,848.66	3,230.58	2,533.65	20.80	20.08	76.39	-969.40	-1,298.22	1,338.72	1,298.92	39.80	33.640		
3,575.00	2,848.70	3,255.57	2,533.76	21.22	20.52	76.38	-994.40	-1,298.28	1,338.19	1,297.55	40.64	32.930		
3,600.00	2,848.74	3,280.57	2,533.87	21.65	20.95	76.38	-1,019.39	-1,298.34	1,337.67	1,296.19	41.48	32.248		
3,625.00	2,848.79	3,305.56	2,533.97	22.08	21.39	76.38	-1,044.38	-1,298.41	1,337.14	1,294.81	42.33	31.587		
3,650.00	2,848.83	3,330.56	2,534.08	22.51	21.83	76.37	-1,069.38	-1,298.47	1,336.61	1,293.43	43.19	30.948		
3,675.00	2,848.87	3,355.55	2,534.19	22.95	22.28	76.37	-1,094.37	-1,298.53	1,336.09	1,292.04	44.05	30.335		
3,700.00	2,848.92	3,380.54	2,534.30	23.38	22.72	76.37	-1,119.37	-1,298.59	1,335.56	1,290.66	44.90	29.744		
3,725.00	2,848.96	3,405.54	2,534.41	23.82	23.17	76.37	-1,144.36	-1,298.65	1,335.04	1,289.27	45.76	29.172		
3,750.00	2,849.00	3,430.53	2,534.52	24.26	23.61	76.36	-1,169.35	-1,298.71	1,334.51	1,287.88	46.63	28.617		
3,775.00	2,849.05	3,455.53	2,534.63	24.70	24.06	76.36	-1,194.35	-1,298.77	1,333.99	1,286.48	47.50	28.083		
3,800.00	2,849.09	3,480.52	2,534.74	25.14	24.51	76.36	-1,219.34	-1,298.83	1,333.46	1,285.09	48.37	27.569		
3,825.00	2,849.14	3,505.52	2,534.85	25.59	24.96	76.36	-1,244.34	-1,298.89	1,332.93	1,283.69	49.24	27.069		
3,850.00	2,849.18	3,530.51	2,534.96	26.03	25.41	76.35	-1,269.33	-1,298.96	1,332.41	1,282.29	50.12	26.585		
3,875.00	2,849.22	3,555.50	2,535.06	26.48	25.87	76.35	-1,294.32	-1,299.02	1,331.88	1,280.89	51.00	26.118		
3,900.00	2,849.27	3,580.50	2,535.17	26.92	26.32	76.35	-1,319.32	-1,299.08	1,331.36	1,279.48	51.87	25.666		
3,925.00	2,849.31	3,605.49	2,535.28	27.37	26.77	76.35	-1,344.31	-1,299.14	1,330.83	1,278.08	52.75	25.228		
3,950.00	2,849.35	3,630.49	2,535.39	27.82	27.23	76.34	-1,369.31	-1,299.20	1,330.31	1,276.67	53.64	24.802		
3,975.00	2,849.40	3,655.48	2,535.50	28.27	27.69	76.34	-1,394.30	-1,299.26	1,329.78	1,275.26	54.52	24.390		
4,000.00	2,849.44	3,680.48	2,535.61	28.72	28.14	76.34	-1,419.30	-1,299.32	1,329.25	1,273.85	55.40	23.992		
4,025.00	2,849.49	3,705.47	2,535.72	29.17	28.60	76.34	-1,444.29	-1,299.38	1,328.73	1,272.44	56.29	23.604		
4,050.00	2,849.53	3,730.47	2,535.83	29.63	29.06	76.33	-1,469.28	-1,299.44	1,328.20	1,271.02	57.18	23.228		
4,075.00	2,849.57	3,755.46	2,535.94	30.08	29.52	76.33	-1,494.28	-1,299.50	1,327.68	1,269.60	58.07	22.863		
4,100.00	2,849.62	3,780.45	2,536.05	30.53	29.98	76.33	-1,519.27	-1,299.57	1,327.15	1,268.19	58.96	22.509		
4,125.00	2,849.66	3,805.45	2,536.16	30.99	30.43	76.33	-1,544.27	-1,299.63	1,326.63	1,266.77	59.85	22.164		
4,150.00	2,849.70	3,830.44	2,536.26	31.44	30.90	76.32	-1,569.26	-1,299.69	1,326.10	1,265.35	60.75	21.829		
4,175.00	2,849.75	3,855.44	2,536.37	31.90	31.36	76.32	-1,594.25	-1,299.75	1,325.57	1,263.93	61.64	21.504		
4,200.00	2,849.79	3,880.43	2,536.48	32.35	31.82	76.32	-1,619.25	-1,299.81	1,325.05	1,262.51	62.54	21.188		
4,225.00	2,849.83	3,905.43	2,536.59	32.81	32.28	76.31	-1,644.24	-1,299.87	1,324.52	1,261.09	63.44	20.880		
4,250.00	2,849.88	3,930.42	2,536.70	33.27	32.74	76.31	-1,669.24	-1,299.93	1,324.00	1,259.66	64.33	20.580		
4,275.00	2,849.92	3,955.42	2,536.81	33.73	33.21	76.31	-1,694.23	-1,299.99	1,323.47	1,258.24	65.23	20.288		
4,300.00	2,849.97	3,980.41	2,536.92	34.19	33.67	76.31	-1,719.22	-1,300.05	1,322.95	1,256.81	66.13	20.005		
4,325.00	2,850.01	4,005.40	2,537.03	34.65	34.13	76.30	-1,744.22	-1,300.12	1,322.42	1,255.39	67.03	19.728		
4,350.00	2,850.05	4,030.40	2,537.14	35.10	34.60	76.30	-1,769.21	-1,300.18	1,321.89	1,253.96	67.93	19.458		
4,375.00	2,850.10	4,055.39	2,537.25	35.56	35.06	76.30	-1,794.21	-1,300.24	1,321.37	1,252.53	68.84	19.196		
4,400.00	2,850.14	4,080.39	2,537.36	36.02	35.53	76.30	-1,819.20	-1,300.30	1,320.84	1,251.10	69.74	18.940		
4,425.00	2,850.18	4,105.38	2,537.46	36.49	35.99	76.29	-1,844.19	-1,300.36	1,320.32	1,249.67	70.64	18.690		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Wellbenders Anticollision Report



**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Reference Site:** Huber Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 16H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** WBDS\_SQL\_2  
**Offset TVD Reference:** Reference Datum

Offset Design Huber Fed - 18H - OH - Plan #2													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
4,450.00	2,850.23	4,130.38	2,537.57	36.95	36.46	76.29	-1,869.19	-1,300.42	1,319.79	1,248.24	71.55	18.446		
4,475.00	2,850.27	4,155.37	2,537.68	37.41	36.92	76.29	-1,894.18	-1,300.48	1,319.27	1,246.81	72.45	18.209		
4,500.00	2,850.32	4,180.36	2,537.79	37.87	37.39	76.29	-1,919.18	-1,300.54	1,318.74	1,245.38	73.36	17.977		
4,525.00	2,850.36	4,205.36	2,537.90	38.33	37.86	76.28	-1,944.17	-1,300.60	1,318.21	1,243.95	74.26	17.750		
4,550.00	2,850.40	4,230.35	2,538.01	38.80	38.32	76.28	-1,969.17	-1,300.67	1,317.69	1,242.52	75.17	17.529		
4,575.00	2,850.45	4,255.35	2,538.12	39.26	38.79	76.28	-1,994.16	-1,300.73	1,317.16	1,241.08	76.08	17.313		
4,600.00	2,850.49	4,280.34	2,538.23	39.72	39.26	76.28	-2,019.15	-1,300.79	1,316.64	1,239.65	76.99	17.102		
4,625.00	2,850.53	4,305.34	2,538.34	40.19	39.72	76.27	-2,044.15	-1,300.85	1,316.11	1,238.21	77.90	16.896		
4,650.00	2,850.58	4,330.33	2,538.45	40.65	40.19	76.27	-2,069.14	-1,300.91	1,315.59	1,236.78	78.81	16.694		
4,675.00	2,850.62	4,355.33	2,538.55	41.12	40.66	76.27	-2,094.14	-1,300.97	1,315.06	1,235.34	79.72	16.497		
4,700.00	2,850.66	4,380.32	2,538.66	41.58	41.13	76.26	-2,119.13	-1,301.03	1,314.53	1,233.91	80.63	16.304		
4,725.00	2,850.71	4,405.31	2,538.77	42.05	41.60	76.26	-2,144.12	-1,301.09	1,314.01	1,232.47	81.54	16.116		
4,750.00	2,850.75	4,430.31	2,538.88	42.51	42.07	76.26	-2,169.12	-1,301.15	1,313.48	1,231.03	82.45	15.931		
4,775.00	2,850.80	4,455.30	2,538.99	42.98	42.54	76.26	-2,194.11	-1,301.21	1,312.96	1,229.60	83.36	15.750		
4,800.00	2,850.84	4,480.30	2,539.10	43.44	43.00	76.25	-2,219.11	-1,301.28	1,312.43	1,228.16	84.27	15.574		
4,825.00	2,850.88	4,505.29	2,539.21	43.91	43.47	76.25	-2,244.10	-1,301.34	1,311.91	1,226.72	85.18	15.401		
4,850.00	2,850.93	4,530.29	2,539.32	44.38	43.94	76.25	-2,269.09	-1,301.40	1,311.38	1,225.28	86.10	15.231		
4,875.00	2,850.97	4,555.28	2,539.43	44.84	44.41	76.25	-2,294.09	-1,301.46	1,310.85	1,223.84	87.01	15.065		
4,900.00	2,851.01	4,580.28	2,539.54	45.31	44.88	76.24	-2,319.08	-1,301.52	1,310.33	1,222.41	87.92	14.903		
4,925.00	2,851.06	4,605.27	2,539.65	45.78	45.35	76.24	-2,344.08	-1,301.58	1,309.80	1,220.97	88.84	14.744		
4,950.00	2,851.10	4,630.26	2,539.75	46.24	45.82	76.24	-2,369.07	-1,301.64	1,309.28	1,219.52	89.75	14.588		
4,975.00	2,851.14	4,655.26	2,539.86	46.71	46.29	76.24	-2,394.06	-1,301.70	1,308.75	1,218.08	90.67	14.435		
5,000.00	2,851.19	4,680.25	2,539.97	47.18	46.77	76.23	-2,419.06	-1,301.76	1,308.23	1,216.64	91.58	14.285		
5,025.00	2,851.23	4,705.25	2,540.08	47.65	47.24	76.23	-2,444.05	-1,301.83	1,307.70	1,215.20	92.50	14.138		
5,050.00	2,851.28	4,730.24	2,540.19	48.12	47.71	76.23	-2,469.05	-1,301.89	1,307.18	1,213.76	93.41	13.993		
5,075.00	2,851.32	4,755.24	2,540.30	48.58	48.18	76.22	-2,494.04	-1,301.95	1,306.65	1,212.32	94.33	13.852		
5,100.00	2,851.36	4,780.23	2,540.41	49.05	48.65	76.22	-2,519.03	-1,302.01	1,306.12	1,210.88	95.25	13.713		
5,125.00	2,851.41	4,805.22	2,540.52	49.52	49.12	76.22	-2,544.03	-1,302.07	1,305.60	1,209.44	96.16	13.577		
5,150.00	2,851.45	4,830.22	2,540.63	49.99	49.59	76.22	-2,569.02	-1,302.13	1,305.07	1,207.99	97.08	13.443		
5,175.00	2,851.49	4,855.21	2,540.74	50.46	50.06	76.21	-2,594.02	-1,302.19	1,304.55	1,206.55	98.00	13.312		
5,200.00	2,851.54	4,880.21	2,540.85	50.93	50.54	76.21	-2,619.01	-1,302.25	1,304.02	1,205.11	98.91	13.183		
5,225.00	2,851.58	4,905.20	2,540.95	51.40	51.01	76.21	-2,644.01	-1,302.31	1,303.50	1,203.66	99.83	13.057		
5,250.00	2,851.63	4,930.20	2,541.06	51.87	51.48	76.21	-2,669.00	-1,302.38	1,302.97	1,202.22	100.75	12.933		
5,275.00	2,851.67	4,955.19	2,541.17	52.34	51.95	76.20	-2,693.99	-1,302.44	1,302.45	1,200.78	101.67	12.811		
5,300.00	2,851.71	4,980.19	2,541.28	52.81	52.42	76.20	-2,718.99	-1,302.50	1,301.92	1,199.33	102.59	12.691		
5,325.00	2,851.76	5,005.18	2,541.39	53.28	52.90	76.20	-2,743.98	-1,302.56	1,301.39	1,197.89	103.50	12.573		
5,350.00	2,851.80	5,030.17	2,541.50	53.75	53.37	76.19	-2,768.98	-1,302.62	1,300.87	1,196.45	104.42	12.458		
5,375.00	2,851.84	5,055.17	2,541.61	54.22	53.84	76.19	-2,793.97	-1,302.68	1,300.34	1,195.00	105.34	12.344		
5,400.00	2,851.89	5,080.16	2,541.72	54.69	54.31	76.19	-2,818.96	-1,302.74	1,299.82	1,193.56	106.26	12.232		
5,425.00	2,851.93	5,105.16	2,541.83	55.16	54.79	76.19	-2,843.96	-1,302.80	1,299.29	1,192.11	107.18	12.123		
5,450.00	2,851.97	5,130.15	2,541.94	55.63	55.26	76.18	-2,868.95	-1,302.86	1,298.77	1,190.67	108.10	12.015		
5,475.00	2,852.02	5,155.15	2,542.04	56.10	55.73	76.18	-2,893.95	-1,302.93	1,298.24	1,189.22	109.02	11.908		
5,500.00	2,852.06	5,180.14	2,542.15	56.57	56.21	76.18	-2,918.94	-1,302.99	1,297.71	1,187.78	109.94	11.804		
5,525.00	2,852.11	5,205.14	2,542.26	57.04	56.68	76.18	-2,943.93	-1,303.05	1,297.19	1,186.33	110.86	11.701		
5,550.00	2,852.15	5,230.13	2,542.37	57.51	57.15	76.17	-2,968.93	-1,303.11	1,296.66	1,184.88	111.78	11.600		
5,575.00	2,852.19	5,255.12	2,542.48	57.98	57.63	76.17	-2,993.92	-1,303.17	1,296.14	1,183.44	112.70	11.501		
5,600.00	2,852.24	5,280.12	2,542.59	58.45	58.10	76.17	-3,018.92	-1,303.23	1,295.61	1,181.99	113.62	11.403		
5,625.00	2,852.28	5,305.11	2,542.70	58.92	58.57	76.16	-3,043.91	-1,303.29	1,295.09	1,180.55	114.54	11.307		
5,650.00	2,852.32	5,330.11	2,542.81	59.39	59.05	76.16	-3,068.90	-1,303.35	1,294.56	1,179.10	115.46	11.212		
5,675.00	2,852.37	5,355.10	2,542.92	59.86	59.52	76.16	-3,093.90	-1,303.41	1,294.04	1,177.65	116.38	11.119		
5,700.00	2,852.41	5,380.10	2,543.03	60.34	59.99	76.16	-3,118.89	-1,303.47	1,293.51	1,176.21	117.30	11.027		
5,725.00	2,852.46	5,405.09	2,543.14	60.81	60.47	76.15	-3,143.89	-1,303.54	1,292.98	1,174.76	118.23	10.937		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



# Wellbenders Anticollision Report



**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Reference Site:** Huber Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 16H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** WBDS\_SQL\_2  
**Offset TVD Reference:** Reference Datum

Offset Design Huber Fed - 18H - OH - Plan #2													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error:	0.00 usft
Reference				Offset		Semi Major Axis			Distance				Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,750.00	2,852.50	5,430.08	2,543.24	61.28	60.94	76.15	-3,168.88	-1,303.60	1,292.46	1,173.31	119.15	10.848		
5,775.00	2,852.54	5,455.08	2,543.35	61.75	61.41	76.15	-3,193.88	-1,303.66	1,291.93	1,171.87	120.07	10.760		
5,800.00	2,852.59	5,480.07	2,543.46	62.22	61.89	76.15	-3,218.87	-1,303.72	1,291.41	1,170.42	120.99	10.674		
5,825.00	2,852.63	5,505.07	2,543.57	62.70	62.36	76.14	-3,243.86	-1,303.78	1,290.88	1,168.97	121.91	10.589		
5,850.00	2,852.67	5,530.06	2,543.68	63.17	62.84	76.14	-3,268.86	-1,303.84	1,290.36	1,167.52	122.83	10.505		
5,875.00	2,852.72	5,555.06	2,543.79	63.64	63.31	76.14	-3,293.85	-1,303.90	1,289.83	1,166.08	123.76	10.422		
5,900.00	2,852.76	5,580.05	2,543.90	64.11	63.79	76.13	-3,318.85	-1,303.96	1,289.31	1,164.63	124.68	10.341		
5,925.00	2,852.80	5,605.05	2,544.01	64.58	64.26	76.13	-3,343.84	-1,304.02	1,288.78	1,163.18	125.60	10.261		
5,950.00	2,852.85	5,630.04	2,544.12	65.06	64.73	76.13	-3,368.83	-1,304.09	1,288.26	1,161.73	126.52	10.182		
5,975.00	2,852.89	5,655.03	2,544.23	65.53	65.21	76.13	-3,393.83	-1,304.15	1,287.73	1,160.28	127.45	10.104		
6,000.00	2,852.94	5,680.03	2,544.33	66.00	65.68	76.12	-3,418.82	-1,304.21	1,287.20	1,158.84	128.37	10.027		
6,025.00	2,852.98	5,705.02	2,544.44	66.47	66.16	76.12	-3,443.82	-1,304.27	1,286.68	1,157.39	129.29	9.952		
6,050.00	2,853.02	5,730.02	2,544.55	66.95	66.63	76.12	-3,468.81	-1,304.33	1,286.15	1,155.94	130.21	9.877		
6,075.00	2,853.07	5,755.01	2,544.66	67.42	67.11	76.11	-3,493.80	-1,304.39	1,285.63	1,154.49	131.14	9.804		
6,100.00	2,853.11	5,780.01	2,544.77	67.89	67.58	76.11	-3,518.80	-1,304.45	1,285.10	1,153.04	132.06	9.731		
6,125.00	2,853.15	5,805.00	2,544.88	68.36	68.06	76.11	-3,543.79	-1,304.51	1,284.58	1,151.59	132.98	9.660		
6,150.00	2,853.20	5,830.00	2,544.99	68.84	68.53	76.11	-3,568.79	-1,304.57	1,284.05	1,150.15	133.91	9.589		
6,175.00	2,853.24	5,854.99	2,545.10	69.31	69.01	76.10	-3,593.78	-1,304.64	1,283.53	1,148.70	134.83	9.520		
6,200.00	2,853.28	5,879.98	2,545.21	69.78	69.48	76.10	-3,618.77	-1,304.70	1,283.00	1,147.25	135.75	9.451		
6,225.00	2,853.33	5,904.98	2,545.32	70.26	69.96	76.10	-3,643.77	-1,304.76	1,282.47	1,145.80	136.68	9.383		
6,250.00	2,853.37	5,929.97	2,545.43	70.73	70.43	76.10	-3,668.76	-1,304.82	1,281.95	1,144.35	137.60	9.317		
6,275.00	2,853.42	5,954.97	2,545.53	71.20	70.91	76.09	-3,693.76	-1,304.88	1,281.42	1,142.90	138.52	9.251		
6,300.00	2,853.46	5,979.96	2,545.64	71.67	71.38	76.09	-3,718.75	-1,304.94	1,280.90	1,141.45	139.45	9.186		
6,325.00	2,853.50	6,004.96	2,545.75	72.15	71.86	76.09	-3,743.75	-1,305.00	1,280.37	1,140.00	140.37	9.121		
6,350.00	2,853.55	6,029.95	2,545.86	72.62	72.33	76.08	-3,768.74	-1,305.06	1,279.85	1,138.55	141.29	9.058		
6,375.00	2,853.59	6,054.94	2,545.97	73.09	72.81	76.08	-3,793.73	-1,305.12	1,279.32	1,137.10	142.22	8.995		
6,400.00	2,853.63	6,079.94	2,546.08	73.57	73.28	76.08	-3,818.73	-1,305.18	1,278.80	1,135.65	143.14	8.934		
6,425.00	2,853.68	6,104.93	2,546.19	74.04	73.76	76.08	-3,843.72	-1,305.25	1,278.27	1,134.20	144.07	8.873		
6,450.00	2,853.72	6,129.93	2,546.30	74.52	74.23	76.07	-3,868.72	-1,305.31	1,277.75	1,132.76	144.99	8.813		
6,475.00	2,853.77	6,154.92	2,546.41	74.99	74.71	76.07	-3,893.71	-1,305.37	1,277.22	1,131.31	145.91	8.753		
6,500.00	2,853.81	6,179.92	2,546.52	75.46	75.18	76.07	-3,918.70	-1,305.43	1,276.69	1,129.86	146.84	8.695		
6,525.00	2,853.85	6,204.91	2,546.63	75.94	75.66	76.06	-3,943.70	-1,305.49	1,276.17	1,128.41	147.76	8.637		
6,550.00	2,853.90	6,229.91	2,546.73	76.41	76.13	76.06	-3,968.69	-1,305.55	1,275.64	1,126.96	148.69	8.579		
6,575.00	2,853.94	6,254.90	2,546.84	76.88	76.61	76.06	-3,993.69	-1,305.61	1,275.12	1,125.51	149.61	8.523		
6,600.00	2,853.98	6,279.89	2,546.95	77.36	77.08	76.06	-4,018.68	-1,305.67	1,274.59	1,124.06	150.54	8.467		
6,625.00	2,854.03	6,304.89	2,547.06	77.83	77.56	76.05	-4,043.67	-1,305.73	1,274.07	1,122.61	151.46	8.412		
6,650.00	2,854.07	6,329.88	2,547.17	78.31	78.04	76.05	-4,068.67	-1,305.80	1,273.54	1,121.16	152.39	8.357		
6,675.00	2,854.11	6,354.88	2,547.28	78.78	78.51	76.05	-4,093.66	-1,305.86	1,273.02	1,119.71	153.31	8.304		
6,700.00	2,854.16	6,379.87	2,547.39	79.25	78.99	76.04	-4,118.66	-1,305.92	1,272.49	1,118.26	154.23	8.250		
6,725.00	2,854.20	6,404.87	2,547.50	79.73	79.46	76.04	-4,143.65	-1,305.98	1,271.97	1,116.81	155.16	8.198		
6,750.00	2,854.25	6,429.86	2,547.61	80.20	79.94	76.04	-4,168.64	-1,306.04	1,271.44	1,115.36	156.08	8.146		
6,775.00	2,854.29	6,454.86	2,547.72	80.68	80.41	76.04	-4,193.64	-1,306.10	1,270.92	1,113.91	157.01	8.095		
6,800.00	2,854.33	6,479.85	2,547.82	81.15	80.89	76.03	-4,218.63	-1,306.16	1,270.39	1,112.46	157.93	8.044		
6,825.00	2,854.38	6,504.84	2,547.93	81.62	81.37	76.03	-4,243.63	-1,306.22	1,269.86	1,111.01	158.86	7.994		
6,850.00	2,854.42	6,529.84	2,548.04	82.10	81.84	76.03	-4,268.62	-1,306.28	1,269.34	1,109.56	159.78	7.944		
6,875.00	2,854.46	6,554.83	2,548.15	82.57	82.32	76.02	-4,293.62	-1,306.35	1,268.81	1,108.10	160.71	7.895		
6,900.00	2,854.51	6,579.83	2,548.26	83.05	82.79	76.02	-4,318.61	-1,306.41	1,268.29	1,106.65	161.63	7.847		
6,925.00	2,854.55	6,604.82	2,548.37	83.52	83.27	76.02	-4,343.60	-1,306.47	1,267.76	1,105.20	162.56	7.799		
6,950.00	2,854.60	6,629.82	2,548.48	83.99	83.75	76.02	-4,368.60	-1,306.53	1,267.24	1,103.75	163.48	7.751		
6,975.00	2,854.64	6,654.81	2,548.59	84.47	84.22	76.01	-4,393.59	-1,306.59	1,266.71	1,102.30	164.41	7.705		
7,000.00	2,854.68	6,679.80	2,548.70	84.94	84.70	76.01	-4,418.59	-1,306.65	1,266.19	1,100.85	165.33	7.658		
7,025.00	2,854.73	6,704.80	2,548.81	85.42	85.17	76.01	-4,443.58	-1,306.71	1,265.66	1,099.40	166.26	7.613		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Wellbenders Anticollision Report



**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Reference Site:** Huber Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 16H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** WBDS\_SQL\_2  
**Offset TVD Reference:** Reference Datum

Offset Design Huber Fed - 18H - OH - Plan #2													Offset Site Error:
Survey Program: 0-MWD+IGRF													Offset Well Error:
Reference		Offset		Semi Major Axis		Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
7,050.00	2,854.77	6,729.79	2,548.92	85.89	85.65	76.00	-4,468.57	-1,306.77	1,265.14	1,097.95	167.18	7.567	
7,075.00	2,854.81	6,754.79	2,549.02	86.37	86.13	76.00	-4,493.57	-1,306.83	1,264.61	1,096.50	168.11	7.523	
7,100.00	2,854.86	6,779.78	2,549.13	86.84	86.60	76.00	-4,518.56	-1,306.89	1,264.09	1,095.05	169.04	7.478	
7,125.00	2,854.90	6,804.78	2,549.24	87.32	87.08	76.00	-4,543.56	-1,306.96	1,263.56	1,093.60	169.96	7.434	
7,150.00	2,854.94	6,829.77	2,549.35	87.79	87.55	75.99	-4,568.55	-1,307.02	1,263.03	1,092.15	170.89	7.391	
7,175.00	2,854.99	6,854.77	2,549.46	88.26	88.03	75.99	-4,593.54	-1,307.08	1,262.51	1,090.70	171.81	7.348	
7,200.00	2,855.03	6,879.76	2,549.57	88.74	88.51	75.99	-4,618.54	-1,307.14	1,261.98	1,089.25	172.74	7.306	
7,225.00	2,855.08	6,904.75	2,549.68	89.21	88.98	75.98	-4,643.53	-1,307.20	1,261.46	1,087.80	173.66	7.264	
7,250.00	2,855.12	6,929.75	2,549.79	89.69	89.46	75.98	-4,668.53	-1,307.26	1,260.93	1,086.34	174.59	7.222	
7,275.00	2,855.16	6,954.74	2,549.90	90.16	89.94	75.98	-4,693.52	-1,307.32	1,260.41	1,084.89	175.51	7.181	
7,300.00	2,855.21	6,979.74	2,550.01	90.64	90.41	75.98	-4,718.51	-1,307.38	1,259.88	1,083.44	176.44	7.141	
7,325.00	2,855.25	7,004.73	2,550.12	91.11	90.89	75.97	-4,743.51	-1,307.44	1,259.36	1,081.99	177.36	7.100	
7,350.00	2,855.29	7,029.73	2,550.22	91.59	91.37	75.97	-4,768.50	-1,307.51	1,258.83	1,080.54	178.29	7.061	
7,375.00	2,855.34	7,054.72	2,550.33	92.06	91.84	75.97	-4,793.50	-1,307.57	1,258.31	1,079.09	179.22	7.021	
7,400.00	2,855.38	7,079.72	2,550.44	92.54	92.32	75.96	-4,818.49	-1,307.63	1,257.78	1,077.64	180.14	6.982	
7,425.00	2,855.42	7,104.71	2,550.55	93.01	92.79	75.96	-4,843.48	-1,307.69	1,257.26	1,076.19	181.07	6.944	
7,450.00	2,855.47	7,129.70	2,550.66	93.49	93.27	75.96	-4,868.48	-1,307.75	1,256.73	1,074.74	181.99	6.905	
7,475.00	2,855.51	7,154.70	2,550.77	93.96	93.75	75.96	-4,893.47	-1,307.81	1,256.21	1,073.29	182.92	6.868	
7,500.00	2,855.56	7,179.69	2,550.88	94.44	94.22	75.95	-4,918.47	-1,307.87	1,255.68	1,071.84	183.84	6.830	
7,525.00	2,855.60	7,204.69	2,550.99	94.91	94.70	75.95	-4,943.46	-1,307.93	1,255.15	1,070.38	184.77	6.793	
7,550.00	2,855.64	7,229.68	2,551.10	95.39	95.18	75.95	-4,968.46	-1,307.99	1,254.63	1,068.93	185.70	6.756	
7,575.00	2,855.69	7,254.68	2,551.21	95.86	95.65	75.94	-4,993.45	-1,308.06	1,254.10	1,067.48	186.62	6.720	
7,600.00	2,855.73	7,279.67	2,551.31	96.34	96.13	75.94	-5,018.44	-1,308.12	1,253.58	1,066.03	187.55	6.684	
7,625.00	2,855.77	7,304.66	2,551.42	96.81	96.61	75.94	-5,043.44	-1,308.18	1,253.05	1,064.58	188.47	6.648	
7,650.00	2,855.82	7,329.66	2,551.53	97.29	97.08	75.93	-5,068.43	-1,308.24	1,252.53	1,063.13	189.40	6.613	
7,675.00	2,855.86	7,354.65	2,551.64	97.76	97.56	75.93	-5,093.43	-1,308.30	1,252.00	1,061.68	190.33	6.578	
7,700.00	2,855.91	7,379.65	2,551.75	98.24	98.04	75.93	-5,118.42	-1,308.36	1,251.48	1,060.23	191.25	6.544	
7,725.00	2,855.95	7,404.64	2,551.86	98.71	98.51	75.93	-5,143.42	-1,308.42	1,250.95	1,058.77	192.18	6.509	
7,750.00	2,855.99	7,429.64	2,551.97	99.19	98.99	75.92	-5,168.41	-1,308.48	1,250.43	1,057.32	193.10	6.475	
7,775.00	2,856.04	7,454.63	2,552.08	99.66	99.47	75.92	-5,193.40	-1,308.54	1,249.90	1,055.87	194.03	6.442	
7,800.00	2,856.08	7,479.63	2,552.19	100.14	99.94	75.92	-5,218.40	-1,308.60	1,249.38	1,054.42	194.96	6.409	
7,825.00	2,856.12	7,504.62	2,552.30	100.61	100.42	75.91	-5,243.39	-1,308.67	1,248.85	1,052.97	195.88	6.376	
7,850.00	2,856.17	7,529.61	2,552.41	101.09	100.90	75.91	-5,268.38	-1,308.73	1,248.33	1,051.52	196.81	6.343	
7,875.00	2,856.21	7,554.61	2,552.51	101.56	101.37	75.91	-5,293.38	-1,308.79	1,247.80	1,050.07	197.73	6.311	
7,900.00	2,856.25	7,579.60	2,552.62	102.04	101.85	75.91	-5,318.37	-1,308.85	1,247.28	1,048.62	198.66	6.278	
7,925.00	2,856.30	7,604.60	2,552.73	102.52	102.33	75.90	-5,343.37	-1,308.91	1,246.75	1,047.16	199.59	6.247	
7,950.00	2,856.34	7,629.59	2,552.84	102.99	102.80	75.90	-5,368.36	-1,308.97	1,246.22	1,045.71	200.51	6.215	
7,975.00	2,856.39	7,654.59	2,552.95	103.47	103.28	75.90	-5,393.35	-1,309.03	1,245.70	1,044.26	201.44	6.184	
8,000.00	2,856.43	7,679.58	2,553.06	103.94	103.76	75.89	-5,418.35	-1,309.09	1,245.17	1,042.81	202.36	6.153	
8,025.00	2,856.47	7,704.58	2,553.17	104.42	104.23	75.89	-5,443.34	-1,309.15	1,244.65	1,041.36	203.29	6.123	
8,050.00	2,856.52	7,729.57	2,553.28	104.89	104.71	75.89	-5,468.34	-1,309.22	1,244.12	1,039.91	204.22	6.092	
8,075.00	2,856.56	7,754.56	2,553.39	105.37	105.19	75.88	-5,493.33	-1,309.28	1,243.60	1,038.46	205.14	6.062	
8,100.00	2,856.60	7,779.56	2,553.50	105.84	105.66	75.88	-5,518.33	-1,309.34	1,243.07	1,037.01	206.07	6.032	
8,125.00	2,856.65	7,804.55	2,553.60	106.32	106.14	75.88	-5,543.32	-1,309.40	1,242.55	1,035.55	206.99	6.003	
8,150.00	2,856.69	7,829.55	2,553.71	106.79	106.62	75.88	-5,568.31	-1,309.46	1,242.02	1,034.10	207.92	5.974	
8,175.00	2,856.74	7,854.54	2,553.82	107.27	107.10	75.87	-5,593.31	-1,309.52	1,241.50	1,032.65	208.85	5.945	
8,200.00	2,856.78	7,879.54	2,553.93	107.74	107.57	75.87	-5,618.30	-1,309.58	1,240.97	1,031.20	209.77	5.916	
8,225.00	2,856.82	7,904.53	2,554.04	108.22	108.05	75.87	-5,643.30	-1,309.64	1,240.45	1,029.75	210.70	5.887	
8,250.00	2,856.87	7,929.52	2,554.15	108.70	108.53	75.86	-5,668.29	-1,309.70	1,239.92	1,028.30	211.62	5.859	
8,275.00	2,856.91	7,954.52	2,554.26	109.17	109.00	75.86	-5,693.28	-1,309.77	1,239.40	1,026.85	212.55	5.831	
8,300.00	2,856.95	7,979.51	2,554.37	109.65	109.48	75.86	-5,718.28	-1,309.83	1,238.87	1,025.40	213.48	5.803	
8,325.00	2,857.00	8,004.51	2,554.48	110.08	109.95	75.85	-5,743.27	-1,309.89	1,238.35	1,023.99	214.36	5.777	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Wellbenders

## Anticollision Report



**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Reference Site:** Huber Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 16H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** WBDS\_SQL\_2  
**Offset TVD Reference:** Reference Datum

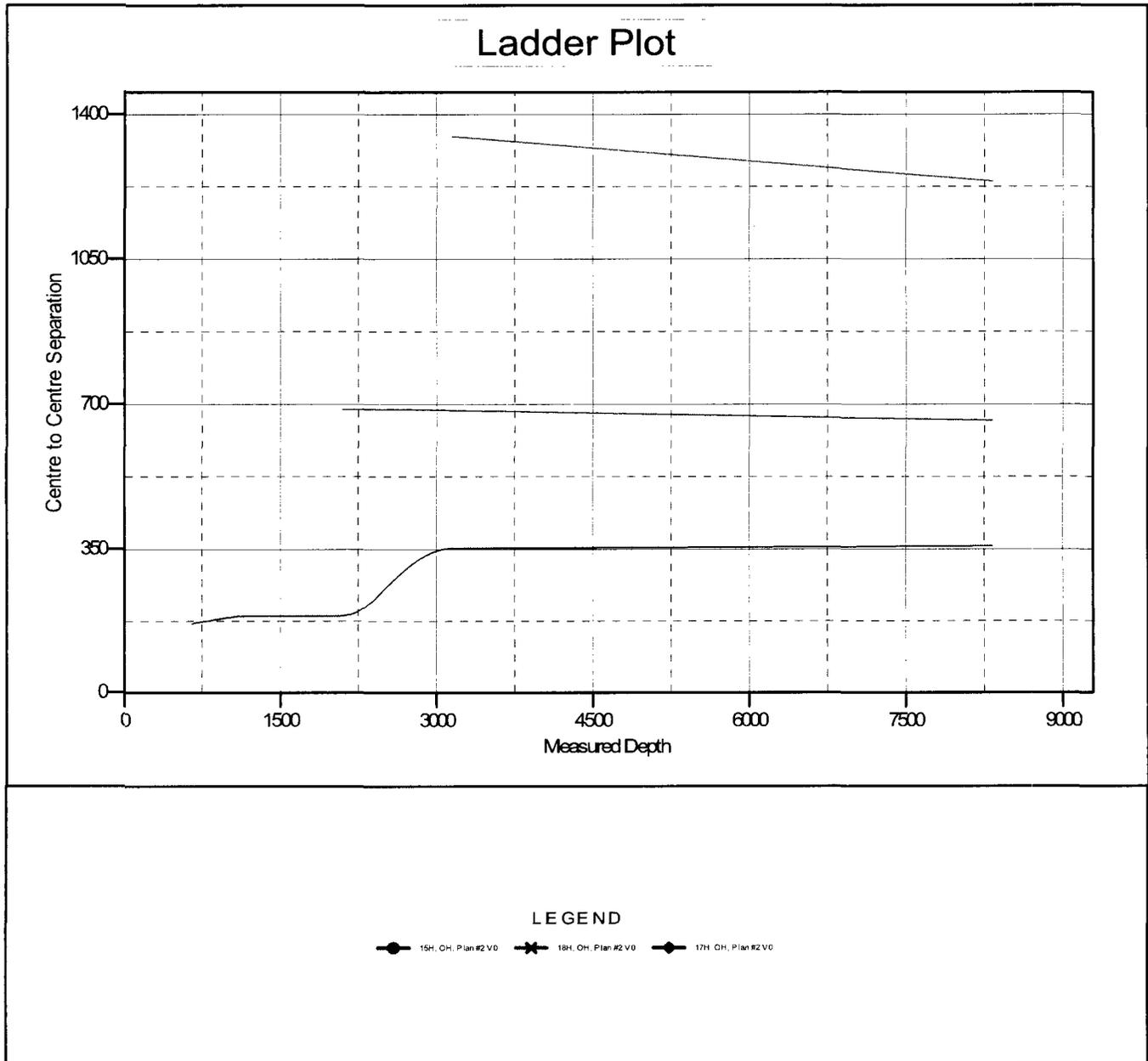
Offset Design													Huber Fed - 18H - OH - Plan #2	Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
8,326.61	2,857.00	8,006.12	2,554.48	110.11	109.98	75.85	-5,744.89	-1,309.89	1,238.31	1,023.90	214.41	5.775	CC, ES, SF		

**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Reference Site:** Huber Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 16H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** WBDS\_SQL\_2  
**Offset TVD Reference:** Reference Datum

Reference Depths are relative to RKB=25' @ 3546.00usft (NA)  
 Offset Depths are relative to Offset Datum  
 Central Meridian is -104.333334

Coordinates are relative to: 16H  
 Coordinate System is US State Plane 1983, New Mexico Eastern Zone  
 Grid Convergence at Surface is: -0.08°

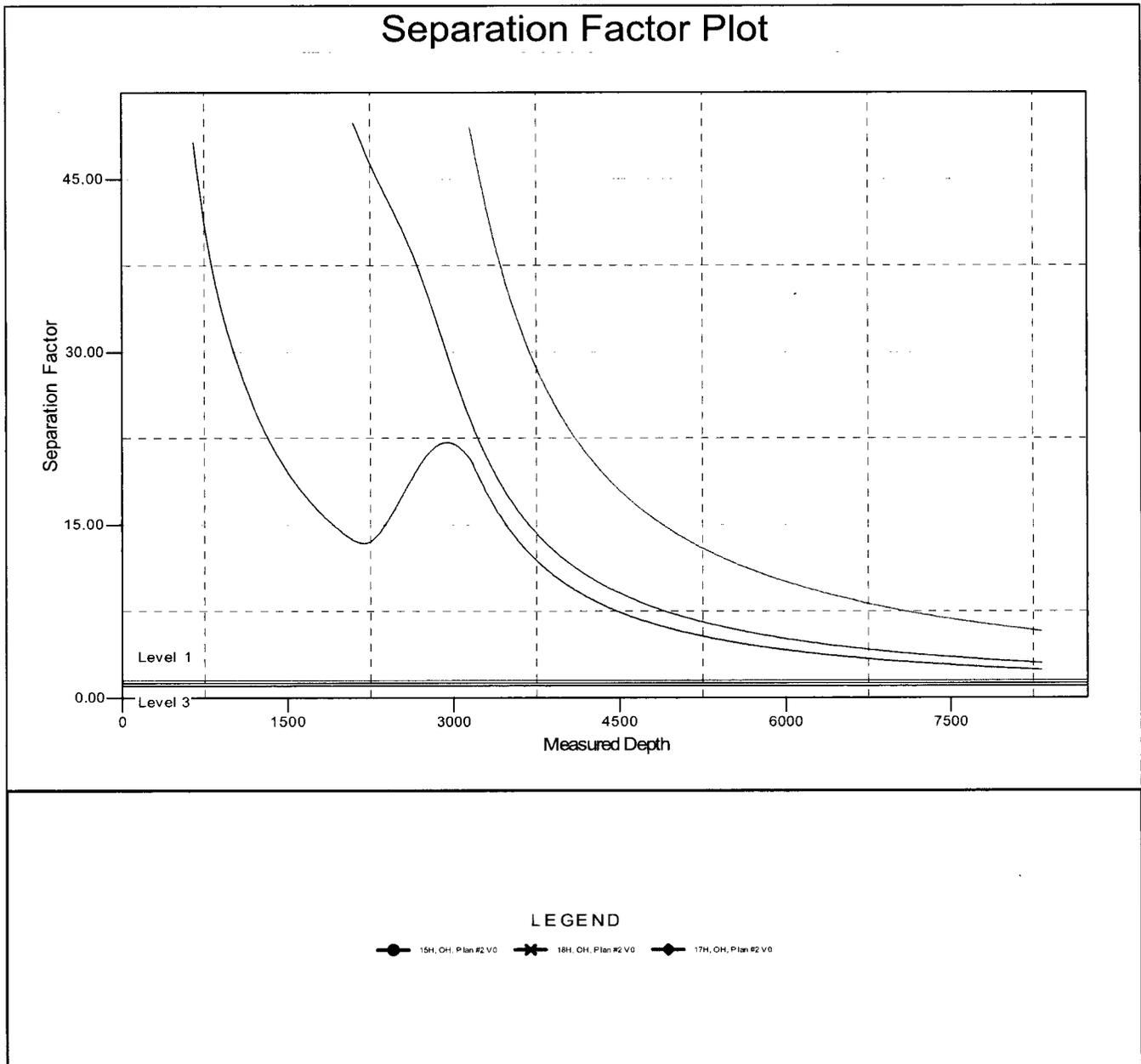


**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Reference Site:** Huber Fed  
**Site Error:** 0.00 usft  
**Reference Well:** 16H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well 16H  
**TVD Reference:** RKB=25' @ 3546.00usft (NA)  
**MD Reference:** RKB=25' @ 3546.00usft (NA)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** WBDS\_SQL\_2  
**Offset TVD Reference:** Reference Datum

Reference Depths are relative to RKB=25' @ 3546.00usft (NA)  
 Offset Depths are relative to Offset Datum  
 Central Meridian is -104.333334

Coordinates are relative to: 16H  
 Coordinate System is US State Plane 1983, New Mexico Eastern Zone  
 Grid Convergence at Surface is: -0.08°

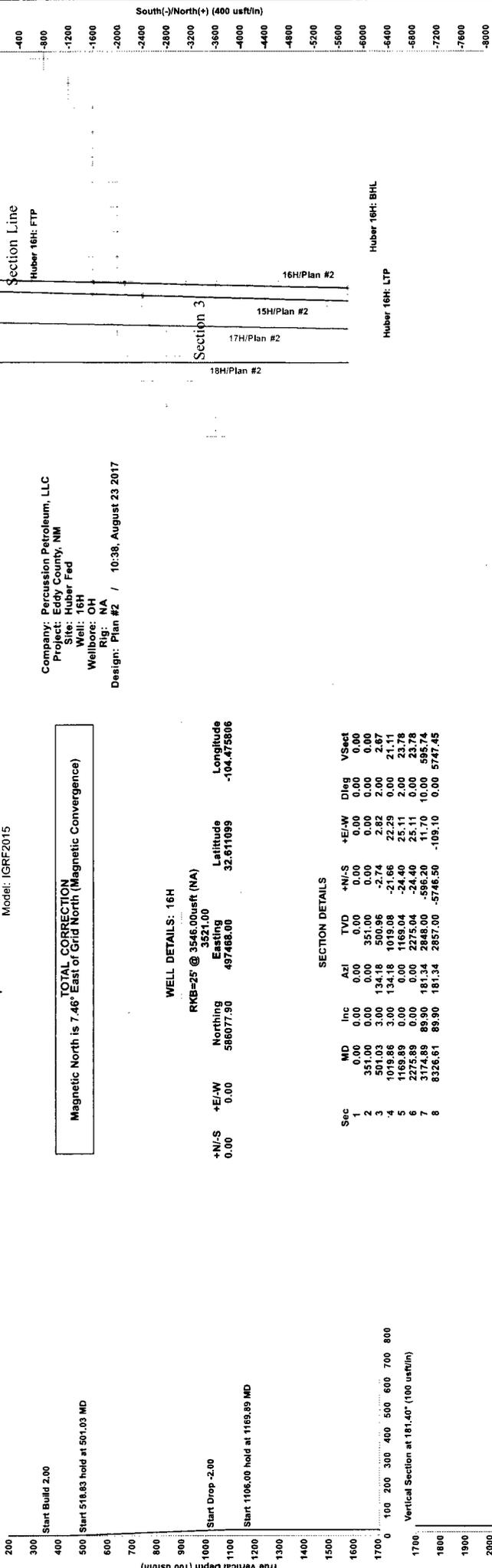




Azimuths to Grid North  
 True North: 0.08°  
 Magnetic North: 7.46°  
 Magnetic Field  
 Strength: 48049.2snt  
 Dip Angle: 60.27°  
 Date: 8/25/2017  
 Model: IGRF2015

**TOTAL CORRECTION**  
 Magnetic North is 7.46° East of Grid North (Magnetic Convergence)

Company: Percussion Petroleum, LLC  
 Project: Eddy County, NM  
 Site: Huber Fed  
 Well: 16H  
 Wellbore: OH  
 Rig: NA  
 Design: Plan #2 / 10:38, August 23 2017



WELL DETAILS: 16H

RKB=25 @ 3546.00usft (NA)

+N/S    +E/W    Northing    Easting    Latitude    Longitude  
 0.00    0.00    586077.90    497468.00    32.611099    -104.475806

SECTION DETAILS

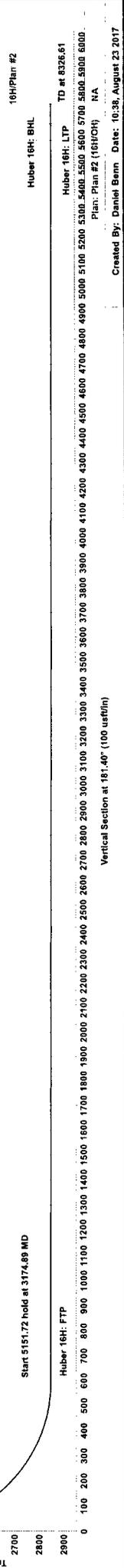
Sec	MD	Inc	Azi	TVD	+N/S	+E/W	Dleg	Vsect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	351.00	0.00	134.18	351.00	-7.70	9.80	0.00	2.80
3	1019.86	3.00	134.18	1019.06	-21.66	22.29	0.00	21.11
4	1169.89	0.00	0.00	1169.04	-24.40	25.11	2.00	23.78
5	2275.89	0.00	0.00	2275.04	-24.40	25.11	0.00	23.78
6	3174.89	89.90	181.34	2848.00	-596.20	11.70	10.00	595.74
7	3174.89	89.90	181.34	2857.00	-5746.50	-109.10	0.00	5747.45

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	MD	Inc	Azi	TVD	+N/S	+E/W	Northing	Easting	Shape
Huber 16H: FTP	0.00	0.00	0.00	0.00	-109.10	586077.90	586077.90	497468.00	Point
Huber 16H: BHL	3174.89	89.90	181.34	2848.00	-596.20	11.70	586077.90	497468.00	Point
Huber 16H: LTP	3174.89	89.90	181.34	2857.00	-5746.50	-109.10	586077.90	497468.00	Point

PROJECT DETAILS: Eddy County, NM  
 Geodetic System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: NAD83  
 System Datum: Mean Sea Level

**Disclaimer:**  
 All Data is preliminary  
 Lines and offset well  
 location/ survey data is  
 provided by customer and  
 not approved.



Vertical Section at 181.40° (100 usft/in)  
 Start 518.83 hold at 501.03 MD  
 Start 1106.00 hold at 1169.89 MD  
 Vertical Section at 181.40° (100 usft/in)  
 Start 518.83 hold at 501.03 MD  
 Start 1106.00 hold at 1169.89 MD

Huber 16H: FTP  
 Huber 16H: BHL  
 Huber 16H: LTP  
 TD at 8326.61  
 Plan: Plan #2 (16H/OH) NA  
 Created By: Daniel Benn Date: 10:38, August 23 2017

Percussion Petroleum Operating, LLC  
Huber Federal 16H  
SHL 496' FSL & 1673' FWL 34-19S-25E  
BHL 20' FSL & 1582' FWL 3-20S-25E  
Eddy County, NM

DRILL PLAN PAGE 1

Drilling Program

1. ESTIMATED TOPS

Formation/Lithology	TVD	MD	Contents
Quaternary caliche	000'	000'	water
Grayburg dolomite	651'	651'	hydrocarbons
San Andres dolomite	836'	836'	hydrocarbons
(KOP	2300'	2300'	hydrocarbons)
Glorieta silty dolomite	2396'	2398'	hydrocarbons
Yeso dolomite	2551'	2564'	hydrocarbons & goal
TD	2857'	8327'	hydrocarbons

2. NOTABLE ZONES

Yeso is the goal. Closest water well (RA 02958) is  $\geq 2188'$  northeast. Depth to water was not recorded in this 450' deep well.

3. PRESSURE CONTROL

A 3000-psi 5000' rated BOP stack consisting of annular preventer and double (blind and pipe) ram will be used below surface casing to TD. See attached BOP and choke manifold diagrams.

Pressure tests will be conducted before drilling out from under all casing strings. Third party test crews will conduct all tests. All tests will be recorded for 10-minutes on low pressure (500 psi) and 10-minutes on high pressure (3000-psi). After BOP testing is complete, test casing (without test plug) to 2000-psi for 30 minutes. All tests will be charted on a plot. BOPs will be function tested every day.

Percussion Petroleum Operating, LLC  
 Huber Federal 16H  
 SHL 496' FSL & 1673' FWL 34-19S-25E  
 BHL 20' FSL & 1582' FWL 3-20S-25E  
 Eddy County, NM

DRILL PLAN PAGE 2

4. CASING & CEMENT

All casing will be API and new.

Hole O. D.	Set MD	Set TVD	Casing O. D.	Weight (lb/ft)	Grade	Joint	Collapse	Burst	Tension
12.25"	0' - 1286'	0' - 1286'	Surface 9.625"	36	J-55	STC	1.125	1.125	1.8
8.75"	0' - 8327'	0' - 2857'	Product. 5.5"	17	L-80	BTC	1.125	1.125	1.8

Casing Name	Type	Sacks	Yield	Cu. Ft.	Weight	Blend
Surface	Lead	640	1.32	845	14.8	Class C + 2% CaCl + ¼ pound per sack celloflake
TOC = GL		100% Excess			centralizers per Onshore Order 2	
Production	Lead	495	1.97	975	12.6	65/65/6 Class C + 6% gel + 5% salt + ¼ #/sack celloflake + 0.2% C41-P
	Tail	1686	1.32	2225	14.8	Class C + 2% CaCl + ¼ pound per sack celloflake
TOC = GL		50% Excess			1 centralizer on 1 <sup>st</sup> collar and every 10 <sup>th</sup> collar to 1200' + 1 inside the surface casing	

5. MUD PROGRAM

An electronic/mechanical mud monitor with a minimum pit volume totalizer, stroke counter, and flow sensor will be used. All necessary mud products (LCM) will be on site to handle any abnormal hole condition that may be encountered while drilling this well. A closed loop system will be used.

Type	Interval (MD)	lb/gal	Viscosity	Fluid Loss	Plastic Viscosity	Yield Point
fresh water/gel	0' - 1286'	8.4 - 9.2	36-42	NC	3-5	5-7
fresh water/cut brine	1286' - 2300'	8.3 - 9.2	28-30	NC	1	1
cut brine	2300' - 8327'	8.6 - 9.2	29-32	NC	4-5	6-10

Percussion Petroleum Operating, LLC  
Huber Federal 16H  
SHL 496' FSL & 1673' FWL 34-19S-25E  
BHL 20' FSL & 1582' FWL 3-20S-25E  
Eddy County, NM

DRILL PLAN PAGE 3

#### 6. CORES, TESTS, & LOGS

No core or drill stem test is planned.

A mud logger will be used from GL to TD. Samples will be collected every 10' in the lateral pay zone.

No electric logs are planned at this time.

#### 7. DOWN HOLE CONDITIONS

No abnormal pressure or temperature is expected. Maximum expected bottom hole pressure is  $\approx 1227$  psi. Expected bottom hole temperature is  $\approx 113$  ° F.

A Hydrogen Sulfide Drilling Operation Plan is attached.

#### 8. OTHER INFORMATION

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

St. Devote LLC has operating rights in NMNM-125603. St. Devote LLC is a subsidiary of Percussion.

**Percussion Huber Wells Bottom Footage Variance Request**

Percussion intentionally plans to drill this (& other wells) so Last Take Point is <330'. This means Percussion will need to file a NSL (Non Standard Location) application with NMOCD, which they plan to do.

## **Contingency Planning – Huber Federal Area Wells**

**Prepared by Lelan J. Anders, Percussion Petroleum Operating, LLC.**

### **INTRODUCTION:**

This document is designed to address the issues that could arise at any time drilling horizontal Yeso wells. Percussion Petroleum Operating (PPO) is going to follow regularly used practices and procedures in order to drill the wells to TD and still keep them economical to operate.

### **SENERIO:**

If a complete loss of circulation occurs while drilling above 400 ft MD.

### **CORRECTIVE ACTIONS:**

1. Pump an LCM sweep and attempt to regain circulation – if unsuccessful go to step 2
2. Continue drilling at attempt to seal off lost circulation zone with drill cuttings
  1. Monitor torque and drag on drill string to determine if pipe is sticking
  2. Have contingency plan to 'drill dry' – have plenty of water on hand and well control in place
  3. Continue to 'dry drill' until torque and drag dictate a different plan
3. If 'dry drilling' is unsuccessful – Run contingency surface casing string
  1. Ream out 12-1/4" open hole to 17-1/2" open hole
  2. Run contingency 13-3/8" 48# H-40, STC casing to no more than 400' MD
  3. Cement 13-3/8" casing using Class C cement
    - i. Pump at minimum 100% excess cement
      1. 65/35/6 Class C Cement, 12.8 ppg, 1.87 yield, 10.15 gal/sk to be used on initial cement job.
    - ii. Top off cement from surface using 1" if necessary
      1. Top off will be 200 sks of 65/35/6 Class C Cement, 12.8 ppg, 1.87 yield, 10.15 gal/sk
      2. Second top off will be performed with same cement if needed.
    - iii. Insure that cement has cured for a minimum of 12 hours prior to drilling out
  4. Install 13-3/8" 3M wellhead and drill to surface casing depth with 12-1/4" OD bit
  5. Run and cement surface casing as planned



APD ID: 10400022209

Submission Date: 09/14/2017

Highlighted data reflects the most recent changes

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: HUBER FEDERAL

Well Number: 16H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

### Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Huber\_16H\_Road\_Map\_20170913143329.pdf

Existing Road Purpose: ACCESS

Row(s) Exist? NO

#### ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

### Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

Huber\_16H\_New\_Road\_Map\_20170913143349.pdf

New road type: RESOURCE

Length: 2674.9 Feet

Width (ft.): 30

Max slope (%): 0

Max grade (%): 4

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 14

New road access erosion control: Crowned and ditched

New road access plan or profile prepared? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** HUBER FEDERAL

**Well Number:** 16H

**Access surfacing type:** OTHER

**Access topsoil source:** ONSITE

**Access surfacing type description:** Caliche

**Access onsite topsoil source depth:** 6

**Offsite topsoil source description:**

**Onsite topsoil removal process:** Grader

**Access other construction information:**

**Access miscellaneous information:** Agave's underground gas pipeline will be padded. An arroyo just east of the 10H/12H pad will be a low water crossing with 4" rock. No culvert, cattle guard, or vehicle turn out is needed. Upgrading will consist of patching potholes with caliche and installing a drainage dip in SESE Section 34.

**Number of access turnouts:**

**Access turnout map:**

### **Drainage Control**

**New road drainage crossing:** OTHER

**Drainage Control comments:** Crowned and ditched

**Road Drainage Control Structures (DCS) description:** None

**Road Drainage Control Structures (DCS) attachment:**

### **Access Additional Attachments**

**Additional Attachment(s):**

### **Section 3 - Location of Existing Wells**

**Existing Wells Map?** YES

**Attach Well map:**

Huber\_16H\_Well\_Map\_20170913143419.pdf

**Existing Wells description:**

### **Section 4 - Location of Existing and/or Proposed Production Facilities**

**Submit or defer a Proposed Production Facilities plan?** SUBMIT

**Production Facilities description:**

**Production Facilities map:**

Huber\_16H\_Production\_Diagram\_20170913143754.pdf

### **Section 5 - Location and Types of Water Supply**

#### **Water Source Table**

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** HUBER FEDERAL

**Well Number:** 16H

**Water source use type:** DUST CONTROL,  
INTERMEDIATE/PRODUCTION CASING, STIMULATION, SURFACE  
CASING

**Water source type:** GW WELL

**Describe type:**

**Source longitude:**

**Source latitude:**

**Source datum:**

**Water source permit type:** PRIVATE CONTRACT

**Source land ownership:** PRIVATE

**Water source transport method:** PIPELINE

**Source transportation land ownership:** FEDERAL

**Water source volume (barrels):** 10000

**Source volume (acre-feet):** 1.288931

**Source volume (gal):** 420000

**Water source and transportation map:**

Huber\_16H\_Water\_Source\_Map\_20170913143919.pdf

**Water source comments:**

**New water well?** NO

### **New Water Well Info**

**Well latitude:**

**Well Longitude:**

**Well datum:**

**Well target aquifer:**

**Est. depth to top of aquifer(ft):**

**Est thickness of aquifer:**

**Aquifer comments:**

**Aquifer documentation:**

**Well depth (ft):**

**Well casing type:**

**Well casing outside diameter (in.):**

**Well casing inside diameter (in.):**

**New water well casing?**

**Used casing source:**

**Drilling method:**

**Drill material:**

**Grout material:**

**Grout depth:**

**Casing length (ft.):**

**Casing top depth (ft.):**

**Well Production type:**

**Completion Method:**

**Water well additional information:**

**State appropriation permit:**

**Additional information attachment:**

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** HUBER FEDERAL

**Well Number:** 16H

## Section 6 - Construction Materials

**Construction Materials description:** NM One Call (811) will be notified before construction starts. Top 6" of soil and brush will be stockpiled west of the pad. V-door will face north. Closed loop drilling system will be used. Caliche will be hauled from existing caliche pits on private land. Arkland caliche pit is in NWNE 23-19s-25e. Seven Rivers caliche pit is in SWSW 6-20s-26e. Griffin caliche pit is in NWNE 14-20s-25e.

**Construction Materials source location attachment:**

## Section 7 - Methods for Handling Waste

**Waste type:** DRILLING

**Waste content description:** Cuttings, mud, salts, and other chemicals

**Amount of waste:** 2000 barrels

**Waste disposal frequency :** Daily

**Safe containment description:** Steel tanks

**Safe containmant attachment:**

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** PRIVATE

**Disposal type description:**

**Disposal location description:** R360's state approved (NM-01-0006) disposal site at Halfway, NM

## Reserve Pit

**Reserve Pit being used?** NO

**Temporary disposal of produced water into reserve pit?**

**Reserve pit length (ft.)** **Reserve pit width (ft.)**

**Reserve pit depth (ft.)** **Reserve pit volume (cu. yd.)**

**Is at least 50% of the reserve pit in cut?**

**Reserve pit liner**

**Reserve pit liner specifications and installation description**

## Cuttings Area

**Cuttings Area being used?** NO

**Are you storing cuttings on location?** YES

**Description of cuttings location** Top 6" of soil and brush will be stockpiled west of the pad. V-door will face north.

**Cuttings area length (ft.)** **Cuttings area width (ft.)**

**Cuttings area depth (ft.)** **Cuttings area volume (cu. yd.)**

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** HUBER FEDERAL

**Well Number:** 16H

**Is at least 50% of the cuttings area in cut?**

**WCuttings area liner**

**Cuttings area liner specifications and installation description**

## Section 8 - Ancillary Facilities

**Are you requesting any Ancillary Facilities?:** NO

**Ancillary Facilities attachment:**

**Comments:**

## Section 9 - Well Site Layout

**Well Site Layout Diagram:**

Huber\_16H\_Well\_Site\_Layout\_20170914100029.pdf

**Comments:**

## Section 10 - Plans for Surface Reclamation

**Type of disturbance:** New Surface Disturbance

**Multiple Well Pad Name:** HUBER FEDERAL

**Multiple Well Pad Number:** 15H

**Recontouring attachment:**

Huber\_16H\_Recontour\_Plat\_20170913144054.pdf

Huber\_16H\_InterimReclaim\_Diagram\_20170914100010.pdf

**Drainage/Erosion control construction:** Crowned and ditched

**Drainage/Erosion control reclamation:** Harrowed on the contour

**Wellpad long term disturbance (acres):** 1.83

**Wellpad short term disturbance (acres):** 2.57

**Access road long term disturbance (acres):** 1.84

**Access road short term disturbance (acres):** 1.84

**Pipeline long term disturbance (acres):** 0

**Pipeline short term disturbance (acres):** 0

**Other long term disturbance (acres):** 2.75

**Other short term disturbance (acres):** 11.7

**Total long term disturbance:** 6.42

**Total short term disturbance:** 16.11

**Reconstruction method:** Interim reclamation will be completed within 6 months of completing the well. Interim reclamation will consist of shrinking the pad 29% (0.74 acre) by removing caliche and reclaiming 75' on the south side and 25' on the east side. This will leave 1.83 acres for the anchors, pump jacks, and tractor-trailer turn around. Disturbed areas will be contoured to match pre-construction grades. Soil and brush will be evenly spread over disturbed areas and harrowed on the contour. Disturbed areas will be seeded in accordance with the surface owner's requirements.

**Topsoil redistribution:** Enough stockpiled topsoil will be retained to cover the remainder of the pad when the well is

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** HUBER FEDERAL

**Well Number:** 16H

plugged. Once the well is plugged, then the rest of the pad and new road will be similarly reclaimed within 6 months of plugging. Noxious weeds will be controlled.

**Soil treatment:** None

**Existing Vegetation at the well pad:**

**Existing Vegetation at the well pad attachment:**

**Existing Vegetation Community at the road:**

**Existing Vegetation Community at the road attachment:**

**Existing Vegetation Community at the pipeline:**

**Existing Vegetation Community at the pipeline attachment:**

**Existing Vegetation Community at other disturbances:**

**Existing Vegetation Community at other disturbances attachment:**

**Non native seed used?** NO

**Non native seed description:**

**Seedling transplant description:**

**Will seedlings be transplanted for this project?** NO

**Seedling transplant description attachment:**

**Will seed be harvested for use in site reclamation?** NO

**Seed harvest description:**

**Seed harvest description attachment:**

## **Seed Management**

### **Seed Table**

**Seed type:**

**Seed source:**

**Seed name:**

**Source name:**

**Source address:**

**Source phone:**

**Seed cultivar:**

**Seed use location:**

**PLS pounds per acre:**

**Proposed seeding season:**

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** HUBER FEDERAL

**Well Number:** 16H

**Seed Summary**

**Total pounds/Acre:**

**Seed Type      Pounds/Acre**

**Seed reclamation attachment:**

**Operator Contact/Responsible Official Contact Info**

**First Name:**

**Last Name:**

**Phone:**

**Email:**

**Seedbed prep:**

**Seed BMP:**

**Seed method:**

**Existing invasive species? NO**

**Existing invasive species treatment description:**

**Existing invasive species treatment attachment:**

**Weed treatment plan description:** To BLM standards

**Weed treatment plan attachment:**

**Monitoring plan description:** To BLM standards

**Monitoring plan attachment:**

**Success standards:** To BLM satisfaction

**Pit closure description:** No pit

**Pit closure attachment:**

**Section 11 - Surface Ownership**

**Disturbance type:** WELL PAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** HUBER FEDERAL

**Well Number:** 16H

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

**Disturbance type:** EXISTING ACCESS ROAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

**Disturbance type:** NEW ACCESS ROAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** HUBER FEDERAL

**Well Number:** 16H

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

## Section 12 - Other Information

**Right of Way needed?** NO

**Use APD as ROW?**

**ROW Type(s):**

### ROW Applications

**SUPO Additional Information:**

**Use a previously conducted onsite?** YES

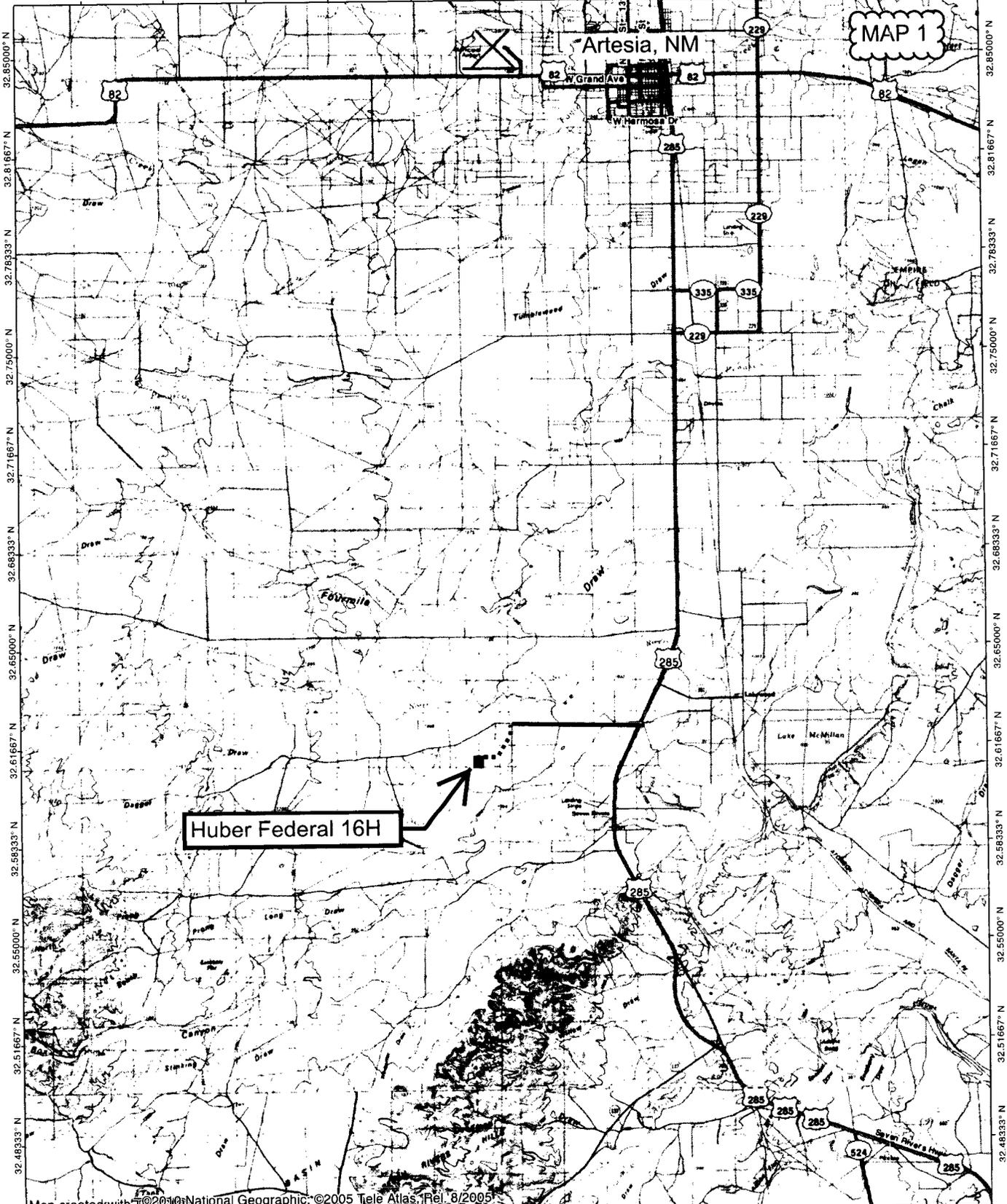
**Previous Onsite information:** On site inspection was held with Jim Goodbar and Jessie Bassett (both BLM) on July 18, 2017.

### Other SUPO Attachment

Huber\_16H\_General\_SUPO\_20170913144410.pdf

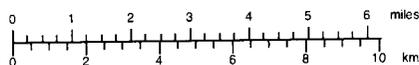


104.63333° W 104.60000° W 104.56667° W 104.53333° W 104.50000° W 104.46667° W 104.43333° W 104.40000° W 104.36667° W 104.33333° W WGS84 104.28333° W



Map created with ©2010 National Geographic, ©2005 Tele Atlas, Rel. 8/2005

NATIONAL GEOGRAPHIC



TN | MN

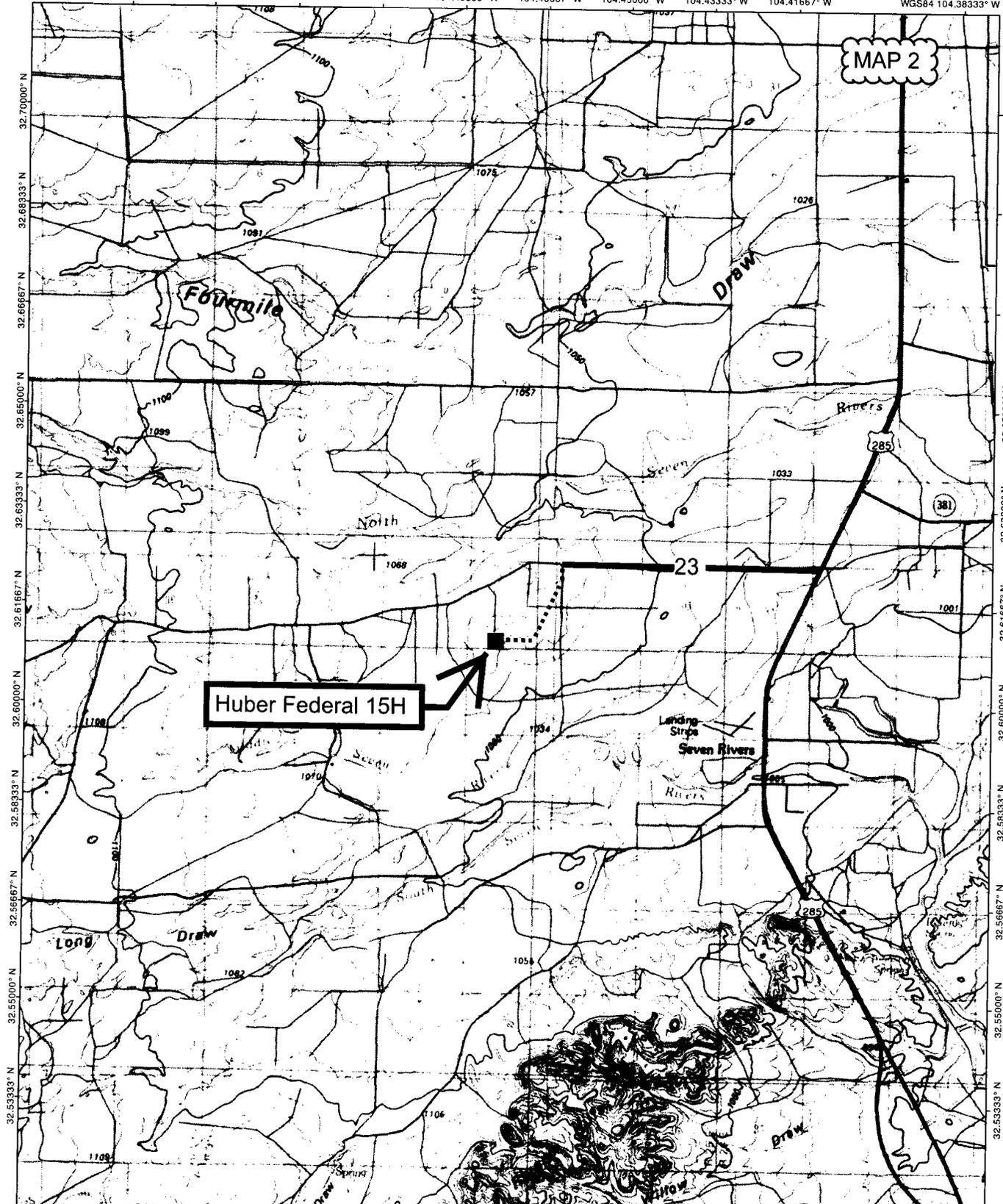
7.5°

07/28/17

104.55000° W 104.53333° W 104.51667° W 104.50000° W 104.48333° W 104.46667° W 104.45000° W 104.43333° W 104.41667° W

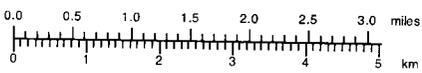
WGS84 104.38333° W

MAP 2



Map created with National Geographic, ©2005 Tele Atlas, Rel. 3/2005

NATIONAL GEOGRAPHIC



MAP 3

BLM O&G lease  
NMNM-015291

access

SHL

1 mile radius

BLM O&G lease  
NMNM-014758

1 mile radius

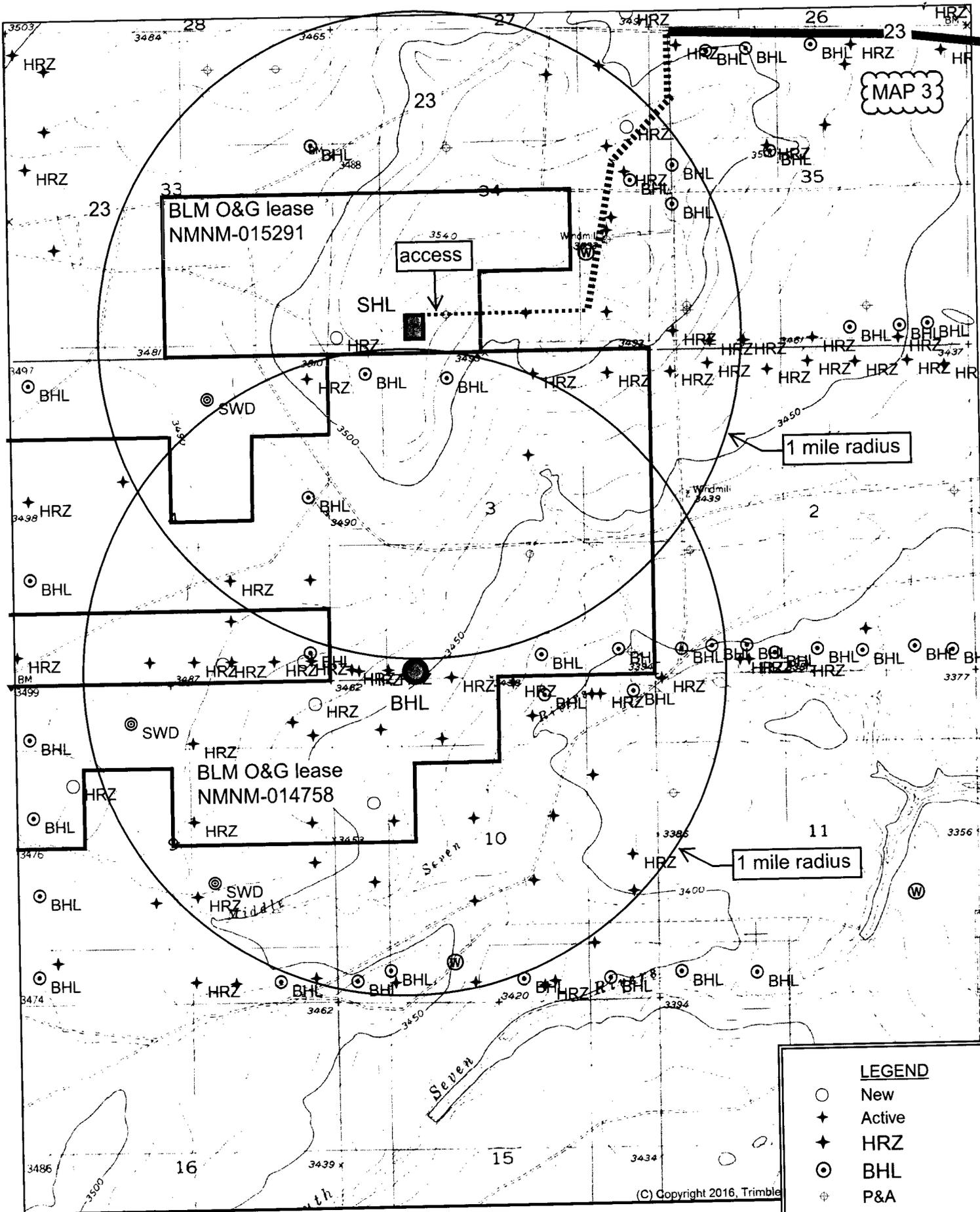
**LEGEND**

- New
- ✦ Active
- ✦ HRZ
- ⊙ BHL
- ⊕ P&A
- ⊙ INJ
- ⊙ SWD
- ⊙ Water



Quad: SEVEN RIVERS  
Scale: 1 inch = 2,000 ft.

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0354

668.3' proposed power line

3261154, 10447663  
 3261154, 10447663  
 326106, 10447663  
 326106, 10447551

15H  
 16H

10H  
 12H

742.9' proposed flowline

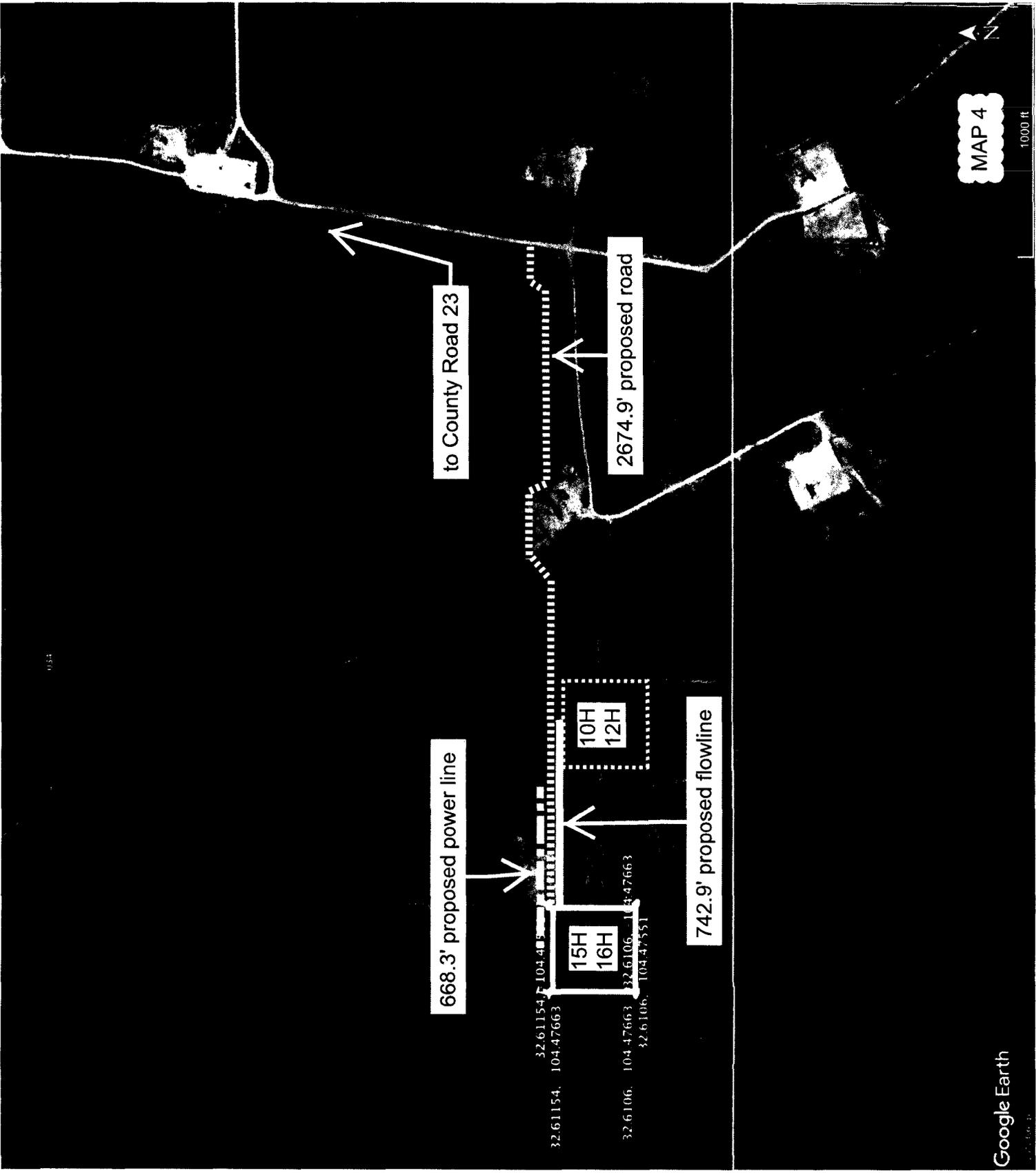
2674.9' proposed road

to County Road 23

MAP 4

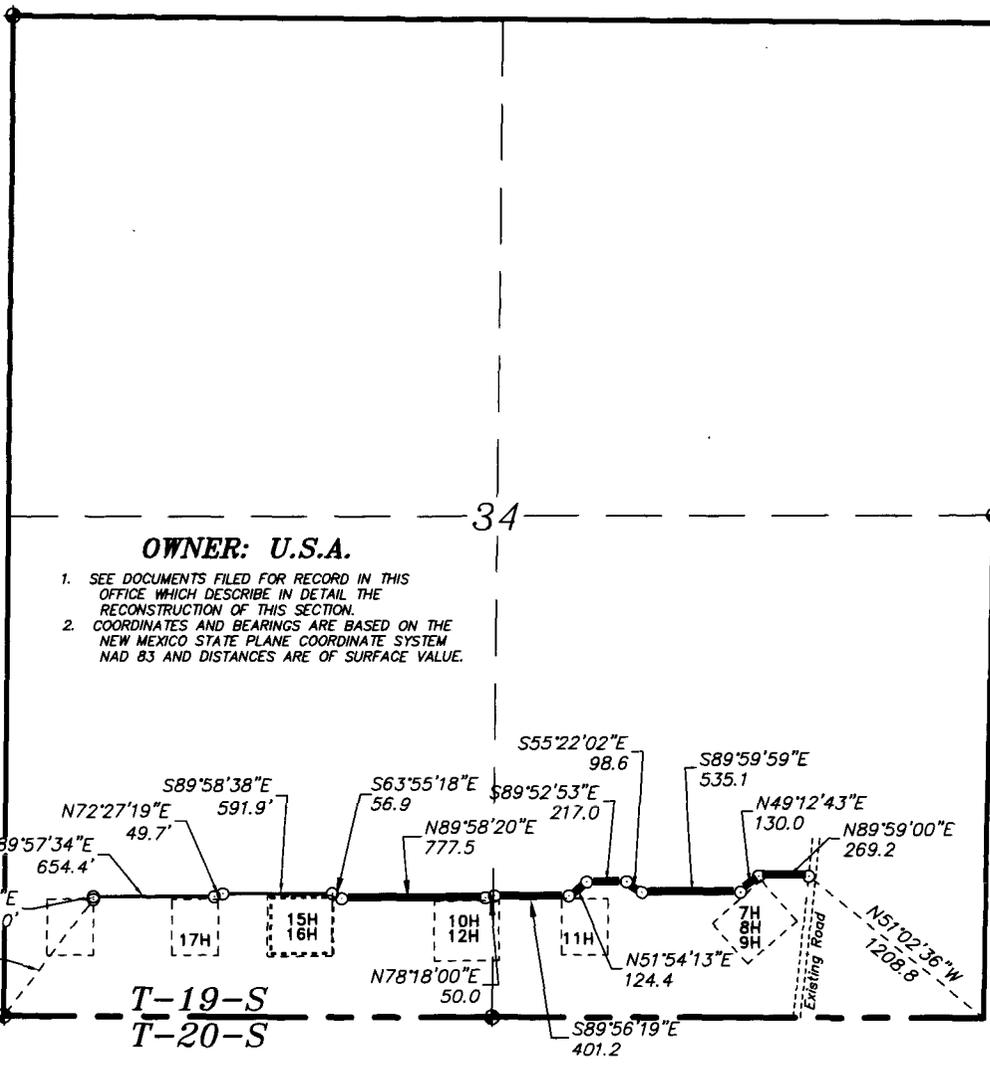
1000 ft

Google Earth



SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST. N.M.P.M.,  
EDDY COUNTY, NEW MEXICO.

MAP 5



OWNER: U.S.A.

1. SEE DOCUMENTS FILED FOR RECORD IN THIS OFFICE WHICH DESCRIBE IN DETAIL THE RECONSTRUCTION OF THIS SECTION.
2. COORDINATES AND BEARINGS ARE BASED ON THE NEW MEXICO STATE PLANE COORDINATE SYSTEM NAD 83 AND DISTANCES ARE OF SURFACE VALUE.

LEGAL DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE, LOCATED IN SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND 15.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

SEC. 34 3970.9 FEET = 0.75 MILE = 240.66 RODS = 2.73 ACRES

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.

GARY L. JONES, P.S. No. 7977  
No. 5074

1000 0 1000 2000 FEET

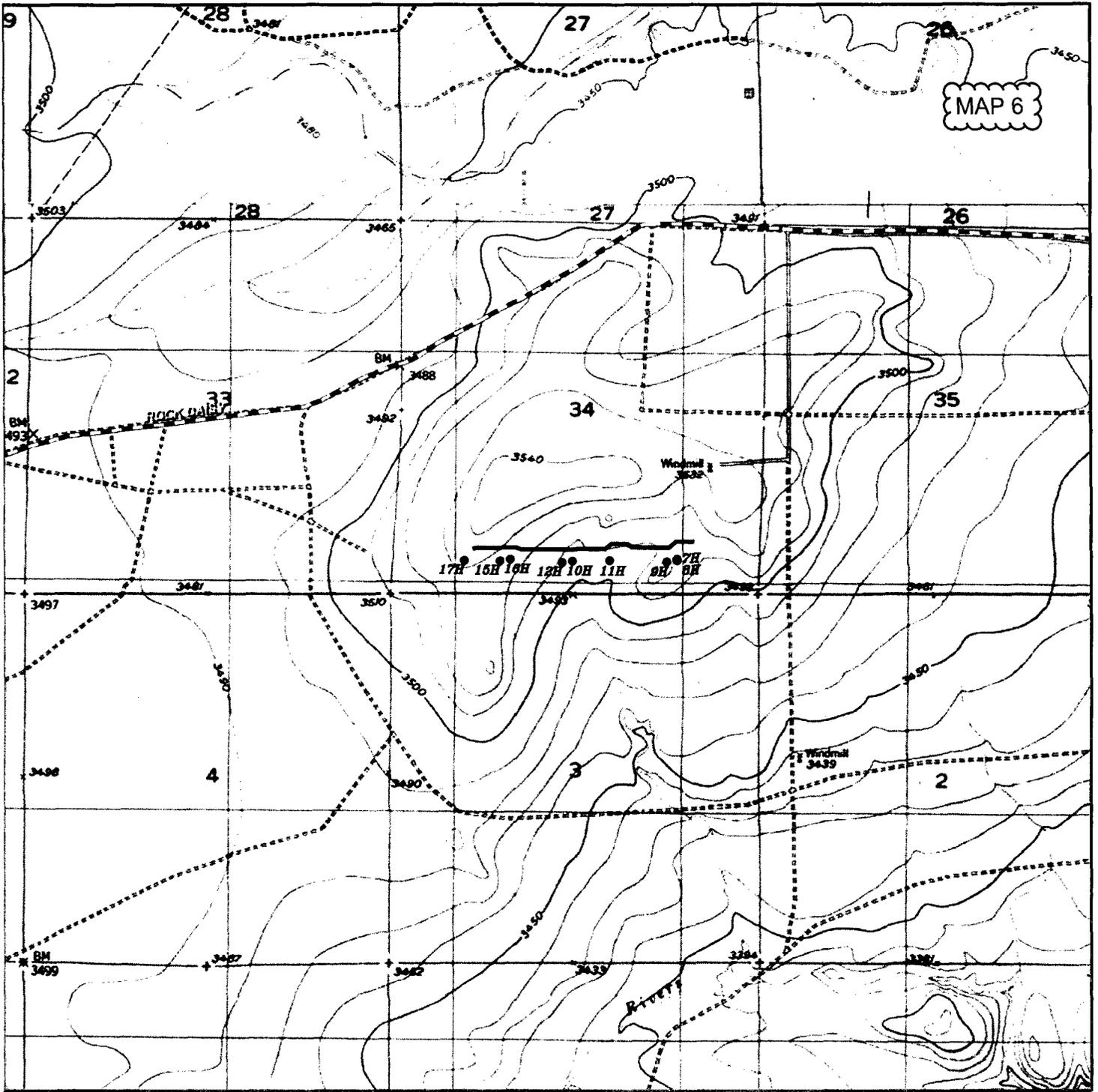
**PERCUSSION PETROLEUM OPERATING, LLC**

REF: PROPOSED HUBER FEDERAL LEASE ROAD

A LEASE ROAD CROSSING USA LAND IN  
SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST.  
N.M.P.M., EDDY COUNTY, NEW MEXICO.

**basin surveys**

P.O. Box 1785 (575) 393-7316 - Office  
1120 N. West County Rd. (575) 392-2206 - Fax  
Hobbs, New Mexico 88241 basin-surveys.com



**PROPOSED HUBER FEDERAL LEASE ROAD**  
 Section 34, Township 19 South, Range 25 East,  
 N.M.P.M., Eddy County, New Mexico.

**basin surveys**  
 focused on excellence  
 in the oilfield

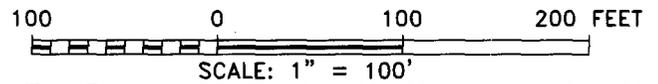
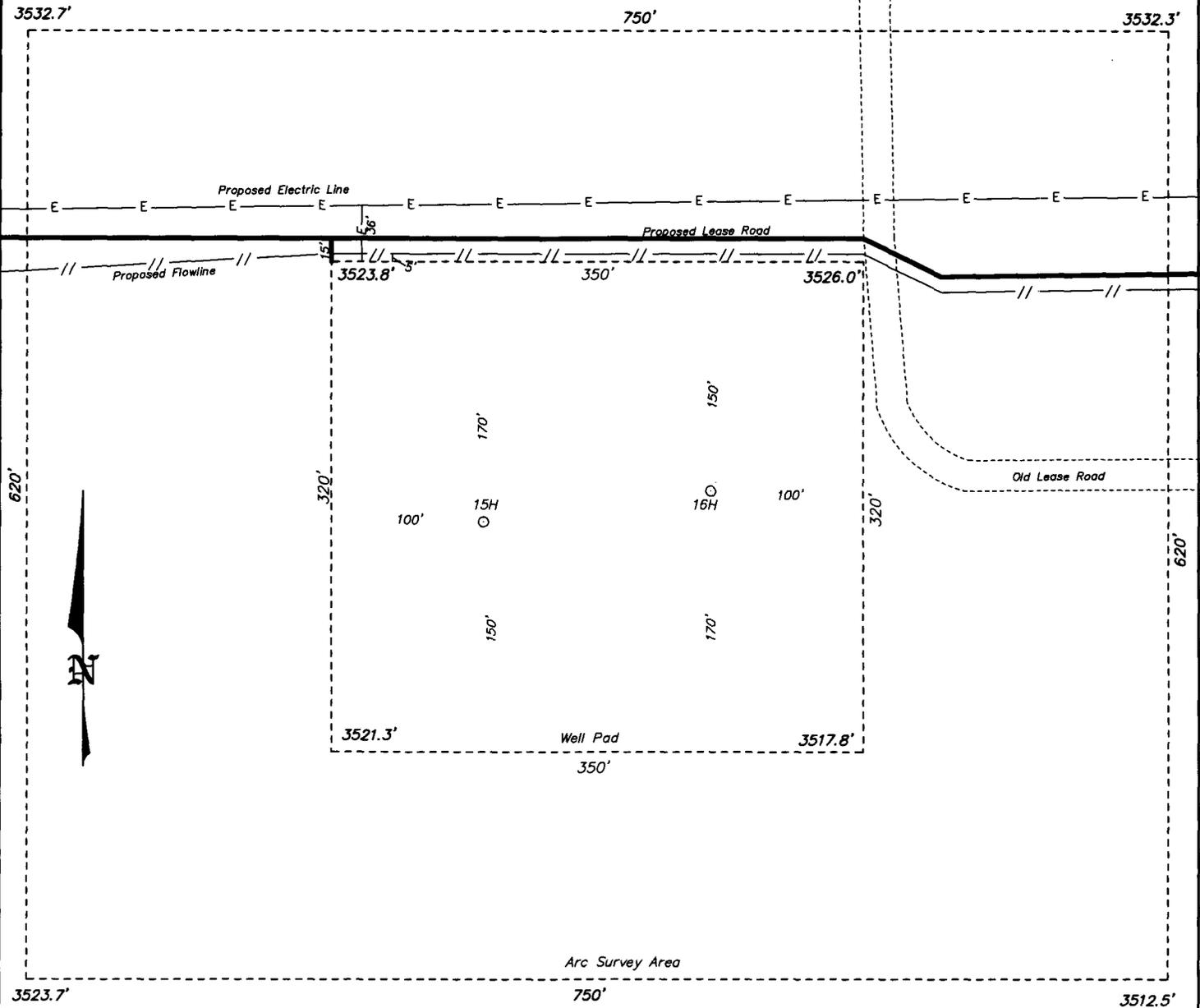
P.O. Box 1786  
 1120 N. West County Rd.  
 Hobbs, New Mexico 88241  
 (575) 393-7316 - Office  
 (575) 392-2206 - Fax  
 basinsurveys.com

0'	1000'	2000'	3000'	4000'
SCALE: 1" = 2000'				
W.O. Number		KJG 33199		
Survey Date:		07-28-2017		
YELLOW TINT - USA LAND BLUE TINT - STATE LAND NATURAL COLOR - FEE LAND				

**PERCUSSION  
 PETROLEUM  
 OPERATING, LLC**

SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,  
EDDY COUNTY, NEW MEXICO.

MAP 7



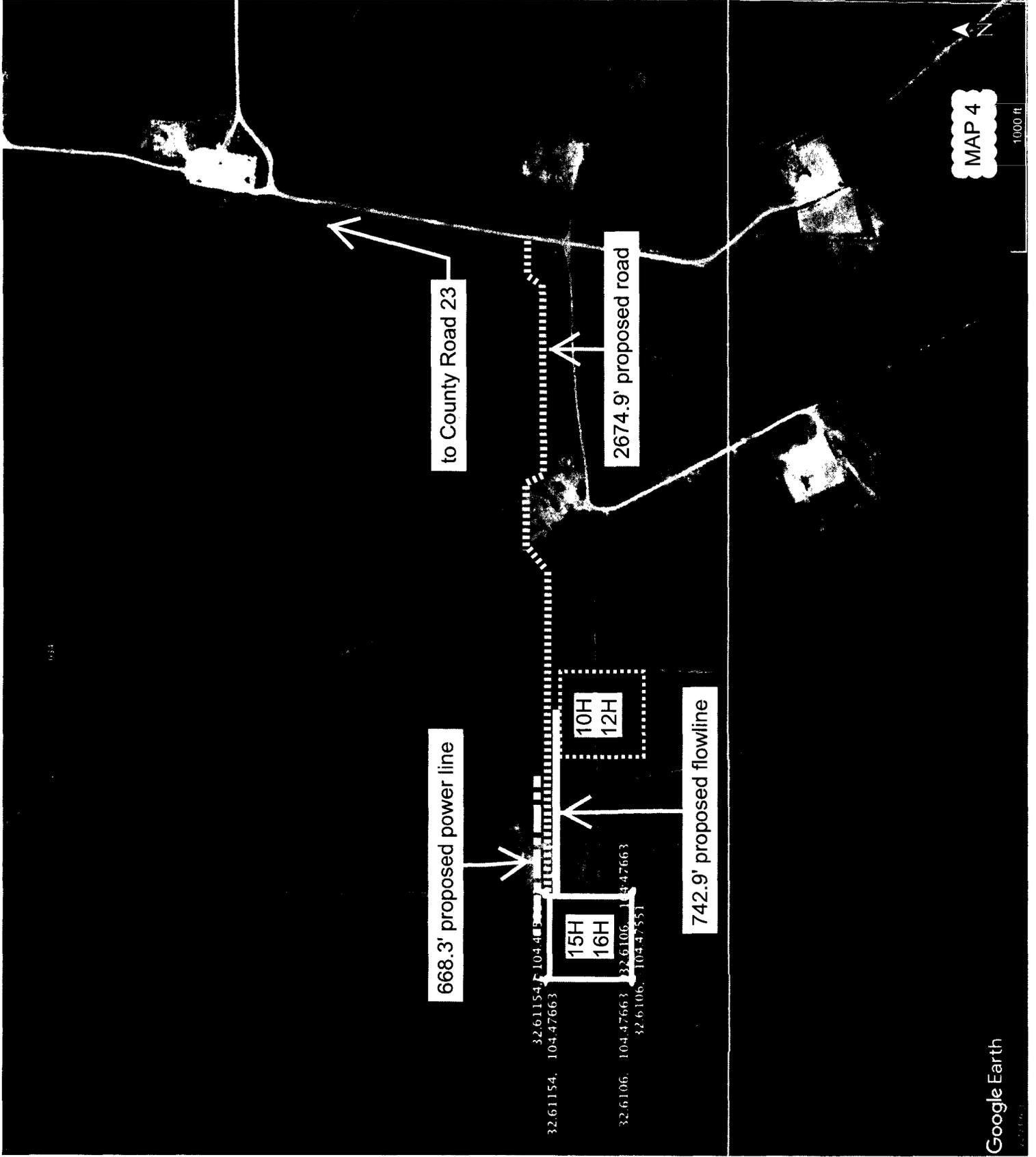
**PERCUSSION PETROLEUM OPERATING, LLC**

REF: HUBER FEDERAL #15H / WELL PAD TOPO

THE HUBER FEDERAL #15H LOCATED 476' FROM  
THE SOUTH LINE AND 1523' FROM THE WEST LINE OF  
SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST,  
N.M.P.M., EDDY COUNTY, NEW MEXICO.



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P.O. Box 1766 (575) 393-7316 - Office  
1120 N. West County Rd. (575) 382-2206 - Fax  
Hobbs, New Mexico 88341 basinsurveys.com



to County Road 23

2674.9' proposed road

668.3' proposed power line

742.9' proposed flowline

10H  
12H

15H  
16H

32.61154, 104.47663  
32.6106, 104.47663  
32.6106, 104.47551

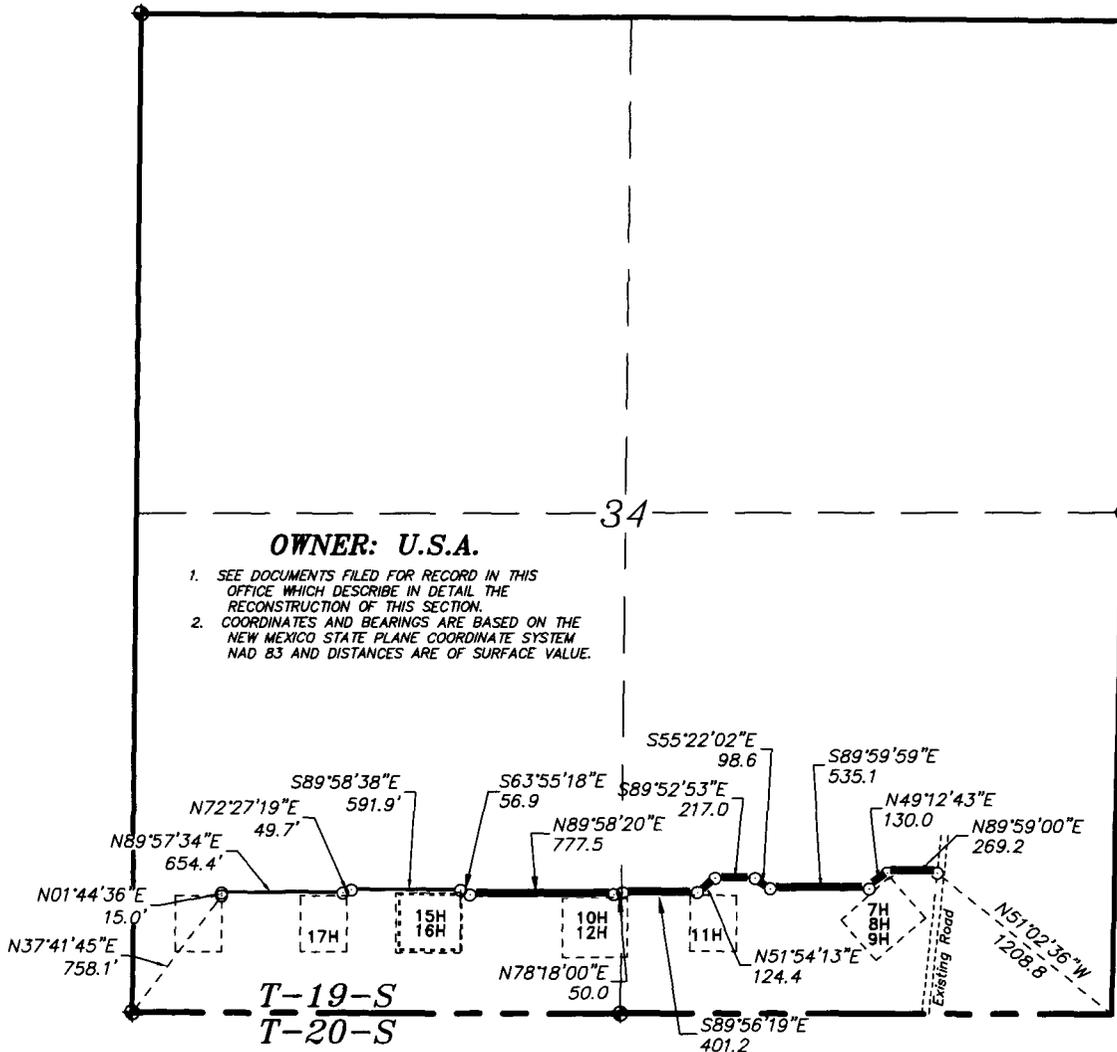
MAP 4

1000 ft

Google Earth

SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST. N.M.P.M.,  
 EDDY COUNTY, NEW MEXICO.

MAP 5



OWNER: U.S.A.

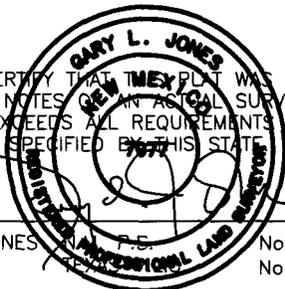
1. SEE DOCUMENTS FILED FOR RECORD IN THIS OFFICE WHICH DESCRIBE IN DETAIL THE RECONSTRUCTION OF THIS SECTION.
2. COORDINATES AND BEARINGS ARE BASED ON THE NEW MEXICO STATE PLANE COORDINATE SYSTEM NAD 83 AND DISTANCES ARE OF SURFACE VALUE.

LEGAL DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE, LOCATED IN SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND 15.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

SEC. 34 3970.9 FEET = 0.75 MILE = 240.66 RODS = 2.73 ACRES

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.



GARY L. JONES, P.E. No. 7977  
 No. 5074



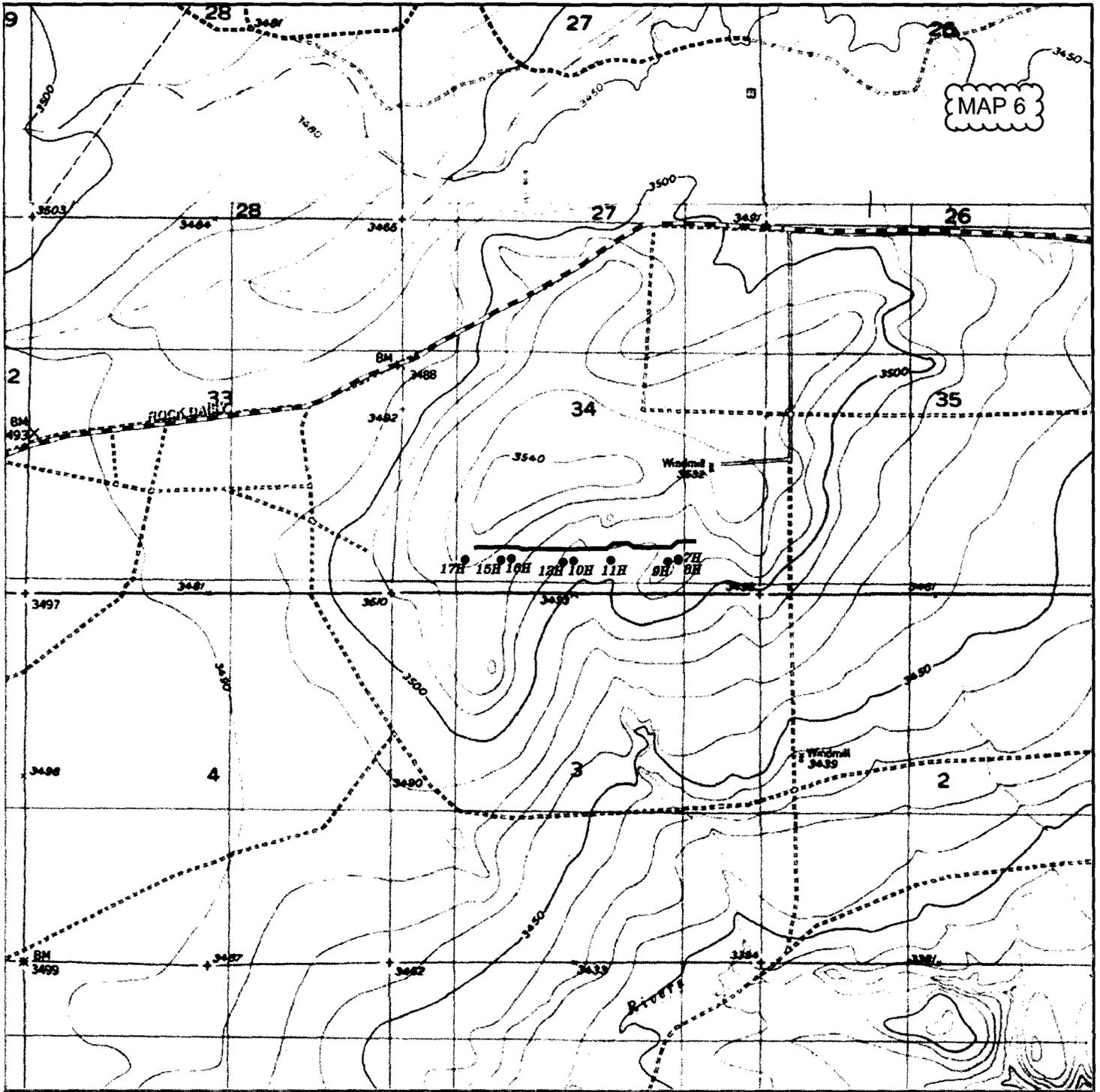
**PERCUSSION PETROLEUM OPERATING, LLC**

REF: PROPOSED HUBER FEDERAL LEASE ROAD

A LEASE ROAD CROSSING USA LAND IN  
 SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST.  
 N.M.P.M., EDDY COUNTY, NEW MEXICO.

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**PROPOSED HUBER FEDERAL LEASE ROAD**  
 Section 34, Township 19 South, Range 25 East,  
 N.M.P.M. Eddy County, New Mexico.

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 in the oilfield

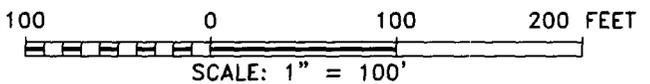
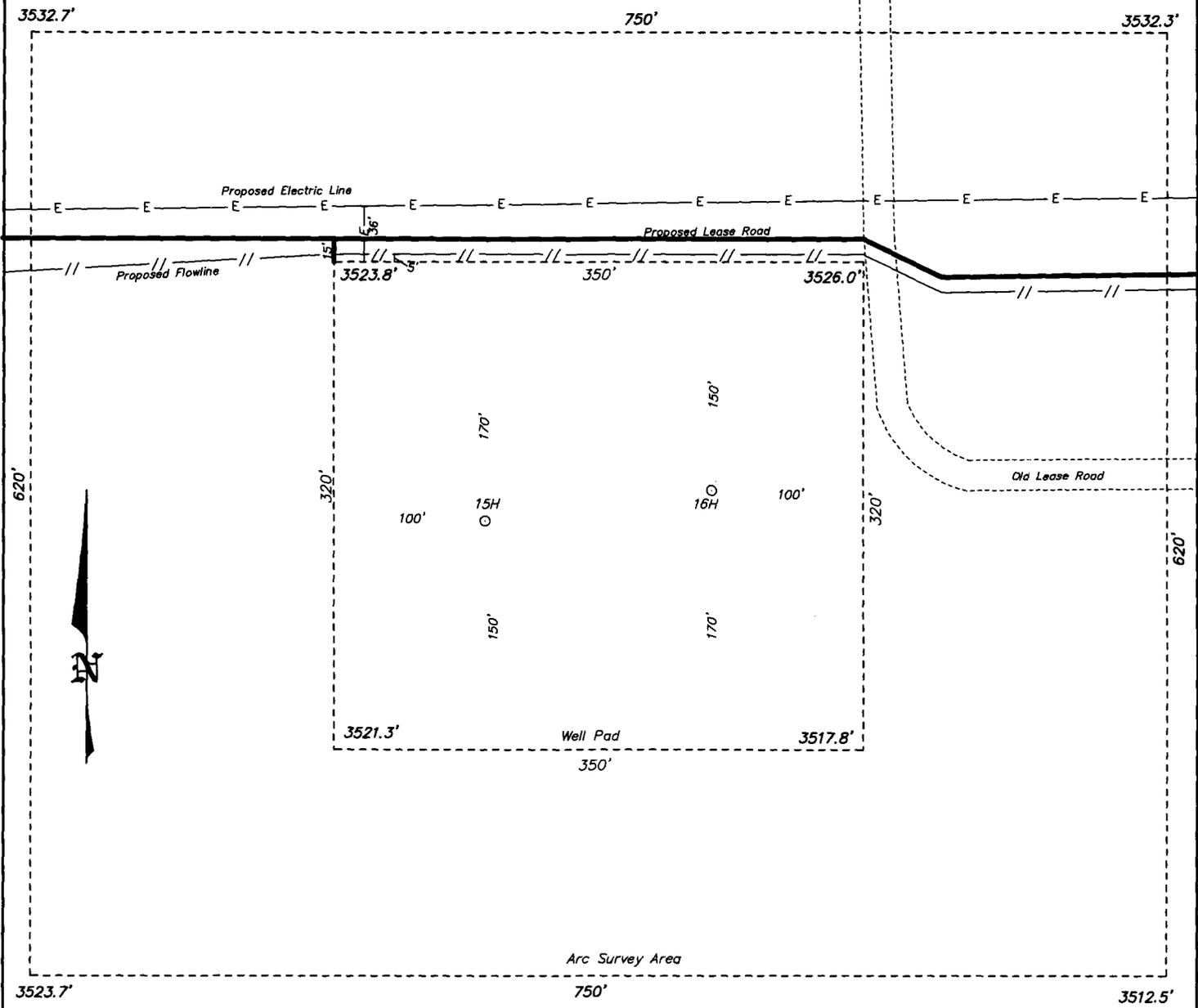
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 1120 N. West County Rd.  
 Hobbs, New Mexico 88241  
 (575) 393-7316 - Office  
 (575) 392-2206 - Fax  
 basinsurveys.com

0'	1000'	2000'	3000'	4000'
SCALE: 1" = 2000'				
W.C. Number: KuG 33'99				
Survey Date: 07-28-2017				
YELLOW TINT - USA LAND				
BLUE TINT - STATE LAND				
NATURAL COLOR - FEE LAND				

**PERCUSSION  
 PETROLEUM  
 OPERATING, LLC**

SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,  
EDDY COUNTY, NEW MEXICO.

MAP 7



**PERCUSSION PETROLEUM OPERATING, LLC**

REF: HUBER FEDERAL #15H / WELL PAD TOPO  
THE HUBER FEDERAL #15H LOCATED 476' FROM  
THE SOUTH LINE AND 1523' FROM THE WEST LINE OF  
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N.M.P.M., EDDY COUNTY, NEW MEXICO.

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Hobbs, New Mexico 88241 basin-surveys.com

MAP 3

BLM O&G lease  
NMNM-015291

access

SHL

SWD

BLM O&G lease  
NMNM-014758

1 mile radius

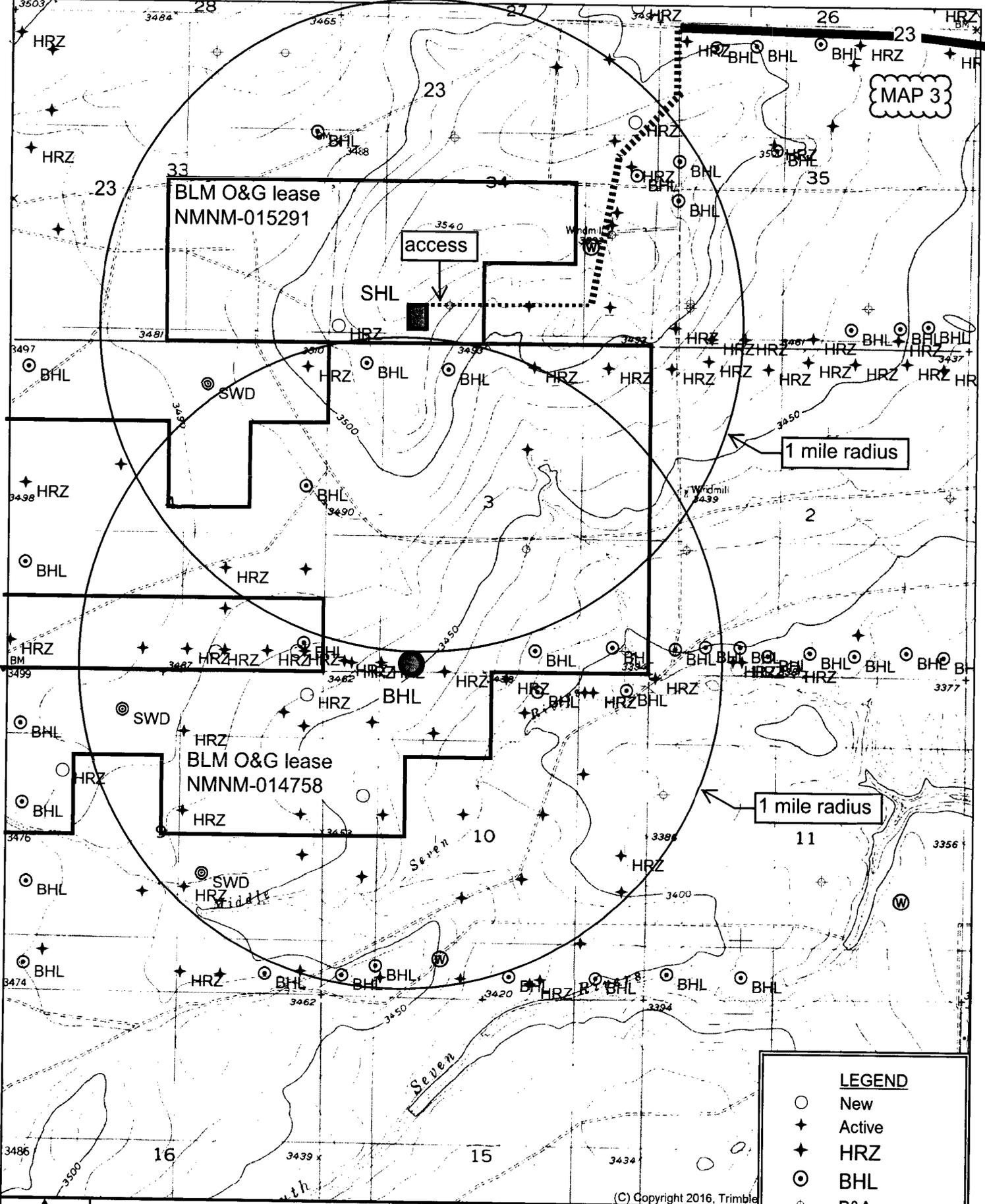
1 mile radius

Seven

Seven

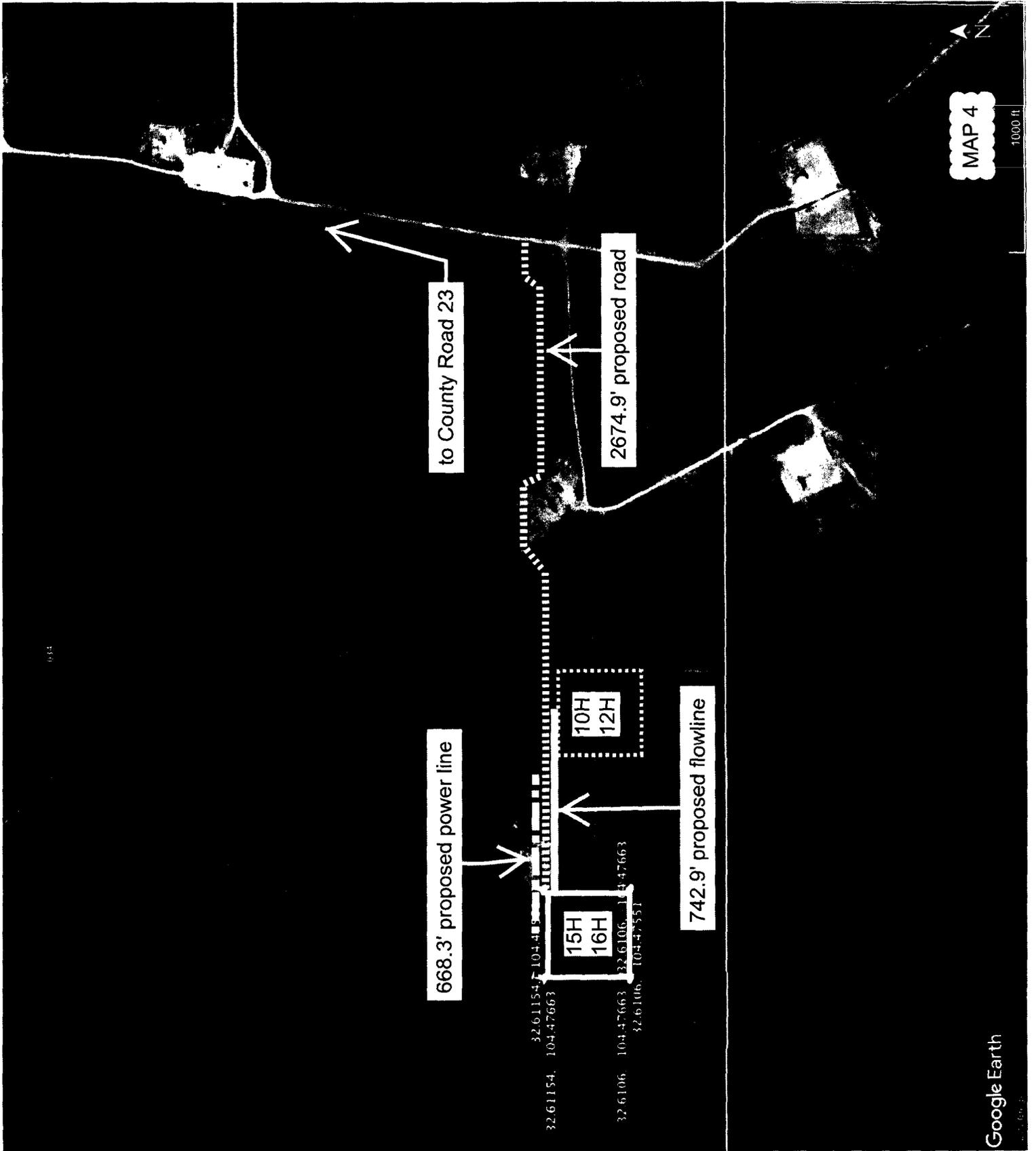
**LEGEND**

- New
- ✦ Active
- ✦ HRZ
- ⊙ BHL
- ⊕ P&A
- ⊙ INJ
- ⊙ SWD
- ⊙ W Water



Quad: SEVEN RIVERS  
Scale: 1 inch = 2,000 ft.

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to County Road 23

2674.9' proposed road

668.3' proposed power line

742.9' proposed flowline

32.61154, 104.47663  
32.61154, 104.4819  
32.6106, 104.47663  
32.6106, 104.47551

15H  
16H

10H  
12H

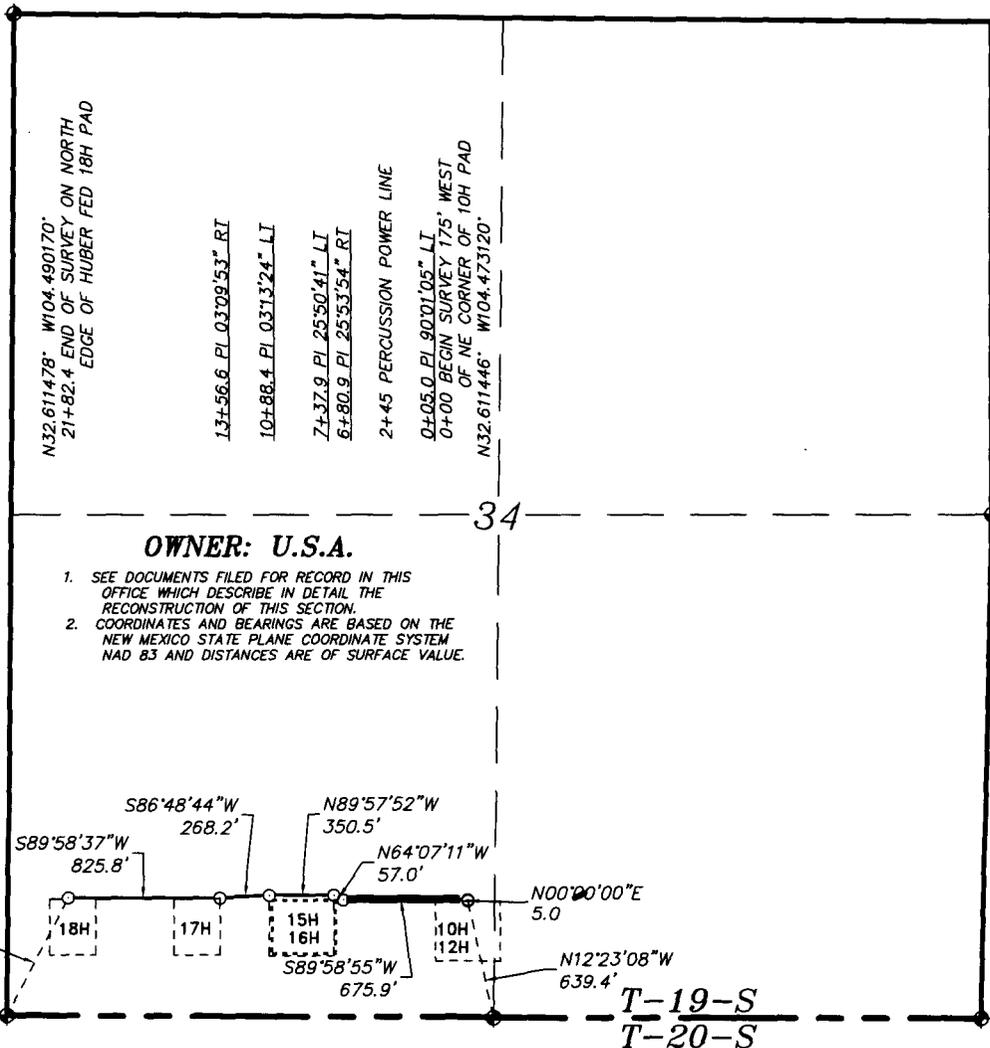
MAP 4

1000 ft

Google Earth

SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST. N.M.P.M.,  
EDDY COUNTY, NEW MEXICO.

MAP 8



**OWNER: U.S.A.**

- SEE DOCUMENTS FILED FOR RECORD IN THIS OFFICE WHICH DESCRIBE IN DETAIL THE RECONSTRUCTION OF THIS SECTION.
- COORDINATES AND BEARINGS ARE BASED ON THE NEW MEXICO STATE PLANE COORDINATE SYSTEM NAD 83 AND DISTANCES ARE OF SURFACE VALUE.

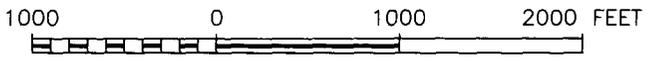
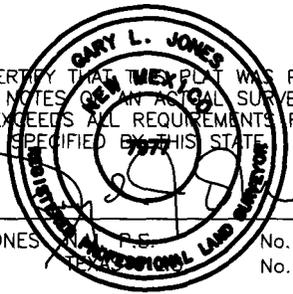
LEGAL DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE, LOCATED IN SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND 15.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

SEC. 34 2182.4 FEET = 0.41 MILE = 132.27 RODS = 1.50 ACRES

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED FROM FIELD NOTES IN AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.

**GARY L. JONES**, P.E.  
No. 7977  
No. 5074



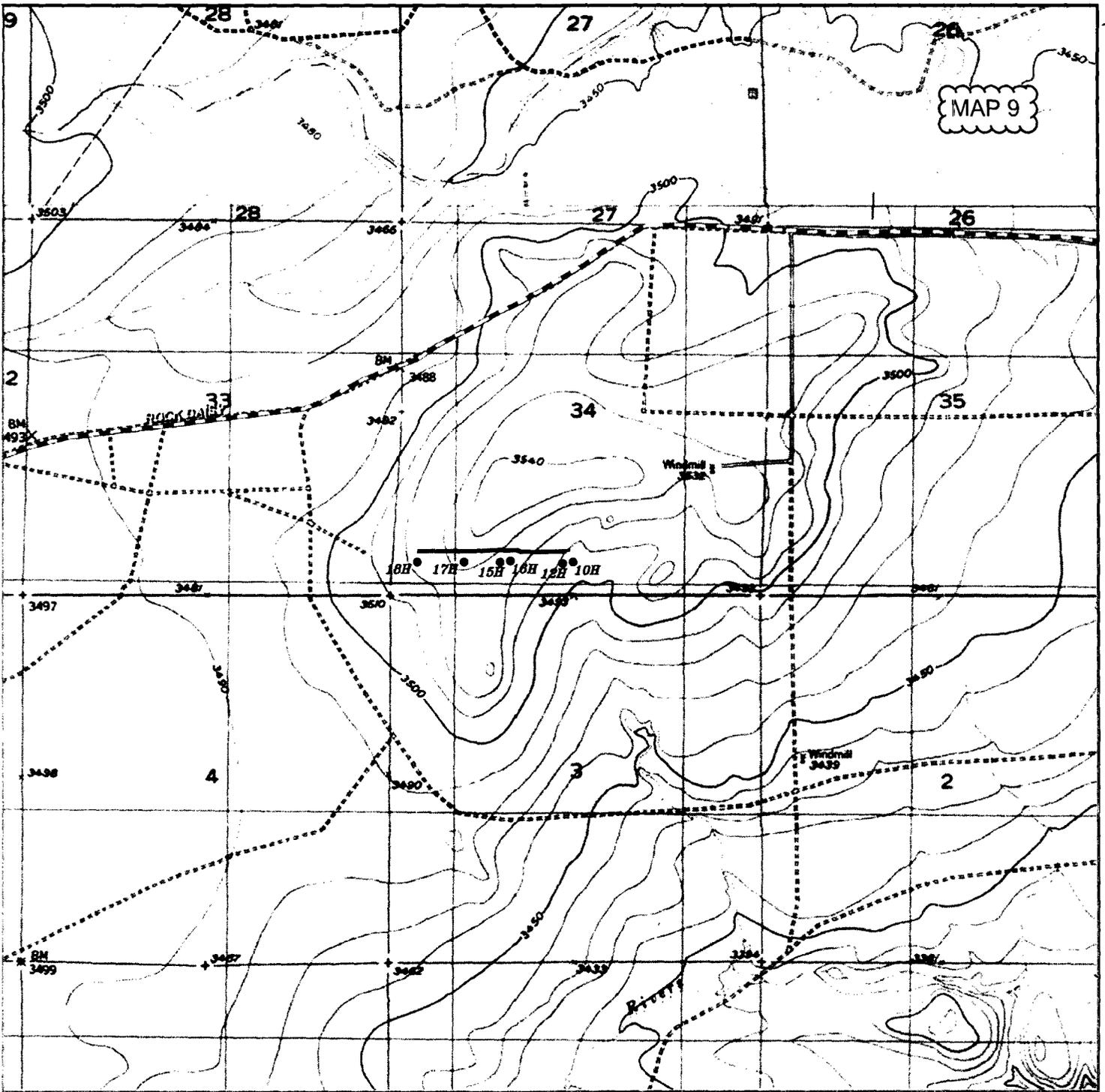
**PERCUSSION PETROLEUM OPERATING, LLC**

REF: PROPOSED HUBER FEDERAL 10H&12H FLOWLINE

A PIPELINE CROSSING USA LAND IN  
SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST.  
N.M.P.M., EDDY COUNTY, NEW MEXICO.



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1120 N. West County Rd.  
Hobbs, New Mexico 88241  
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(575) 392-2206 - Fax  
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**PROPOSED HUBER FEDERAL 10H&12H FLOWLINE**  
 Section 34, Township 19 South, Range 25 East,  
 N.M.P.M., Eddy County, New Mexico.



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 Hobbs, New Mexico 88241  
 (575) 393-7316 - Office  
 (575) 392-2206 - Fax  
 basinsurveys.com

1" = 1000' 2000' 3000' 4000'  
 SCALE: 1" = 2000'

W.G. Number: KUG 35211

Survey Date: 07-28-2017

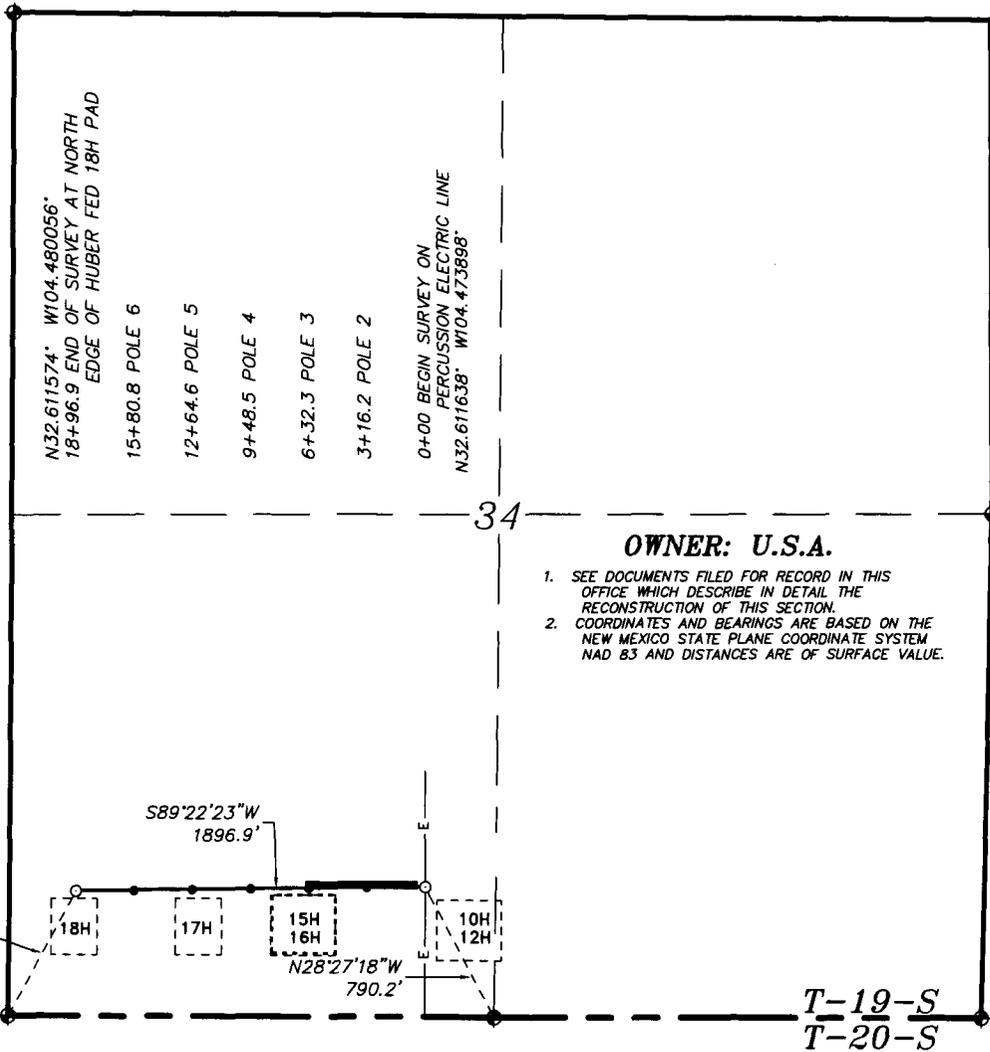
YELLOW TINT - USA LAND  
 BLUE TINT - STATE LAND  
 NATURAL COLOR - FEE LAND



**PERCUSSION  
 PETROLEUM  
 OPERATING, LLC**

SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST. N.M.P.M.,  
EDDY COUNTY, NEW MEXICO.

MAP 10



OWNER: U.S.A.

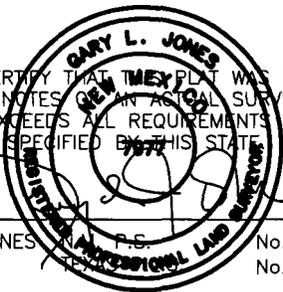
1. SEE DOCUMENTS FILED FOR RECORD IN THIS OFFICE WHICH DESCRIBE IN DETAIL THE RECONSTRUCTION OF THIS SECTION.
2. COORDINATES AND BEARINGS ARE BASED ON THE NEW MEXICO STATE PLANE COORDINATE SYSTEM NAD 83 AND DISTANCES ARE OF SURFACE VALUE.

LEGAL DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE, LOCATED IN SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND 15.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

SEC. 34 1896.9 FEET = 0.36 MILE = 114.96 RODS = 1.31 ACRES

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.



GARY L. JONES, P.S. No. 7977  
No. 5074



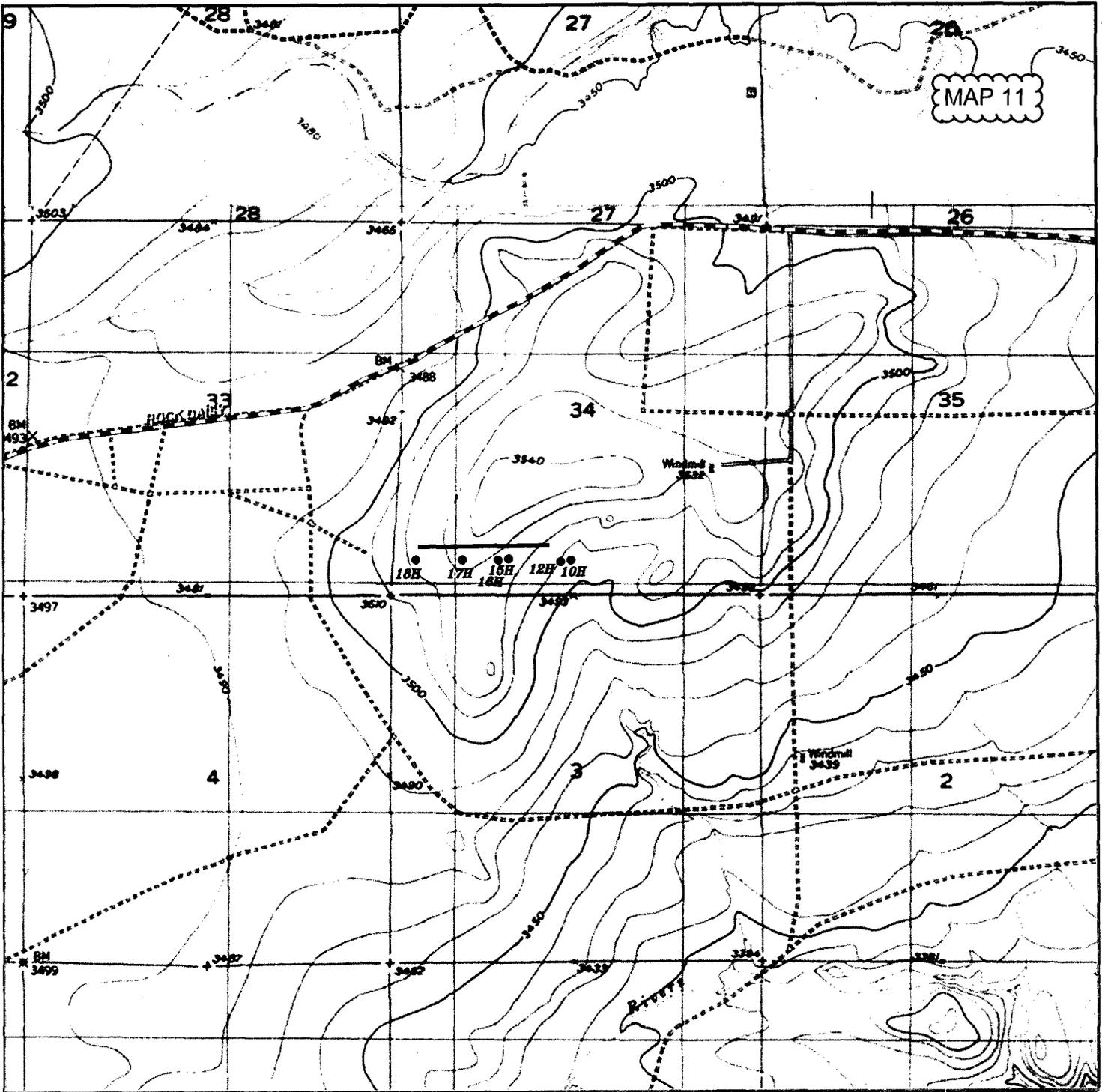
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1120 N. West County Rd. (575) 392-2206 - Fax  
Hobbs, New Mexico 88241 basin-surveys.com



**PERCUSSION PETROLEUM OPERATING, LLC**

REF: PROPOSED HUBER ELECTRIC LINE

AN ELECTRIC LINE CROSSING USA LAND IN  
SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST.  
N.M.P.M., EDDY COUNTY, NEW MEXICO.



**PROPOSED HUBER ELECTRIC LINE**  
 Section 34, Township 19 South, Range 25 East.  
 N.M.P.M., Eddy County, New Mexico.

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0' 1000' 2000' 3000' 4000'  
 GRAPHIC SCALE

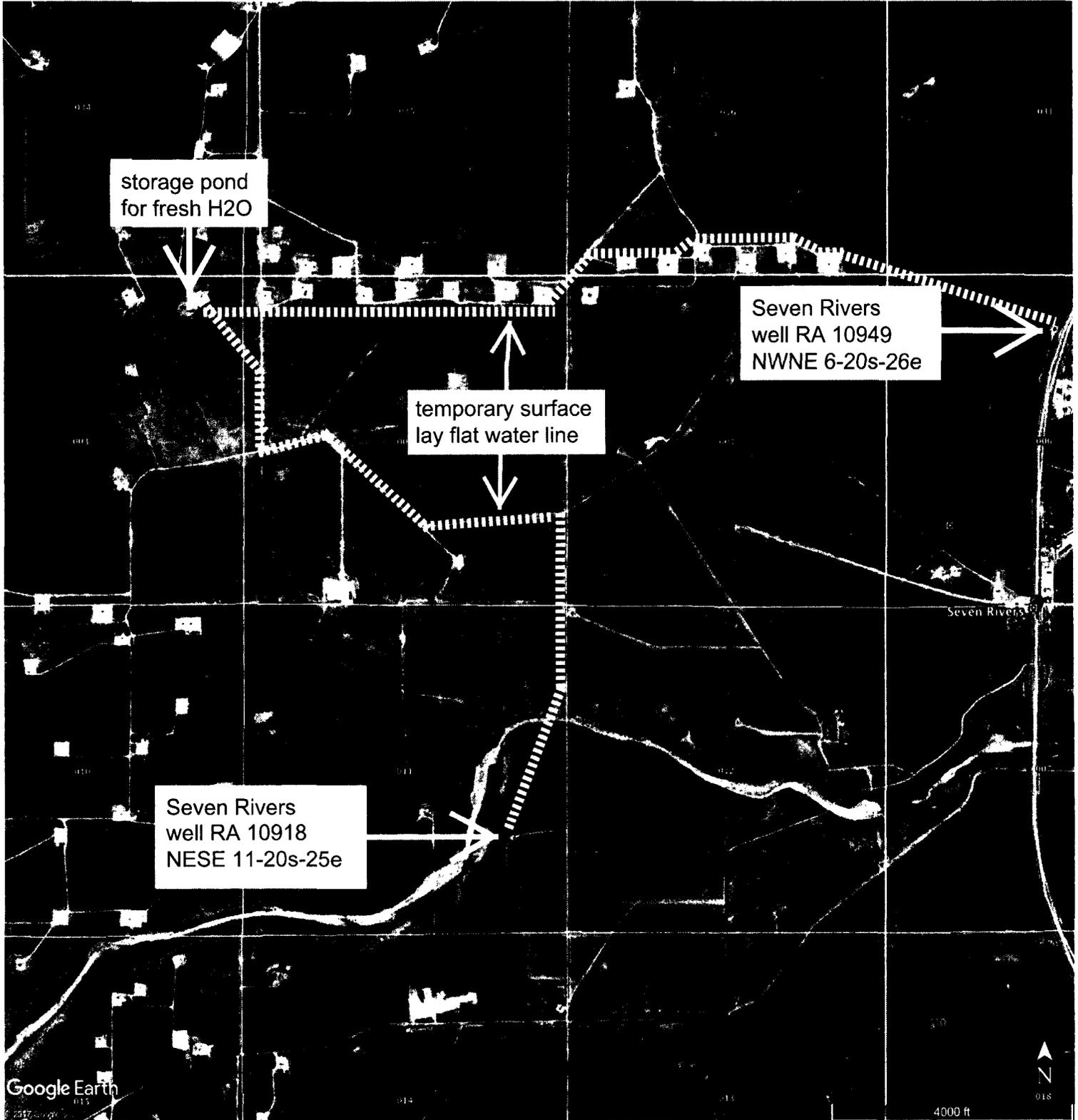
SCALE: 1" = 2000'

W.O. Number: KUJ 33209

Survey Date: 07-28-2017

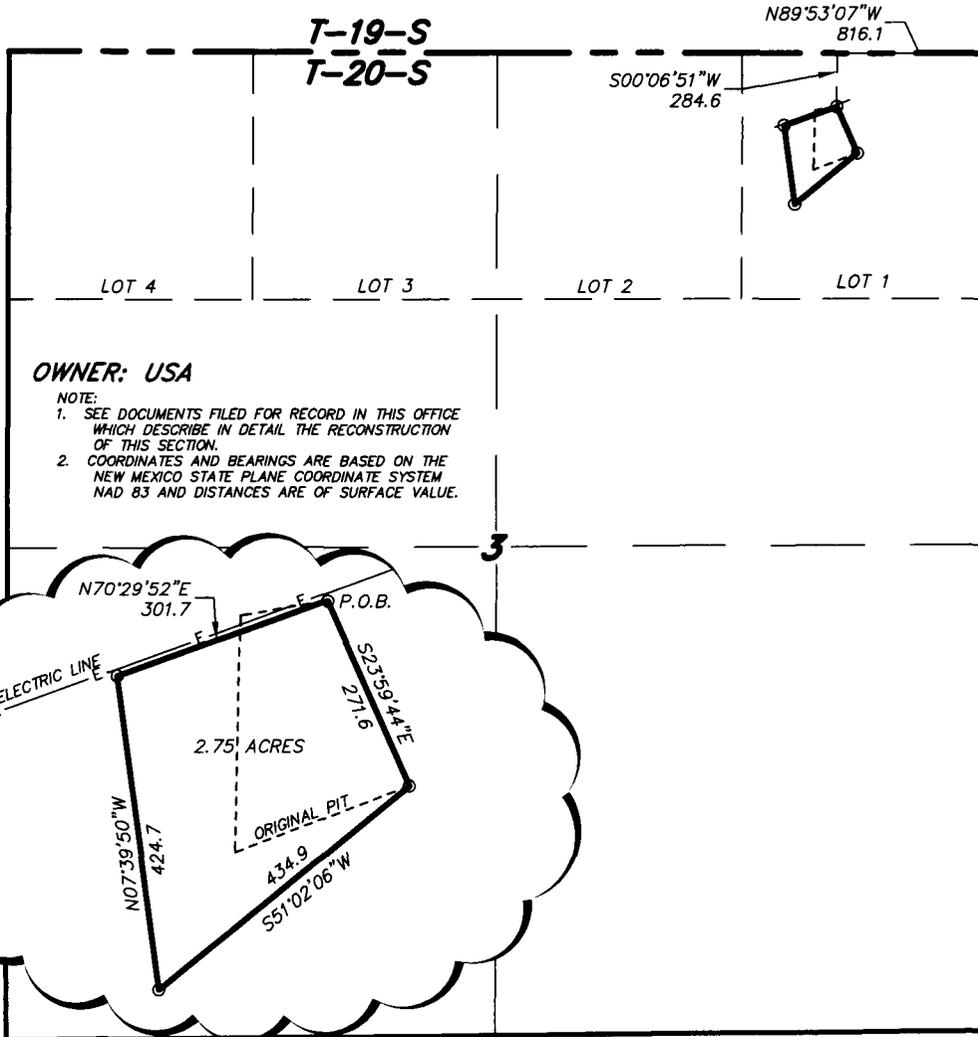
YELLOW TINT - USA LAND  
 BLUE TINT - STATE LAND  
 NATURAL COLOR - FEE LAND

**PERCUSSION  
 PETROLEUM  
 OPERATING, LLC**



SECTION 3, TOWNSHIP 20 SOUTH, RANGE 25 EAST, N.M.P.M.,  
EDDY COUNTY, NEW MEXICO.

MAP 13



OWNER: USA

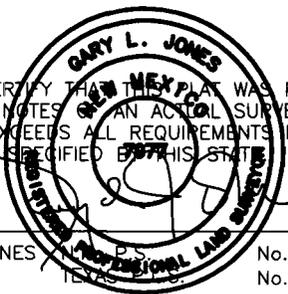
- NOTE:
1. SEE DOCUMENTS FILED FOR RECORD IN THIS OFFICE WHICH DESCRIBE IN DETAIL THE RECONSTRUCTION OF THIS SECTION.
  2. COORDINATES AND BEARINGS ARE BASED ON THE NEW MEXICO STATE PLANE COORDINATE SYSTEM NAD 83 AND DISTANCES ARE OF SURFACE VALUE.

LEGAL DESCRIPTION

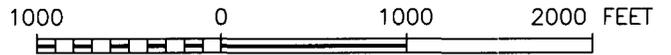
A TRACT OF LAND LOCATED IN SECTION 3, TOWNSHIP 20 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT WHICH LIES N89°53'07\"W., 816.1 FEET AND S00°06'51\"W., 284.6 FEET FROM THE NORTHEAST CORNER OF SAID SECTION 3; THENCE S23°59'44\"E., 271.6 FEET; THENCE S51°02'06\"W., 434.9 FEET; THENCE N07°39'50\"W., 424.7 FEET; THENCE N70°29'52\"E., 301.7 FEET TO THE POINT OF BEGINNING. SAID TRACT OF LAND BEING 2.75 ACRES, MORE OR LESS.

I HEREBY CERTIFY THAT THIS SURVEY WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.



GARY L. JONES, P.L.S. No. 7977  
No. 5074



**PERCUSSION PETROLEUM, LLC**

REF: HUBER WATER PIT EXPANSION

A TRACT OF LAND LOCATED ON USA LAND IN  
SECTION 3, TOWNSHIP 20 SOUTH, RANGE 25 EAST,  
N.M.P.M., EDDY COUNTY, NEW MEXICO.



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3H

existing  
pond

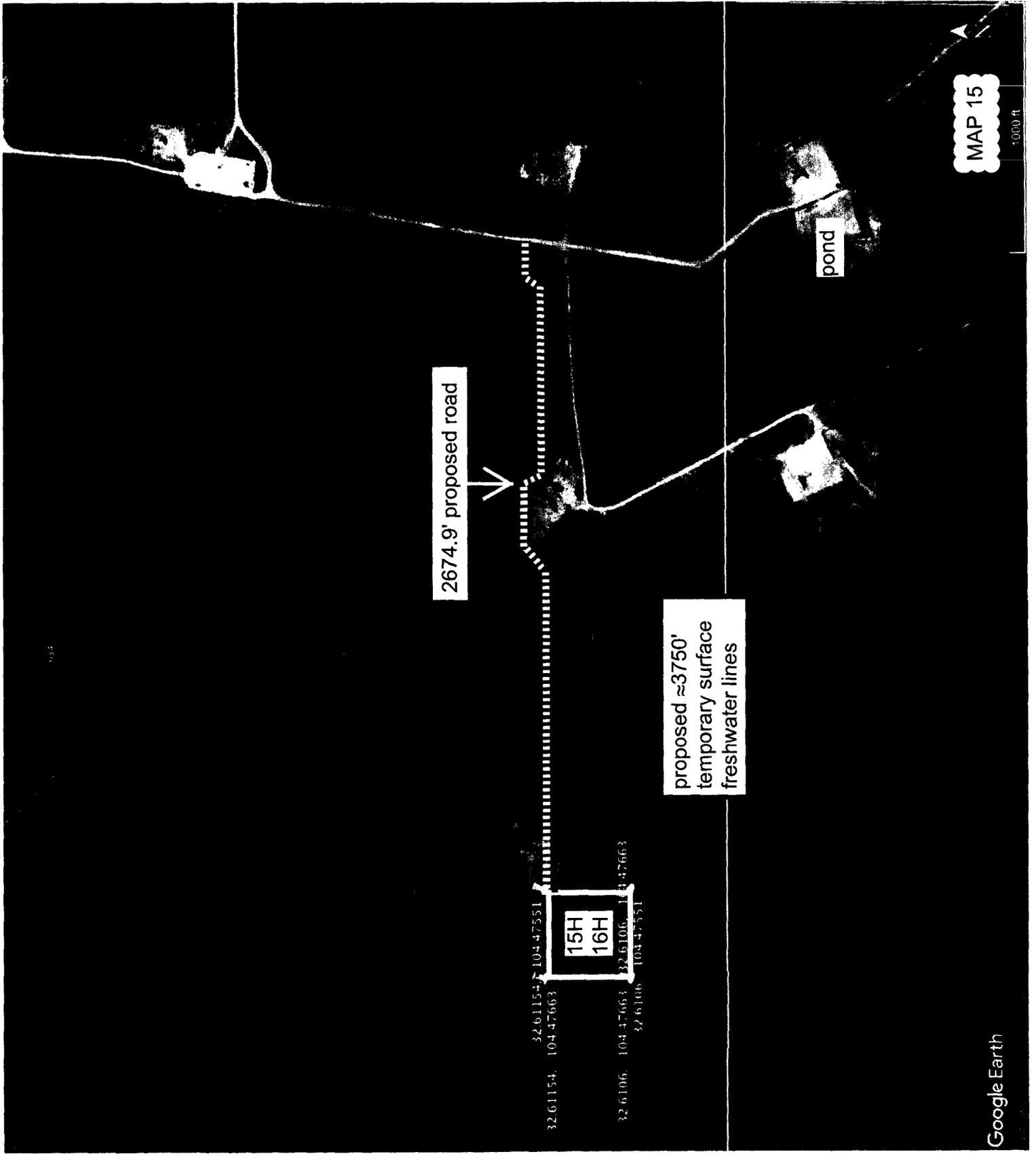
proposed  
pond  
expansion

104-46764

104-46742 104-46751

MAP 14

300 ft



2674.9' proposed road

proposed ≈3750'  
temporary surface  
freshwater lines

pond

MAP 15

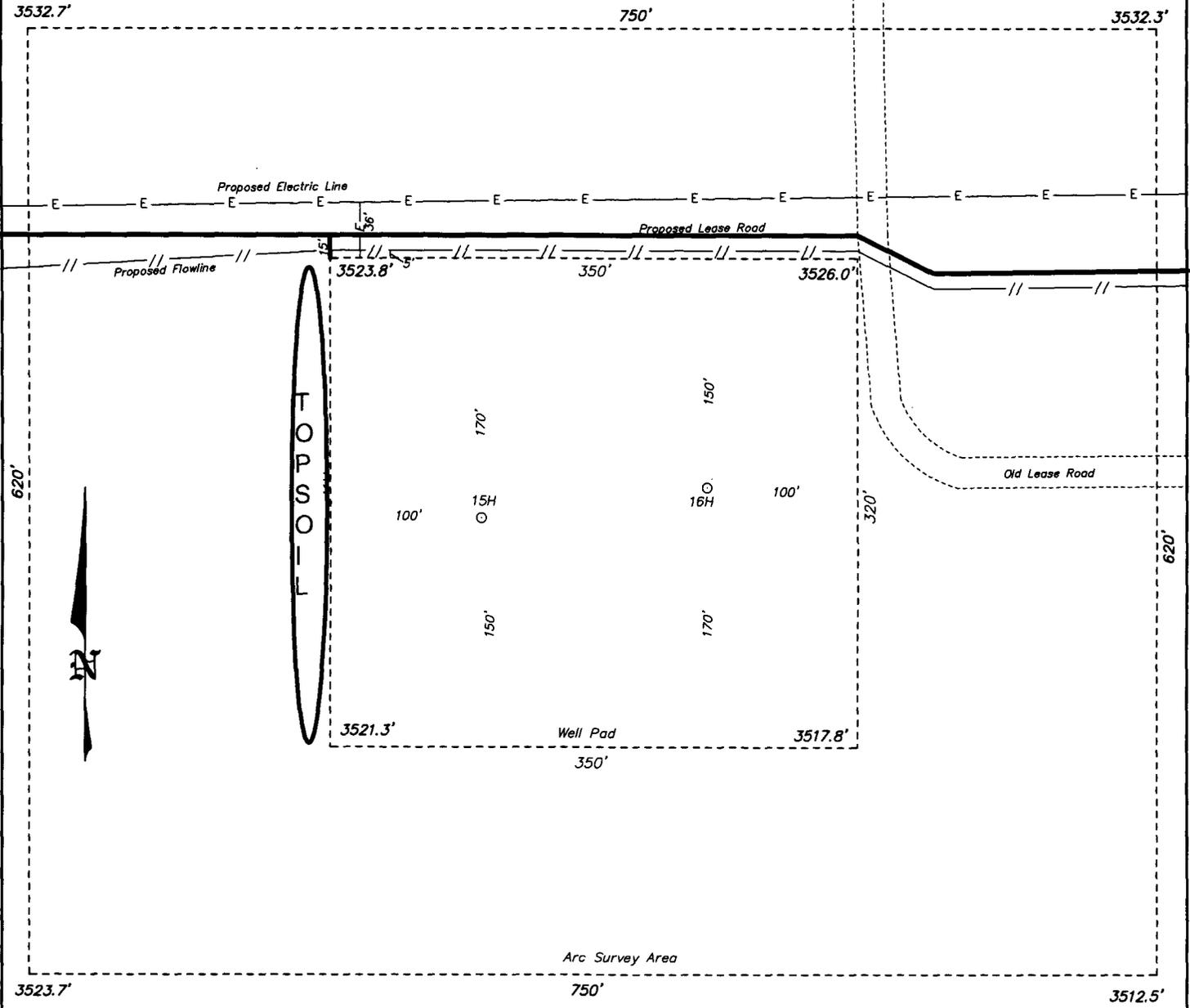
1,000 ft

32.61154	104.47663	32.61154	104.47551
32.6106	104.47663	32.6106	104.47551

15H  
16H

SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,  
EDDY COUNTY, NEW MEXICO.

MAP 16



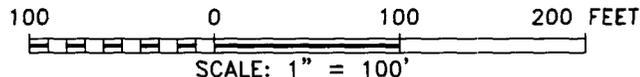
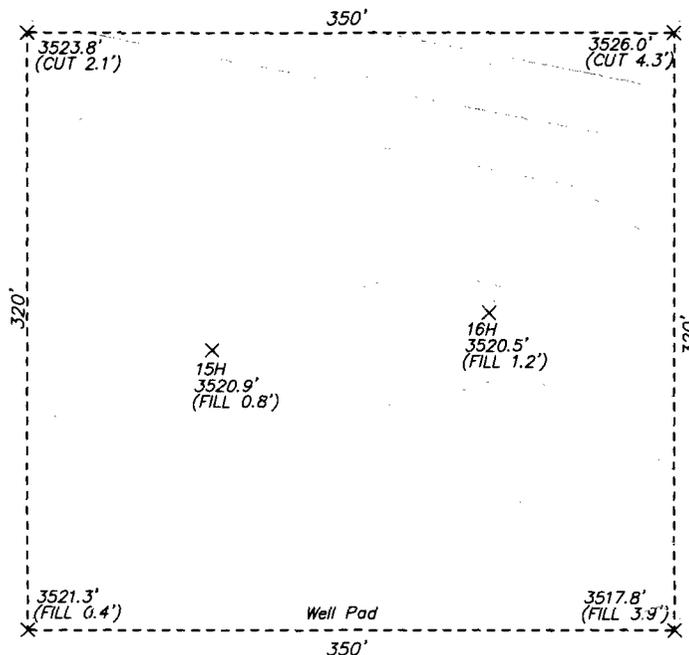
**PERCUSSION PETROLEUM OPERATING, LLC**  
 REF: HUBER FEDERAL #16H / WELL PAD TOPO  
 THE HUBER FEDERAL #16H LOCATED 496' FROM  
 THE SOUTH LINE AND 1673' FROM THE WEST LINE OF  
 SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST,  
 N.M.P.M., EDDY COUNTY, NEW MEXICO.

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 (575) 392-2206 - Fax  
 basin-surveys.com

SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,  
 EDDY COUNTY, NEW MEXICO.

MAP 17



**PERCUSSION PETROLEUM OPERATING, LLC**

REF: HUBER FEDERAL #15H&16H / WELL PAD CUT & FILL

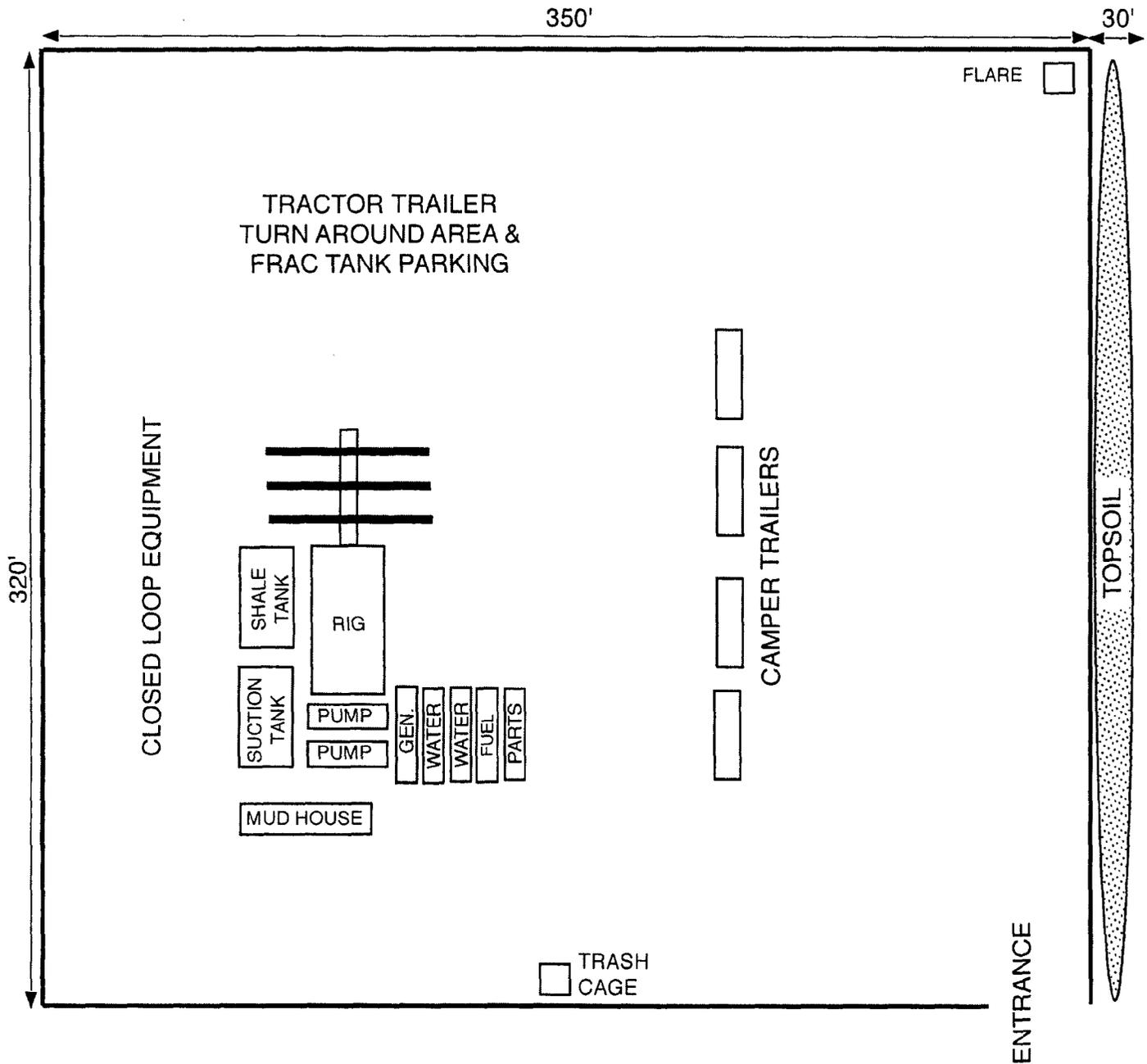
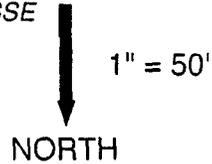
THE WELL PAD LOCATED IN  
 SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST,  
 N.M.P.M., EDDY COUNTY, NEW MEXICO.

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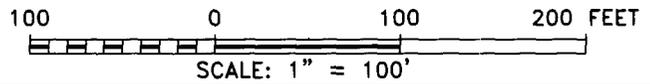
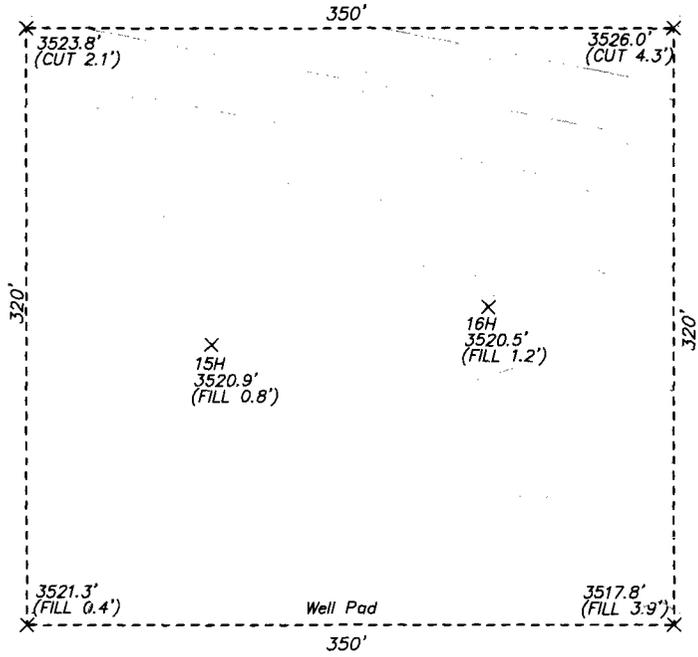
Percussion's  
Huber Federal 16H  
rig diagram

Prevailing Wind  
out of South  
or SSE



SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,  
 EDDY COUNTY, NEW MEXICO.

MAP 17



**PERCUSSION PETROLEUM OPERATING, LLC**

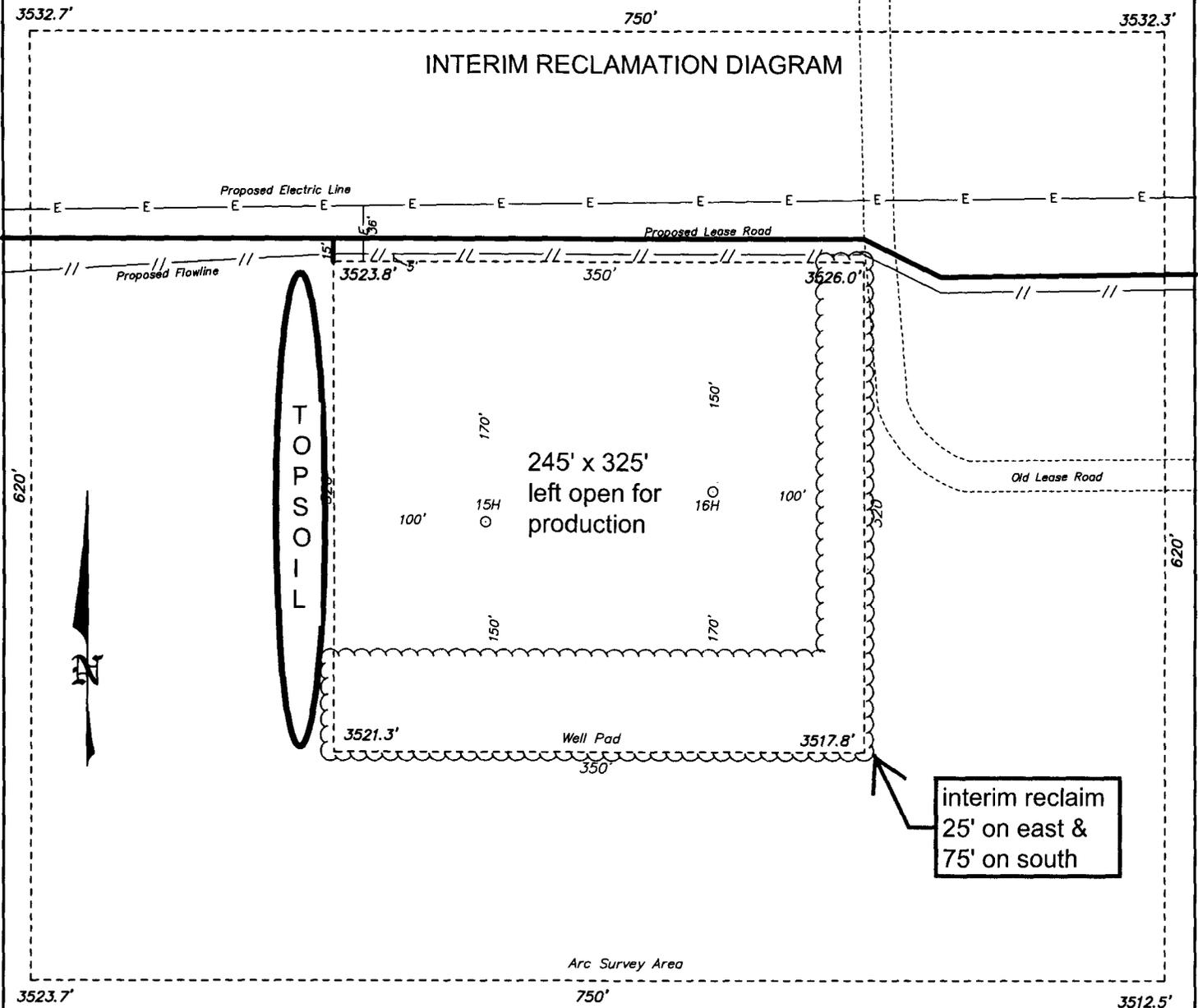
REF: HUBER FEDERAL #15H&16H / WELL PAD CUT & FILL

THE WELL PAD LOCATED IN  
 SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST,  
 N.M.P.M., EDDY COUNTY, NEW MEXICO.

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**SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,  
EDDY COUNTY, NEW MEXICO.**



interim reclaim  
25' on east &  
75' on south



(production equipment at 10H-12H pad)

**PERCUSSION PETROLEUM OPERATING, LLC**

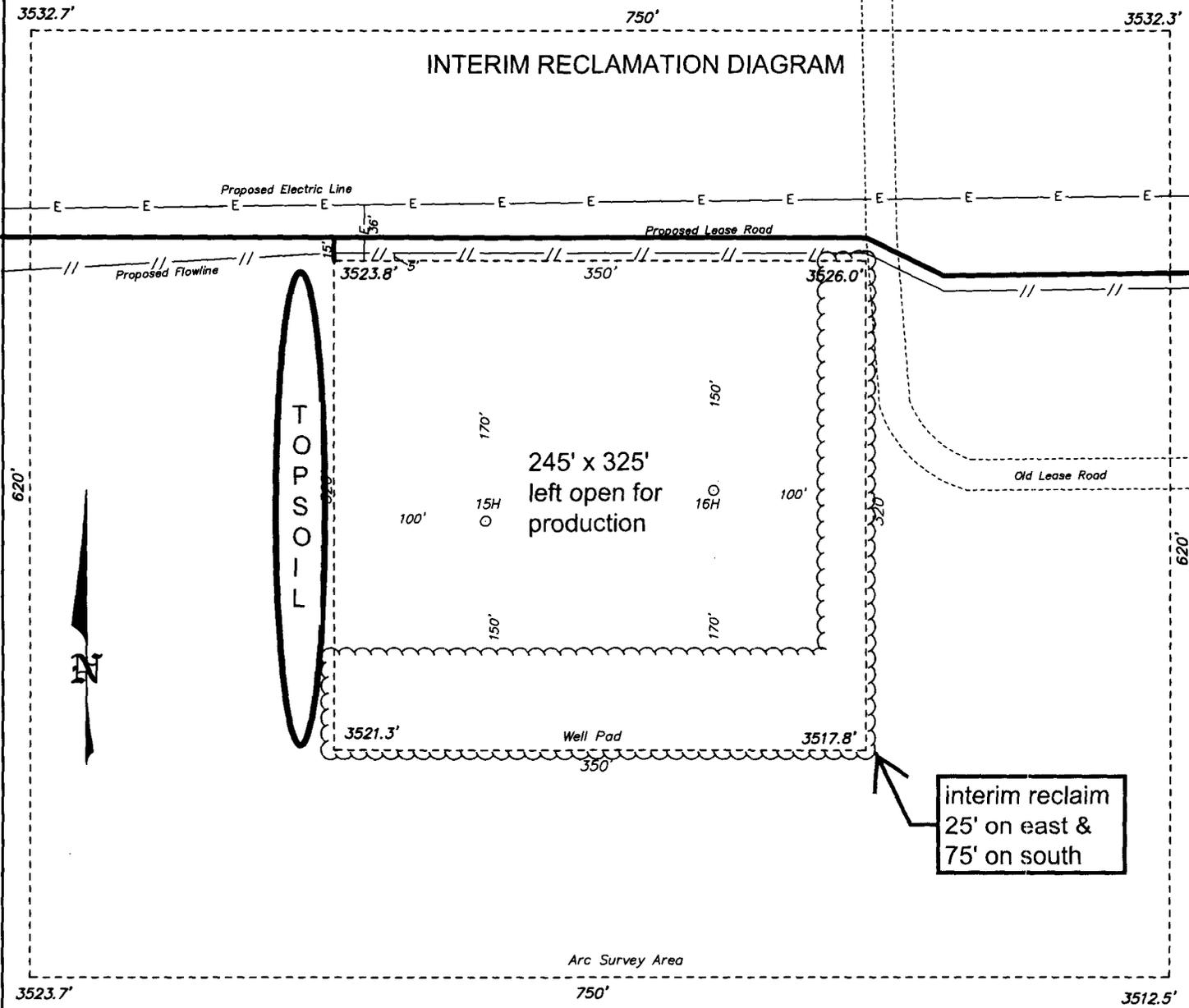
REF: HUBER FEDERAL #15H / WELL PAD TOPO

THE HUBER FEDERAL #15H LOCATED 476' FROM  
THE SOUTH LINE AND 1523' FROM THE WEST LINE OF  
SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST,  
N.M.P.M., EDDY COUNTY, NEW MEXICO.

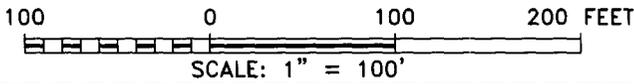


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SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,  
EDDY COUNTY, NEW MEXICO.



interim reclaim  
25' on east &  
75' on south



(production equipment at 10H-12H pad)

**PERCUSSION PETROLEUM OPERATING, LLC**

REF: HUBER FEDERAL #15H / WELL PAD TOPO  
THE HUBER FEDERAL #15H LOCATED 476' FROM  
THE SOUTH LINE AND 1523' FROM THE WEST LINE OF  
SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST,  
N.M.P.M., EDDY COUNTY, NEW MEXICO.



P.O. Box 1786 (575) 393-7316 - Office  
1120 N. West County Rd. (575) 392-2206 - Fax  
Hobbs, New Mexico 88241 basin-surveys.com

**Percussion Petroleum Operating, LLC  
Huber Federal 16H  
SHL 496' FSL & 1673' FWL 34-19S-25E  
BHL 20' FSL & 1582' FWL 3-20S-25E  
Eddy County, NM**

**SURFACE PLAN PAGE 1**

Surface Use Plan

1. ROAD DIRECTIONS & DESCRIPTIONS (See MAPS 1 – 7)

From the junction of US 82 & US 285 in Artesia....  
Go South 15.6 miles on US 285 to the equivalent of Mile Post 53.6  
Then turn right and go West 3.05 miles on paved County Road 23 (Rock Daisy)  
Then turn left and go S 0.2 mile on a caliche road  
Then bear right and go SW 0.75 miles on a caliche road  
Then turn right and go West 2659.9' cross-country  
Then turn left and go South 15' cross-country to the proposed pad

Non-county roads will be maintained as needed to Gold Book standards. This includes pulling ditches, preserving the crown, and cleaning culverts. This will be done at least once a year, and more often as needed.

2. ROAD TO BE BUILT OR UPGRADED (See MAPS 4 - 7)

The 2674.9' of new road will be crowned and ditched, have a 14' wide driving surface, and be surfaced with caliche. Maximum disturbed width = 30'. Maximum grade = 4%. Maximum cut or fill = 3'.

Agave's underground gas pipeline will be padded. An arroyo just east of the 10H/12H pad will be a low water crossing with 4" rock. No culvert, cattle guard, or vehicle turn out is needed. Upgrading will consist of patching potholes with caliche and installing a drainage dip in SESE Section 34.

3. EXISTING WELLS (See MAP 3)

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

4. PROPOSED PRODUCTION FACILITIES (See MAPS 4 & 8-11)

A 668.3' long overhead raptor safe 3-phase power line will be built east to Percussion's existing power line. A 742.9' long <6" O D. HDPE flow line will be laid on the surface to a proposed central tank battery on the proposed 10H pad. Equipment to be installed on that pad will be described in its APD.

**Percussion Petroleum Operating, LLC  
Huber Federal 16H  
SHL 496' FSL & 1673' FWL 34-19S-25E  
BHL 20' FSL & 1582' FWL 3-20S-25E  
Eddy County, NM**

**SURFACE PLAN PAGE 2**

**5. WATER SUPPLY (See MAPS 12-15)**

Water will be piped via one temporary surface 12" Kevlar lay flat pipeline from one of two water wells to a fresh water pond at Percussion's Huber Federal 3H well. Pipeline routes will not be bladed or excavated. Existing unlined pond will be expanded to 2.75 acres and lined with geotextile fabric and 12-30 mil liner.

Primary source will be Seven Rivers' well RA 10949 in NWNE 6-20s-29e. That route is ≈14,750' long. Route crosses ≈2950' of private, ≈5350' of State land, and ≈6450' of BLM.

Secondary source will be Seven Rivers' well RA 10918 in NESE 11-20s-25e. That route is ≈14,000' long. Route crosses ≈6850' of private land and ≈7150' of BLM land.

Two temporary surface 10" Kevlar lay flat pipelines will then be laid ≈3750' along roads from pond to 15H. Pipeline route will not be bladed or excavated.

**6. CONSTRUCTION MATERIALS & METHODS (See MAPS 16-18)**

NM One Call (811) will be notified before construction starts. Top ≈6" of soil and brush will be stockpiled west of the pad. V-door will face south. Closed loop drilling system will be used. Caliche will be hauled from existing caliche pits on private land. Arkland caliche pit is in NWNE 23-19s-25e. Seven Rivers caliche pit is in SWSW 6-20s-26e. Griffin caliche pit is in NWNE 14-20s-25e.

**7. WASTE DISPOSAL**

All trash will be placed in a portable trash cage. It will be hauled to the Eddy County landfill. There will be no trash burning. Contents (drill cuttings, mud, salts, and other chemicals) of the mud tanks will be hauled to R360's state approved (NM-01-0006) disposal site at Halfway. Human waste will be disposed of in chemical toilets and hauled to the Artesia wastewater treatment plant.

**8. ANCILLARY FACILITIES**

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

Percussion Petroleum Operating, LLC  
Huber Federal 16H  
SHL 496' FSL & 1673' FWL 34-19S-25E  
BHL 20' FSL & 1582' FWL 3-20S-25E  
Eddy County, NM

SURFACE PLAN PAGE 3

9. WELL SITE LAYOUT (See MAPS 16 & 17)

Also see Rig Layout diagram for depictions of the well pad, trash cage, access onto the location, parking, living facilities, and rig orientation.

10. RECLAMATION

Interim reclamation will be completed within 6 months of completing the well. Interim reclamation will consist of shrinking the pad  $\approx 29\%$  (0.74 acre) by removing caliche and reclaiming 75' on the south side and 25' on the east side. This will leave 1.83 acres for the anchors, pump jacks, and tractor-trailer turn around. Disturbed areas will be contoured to match pre-construction grades. Soil and brush will be evenly spread over disturbed areas and harrowed on the contour. Disturbed areas will be seeded in accordance with the surface owner's requirements.

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 rest of the pad and new road will be similarly reclaimed within 6 months of plugging. Noxious weeds will be controlled.

Land use:

2674.9' x 30' road = 1.84 acres  
742.9' x 30' flow line = 0.51 acres  
668.3' x 30' power line = 0.46 acres  
20' x 14,750' water line to pond = 6.77 acres  
20' x 3750' water line from pond = 1.72 acres  
fresh water pond = 2.75 acres  
+ 320' x 350' pad = 2.57 acres  
16.62 acres short term  
- 0.51 acres flow line  
- 0.46 acres power line  
0.74 acre interim reclamation on pad  
20' x 14,750' water line to pond = 6.77 acres  
- 20' x 3750' water line from pond = 1.72 acres  
6.42 acres long term (2.75 ac. pond + 1.84 ac. road + 1.83 ac. pad)

11. SURFACE OWNER

All construction is on BLM land managed by the Carlsbad Field Office, 620 E. Greene St., Carlsbad NM 88220. Phone number is 575 234-5972.

**Percussion Petroleum Operating, LLC  
Huber Federal 16H  
SHL 496' FSL & 1673' FWL 34-19S-25E  
BHL 20' FSL & 1582' FWL 3-20S-25E  
Eddy County, NM**

**SURFACE PLAN PAGE 4**

**12. OTHER INFORMATION**

On site inspection was held with Jim Goodbar and Jessie Bassett (both BLM) on July 18, 2017.

Lone Mountain consulted (LMAS 2315) with BLM's Bruce Boeke on May 22, 2017 and August 9 (LMAS 2362). It was determined no archaeology survey was needed due to previous coverage.

**CERTIFICATION**

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 10th day of September, 2017.

---

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:

Lelan Anders, Operations Manager  
Percussion Petroleum Operating, LLC  
919 Milam, Suite 2475  
Houston TX 77002  
Office: (713) 429-1291

**Percussion Petroleum Operating, LLC  
Huber Federal 16H  
SHL 496' FSL & 1673' FWL 34-19S-25E  
BHL 20' FSL & 1582' FWL 3-20S-25E  
Eddy County, NM**

**SURFACE PLAN PAGE 5**

Mobile: (281) 908-1752



## Section 1 - General

Would you like to address long-term produced water disposal? NO

## Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

### **Section 3 - Unlined Pits**

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

### **Section 4 - Injection**

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

**Injection well type:**

**Injection well number:**

**Assigned injection well API number?**

**Injection well new surface disturbance (acres):**

**Minerals protection information:**

**Mineral protection attachment:**

**Underground Injection Control (UIC) Permit?**

**UIC Permit attachment:**

**Injection well name:**

**Injection well API number:**

## **Section 5 - Surface Discharge**

**Would you like to utilize Surface Discharge PWD options? NO**

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:**

**PWD disturbance (acres):**

**Surface discharge PWD discharge volume (bbl/day):**

**Surface Discharge NPDES Permit?**

**Surface Discharge NPDES Permit attachment:**

**Surface Discharge site facilities information:**

**Surface discharge site facilities map:**

## **Section 6 - Other**

**Would you like to utilize Other PWD options? NO**

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:**

**PWD disturbance (acres):**

**Other PWD discharge volume (bbl/day):**

**Other PWD type description:**

**Other PWD type attachment:**

**Have other regulatory requirements been met?**

**Other regulatory requirements attachment:**



U.S. Department of the Interior  
BUREAU OF LAND MANAGEMENT

## Bond Info Data Report

02/09/2018

### Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB001424

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: