

18-269

Form 3160-3
(March 2012)

OCD Hobbs HOBBS OCD

APR 05 2018

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM0504364B
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator PERCUSSION PETROLEUM OPERATING LLC		7. If Unit or CA Agreement, Name and No.
3a. Address 919 Milam Street, Suite 2475 Houston TX 7701		8. Lease Name and Well No. 320768 SOUTH BOYD FEDERAL COM 17H
3b. Phone No. (include area code) (713)589-2337		9. API Well No. 30-015-44884
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface NENE / 584 FNL / 1244 FEL / LAT 32.622822 / LONG -104.46797 At proposed prod. zone NWNE / 20 FNL / ¹²⁷⁸ 1248 FEL / LAT 32.638728 / LONG -104.468481		10. Field and Pool, or Exploratory SEVEN RIVERS / GLORIETA-YESO
14. Distance in miles and direction from nearest town or post office* 16 miles		11. Sec., T. R. M. or Blk. and Survey or Area SEC 34 / T19S / R25E / NMP
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 1244 feet	16. No. of acres in lease 480	12. County or Parish LEA Eddy
17. Spacing Unit dedicated to this well 160	13. State NM	
18. Distance from proposed location* to nearest well, drilling, completed, 382 feet applied for, on this lease, ft.	19. Proposed Depth 2720 feet / 8185 feet	20. BLM/BIA Bond No. on file FED: NMB001424
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3520 feet	22. Approximate date work will start* 01/02/2018	23. Estimated duration 30 days

24. Attachments

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

- | | |
|--|---|
| 1. Well plat certified by a registered surveyor. | 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) Brian Wood / Ph: (505)466-8120	Date 11/07/2017
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Title
President

Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575)234-5959	Date 03/27/2018
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Title
Supervisor Multiple Resources
Office
CARLSBAD

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: 03/27/2018

NM OIL CONSERVATION
ARTESIA DISTRICT

APR 09 2018

RWP 4-13-18.

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Additional Operator Remarks

Location of Well

1. SHL: NENE / 584 FNL / 1244 FEL / TWSP: 19S / RANGE: 25E / SECTION: 34 / LAT: 32.622822 / LONG: -104.46797 (TVD: 0 feet, MD: 0 feet)

PPP: SWNE / 2640 FSL / 1377 FEL / TWSP: 20S / RANGE: 25E / SECTION: 27 / LAT: 32.631601 / LONG: -104.468358 (TVD: 2720 feet, MD: 5598 feet)

PPP: NENE / 584 FNL / 1244 FEL / TWSP: 19S / RANGE: 25E / SECTION: 34 / LAT: 32.622822 / LONG: -104.46797 (TVD: 0 feet, MD: 0 feet)

BHL: NWNE / 20 FNL / 1318 FEL / TWSP: 19S / RANGE: 25E / SECTION: 27 / LAT: 32.638728 / LONG: -104.468481 (TVD: 2720 feet, MD: 8185 feet)

BLM Point of Contact

Name: Tenille Ortiz

Title: Legal Instruments Examiner

Phone: 5752342224

Email: tortiz@blm.gov

**PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL**

**HOBBS OCD
APR 05 2018
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OPERATOR'S NAME:	Percussion Petroleum Operating
LEASE NO.:	NM0504364B
WELL NAME & NO.:	17H – South Boyd Federal Com
SURFACE HOLE FOOTAGE:	584'/N & 1244'/E
BOTTOM HOLE FOOTAGE:	20'/N & 1278'/E, sec. 27
LOCATION:	Section 34, T. 19 S., R. 25 E.
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

- 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.

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)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

Unorthodox Location

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

MHH 03112018

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.

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.

**PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	Percussion Petroleum Operating
LEASE NO.:	NM0504364B
WELL NAME & NO.:	17H – South Boyd Federal Com
SURFACE HOLE FOOTAGE:	584'/N & 1244'/E
BOTTOM HOLE FOOTAGE:	20'/N & 1278'/E, sec. 27
LOCATION:	Section 34, T. 19 S., R. 25 E.
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
 - Wildlife
- 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**

V. SPECIAL REQUIREMENT(S)

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.

Pad Berming:

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 Liners and Berms:

Tank battery locations and all facilities will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing, or equivalent, to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

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.

Production facilities on the three well pads would be bermed to prevent oil, salt, and other chemical contaminants from leaving the pads. Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The berm shall be maintained through the life of the well and after interim reclamation has been completed.

Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion.

Stockpiling of topsoil is required. The top soil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control.

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.

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 power line structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. The holder without liability or expense shall make such modifications and/or additions to the United States.

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.

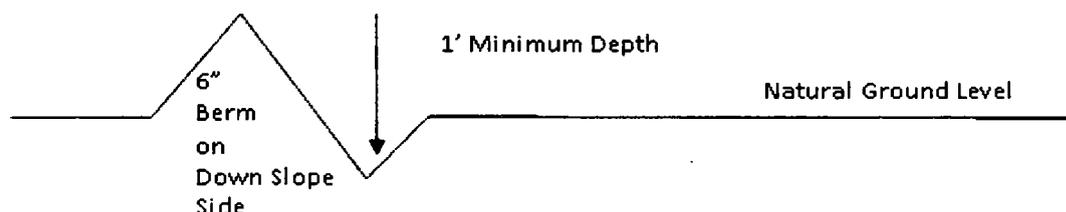
If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

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

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.

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

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

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

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.

Seed Mixture 1 for Loamy Sites

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

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.

Leak Detection System:

A method of detecting leaks is required. The method could incorporate gauges to measure loss, siting 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.

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

Construction Steps

1. Salvage topsoil
2. Construct road

3. Redistribute topsoil
4. Revegetate slopes

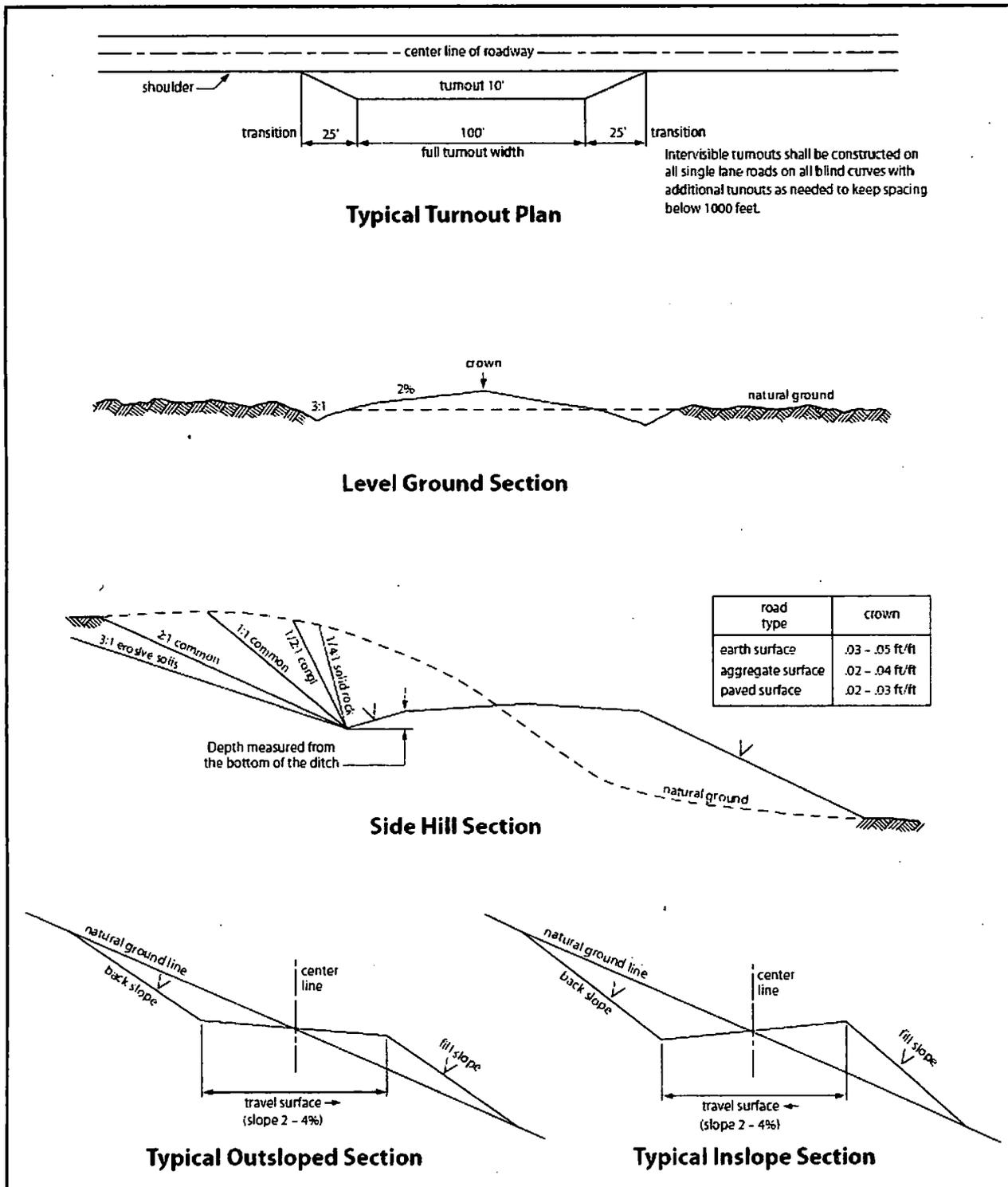


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

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

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

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.

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.



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

Operator Certification Data Report

03/30/2018

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: 11/07/2017

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:

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: SOUTH BOYD FEDERAL COM

Well Number: 17H

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:
SOUTH BOYD FEDERAL COM

Number: 17H

Well Class: HORIZONTAL

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: 382 FT

Distance to lease line: 1244 FT

Reservoir well spacing assigned acres Measurement: 160 Acres

Well plat: SB_17H_Plat_20171107085346.pdf

Well work start Date: 01/02/2018

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	584	FNL	124 4	FEL	19S	25E	34	Aliquot NENE	32.62282 2	- 104.4679 7	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 050436 4B	352 0	0	0
KOP Leg #1	584	FNL	124 4	FEL	19S	25E	34	Aliquot NENE	32.62282 2	- 104.4679 7	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 050436 4B	132 5	220 0	219 5
PPP Leg #1	584	FNL	124 4	FEL	19S	25E	34	Aliquot NENE	32.62282 2	- 104.4679 7	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 050436 4B	352 0	0	0

APD ID: 10400024336

Submission Date: 11/07/2017

Highlighted data reflects the most recent changes

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: SOUTH BOYD FEDERAL COM

Well Number: 17H

[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	---	3520	0	0	OTHER : Quaternary caliche	USEABLE WATER	No
2	GRAYBURG	2984	536	536	DOLOMITE	NATURAL GAS,CO2,OIL	No
3	SAN ANDRES	2704	816	817	DOLOMITE	NATURAL GAS,CO2,OIL	No
4	GLORIETA	1125	2395	2405	DOLOMITE	NATURAL GAS,CO2,OIL	No
5	YESO	990	2530	2563	DOLOMITE	NATURAL GAS,CO2	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. Only flexible lines are between the accumulator and BOP. All other lines are hard lined, welded, and pressure tested after NU.

Requesting Variance? NO

Variance request:

Testing Procedure: 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:

SB_17H_BOP_Choke_20171107090152.pdf

BOP Diagram Attachment:

SB_17H_BOP_Choke_20171107090200.pdf

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: SOUTH BOYD FEDERAL COM

Well Number: 17H

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	1266	630	1.32	14.8	831	100	Class C	2% CaCl + ¼ pound per sack celloflake

PRODUCTION	Lead		0	8183	495	1.97	12.6	975	50	65/65/6 Class C	6% gel + 5% salt + ¼ pound per sack celloflake + 0.2% C41-P
PRODUCTION	Tail		0	8183	1645	1.32	14.8	2171	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:

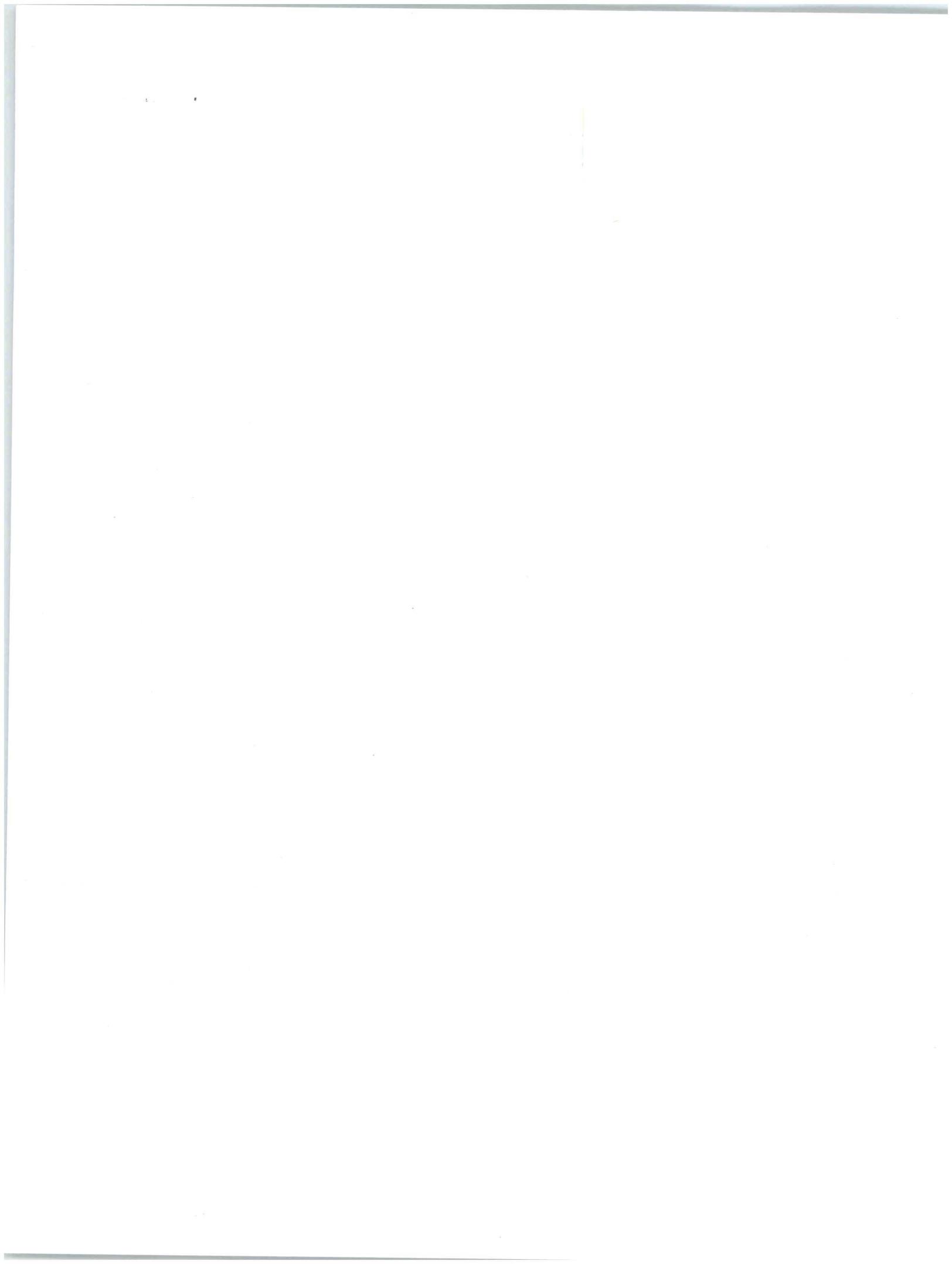
Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

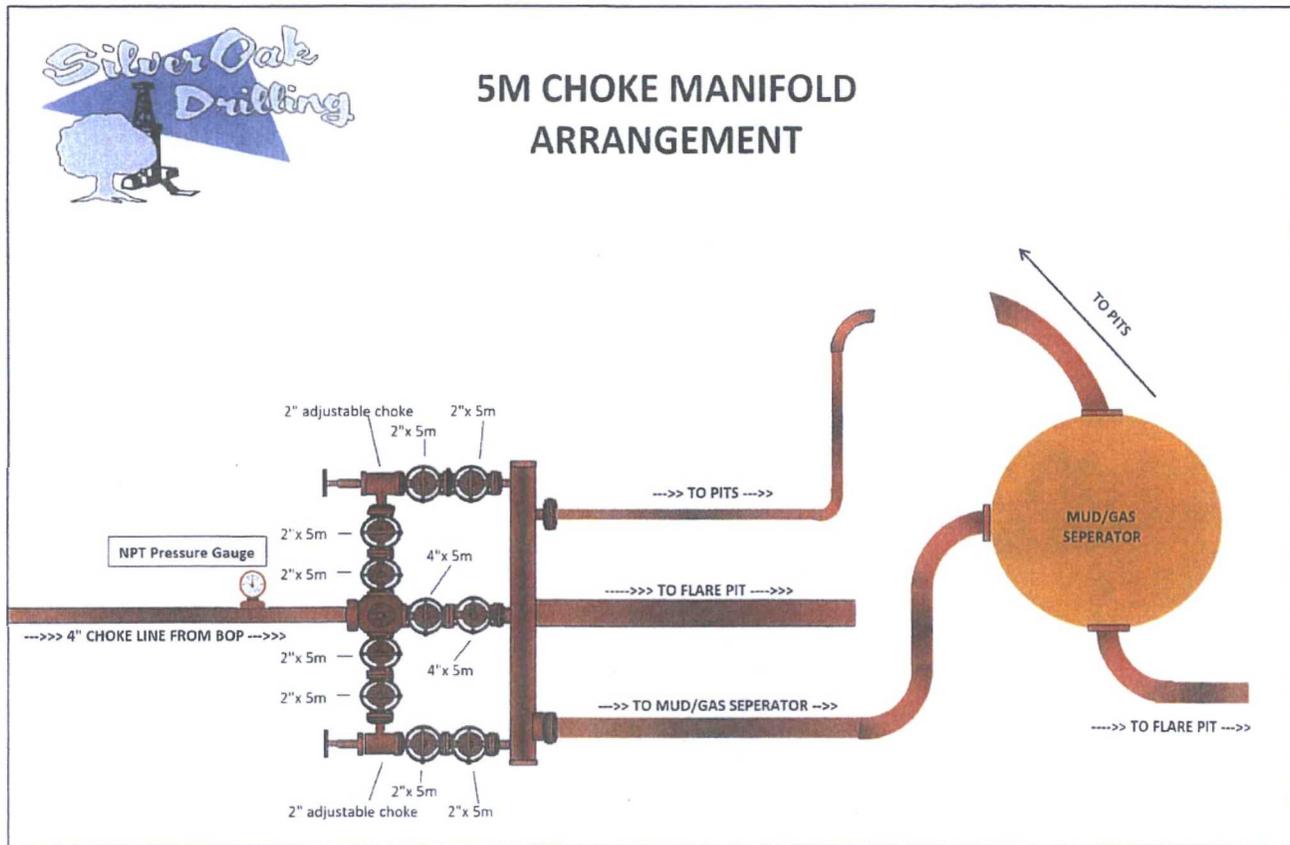
Describe what will be on location to control well or mitigate other conditions: All necessary mud products (LCM) will be on site to handle any abnormal hole condition that may be encountered while drilling this well.

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	1266	OTHER : Fresh water/gel	8.4	9.2							
1266	2200	OTHER : Fresh water/cut brine	8.3	9.2							
2200	8183	OTHER : Cut brine	8.6	9.2							



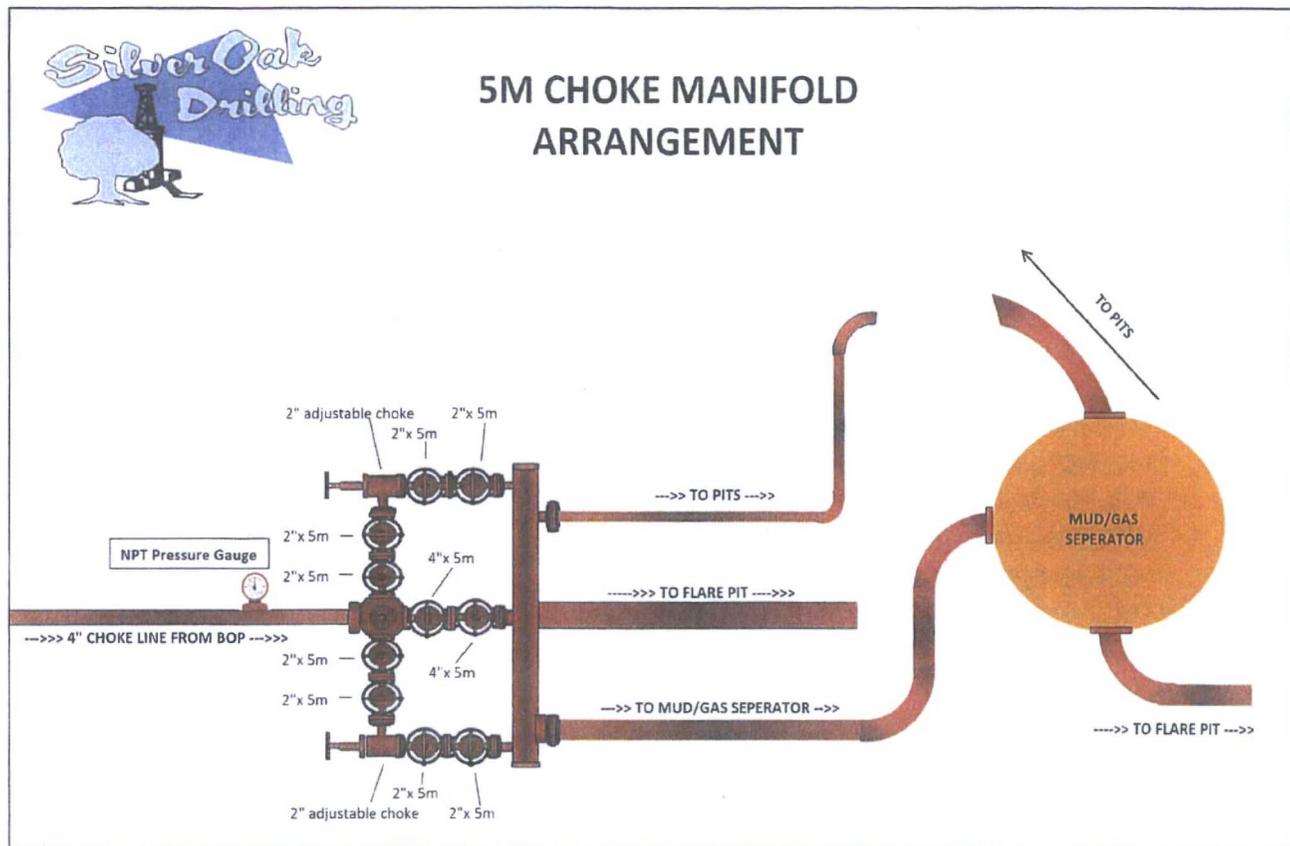


Pressure Testing

- a. All testing to be done with 3rd 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



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Casing Design Criteria and Load Case Assumptions

Percussion Petroleum Operating, LLC. – South Boyd Federal Com 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	ACTUAL SF	Case	External Fluids			Internal Fluids		
Collapse	1.125	3.30	Lost Circulation	Mud			None		
Burst	1.125	1.46	Plug Bump	Green Cement + 2ksi surf pressure			Displacement Fluid/Mud		
Tension	1.8	2.80	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	ACTUAL SF	Case	External Fluids			Internal Fluids		
Collapse	1.125	3.75	Lost Circulation	Mud			None		
Burst	1.125	2.47	Plug Bump	Green Cement + 2ksi surf pressure			Displacement Fluid/Mud		
Tension	1.8	2.29	100 klbs Overpull	Mud			Mud		

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

10. Emergency Contacts:

Emergency Contact Information - H2S Contingency Plan				
Percussion Petroleum Operating, LLC	713-518-1331			
Key Parties at Percussion Petroleum		Office	Mobile	Email
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

Artesia, New Mexico:	
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

Carlsbad, New Mexico:	
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

Santa Fe, New Mexico:	
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

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

Medical:	
Flight for Life - Lubbock, TX	806-743-9911
AeroCare - Lubbock, TX	806-747-8923
Med Flight Air Ambulance - Albuquerque, NM	505-842-4433
SB Air Med Service - Albuquerque, NM	505-842-4949

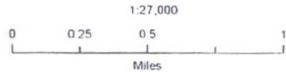
Well Control/Other:	
Wild Well Control	281-784-4700
Boots & Coots IWC	800-256-9688
B.J. Services	575-746-3569
Halliburton	575-746-2757

Percussion Petroleum Operating LLC

South Boyd Fed Com #17H
 H₂S 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





Wellbenders Planning Report



Database: WBDS_SQL_2
Company: Percussion Petroleum, LLC
Project: Eddy County, NM
Site: South Boyd
Well: 17H
Wellbore: OH
Design: Plan #3

Local Co-ordinate Reference: Well 17H
TVD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
MD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project	Eddy County, NM		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	South Boyd				
Site Position:		Northing:	596,083.74 usft	Latitude:	32.638611
From:	Lat/Long	Easting:	500,025.61 usft	Longitude:	-104.467541
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	-0.07 °

Well	17H					
Well Position	+N-S	-5,743.14 usft	Northing:	590,340.60 usft	Latitude:	32.622825
	+E-W	-140.61 usft	Easting:	499,885.00 usft	Longitude:	-104.467975
Position Uncertainty	0.00 usft		Wellhead Elevation:		Ground Level:	3,520.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	11/20/2017	7.35	60.28	48,032.62990797

Design	Plan #3				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)	
	0.00	0.00	0.00	359.20	

Plan Survey Tool Program	Date	11/3/2017			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	8,183.36 Plan #3 (OH)	MWD+IGRF OWSG MWD + IGRF or WI		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
345.00	0.00	360.00	345.00	0.00	0.00	0.00	0.00	0.00	360.00	
594.94	5.00	344.13	594.62	10.48	-2.98	2.00	2.00	0.00	344.13	
1,627.67	5.00	344.13	1,623.43	97.04	-27.59	0.00	0.00	0.00	0.00	
1,877.61	0.00	0.00	1,873.05	107.52	-30.57	2.00	-2.00	0.00	180.00	
2,178.61	0.00	0.00	2,174.05	107.52	-30.57	0.00	0.00	0.00	0.00	
3,081.69	90.31	359.20	2,747.00	683.50	-38.60	10.00	10.00	0.00	0.00	South Boyd 17H: F
8,103.25	90.31	359.20	2,720.00	5,704.50	-108.60	0.00	0.00	0.00	0.00	South Boyd 17H: L
8,183.36	90.31	359.20	2,719.57	5,784.60	-109.72	0.00	0.00	0.00	0.00	South Boyd 17H: B



Wellbenders Planning Report



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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)
3,900.00	90.31	359.20	2,742.60	1,501.72	-50.01	1,502.27	0.00	0.00	0.00
4,000.00	90.31	359.20	2,742.06	1,601.70	-51.40	1,602.27	0.00	0.00	0.00
4,100.00	90.31	359.20	2,741.52	1,701.69	-52.80	1,702.27	0.00	0.00	0.00
4,200.00	90.31	359.20	2,740.99	1,801.68	-54.19	1,802.26	0.00	0.00	0.00
4,300.00	90.31	359.20	2,740.45	1,901.67	-55.58	1,902.26	0.00	0.00	0.00
4,400.00	90.31	359.20	2,739.91	2,001.66	-56.98	2,002.26	0.00	0.00	0.00
4,500.00	90.31	359.20	2,739.37	2,101.65	-58.37	2,102.26	0.00	0.00	0.00
4,600.00	90.31	359.20	2,738.84	2,201.64	-59.77	2,202.26	0.00	0.00	0.00
4,700.00	90.31	359.20	2,738.30	2,301.63	-61.16	2,302.26	0.00	0.00	0.00
4,800.00	90.31	359.20	2,737.76	2,401.62	-62.55	2,402.25	0.00	0.00	0.00
4,900.00	90.31	359.20	2,737.22	2,501.60	-63.95	2,502.25	0.00	0.00	0.00
5,000.00	90.31	359.20	2,736.69	2,601.59	-65.34	2,602.25	0.00	0.00	0.00
5,100.00	90.31	359.20	2,736.15	2,701.58	-66.73	2,702.25	0.00	0.00	0.00
5,200.00	90.31	359.20	2,735.61	2,801.57	-68.13	2,802.25	0.00	0.00	0.00
5,300.00	90.31	359.20	2,735.07	2,901.56	-69.52	2,902.25	0.00	0.00	0.00
5,400.00	90.31	359.20	2,734.53	3,001.55	-70.92	3,002.25	0.00	0.00	0.00
5,500.00	90.31	359.20	2,734.00	3,101.54	-72.31	3,102.24	0.00	0.00	0.00
5,600.00	90.31	359.20	2,733.46	3,201.53	-73.70	3,202.24	0.00	0.00	0.00
5,700.00	90.31	359.20	2,732.92	3,301.52	-75.10	3,302.24	0.00	0.00	0.00
5,800.00	90.31	359.20	2,732.38	3,401.50	-76.49	3,402.24	0.00	0.00	0.00
5,900.00	90.31	359.20	2,731.85	3,501.49	-77.89	3,502.24	0.00	0.00	0.00
6,000.00	90.31	359.20	2,731.31	3,601.48	-79.28	3,602.24	0.00	0.00	0.00
6,100.00	90.31	359.20	2,730.77	3,701.47	-80.67	3,702.24	0.00	0.00	0.00
6,200.00	90.31	359.20	2,730.23	3,801.46	-82.07	3,802.23	0.00	0.00	0.00
6,300.00	90.31	359.20	2,729.70	3,901.45	-83.46	3,902.23	0.00	0.00	0.00
6,400.00	90.31	359.20	2,729.16	4,001.44	-84.86	4,002.23	0.00	0.00	0.00
6,500.00	90.31	359.20	2,728.62	4,101.43	-86.25	4,102.23	0.00	0.00	0.00
6,600.00	90.31	359.20	2,728.08	4,201.41	-87.64	4,202.23	0.00	0.00	0.00
6,700.00	90.31	359.20	2,727.55	4,301.40	-89.04	4,302.23	0.00	0.00	0.00
6,800.00	90.31	359.20	2,727.01	4,401.39	-90.43	4,402.23	0.00	0.00	0.00
6,900.00	90.31	359.20	2,726.47	4,501.38	-91.83	4,502.22	0.00	0.00	0.00
7,000.00	90.31	359.20	2,725.93	4,601.37	-93.22	4,602.22	0.00	0.00	0.00
7,100.00	90.31	359.20	2,725.39	4,701.36	-94.61	4,702.22	0.00	0.00	0.00
7,200.00	90.31	359.20	2,724.86	4,801.35	-96.01	4,802.22	0.00	0.00	0.00
7,300.00	90.31	359.20	2,724.32	4,901.34	-97.40	4,902.22	0.00	0.00	0.00
7,400.00	90.31	359.20	2,723.78	5,001.33	-98.80	5,002.22	0.00	0.00	0.00
7,500.00	90.31	359.20	2,723.24	5,101.31	-100.19	5,102.22	0.00	0.00	0.00
7,600.00	90.31	359.20	2,722.71	5,201.30	-101.58	5,202.21	0.00	0.00	0.00
7,700.00	90.31	359.20	2,722.17	5,301.29	-102.98	5,302.21	0.00	0.00	0.00
7,800.00	90.31	359.20	2,721.63	5,401.28	-104.37	5,402.21	0.00	0.00	0.00
7,900.00	90.31	359.20	2,721.09	5,501.27	-105.77	5,502.21	0.00	0.00	0.00
8,000.00	90.31	359.20	2,720.56	5,601.26	-107.16	5,602.21	0.00	0.00	0.00
8,103.25	90.31	359.20	2,720.00	5,704.50	-108.60	5,705.46	0.00	0.00	0.00
8,183.36	90.31	359.20	2,719.57	5,784.60	-109.72	5,785.57	0.00	0.00	0.00



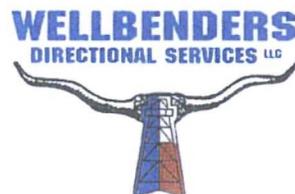
Percussion Petroleum, LLC

Eddy County, NM
South Boyd
17H

OH
Plan #3

Anticollision Report

03 November, 2017



Company: Percussion Petroleum, LLC
Project: Eddy County, NM
Reference Site: South Boyd
Site Error: 0.00 usft
Reference Well: 17H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #3

Local Co-ordinate Reference: Well 17H
TVD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
MD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
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 South Boyd - 13H - 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 Tooface (')	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)				
3,700.00	2,743.68	3,867.19	2,884.85	26.34	23.12	98.94	1,314.68	850.59	908.93	860.39	48.54	18.726	CC	
3,800.00	2,743.14	3,967.19	2,884.67	28.14	24.84	98.96	1,414.67	849.18	908.97	856.93	52.04	17.466		
3,900.00	2,742.60	4,067.19	2,884.49	29.96	26.59	98.98	1,514.66	847.76	909.01	853.42	55.59	16.353		
4,000.00	2,742.06	4,167.19	2,884.31	31.79	28.37	99.00	1,614.65	846.35	909.04	849.88	59.16	15.365		
4,100.00	2,741.52	4,267.19	2,884.13	33.62	30.16	99.03	1,714.64	844.94	909.08	846.32	62.76	14.484		
4,200.00	2,740.99	4,367.19	2,883.95	35.47	31.96	99.05	1,814.63	843.52	909.12	842.73	66.39	13.694		
4,300.00	2,740.45	4,467.19	2,883.77	37.32	33.78	99.07	1,914.62	842.11	909.15	839.13	70.03	12.983		
4,400.00	2,739.91	4,567.19	2,883.59	39.19	35.61	99.09	2,014.61	840.70	909.19	835.51	73.68	12.339		
4,500.00	2,739.37	4,667.19	2,883.41	41.05	37.44	99.11	2,114.60	839.28	909.23	831.88	77.35	11.755		
4,600.00	2,738.84	4,767.19	2,883.23	42.92	39.29	99.14	2,214.58	837.87	909.27	828.24	81.03	11.221		
4,700.00	2,738.30	4,867.18	2,883.05	44.80	41.14	99.16	2,314.57	836.46	909.31	824.59	84.72	10.733		
4,800.00	2,737.76	4,967.18	2,882.87	46.67	43.00	99.18	2,414.56	835.04	909.34	820.93	88.42	10.285		
4,900.00	2,737.22	5,067.18	2,882.69	48.55	44.86	99.20	2,514.55	833.63	909.38	817.26	92.12	9.872		
5,000.00	2,736.69	5,167.18	2,882.51	50.44	46.73	99.23	2,614.54	832.22	909.42	813.59	95.83	9.490		
5,100.00	2,736.15	5,267.18	2,882.33	52.32	48.60	99.25	2,714.53	830.81	909.46	809.91	99.55	9.136		
5,200.00	2,735.61	5,367.18	2,882.15	54.21	50.47	99.27	2,814.52	829.39	909.50	806.23	103.27	8.807		
5,300.00	2,735.07	5,467.18	2,881.97	56.10	52.35	99.29	2,914.51	827.98	909.54	802.54	107.00	8.501		
5,400.00	2,734.53	5,567.18	2,881.79	58.00	54.23	99.32	3,014.50	826.57	909.57	798.85	110.73	8.215		
5,500.00	2,734.00	5,667.18	2,881.61	59.89	56.11	99.34	3,114.49	825.15	909.61	795.15	114.46	7.947		
5,600.00	2,733.46	5,767.18	2,881.43	61.79	58.00	99.36	3,214.48	823.74	909.65	791.46	118.20	7.696		
5,700.00	2,732.92	5,867.18	2,881.25	63.68	59.88	99.38	3,314.47	822.33	909.69	787.76	121.93	7.460		
5,800.00	2,732.38	5,967.18	2,881.07	65.58	61.77	99.41	3,414.46	820.91	909.73	784.06	125.68	7.239		
5,900.00	2,731.85	6,067.18	2,880.89	67.48	63.66	99.43	3,514.44	819.50	909.77	780.35	129.42	7.030		
6,000.00	2,731.31	6,167.18	2,880.71	69.38	65.56	99.45	3,614.43	818.09	909.81	776.65	133.17	6.832		
6,100.00	2,730.77	6,267.18	2,880.53	71.28	67.45	99.47	3,714.42	816.67	909.85	772.94	136.91	6.645		
6,200.00	2,730.23	6,367.18	2,880.35	73.19	69.34	99.50	3,814.41	815.26	909.89	769.23	140.66	6.469		
6,300.00	2,729.70	6,467.17	2,880.17	75.09	71.24	99.52	3,914.40	813.85	909.93	765.52	144.41	6.301		
6,400.00	2,729.16	6,567.17	2,879.99	76.99	73.14	99.54	4,014.39	812.43	909.97	761.81	148.16	6.142		
6,500.00	2,728.62	6,667.17	2,879.81	78.90	75.04	99.56	4,114.38	811.02	910.01	758.09	151.92	5.990		
6,600.00	2,728.08	6,767.17	2,879.63	80.80	76.94	99.59	4,214.37	809.61	910.05	754.38	155.67	5.846		
6,700.00	2,727.55	6,867.17	2,879.45	82.71	78.84	99.61	4,314.36	808.19	910.09	750.67	159.43	5.709		
6,800.00	2,727.01	6,967.17	2,879.27	84.61	80.74	99.63	4,414.35	806.78	910.13	746.95	163.18	5.577		
6,900.00	2,726.47	7,067.17	2,879.09	86.52	82.64	99.65	4,514.34	805.37	910.18	743.24	166.94	5.452		
7,000.00	2,725.93	7,167.17	2,878.91	88.43	84.54	99.68	4,614.33	803.96	910.22	739.52	170.70	5.332		
7,100.00	2,725.39	7,267.17	2,878.73	90.34	86.45	99.70	4,714.31	802.54	910.26	735.80	174.45	5.218		
7,200.00	2,724.86	7,367.17	2,878.55	92.24	88.35	99.72	4,814.30	801.13	910.30	732.09	178.21	5.108		
7,300.00	2,724.32	7,467.17	2,878.37	94.15	90.26	99.74	4,914.29	799.72	910.34	728.37	181.97	5.003		
7,400.00	2,723.78	7,567.17	2,878.19	96.06	92.16	99.76	5,014.28	798.30	910.38	724.65	185.73	4.902		
7,500.00	2,723.24	7,667.17	2,878.01	97.97	94.07	99.79	5,114.27	796.89	910.42	720.93	189.49	4.805		
7,600.00	2,722.71	7,767.17	2,877.83	99.88	95.97	99.81	5,214.26	795.48	910.47	717.22	193.25	4.711		
7,700.00	2,722.17	7,867.17	2,877.65	101.79	97.88	99.83	5,314.25	794.06	910.51	713.50	197.01	4.622		
7,800.00	2,721.63	7,967.16	2,877.47	103.70	99.79	99.85	5,414.24	792.65	910.55	709.78	200.77	4.535		
7,900.00	2,721.09	8,067.16	2,877.29	105.61	101.69	99.88	5,514.23	791.24	910.59	706.06	204.53	4.452		
8,000.00	2,720.56	8,167.16	2,877.11	107.52	103.60	99.90	5,614.22	789.82	910.64	702.34	208.29	4.372		
8,100.00	2,720.02	8,267.16	2,876.92	109.43	105.51	99.92	5,714.21	788.41	910.68	698.62	212.05	4.295		
8,101.16	2,720.01	8,268.32	2,876.92	109.46	105.53	99.92	5,715.37	788.39	910.68	698.58	212.10	4.294		
8,183.36	2,719.57	8,306.46	2,876.85	111.03	106.26	99.93	5,753.50	787.86	911.78	697.50	214.28	4.255	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: South Boyd
Site Error: 0.00 usft
Reference Well: 17H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #3

Local Co-ordinate Reference: Well 17H
TVD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
MD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
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 South Boyd - 15H - OH - Plan #4													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)				
2,300.00	2,294.53	2,317.18	2,306.23	8.00	7.83	91.19	120.65	270.42	301.39	285.62	15.78	19.104		
2,400.00	2,389.97	2,417.72	2,401.76	8.49	8.08	91.31	151.33	266.56	297.95	281.45	16.50	18.053		
2,500.00	2,478.85	2,518.05	2,490.29	9.08	8.32	91.40	198.12	262.72	294.75	277.38	17.37	16.974		
2,600.00	2,558.46	2,618.17	2,569.15	9.83	8.66	91.44	259.48	259.02	291.88	273.40	18.47	15.801		
2,700.00	2,626.40	2,718.07	2,636.02	10.75	9.19	91.43	333.46	255.58	289.43	269.50	19.93	14.525		
2,800.00	2,680.59	2,817.77	2,688.94	11.87	9.95	91.37	417.75	252.49	287.48	265.69	21.79	13.196		
2,900.00	2,719.39	2,917.26	2,726.41	13.15	10.92	91.27	509.74	249.84	286.08	262.03	24.05	11.897		
3,000.00	2,741.62	3,016.57	2,747.41	14.58	12.09	91.13	606.65	247.72	285.28	258.63	26.65	10.706		
3,100.00	2,746.90	3,115.93	2,751.90	16.10	13.42	91.00	705.81	246.16	285.09	255.59	29.49	9.666		
3,200.00	2,746.36	3,215.93	2,751.48	17.70	14.88	91.03	805.80	244.76	285.09	252.54	32.55	8.759		
3,300.00	2,745.83	3,315.93	2,751.06	19.36	16.43	91.05	905.78	243.37	285.09	249.33	35.76	7.973		
3,355.39	2,745.53	3,371.32	2,750.83	20.30	17.32	91.07	961.17	242.59	285.09	247.49	37.59	7.583 CC		
3,400.00	2,745.29	3,415.93	2,750.64	21.06	18.05	91.08	1,005.77	241.97	285.09	246.01	39.08	7.295		
3,500.00	2,744.75	3,515.93	2,750.22	22.79	19.72	91.10	1,105.76	240.58	285.09	242.59	42.49	6.709		
3,600.00	2,744.21	3,615.93	2,749.80	24.55	21.44	91.12	1,205.75	239.18	285.09	239.12	45.97	6.201		
3,700.00	2,743.68	3,715.93	2,749.38	26.34	23.19	91.15	1,305.74	237.78	285.09	235.58	49.50	5.759		
3,800.00	2,743.14	3,815.93	2,748.97	28.14	24.96	91.17	1,405.73	236.39	285.09	232.01	53.08	5.371		
3,900.00	2,742.60	3,915.93	2,748.55	29.96	26.75	91.20	1,505.72	234.99	285.09	228.40	56.69	5.029		
4,000.00	2,742.06	4,015.93	2,748.13	31.79	28.56	91.22	1,605.71	233.59	285.09	224.76	60.33	4.726		
4,100.00	2,741.52	4,115.93	2,747.71	33.62	30.39	91.24	1,705.70	232.20	285.09	221.10	63.99	4.455		
4,200.00	2,740.99	4,215.93	2,747.29	35.47	32.22	91.27	1,805.69	230.80	285.09	217.42	67.67	4.213		
4,300.00	2,740.45	4,315.93	2,746.87	37.32	34.06	91.29	1,905.68	229.41	285.09	213.73	71.36	3.995		
4,400.00	2,739.91	4,415.93	2,746.45	39.19	35.91	91.31	2,005.67	228.01	285.09	210.02	75.07	3.797		
4,500.00	2,739.37	4,515.93	2,746.03	41.05	37.77	91.34	2,105.66	226.61	285.09	206.29	78.80	3.618		
4,600.00	2,738.84	4,615.93	2,745.62	42.92	39.63	91.36	2,205.65	225.22	285.09	202.56	82.53	3.454		
4,700.00	2,738.30	4,715.93	2,745.20	44.80	41.50	91.39	2,305.64	223.82	285.09	198.82	86.27	3.305		
4,800.00	2,737.76	4,815.93	2,744.78	46.67	43.37	91.41	2,405.62	222.43	285.09	195.07	90.02	3.167		
4,900.00	2,737.22	4,915.93	2,744.36	48.55	45.25	91.43	2,505.61	221.03	285.09	191.32	93.78	3.040		
5,000.00	2,736.69	5,015.93	2,743.94	50.44	47.13	91.46	2,605.60	219.63	285.09	187.55	97.54	2.923		
5,100.00	2,736.15	5,115.93	2,743.52	52.32	49.01	91.48	2,705.59	218.24	285.10	183.79	101.31	2.814		
5,200.00	2,735.61	5,215.93	2,743.10	54.21	50.90	91.51	2,805.58	216.84	285.10	180.02	105.08	2.713		
5,300.00	2,735.07	5,315.93	2,742.68	56.10	52.79	91.53	2,905.57	215.44	285.10	176.24	108.86	2.619		
5,400.00	2,734.53	5,415.93	2,742.26	58.00	54.68	91.55	3,005.56	214.05	285.10	172.46	112.64	2.531		
5,500.00	2,734.00	5,515.93	2,741.85	59.89	56.57	91.58	3,105.55	212.65	285.10	168.68	116.42	2.449		
5,600.00	2,733.46	5,615.93	2,741.43	61.79	58.46	91.60	3,205.54	211.26	285.10	164.89	120.21	2.372		
5,700.00	2,732.92	5,715.93	2,741.01	63.68	60.36	91.63	3,305.53	209.86	285.10	161.10	124.00	2.299		
5,800.00	2,732.38	5,815.93	2,740.59	65.58	62.25	91.65	3,405.52	208.46	285.10	157.31	127.79	2.231		
5,900.00	2,731.85	5,915.93	2,740.17	67.48	64.15	91.67	3,505.51	207.07	285.10	153.52	131.59	2.167		
6,000.00	2,731.31	6,015.93	2,739.75	69.38	66.05	91.70	3,605.50	205.67	285.10	149.72	135.38	2.106		
6,100.00	2,730.77	6,115.93	2,739.33	71.28	67.95	91.72	3,705.49	204.27	285.11	145.92	139.18	2.048		
6,200.00	2,730.23	6,215.93	2,738.91	73.19	69.85	91.74	3,805.47	202.88	285.11	142.13	142.98	1.994		
6,300.00	2,729.70	6,315.93	2,738.49	75.09	71.75	91.77	3,905.46	201.48	285.11	138.32	146.78	1.942		
6,400.00	2,729.16	6,415.93	2,738.08	76.99	73.66	91.79	4,005.45	200.09	285.11	134.52	150.59	1.893		
6,500.00	2,728.62	6,515.93	2,737.66	78.90	75.56	91.82	4,105.44	198.69	285.11	130.72	154.39	1.847		
6,600.00	2,728.08	6,615.93	2,737.24	80.80	77.47	91.84	4,205.43	197.29	285.11	126.91	158.20	1.802		
6,700.00	2,727.55	6,715.93	2,736.82	82.71	79.37	91.86	4,305.42	195.90	285.12	123.11	162.01	1.760		
6,800.00	2,727.01	6,815.93	2,736.40	84.61	81.28	91.89	4,405.41	194.50	285.12	119.30	165.82	1.719		
6,900.00	2,726.47	6,915.93	2,735.98	86.52	83.18	91.91	4,505.40	193.10	285.12	115.49	169.63	1.681		
7,000.00	2,725.93	7,015.93	2,735.56	88.43	85.09	91.94	4,605.39	191.71	285.12	111.68	173.44	1.644		
7,100.00	2,725.39	7,115.93	2,735.14	90.34	87.00	91.96	4,705.38	190.31	285.12	107.88	177.25	1.609		
7,200.00	2,724.86	7,215.93	2,734.72	92.24	88.90	91.98	4,805.37	188.92	285.12	104.06	181.06	1.575		
7,300.00	2,724.32	7,315.93	2,734.31	94.15	90.81	92.01	4,905.36	187.52	285.13	100.25	184.87	1.542		

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

Company: Percussion Petroleum, LLC
Project: Eddy County, NM
Reference Site: South Boyd
Site Error: 0.00 usft
Reference Well: 17H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #3

Local Co-ordinate Reference: Well 17H
TVD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
MD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
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 South Boyd - 16H - OH - Plan #1													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)				
2,100.00	2,095.44	2,108.02	2,099.07	7.25	7.47	89.61	109.48	255.04	285.64	271.00	14.64	19.513		
2,196.18	2,191.60	2,202.49	2,191.60	7.59	7.78	91.03	108.07	254.45	285.05	269.76	15.29	18.648		
2,200.00	2,195.43	2,204.40	2,195.43	7.60	7.79	90.77	108.07	254.45	285.03	269.72	15.30	18.624 CC		
2,300.00	2,294.53	2,303.55	2,294.59	8.00	8.10	93.19	108.07	254.45	285.46	269.45	16.02	17.820		
2,400.00	2,389.97	2,406.18	2,396.64	8.49	8.38	97.20	117.60	254.32	287.36	270.57	16.79	17.115		
2,500.00	2,478.85	2,512.92	2,499.19	9.08	8.61	101.00	146.62	253.92	290.55	272.97	17.58	16.525		
2,600.00	2,558.46	2,623.99	2,598.27	9.83	8.84	104.47	196.43	253.23	294.63	276.18	18.45	15.971		
2,700.00	2,626.40	2,739.40	2,699.04	10.75	9.16	107.45	267.39	252.26	299.07	279.59	19.48	15.351		
2,800.00	2,680.59	2,858.84	2,766.06	11.87	9.76	109.83	358.39	251.00	303.23	282.41	20.82	14.567		
2,900.00	2,719.39	2,981.64	2,823.84	13.15	10.73	111.51	466.46	249.51	306.51	283.87	22.64	13.539		
3,000.00	2,741.62	3,106.73	2,857.70	14.58	12.04	112.42	586.61	247.85	308.41	283.41	25.00	12.337		
3,100.00	2,746.90	3,226.61	2,865.46	16.10	13.56	112.58	706.05	246.21	308.76	280.96	27.80	11.106		
3,200.00	2,746.36	3,326.60	2,865.20	17.70	14.97	112.63	806.04	244.83	308.88	278.28	30.61	10.092		
3,300.00	2,745.83	3,426.60	2,864.93	19.36	16.48	112.67	906.03	243.45	309.00	275.44	33.56	9.208		
3,400.00	2,745.29	3,526.60	2,864.67	21.06	18.07	112.72	1,006.02	242.07	309.12	272.50	36.63	8.440		
3,500.00	2,744.75	3,626.60	2,864.41	22.79	19.72	112.76	1,106.01	240.69	309.24	269.47	39.78	7.774		
3,600.00	2,744.21	3,726.60	2,864.15	24.55	21.41	112.81	1,206.00	239.31	309.36	266.37	43.00	7.195		
3,700.00	2,743.68	3,826.60	2,863.89	26.34	23.14	112.86	1,305.99	237.93	309.49	263.22	46.27	6.689		
3,800.00	2,743.14	3,926.60	2,863.62	28.14	24.89	112.90	1,405.97	236.56	309.61	260.03	49.58	6.245		
3,900.00	2,742.60	4,026.60	2,863.36	29.96	26.67	112.95	1,505.96	235.18	309.73	256.81	52.92	5.853		
4,000.00	2,742.06	4,126.60	2,863.10	31.79	28.47	112.99	1,605.95	233.80	309.85	253.56	56.29	5.504		
4,100.00	2,741.52	4,226.60	2,862.84	33.62	30.28	113.04	1,705.94	232.42	309.97	250.29	59.68	5.194		
4,200.00	2,740.99	4,326.60	2,862.58	35.47	32.10	113.09	1,805.93	231.04	310.09	247.00	63.09	4.915		
4,300.00	2,740.45	4,426.60	2,862.32	37.32	33.93	113.13	1,905.92	229.66	310.22	243.70	66.52	4.664		
4,400.00	2,739.91	4,526.60	2,862.05	39.19	35.78	113.18	2,005.91	228.28	310.34	240.38	69.95	4.436		
4,500.00	2,739.37	4,626.60	2,861.79	41.05	37.63	113.22	2,105.90	226.90	310.46	237.06	73.40	4.230		
4,600.00	2,738.84	4,726.60	2,861.53	42.92	39.48	113.27	2,205.89	225.53	310.58	233.73	76.86	4.041		
4,700.00	2,738.30	4,826.60	2,861.27	44.80	41.35	113.31	2,305.88	224.15	310.71	230.39	80.32	3.868		
4,800.00	2,737.76	4,926.60	2,861.01	46.67	43.21	113.36	2,405.87	222.77	310.83	227.05	83.79	3.710		
4,900.00	2,737.22	5,026.60	2,860.75	48.55	45.09	113.41	2,505.86	221.39	310.95	223.70	87.26	3.564		
5,000.00	2,736.69	5,126.60	2,860.48	50.44	46.96	113.45	2,605.85	220.01	311.08	220.34	90.74	3.428		
5,100.00	2,736.15	5,226.60	2,860.22	52.32	48.84	113.50	2,705.84	218.63	311.20	216.99	94.22	3.303		
5,200.00	2,735.61	5,326.60	2,859.96	54.21	50.72	113.54	2,805.83	217.25	311.33	213.63	97.70	3.187		
5,300.00	2,735.07	5,426.60	2,859.70	56.10	52.61	113.59	2,905.82	215.87	311.45	210.27	101.19	3.078		
5,400.00	2,734.53	5,526.60	2,859.44	58.00	54.49	113.63	3,005.81	214.50	311.58	206.90	104.67	2.977		
5,500.00	2,734.00	5,626.60	2,859.17	59.89	56.38	113.68	3,105.80	213.12	311.70	203.54	108.16	2.882		
5,600.00	2,733.46	5,726.60	2,858.91	61.79	58.27	113.72	3,205.79	211.74	311.82	200.17	111.65	2.793		
5,700.00	2,732.92	5,826.60	2,858.65	63.68	60.16	113.77	3,305.78	210.36	311.95	196.81	115.14	2.709		
5,800.00	2,732.38	5,926.59	2,858.39	65.58	62.06	113.81	3,405.77	208.98	312.07	193.44	118.64	2.631		
5,900.00	2,731.85	6,026.59	2,858.13	67.48	63.95	113.86	3,505.76	207.60	312.20	190.07	122.13	2.556		
6,000.00	2,731.31	6,126.59	2,857.87	69.38	65.85	113.90	3,605.75	206.22	312.33	186.71	125.62	2.486		
6,100.00	2,730.77	6,226.59	2,857.60	71.28	67.75	113.95	3,705.74	204.84	312.45	183.34	129.11	2.420		
6,200.00	2,730.23	6,326.59	2,857.34	73.19	69.65	113.99	3,805.73	203.47	312.58	179.97	132.61	2.357		
6,300.00	2,729.70	6,426.59	2,857.08	75.09	71.55	114.04	3,905.72	202.09	312.70	176.61	136.10	2.298		
6,400.00	2,729.16	6,526.59	2,856.82	76.99	73.45	114.08	4,005.71	200.71	312.83	173.24	139.59	2.241		
6,500.00	2,728.62	6,626.59	2,856.56	78.90	75.35	114.13	4,105.70	199.33	312.96	169.88	143.08	2.187		
6,600.00	2,728.08	6,726.59	2,856.29	80.80	77.25	114.17	4,205.69	197.95	313.08	166.51	146.57	2.136		
6,700.00	2,727.55	6,826.59	2,856.03	82.71	79.15	114.22	4,305.68	196.57	313.21	163.15	150.06	2.087		
6,800.00	2,727.01	6,926.59	2,855.77	84.61	81.06	114.26	4,405.67	195.19	313.34	159.79	153.55	2.041		
6,900.00	2,726.47	7,026.59	2,855.51	86.52	82.96	114.31	4,505.66	193.81	313.47	156.43	157.04	1.995		
7,000.00	2,725.93	7,126.59	2,855.25	88.43	84.87	114.35	4,605.65	192.44	313.59	153.07	160.52	1.954		
7,100.00	2,725.39	7,226.59	2,854.99	90.34	86.77	114.40	4,705.64	191.06	313.72	149.71	164.01	1.913		

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: South Boyd
Site Error: 0.00 usft
Reference Well: 17H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #3

Local Co-ordinate Reference: Well 17H
TVD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
MD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
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 South Boyd - 18H - OH - Plan #2													Offset Site Error:	0.00 usft
Survey Program: O-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		
1,400.00	1,396.62	1,406.34	1,381.29	4.70	4.73	-64.78	105.54	-195.69	176.38	167.21	9.17	19.244	CC	
1,500.00	1,496.24	1,506.83	1,480.43	5.09	5.12	-67.46	106.32	-204.33	181.58	171.66	9.92	18.307		
1,600.00	1,595.86	1,592.68	1,579.57	5.48	5.46	-69.98	107.10	-212.96	187.15	176.53	10.62	17.622		
1,700.00	1,695.55	1,695.06	1,681.58	5.86	5.86	-72.23	107.87	-221.53	193.06	181.68	11.38	16.962		
1,800.00	1,795.45	1,802.18	1,788.54	6.23	6.25	-73.53	108.39	-227.28	197.13	184.99	12.14	16.242		
1,900.00	1,895.44	1,909.56	1,895.89	6.57	6.62	-89.70	108.55	-229.04	198.47	185.62	12.85	15.447		
1,906.46	1,901.89	1,916.49	1,902.83	6.59	6.65	-89.70	108.54	-229.01	198.45	185.55	12.89	15.391		
2,000.00	1,995.44	2,009.10	1,995.44	6.91	6.95	-89.70	108.55	-229.04	198.48	184.94	13.53	14.667		
2,100.00	2,095.44	2,107.24	2,093.00	7.25	7.29	-86.98	118.01	-229.18	198.90	184.69	14.21	13.994		
2,200.00	2,195.43	2,199.76	2,182.25	7.60	7.63	-79.35	142.01	-229.51	202.27	187.40	14.87	13.603		
2,300.00	2,294.53	2,287.21	2,262.02	8.00	7.98	-71.72	177.61	-230.01	209.86	194.36	15.50	13.538		
2,400.00	2,389.97	2,371.52	2,332.96	8.49	8.38	-65.14	223.04	-230.64	220.03	203.95	16.08	13.683		
2,500.00	2,478.85	2,453.31	2,394.69	9.08	8.88	-59.70	276.59	-231.39	231.36	214.74	16.62	13.921		
2,600.00	2,558.46	2,533.12	2,446.98	9.83	9.51	-55.37	336.79	-232.23	242.61	225.41	17.20	14.105		
2,700.00	2,626.40	2,611.38	2,489.65	10.75	10.26	-52.05	402.32	-233.15	252.79	234.88	17.91	14.116		
2,800.00	2,680.59	2,688.50	2,522.59	11.87	11.13	-49.63	471.98	-234.12	261.15	242.31	18.84	13.861		
2,900.00	2,719.39	2,764.81	2,545.68	13.15	12.11	-48.04	544.64	-235.13	267.17	247.10	20.07	13.310		
3,000.00	2,741.62	2,840.64	2,558.87	14.58	13.17	-47.20	619.25	-236.18	270.52	248.87	21.65	12.495		
3,100.00	2,746.90	2,919.46	2,562.17	16.10	14.34	-47.05	697.94	-237.27	271.13	247.50	23.63	11.475		
3,200.00	2,746.36	3,019.46	2,561.58	17.70	15.90	-47.04	797.93	-238.67	271.17	245.09	26.08	10.396		
3,300.00	2,745.83	3,119.46	2,560.98	19.36	17.53	-47.03	897.92	-240.07	271.21	242.57	28.64	9.469		
3,400.00	2,745.29	3,219.46	2,560.39	21.06	19.22	-47.03	997.90	-241.46	271.25	239.97	31.28	8.672		
3,500.00	2,744.75	3,319.46	2,559.80	22.79	20.94	-47.02	1,097.89	-242.86	271.29	237.31	33.98	7.984		
3,600.00	2,744.21	3,419.46	2,559.20	24.55	22.70	-47.01	1,197.88	-244.26	271.33	234.61	36.72	7.389		
3,700.00	2,743.68	3,519.46	2,558.61	26.34	24.48	-47.00	1,297.87	-245.65	271.37	231.87	39.50	6.870		
3,800.00	2,743.14	3,619.46	2,558.02	28.14	26.28	-46.99	1,397.86	-247.05	271.41	229.10	42.31	6.415		
3,900.00	2,742.60	3,719.46	2,557.42	29.96	28.10	-46.98	1,497.85	-248.44	271.45	226.30	45.14	6.013		
4,000.00	2,742.06	3,819.46	2,556.83	31.79	29.93	-46.98	1,597.83	-249.84	271.49	223.49	48.00	5.656		
4,100.00	2,741.52	3,919.46	2,556.24	33.62	31.77	-46.97	1,697.82	-251.24	271.53	220.66	50.87	5.338		
4,200.00	2,740.99	4,019.46	2,555.64	35.47	33.61	-46.96	1,797.81	-252.63	271.56	217.82	53.75	5.053		
4,300.00	2,740.45	4,119.46	2,555.05	37.32	35.47	-46.95	1,897.80	-254.03	271.60	214.96	56.64	4.795		
4,400.00	2,739.91	4,219.46	2,554.46	39.19	37.33	-46.94	1,997.79	-255.42	271.64	212.10	59.54	4.562		
4,500.00	2,739.37	4,319.46	2,553.86	41.05	39.20	-46.93	2,097.78	-256.82	271.68	209.23	62.46	4.350		
4,600.00	2,738.84	4,419.46	2,553.27	42.92	41.07	-46.93	2,197.77	-258.22	271.72	206.35	65.37	4.156		
4,700.00	2,738.30	4,519.46	2,552.68	44.80	42.95	-46.92	2,297.75	-259.61	271.76	203.47	68.30	3.979		
4,800.00	2,737.76	4,619.46	2,552.08	46.67	44.83	-46.91	2,397.74	-261.01	271.80	200.58	71.23	3.816		
4,900.00	2,737.22	4,719.46	2,551.49	48.55	46.71	-46.90	2,497.73	-262.41	271.84	197.68	74.16	3.666		
5,000.00	2,736.69	4,819.46	2,550.89	50.44	48.59	-46.89	2,597.72	-263.80	271.88	194.79	77.10	3.527		
5,100.00	2,736.15	4,919.46	2,550.30	52.32	50.48	-46.88	2,697.71	-265.20	271.92	191.88	80.04	3.397		
5,200.00	2,735.61	5,019.46	2,549.71	54.21	52.37	-46.88	2,797.70	-266.59	271.96	188.98	82.98	3.277		
5,300.00	2,735.07	5,119.46	2,549.11	56.10	54.27	-46.87	2,897.68	-267.99	272.00	186.07	85.93	3.165		
5,400.00	2,734.53	5,219.46	2,548.52	58.00	56.16	-46.86	2,997.67	-269.39	272.04	183.17	88.88	3.061		
5,500.00	2,734.00	5,319.46	2,547.93	59.89	58.05	-46.85	3,097.66	-270.78	272.08	180.25	91.83	2.963		
5,600.00	2,733.46	5,419.46	2,547.33	61.79	59.95	-46.84	3,197.65	-272.18	272.12	177.34	94.78	2.871		
5,700.00	2,732.92	5,519.46	2,546.74	63.68	61.85	-46.84	3,297.64	-273.58	272.16	174.43	97.73	2.785		
5,800.00	2,732.38	5,619.46	2,546.15	65.58	63.75	-46.83	3,397.63	-274.97	272.20	171.51	100.69	2.703		
5,900.00	2,731.85	5,719.46	2,545.55	67.48	65.65	-46.82	3,497.62	-276.37	272.24	168.60	103.64	2.627		
6,000.00	2,731.31	5,819.46	2,544.96	69.38	67.55	-46.81	3,597.60	-277.76	272.28	165.68	106.60	2.554		
6,100.00	2,730.77	5,919.46	2,544.37	71.28	69.45	-46.80	3,697.59	-279.16	272.32	162.76	109.56	2.486		
6,200.00	2,730.23	6,019.46	2,543.77	73.19	71.36	-46.79	3,797.58	-280.56	272.36	159.84	112.52	2.421		
6,300.00	2,729.70	6,119.46	2,543.18	75.09	73.26	-46.79	3,897.57	-281.95	272.40	156.92	115.48	2.359		
6,400.00	2,729.16	6,219.46	2,542.59	76.99	75.17	-46.78	3,997.56	-283.35	272.44	154.00	118.44	2.300		

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: South Boyd
Site Error: 0.00 usft
Reference Well: 17H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #3

Local Co-ordinate Reference: Well 17H
TVD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
MD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
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 South Boyd - 19H - 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			Minimum Separation		Separation Factor		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)	Separation (usft)	Factor		
2,600.00	2,558.46	2,638.44	2,587.68	9.83	10.32	-98.17	206.26	-397.19	369.04	350.06	18.98	19.446	CC	
2,700.00	2,626.40	2,749.07	2,673.58	10.75	10.86	-100.35	275.71	-398.16	371.36	350.86	20.50	18.115		
2,800.00	2,680.59	2,862.96	2,746.38	11.87	11.63	-102.20	363.04	-399.37	373.75	351.38	22.36	16.713		
2,900.00	2,719.39	2,979.72	2,801.60	13.15	12.72	-103.65	465.67	-400.80	375.87	351.30	24.57	15.295		
3,000.00	2,741.62	3,098.70	2,835.33	14.58	14.11	-104.61	579.54	-402.38	377.42	350.30	27.12	13.915		
3,100.00	2,746.90	3,216.79	2,844.97	16.10	15.70	-105.03	697.02	-404.01	378.13	348.16	29.97	12.618		
3,200.00	2,746.36	3,316.79	2,844.67	17.70	17.17	-105.07	797.01	-405.40	378.18	345.20	32.99	11.465		
3,300.00	2,745.83	3,416.79	2,844.37	19.36	18.72	-105.10	897.00	-406.79	378.24	342.11	36.14	10.467		
3,400.00	2,745.29	3,516.79	2,844.07	21.06	20.33	-105.14	996.99	-408.18	378.30	338.92	39.38	9.606		
3,500.00	2,744.75	3,616.79	2,843.78	22.79	21.99	-105.17	1,096.98	-409.57	378.36	335.65	42.71	8.859		
3,600.00	2,744.21	3,716.79	2,843.48	24.55	23.69	-105.21	1,196.97	-410.96	378.42	332.32	46.09	8.210		
3,700.00	2,743.68	3,816.79	2,843.18	26.34	25.42	-105.24	1,296.96	-412.35	378.48	328.95	49.53	7.642		
3,800.00	2,743.14	3,916.79	2,842.88	28.14	27.17	-105.28	1,396.95	-413.74	378.54	325.54	53.00	7.143		
3,900.00	2,742.60	4,016.79	2,842.58	29.96	28.95	-105.31	1,496.94	-415.13	378.60	322.10	56.50	6.701		
4,000.00	2,742.06	4,116.78	2,842.28	31.79	30.74	-105.35	1,596.93	-416.52	378.66	318.63	60.02	6.309		
4,100.00	2,741.52	4,216.78	2,841.99	33.62	32.55	-105.38	1,696.92	-417.91	378.72	315.15	63.57	5.958		
4,200.00	2,740.99	4,316.78	2,841.69	35.47	34.37	-105.42	1,796.91	-419.30	378.77	311.64	67.13	5.642		
4,300.00	2,740.45	4,416.78	2,841.39	37.32	36.20	-105.45	1,896.90	-420.69	378.83	308.13	70.71	5.358		
4,400.00	2,739.91	4,516.78	2,841.09	39.19	38.04	-105.49	1,996.89	-422.08	378.89	304.59	74.30	5.100		
4,500.00	2,739.37	4,616.78	2,840.79	41.05	39.88	-105.52	2,096.88	-423.47	378.95	301.05	77.90	4.865		
4,600.00	2,738.84	4,716.78	2,840.50	42.92	41.74	-105.56	2,196.87	-424.86	379.01	297.51	81.51	4.650		
4,700.00	2,738.30	4,816.78	2,840.20	44.80	43.59	-105.59	2,296.86	-426.25	379.08	293.95	85.13	4.453		
4,800.00	2,737.76	4,916.78	2,839.90	46.67	45.46	-105.63	2,396.85	-427.64	379.14	290.39	88.75	4.272		
4,900.00	2,737.22	5,016.78	2,839.60	48.55	47.32	-105.66	2,496.83	-429.03	379.20	286.82	92.38	4.105		
5,000.00	2,736.69	5,116.78	2,839.30	50.44	49.20	-105.70	2,596.82	-430.42	379.26	283.25	96.01	3.950		
5,100.00	2,736.15	5,216.78	2,839.01	52.32	51.07	-105.73	2,696.81	-431.81	379.32	279.67	99.65	3.807		
5,200.00	2,735.61	5,316.78	2,838.71	54.21	52.95	-105.77	2,796.80	-433.20	379.38	276.09	103.29	3.673		
5,300.00	2,735.07	5,416.78	2,838.41	56.10	54.83	-105.80	2,896.79	-434.59	379.44	272.51	106.94	3.548		
5,400.00	2,734.53	5,516.78	2,838.11	58.00	56.71	-105.84	2,996.78	-435.98	379.50	268.92	110.58	3.432		
5,500.00	2,734.00	5,616.78	2,837.81	59.89	58.60	-105.87	3,096.77	-437.37	379.56	265.33	114.23	3.323		
5,600.00	2,733.46	5,716.78	2,837.52	61.79	60.48	-105.91	3,196.76	-438.76	379.63	261.74	117.88	3.220		
5,700.00	2,732.92	5,816.78	2,837.22	63.68	62.37	-105.94	3,296.75	-440.15	379.69	258.15	121.54	3.124		
5,800.00	2,732.38	5,916.78	2,836.92	65.58	64.26	-105.98	3,396.74	-441.54	379.75	254.56	125.19	3.033		
5,900.00	2,731.85	6,016.78	2,836.62	67.48	66.16	-106.01	3,496.73	-442.93	379.81	250.96	128.85	2.948		
6,000.00	2,731.31	6,116.78	2,836.32	69.38	68.05	-106.05	3,596.72	-444.32	379.87	247.37	132.51	2.867		
6,100.00	2,730.77	6,216.78	2,836.02	71.28	69.95	-106.08	3,696.71	-445.71	379.94	243.77	136.16	2.790		
6,200.00	2,730.23	6,316.78	2,835.73	73.19	71.84	-106.12	3,796.70	-447.10	380.00	240.18	139.82	2.718		
6,300.00	2,729.70	6,416.78	2,835.43	75.09	73.74	-106.15	3,896.69	-448.49	380.06	236.58	143.48	2.649		
6,400.00	2,729.16	6,516.78	2,835.13	76.99	75.64	-106.19	3,996.68	-449.88	380.12	232.98	147.14	2.583		
6,500.00	2,728.62	6,616.78	2,834.83	78.90	77.54	-106.22	4,096.67	-451.27	380.19	229.39	150.80	2.521		
6,600.00	2,728.08	6,716.78	2,834.53	80.80	79.44	-106.26	4,196.66	-452.66	380.25	225.79	154.46	2.462		
6,700.00	2,727.55	6,816.78	2,834.24	82.71	81.34	-106.29	4,296.65	-454.05	380.31	222.19	158.12	2.405		
6,800.00	2,727.01	6,916.78	2,833.94	84.61	83.24	-106.33	4,396.64	-455.44	380.38	218.59	161.78	2.351		
6,900.00	2,726.47	7,016.78	2,833.64	86.52	85.15	-106.36	4,496.63	-456.83	380.44	215.00	165.44	2.300		
7,000.00	2,725.93	7,116.78	2,833.34	88.43	87.05	-106.40	4,596.62	-458.22	380.50	211.40	169.10	2.250		
7,100.00	2,725.39	7,216.78	2,833.04	90.34	88.95	-106.43	4,696.61	-459.61	380.57	207.80	172.76	2.203		
7,200.00	2,724.86	7,316.78	2,832.75	92.24	90.86	-106.47	4,796.60	-461.00	380.63	204.21	176.42	2.157		
7,300.00	2,724.32	7,416.78	2,832.45	94.15	92.76	-106.50	4,896.59	-462.39	380.70	200.61	180.08	2.114		
7,400.00	2,723.78	7,516.78	2,832.15	96.06	94.67	-106.54	4,996.58	-463.78	380.76	197.02	183.74	2.072		
7,500.00	2,723.24	7,616.77	2,831.85	97.97	96.58	-106.57	5,096.56	-465.17	380.82	193.42	187.40	2.032		
7,600.00	2,722.71	7,716.77	2,831.55	99.88	98.48	-106.61	5,196.55	-466.56	380.89	189.83	191.06	1.994		
7,700.00	2,722.17	7,816.77	2,831.26	101.79	100.39	-106.64	5,296.54	-467.95	380.95	186.23	194.72	1.956		

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: South Boyd
Site Error: 0.00 usft
Reference Well: 17H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #3

Local Co-ordinate Reference: Well 17H
TVD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
MD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
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 South Boyd - 20H - OH - Plan #4														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			
3,000.00	2,741.62	3,107.79	2,721.70	14.58	16.67	-87.84	617.97	-649.24	612.31	581.21	31.10	19.687			
3,100.00	2,746.90	3,208.15	2,721.14	16.10	18.28	-87.58	717.58	-646.63	608.53	574.31	34.22	17.782			
3,200.00	2,746.36	3,308.23	2,720.58	17.70	19.94	-87.57	817.46	-644.02	604.52	567.04	37.48	16.129			
3,300.00	2,745.83	3,408.31	2,720.02	19.36	21.64	-87.55	917.34	-641.40	600.52	559.68	40.84	14.705			
3,400.00	2,745.29	3,508.39	2,719.46	21.06	23.37	-87.53	1,017.23	-638.79	596.51	552.24	44.27	13.474			
3,500.00	2,744.75	3,591.53	2,718.91	22.79	24.83	-87.51	1,117.11	-636.17	592.50	545.04	47.46	12.463			
3,600.00	2,744.21	3,708.55	2,718.35	24.55	26.91	-87.49	1,217.00	-633.56	588.50	537.19	51.30	11.471			
3,700.00	2,743.68	3,808.63	2,717.79	26.34	28.70	-87.47	1,316.88	-630.94	584.49	529.61	54.88	10.650			
3,800.00	2,743.14	3,908.71	2,717.23	28.14	30.51	-87.45	1,416.76	-628.32	580.48	521.99	58.49	9.924			
3,900.00	2,742.60	4,008.79	2,716.67	29.96	32.33	-87.43	1,516.65	-625.71	576.48	514.35	62.13	9.279			
4,000.00	2,742.06	4,108.87	2,716.12	31.79	34.17	-87.41	1,616.53	-623.09	572.47	506.69	65.78	8.702			
4,100.00	2,741.52	4,208.95	2,715.56	33.62	36.00	-87.39	1,716.41	-620.48	568.47	499.01	69.46	8.184			
4,200.00	2,740.99	4,309.03	2,715.00	35.47	37.85	-87.37	1,816.30	-617.86	564.46	491.31	73.15	7.717			
4,300.00	2,740.45	4,409.11	2,714.44	37.32	39.70	-87.35	1,916.18	-615.25	560.46	483.60	76.85	7.293			
4,400.00	2,739.91	4,509.19	2,713.88	39.19	41.56	-87.33	2,016.07	-612.63	556.45	475.88	80.56	6.907			
4,500.00	2,739.37	4,609.27	2,713.33	41.05	43.42	-87.31	2,115.95	-610.02	552.44	468.16	84.29	6.554			
4,600.00	2,738.84	4,709.36	2,712.77	42.92	45.29	-87.29	2,215.83	-607.40	548.44	460.42	88.02	6.231			
4,700.00	2,738.30	4,809.44	2,712.21	44.80	47.16	-87.26	2,315.72	-604.78	544.43	452.67	91.76	5.933			
4,800.00	2,737.76	4,909.52	2,711.65	46.67	49.03	-87.24	2,415.60	-602.17	540.43	444.92	95.50	5.659			
4,900.00	2,737.22	5,009.60	2,711.09	48.55	50.91	-87.22	2,515.48	-599.55	536.42	437.17	99.26	5.404			
5,000.00	2,736.69	5,109.68	2,710.54	50.44	52.79	-87.19	2,615.37	-596.94	532.42	429.41	103.01	5.169			
5,100.00	2,736.15	5,209.76	2,709.98	52.32	54.67	-87.17	2,715.25	-594.32	528.41	421.64	106.77	4.949			
5,200.00	2,735.61	5,309.84	2,709.42	54.21	56.55	-87.15	2,815.14	-591.71	524.41	413.87	110.54	4.744			
5,300.00	2,735.07	5,409.92	2,708.86	56.10	58.43	-87.12	2,915.02	-589.09	520.40	406.10	114.31	4.553			
5,400.00	2,734.53	5,510.00	2,708.30	58.00	60.32	-87.10	3,014.90	-586.48	516.40	398.32	118.08	4.373			
5,500.00	2,734.00	5,589.92	2,707.75	59.89	61.83	-87.07	3,114.79	-583.86	512.39	390.92	121.47	4.218			
5,600.00	2,733.46	5,689.84	2,707.19	61.79	63.71	-87.05	3,214.67	-581.24	508.39	383.14	125.25	4.059			
5,700.00	2,732.92	5,789.76	2,706.63	63.68	65.60	-87.02	3,314.55	-578.63	504.38	375.36	129.02	3.909			
5,800.00	2,732.38	5,889.68	2,706.07	65.58	67.49	-87.00	3,414.44	-576.01	500.38	367.58	132.80	3.768			
5,900.00	2,731.85	5,989.60	2,705.51	67.48	69.38	-86.97	3,514.32	-573.40	496.38	359.80	136.58	3.634			
6,000.00	2,731.31	6,089.52	2,704.96	69.38	71.27	-86.94	3,614.20	-570.78	492.37	352.01	140.36	3.508			
6,100.00	2,730.77	6,189.44	2,704.40	71.28	73.16	-86.91	3,714.09	-568.17	488.37	344.22	144.15	3.388			
6,200.00	2,730.23	6,289.36	2,703.84	73.19	75.05	-86.89	3,813.97	-565.55	484.36	336.43	147.93	3.274			
6,300.00	2,729.70	6,381.17	2,703.33	75.09	76.79	-86.86	3,909.76	-563.56	480.84	329.27	151.57	3.172			
6,377.65	2,729.28	6,447.68	2,702.95	76.57	78.05	-86.86	3,972.27	-563.71	479.94	325.69	154.24	3.112 CC			
6,400.00	2,729.16	6,466.83	2,702.85	76.99	78.41	-86.86	3,991.41	-564.04	480.01	325.01	155.00	3.097			
6,500.00	2,728.62	6,552.45	2,702.35	78.90	80.04	-86.87	4,076.98	-567.08	482.17	323.87	158.30	3.046 ES			
6,600.00	2,728.08	6,637.89	2,701.88	80.80	81.66	-86.89	4,162.22	-572.67	487.31	325.85	161.46	3.018			
6,700.00	2,727.55	6,723.11	2,701.40	82.71	83.28	-86.93	4,247.06	-580.77	495.41	330.93	164.48	3.012			
6,800.00	2,727.01	6,822.65	2,700.84	84.61	85.17	-86.99	4,346.00	-591.67	504.97	336.68	168.29	3.001			
6,900.00	2,726.47	6,922.19	2,700.28	86.52	87.06	-87.04	4,444.94	-602.58	514.53	342.42	172.11	2.990			
7,000.00	2,725.93	7,021.73	2,699.72	88.43	88.96	-87.09	4,543.88	-613.48	524.09	348.16	175.92	2.979			
7,100.00	2,725.39	7,121.27	2,699.16	90.34	90.85	-87.14	4,642.82	-624.39	533.65	353.90	179.74	2.969			
7,200.00	2,724.86	7,220.81	2,698.59	92.24	92.75	-87.19	4,741.76	-635.29	543.20	359.64	183.56	2.959			
7,300.00	2,724.32	7,320.35	2,698.03	94.15	94.65	-87.23	4,840.70	-646.20	552.76	365.38	187.38	2.950			
7,400.00	2,723.78	7,419.90	2,697.47	96.06	96.56	-87.28	4,939.64	-657.11	562.32	371.12	191.20	2.941			
7,500.00	2,723.24	7,519.44	2,696.91	97.97	98.46	-87.32	5,038.58	-668.01	571.88	376.86	195.03	2.932			
7,600.00	2,722.71	7,618.98	2,696.35	99.88	100.36	-87.36	5,137.52	-678.92	581.44	382.59	198.85	2.924			
7,700.00	2,722.17	7,718.52	2,695.79	101.79	102.27	-87.40	5,236.46	-689.82	591.00	388.33	202.67	2.916			
7,800.00	2,721.63	7,818.06	2,695.22	103.70	104.18	-87.44	5,335.40	-700.73	600.56	394.06	206.50	2.908			
7,900.00	2,721.09	7,917.60	2,694.66	105.61	106.09	-87.48	5,434.34	-711.63	610.12	399.80	210.33	2.901			
8,000.00	2,720.56	8,017.14	2,694.10	107.52	108.00	-87.51	5,533.28	-722.54	619.68	405.53	214.15	2.894			

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: South Boyd
Site Error: 0.00 usft
Reference Well: 17H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #3

Local Co-ordinate Reference: Well 17H
TVD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
MD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
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 South Boyd - 21H - 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			Minimum Separation		Separation Factor	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)			
3,400.00	2,745.29	3,318.24	2,550.06	21.06	22.67	-76.03	989.04	-827.76	808.75	766.33	42.42	19.065	CC	
3,500.00	2,744.75	3,418.24	2,549.15	22.79	24.45	-76.00	1,089.03	-829.16	808.84	762.99	45.85	17.643		
3,600.00	2,744.21	3,518.24	2,548.24	24.55	26.24	-75.98	1,189.01	-830.56	808.93	759.62	49.31	16.403		
3,700.00	2,743.68	3,618.23	2,547.33	26.34	28.05	-75.95	1,289.00	-831.95	809.02	756.20	52.82	15.317		
3,800.00	2,743.14	3,718.23	2,546.43	28.14	29.88	-75.93	1,388.98	-833.35	809.12	752.76	56.35	14.358		
3,900.00	2,742.60	3,818.23	2,545.52	29.96	31.72	-75.90	1,488.97	-834.75	809.21	749.30	59.91	13.507		
4,000.00	2,742.06	3,918.23	2,544.61	31.79	33.56	-75.88	1,588.95	-836.14	809.30	745.81	63.49	12.747		
4,100.00	2,741.52	4,018.23	2,543.70	33.62	35.41	-75.85	1,688.94	-837.54	809.39	742.31	67.08	12.065		
4,200.00	2,740.99	4,118.23	2,542.80	35.47	37.27	-75.83	1,788.93	-838.93	809.49	738.79	70.69	11.451		
4,300.00	2,740.45	4,218.23	2,541.89	37.32	39.14	-75.80	1,888.91	-840.33	809.58	735.27	74.31	10.894		
4,400.00	2,739.91	4,318.23	2,540.98	39.19	41.01	-75.78	1,988.90	-841.73	809.67	731.73	77.94	10.388		
4,500.00	2,739.37	4,418.23	2,540.07	41.05	42.88	-75.75	2,088.88	-843.12	809.76	728.18	81.58	9.926		
4,600.00	2,738.84	4,518.23	2,539.17	42.92	44.76	-75.73	2,188.87	-844.52	809.86	724.63	85.23	9.502		
4,700.00	2,738.30	4,618.23	2,538.26	44.80	46.64	-75.70	2,288.85	-845.91	809.95	721.07	88.88	9.113		
4,800.00	2,737.76	4,718.23	2,537.35	46.67	48.53	-75.68	2,388.84	-847.31	810.04	717.51	92.54	8.754		
4,900.00	2,737.22	4,818.23	2,536.44	48.55	50.41	-75.65	2,488.82	-848.71	810.14	713.94	96.20	8.422		
5,000.00	2,736.69	4,918.23	2,535.53	50.44	52.30	-75.62	2,588.81	-850.10	810.23	710.37	99.86	8.113		
5,100.00	2,736.15	5,018.23	2,534.63	52.32	54.19	-75.60	2,688.79	-851.50	810.33	706.79	103.53	7.827		
5,200.00	2,735.61	5,118.22	2,533.72	54.21	56.09	-75.57	2,788.78	-852.90	810.42	703.21	107.21	7.559		
5,300.00	2,735.07	5,218.22	2,532.81	56.10	57.98	-75.55	2,888.77	-854.29	810.51	699.63	110.88	7.310		
5,400.00	2,734.53	5,318.22	2,531.90	58.00	59.88	-75.52	2,988.75	-855.69	810.61	696.05	114.56	7.076		
5,500.00	2,734.00	5,418.22	2,531.00	59.89	61.77	-75.50	3,088.74	-857.08	810.70	692.46	118.24	6.856		
5,600.00	2,733.46	5,518.22	2,530.09	61.79	63.67	-75.47	3,188.72	-858.48	810.80	688.87	121.93	6.650		
5,700.00	2,732.92	5,618.22	2,529.18	63.68	65.57	-75.45	3,288.71	-859.88	810.89	685.28	125.61	6.456		
5,800.00	2,732.38	5,718.22	2,528.27	65.58	67.47	-75.42	3,388.69	-861.27	810.99	681.69	129.30	6.272		
5,900.00	2,731.85	5,818.22	2,527.37	67.48	69.38	-75.40	3,488.68	-862.67	811.08	678.10	132.98	6.099		
6,000.00	2,731.31	5,918.22	2,526.46	69.38	71.28	-75.37	3,588.66	-864.06	811.18	674.51	136.67	5.935		
6,100.00	2,730.77	6,018.22	2,525.55	71.28	73.18	-75.35	3,688.65	-865.46	811.28	670.92	140.36	5.780		
6,200.00	2,730.23	6,118.22	2,524.64	73.19	75.09	-75.32	3,788.63	-866.86	811.37	667.32	144.05	5.633		
6,300.00	2,729.70	6,218.22	2,523.74	75.09	76.99	-75.30	3,888.62	-868.25	811.47	663.73	147.74	5.493		
6,400.00	2,729.16	6,318.22	2,522.83	76.99	78.90	-75.27	3,988.61	-869.65	811.56	660.13	151.43	5.359		
6,500.00	2,728.62	6,418.22	2,521.92	78.90	80.80	-75.25	4,088.59	-871.05	811.66	656.54	155.12	5.232		
6,600.00	2,728.08	6,518.21	2,521.01	80.80	82.71	-75.22	4,188.58	-872.44	811.76	652.94	158.82	5.111		
6,700.00	2,727.55	6,618.21	2,520.11	82.71	84.62	-75.20	4,288.56	-873.84	811.85	649.35	162.51	4.996		
6,800.00	2,727.01	6,718.21	2,519.20	84.61	86.52	-75.17	4,388.55	-875.23	811.95	645.75	166.20	4.885		
6,900.00	2,726.47	6,818.21	2,518.29	86.52	88.43	-75.15	4,488.53	-876.63	812.05	642.15	169.89	4.780		
7,000.00	2,725.93	6,918.21	2,517.38	88.43	90.34	-75.12	4,588.52	-878.03	812.14	638.56	173.59	4.679		
7,100.00	2,725.39	7,018.21	2,516.48	90.34	92.25	-75.09	4,688.50	-879.42	812.24	634.96	177.28	4.582		
7,200.00	2,724.86	7,118.21	2,515.57	92.24	94.16	-75.07	4,788.49	-880.82	812.34	631.37	180.97	4.489		
7,300.00	2,724.32	7,218.21	2,514.66	94.15	96.07	-75.04	4,888.47	-882.21	812.44	627.77	184.67	4.399		
7,400.00	2,723.78	7,318.21	2,513.75	96.06	97.98	-75.02	4,988.46	-883.61	812.53	624.17	188.36	4.314		
7,500.00	2,723.24	7,418.21	2,512.85	97.97	99.89	-74.99	5,088.45	-885.01	812.63	620.58	192.05	4.231		
7,600.00	2,722.71	7,518.21	2,511.94	99.88	101.80	-74.97	5,188.43	-886.40	812.73	616.98	195.74	4.152		
7,700.00	2,722.17	7,618.21	2,511.03	101.79	103.71	-74.94	5,288.42	-887.80	812.83	613.39	199.44	4.076		
7,800.00	2,721.63	7,718.21	2,510.12	103.70	105.62	-74.92	5,388.40	-889.20	812.93	609.80	203.13	4.002		
7,900.00	2,721.09	7,818.21	2,509.22	105.61	107.54	-74.89	5,488.39	-890.59	813.02	606.20	206.82	3.931		
8,000.00	2,720.56	7,918.21	2,508.31	107.52	109.45	-74.87	5,588.37	-891.99	813.12	602.61	210.51	3.863		
8,100.00	2,720.02	8,018.20	2,507.40	109.43	111.36	-74.84	5,688.36	-893.38	813.22	599.02	214.21	3.796		
8,183.36	2,719.57	8,101.57	2,506.64	111.03	112.95	-74.82	5,771.71	-894.55	813.30	596.02	217.28	3.743	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: South Boyd
Site Error: 0.00 usft
Reference Well: 17H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #3

Local Co-ordinate Reference: Well 17H
TVD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
MD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
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 South Boyd - Hawk 27 Federal - OH - OH														Offset Site Error:	0.00 usft
Survey Program: 200-INC-ONLY														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)					
3,900.00	2,742.60	2,671.60	2,742.60	29.96	44.88	-90.47	2,516.97	-734.77	1,224.59	1,161.71	62.88	19.474			
4,000.00	2,742.06	2,671.06	2,742.06	31.79	44.87	-90.42	2,516.97	-734.77	1,142.23	1,077.42	64.81	17.623			
4,100.00	2,741.52	2,670.52	2,741.52	33.62	44.86	-90.38	2,516.97	-734.77	1,062.90	995.83	67.07	15.848			
4,200.00	2,740.99	2,669.99	2,740.99	35.47	44.85	-90.33	2,516.97	-734.77	987.33	917.65	69.68	14.170			
4,300.00	2,740.45	2,669.45	2,740.45	37.32	44.85	-90.29	2,516.97	-734.77	916.45	843.79	72.66	12.613			
4,400.00	2,739.91	2,668.91	2,739.91	39.19	44.84	-90.24	2,516.97	-734.77	851.43	775.43	76.00	11.202			
4,500.00	2,739.37	2,668.37	2,739.37	41.05	44.83	-90.20	2,516.97	-734.77	793.73	714.07	79.66	9.964			
4,600.00	2,738.84	2,667.84	2,738.84	42.92	44.82	-90.15	2,516.97	-734.77	745.02	661.55	83.48	8.925			
4,700.00	2,738.30	2,667.30	2,738.30	44.80	44.81	-90.10	2,516.97	-734.77	707.19	619.95	87.24	8.106			
4,800.00	2,737.76	2,666.76	2,737.76	46.67	44.80	-90.06	2,516.97	-734.77	682.04	591.41	90.63	7.526			
4,900.00	2,737.22	2,666.22	2,737.22	48.55	44.79	-90.01	2,516.97	-734.77	671.00	577.71	93.29	7.192			
4,924.71	2,737.09	2,666.09	2,737.09	49.02	44.79	-90.00	2,516.97	-734.77	670.54	576.74	93.80	7.148	CC, ES		
5,000.00	2,736.69	2,665.69	2,736.69	50.44	44.78	-89.97	2,516.97	-734.77	674.76	579.79	94.97	7.105	SF		
5,100.00	2,736.15	2,665.15	2,736.15	52.32	44.77	-89.92	2,516.97	-734.77	693.08	597.49	95.58	7.251			
5,200.00	2,735.61	2,664.61	2,735.61	54.21	44.76	-89.87	2,516.97	-734.77	724.85	629.60	95.25	7.610			
5,300.00	2,735.07	2,664.07	2,735.07	56.10	44.75	-89.83	2,516.97	-734.77	768.42	674.21	94.20	8.157			
5,400.00	2,734.53	2,663.53	2,734.53	58.00	44.74	-89.78	2,516.97	-734.77	821.90	729.19	92.72	8.865			
5,500.00	2,734.00	2,663.00	2,734.00	59.89	44.73	-89.74	2,516.97	-734.77	883.50	792.50	91.00	9.709			
5,600.00	2,733.46	2,662.46	2,733.46	61.79	44.72	-89.69	2,516.97	-734.77	951.65	862.42	89.23	10.666			
5,700.00	2,732.92	2,661.92	2,732.92	63.68	44.71	-89.64	2,516.97	-734.77	1,025.03	937.55	87.48	11.717			
5,800.00	2,732.38	2,661.38	2,732.38	65.58	44.70	-89.60	2,516.97	-734.77	1,102.60	1,016.77	85.83	12.846			
5,900.00	2,731.85	2,660.85	2,731.85	67.48	44.70	-89.55	2,516.97	-734.77	1,183.55	1,099.25	84.30	14.040			
6,000.00	2,731.31	2,660.31	2,731.31	69.38	44.69	-89.51	2,516.97	-734.77	1,267.22	1,184.33	82.89	15.288			
6,100.00	2,730.77	2,659.77	2,730.77	71.28	44.68	-89.46	2,516.97	-734.77	1,353.10	1,271.50	81.60	16.581			
6,200.00	2,730.23	2,659.23	2,730.23	73.19	44.67	-89.41	2,516.97	-734.77	1,440.81	1,360.38	80.44	17.912			
6,300.00	2,729.70	2,658.70	2,729.70	75.09	44.66	-89.37	2,516.97	-734.77	1,530.03	1,450.65	79.38	19.275			

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: South Boyd
Site Error: 0.00 usft
Reference Well: 17H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #3

Local Co-ordinate Reference: Well 17H
TVD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
MD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
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 South Boyd - SB 27 10H PDF - OH - OH													Offset Site Error:	0.00 usft
Survey Program: 2251-MWD-IGRF													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance		Minimum Separation	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	(usft)			
5,400.00	2,734.53	4,125.28	2,523.92	58.00	34.34	55.83	3,604.83	226.26	704.71	660.80	43.91	16.051		
5,500.00	2,734.00	4,125.28	2,523.92	59.89	34.34	55.83	3,604.83	226.26	621.75	571.76	49.99	12.437		
5,600.00	2,733.46	4,125.28	2,523.92	61.79	34.34	55.83	3,604.83	226.26	544.55	487.08	57.47	9.476		
5,700.00	2,732.92	4,125.28	2,523.92	63.68	34.34	55.83	3,604.83	226.26	475.91	409.57	66.34	7.174		
5,800.00	2,732.38	4,125.28	2,523.92	65.58	34.34	55.83	3,604.83	226.26	420.06	344.07	75.99	5.528		
5,900.00	2,731.85	4,125.28	2,523.92	67.48	34.34	55.83	3,604.83	226.26	382.64	298.14	84.50	4.528		
6,000.00	2,731.31	6,000.00	2,523.92	69.38	70.30	55.83	3,605.14	226.25	369.29	249.58	119.70	3.085 ES, SF		
6,100.00	2,730.77	4,009.27	2,524.11	71.28	32.11	55.66	3,720.70	221.45	366.55	278.16	88.39	4.147		
6,200.00	2,730.23	3,919.64	2,525.00	73.19	30.39	55.63	3,810.26	217.88	363.55	274.98	88.57	4.105		
6,250.54	2,729.96	3,874.80	2,524.09	74.15	29.53	55.46	3,855.06	216.36	363.14	274.63	88.51	4.103 CC		
6,300.00	2,729.70	3,831.27	2,523.47	75.09	28.69	55.43	3,898.58	215.91	363.54	274.99	88.55	4.105		
6,400.00	2,729.16	3,736.40	2,523.07	76.99	26.88	55.76	3,993.41	218.23	366.60	277.73	88.87	4.125		
6,500.00	2,728.62	3,631.02	2,524.18	78.90	24.88	56.33	4,098.76	220.79	368.88	279.59	89.30	4.131		
6,600.00	2,728.08	3,529.85	2,526.62	80.80	22.94	56.96	4,199.88	222.24	369.62	279.83	89.79	4.116		
6,700.00	2,727.55	3,432.75	2,527.30	82.71	21.09	57.38	4,296.97	223.97	371.61	281.45	90.16	4.122		
6,800.00	2,727.01	3,334.77	2,525.12	84.61	19.22	57.26	4,394.92	223.80	373.55	283.47	90.08	4.147		
6,900.00	2,726.47	3,236.17	2,523.67	86.52	17.33	57.34	4,493.50	224.78	376.07	285.92	90.15	4.171		
7,000.00	2,725.93	3,147.82	2,519.61	88.43	15.65	57.06	4,581.74	225.75	380.39	290.42	89.97	4.228		
7,100.00	2,725.39	3,057.50	2,512.43	90.34	13.93	56.52	4,671.74	228.10	387.78	296.27	89.51	4.332		
7,200.00	2,724.86	2,949.39	2,498.85	92.24	11.88	55.10	4,778.98	228.50	396.08	307.70	88.38	4.482		
7,300.00	2,724.32	2,856.63	2,487.11	94.15	10.11	53.85	4,870.99	228.01	403.83	316.53	87.31	4.625		
7,400.00	2,723.78	2,753.96	2,475.24	96.06	8.17	52.73	4,972.95	228.48	411.93	325.55	86.38	4.769		
7,500.00	2,723.24	2,660.26	2,469.85	97.97	6.41	52.60	5,066.41	232.03	419.27	332.98	86.29	4.859		
7,600.00	2,722.71	2,576.83	2,466.39	99.88	4.90	53.05	5,149.35	240.35	430.48	343.89	86.60	4.971		
7,700.00	2,722.17	2,447.00	2,461.08	101.79	2.75	53.49	5,278.33	250.30	439.89	352.44	87.45	5.030		
7,800.00	2,721.63	2,394.00	2,445.36	103.70	2.23	51.58	5,328.33	245.51	451.74	366.18	85.55	5.280		
7,900.00	2,721.09	2,369.47	2,431.84	105.61	1.90	49.87	5,348.11	240.57	476.52	394.87	81.65	5.836		
8,000.00	2,720.56	2,353.00	2,420.41	107.52	1.67	48.51	5,359.46	237.13	516.81	440.69	76.12	6.789		
8,100.00	2,720.02	2,331.00	2,403.11	109.43	1.38	46.51	5,372.01	232.05	569.95	500.22	69.73	8.174		
8,183.36	2,719.57	2,326.11	2,399.01	111.03	1.31	46.05	5,374.42	230.91	622.12	557.42	64.69	9.616		

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: South Boyd
Site Error: 0.00 usft
Reference Well: 17H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #3

Local Co-ordinate Reference: Well 17H
TVD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
MD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
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													Offset Site Error:	0.00 usft
Survey Program: 500-MWD													Offset Well Error:	0.00 usft
Reference				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		
6,500.00	2,728.62	2,664.93	2,735.81	78.90	8.67	-90.96	4,888.20	-783.83	1,051.51	991.08	60.43	17.399		
6,600.00	2,728.08	2,664.39	2,735.26	80.80	8.66	-90.91	4,888.20	-783.84	977.96	912.42	65.54	14.921		
6,700.00	2,727.55	2,663.84	2,734.71	82.71	8.66	-90.87	4,888.20	-783.85	909.47	838.30	71.16	12.780		
6,800.00	2,727.01	2,663.30	2,734.17	84.61	8.66	-90.82	4,888.20	-783.85	847.27	770.05	77.22	10.972		
6,900.00	2,726.47	2,662.75	2,733.62	86.52	8.66	-90.77	4,888.20	-783.86	792.83	709.31	83.52	9.493		
7,000.00	2,725.93	2,662.21	2,733.08	88.43	8.66	-90.73	4,888.20	-783.86	747.87	658.12	89.74	8.333		
7,100.00	2,725.39	2,661.66	2,732.53	90.34	8.65	-90.68	4,888.20	-783.87	714.16	618.76	95.40	7.486		
7,200.00	2,724.86	2,661.11	2,731.99	92.24	8.65	-90.64	4,888.20	-783.87	693.36	593.44	99.93	6.939		
7,296.39	2,724.34	2,660.59	2,731.46	94.08	8.65	-90.59	4,888.20	-783.88	686.63	583.91	102.72	6.684 CC		
7,300.00	2,724.32	2,660.57	2,731.44	94.15	8.65	-90.59	4,888.20	-783.88	686.64	583.85	102.79	6.680 ES, SF		
7,400.00	2,723.78	2,660.02	2,730.90	96.06	8.65	-90.55	4,888.20	-783.89	694.40	590.69	103.72	6.695		
7,500.00	2,723.24	2,659.48	2,730.35	97.97	8.65	-90.50	4,888.20	-783.89	716.18	613.41	102.77	6.969		
7,600.00	2,722.71	2,658.93	2,729.81	99.88	8.64	-90.46	4,888.20	-783.90	750.76	650.44	100.31	7.484		
7,700.00	2,722.17	2,658.39	2,729.26	101.79	8.64	-90.41	4,888.20	-783.90	796.46	699.62	96.85	8.224		
7,800.00	2,721.63	2,657.84	2,728.71	103.70	8.64	-90.37	4,888.20	-783.91	851.51	758.67	92.84	9.172		
7,900.00	2,721.09	2,657.30	2,728.17	105.61	8.64	-90.32	4,888.20	-783.91	914.22	825.55	88.67	10.311		
8,000.00	2,720.56	2,656.75	2,727.62	107.52	8.64	-90.27	4,888.20	-783.92	983.11	898.55	84.57	11.625		
8,100.00	2,720.02	2,656.20	2,727.08	109.43	8.63	-90.23	4,888.20	-783.92	1,056.99	976.31	80.68	13.102		
8,183.36	2,719.57	2,655.75	2,726.62	111.03	8.63	-90.19	4,888.20	-783.93	1,121.67	1,044.03	77.65	14.446		

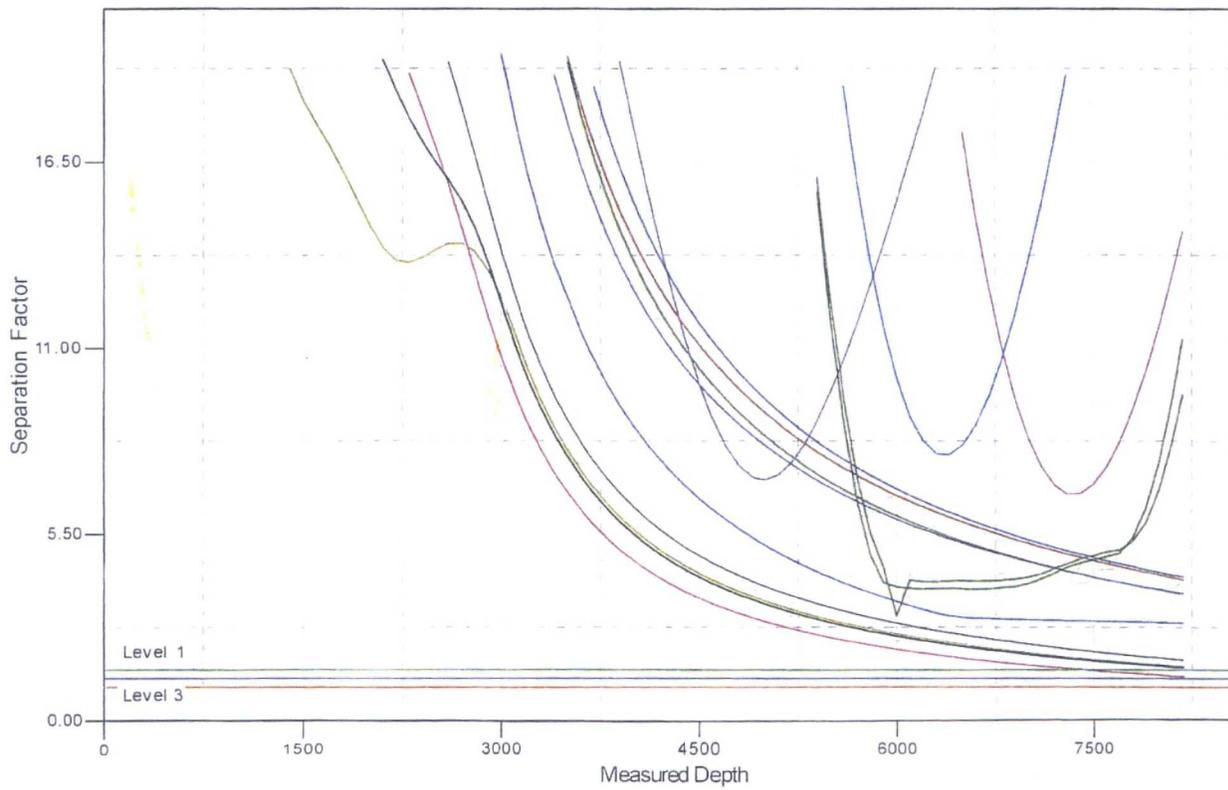
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company: Percussion Petroleum, LLC
 Project: Eddy County, NM
 Reference Site: South Boyd
 Site Error: 0.00 usft
 Reference Well: 17H
 Well Error: 0.00 usft
 Reference Wellbore: OH
 Reference Design: Plan #3

Local Co-ordinate Reference: Well 17H
 TVD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
 MD Reference: RKB=17' @ 3537.00usft (Silver Oak 1)
 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=17' @ 3537.00usft (Silver Oak 1) Coordinates are relative to: 17H
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, New Mexico Eastern Zone
 Central Meridian is -104.333334 Grid Convergence at Surface is: -0.07°

Separation Factor Plot



LEGEND

- | | | |
|--------------------------|----------------------------|---------------------------|
| SB 27 10H PDF, OH, OH VO | Hawk 27 Federal, OH, OH VO | 20H, OH, Plan #4 VO |
| SB 27 9H, OH, OH VO | SB 27 6H, OH, OH VO | 13H, OH, Plan #2 VO |
| 14H, OH, Plan #3 VO | 22H, OH, Plan #2 VO | SR 27 10H Exon, OH, OH VO |
| 16H, OH, Plan #2 VO | 16H, OH, Plan #1 VO | 21H, OH, Plan #2 VO |
| 15H, OH, Plan #4 VO | 15H, OH, Plan #2 VO | |

Percussion Petroleum Operating, LLC
 South Boyd Federal Com 17H
 SHL 584' FNL & 1244' FEL 34-19S-25E
 BHL 20' FNL & 1278' FEL 27-19S-25E
 Eddy County, NM

DRILL PLAN PAGE 2

4. CASING & CEMENT

All casing will be API and new. A contingency plan is attached.

Hole O. D.	Set MD	Set TVD	Casing O. D.	Weight (lb/ft)	Grade	Joint	Collapse	Burst	Tension
12.25"	0' - 1266'	0' - 1263'	Surface 9.625"	36	J-55	STC	1.125	1.125	1:8
8.75"	0' - 8183'	0' - 2720'	Product. 5.5"	17	L-80	BTC	1.125	1.125	1:8

Casing Name	Type	Sacks	Yield	Cu. Ft.	Weight	Blend
Surface	Lead	630	1.32	831	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 pound per sack celloflake + 0.2% C41-P
	Tail	1645	1.32	2171	14.8	Class C + 2% CaCl + ¼ pound per sack celloflake
TOC = GL		50% Excess			1 centralizer on 1 st collar and every 10 th 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.

Contingency Planning – South Boyd 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

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: SOUTH BOYD FEDERAL COM

Well Number: 17H

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: A central production facility will be built on the northeast and southeast sides of the pad. A 2999.9' long 8" O. D. poly buried gas pipeline will be laid southwest to DCP's existing pipeline. One to two 2238.0' long 4" O. D. poly surface saltwater disposal pipelines will be laid northwest to Percussion's existing saltwater disposal pipeline. Saltwater lines will use an existing cased bore under County Road 23. A 734.4' long overhead raptor safe 3-phase power line will be built south and southwest from an existing power line.

Production Facilities map:

SB_17H_Production_Facilities_20171107094318.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source use type: DUST CONTROL, STIMULATION, SURFACE CASING **Water source type:** GW WELL

Describe type:

Source latitude:

Source longitude:

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:

SB_17H_Water_Source_20171107094450.pdf

Water source comments: 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 (2950' private + 5350' State + 6450' BLM). Secondary source will be Seven Rivers' well RA 10918 in NESE 11-20s-25e. That route is 14,000' long (6850' of private land + 7150' of BLM). Two temporary surface 10" Kevlar lay flat pipelines will then be laid 7550' north and west along roads from the pond to the 17H/18H/19H pad. Pipeline route will not be bladed or excavated.

New water well? NO

New Water Well Info

Well latitude:

Well Longitude:

Well datum:

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: SOUTH BOYD FEDERAL COM

Well Number: 17H

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 Steel tanks on pad

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

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

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:

SB_17H_Well_Site_Layout_20171107094828.pdf

Comments:

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: SOUTH BOYD FEDERAL COM

Well Number: 17H

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:

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:

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: SOUTH BOYD FEDERAL COM

Well Number: 17H

Fee Owner: Ross Ranch Inc.

Fee Owner Address: PO Box 216 Lakewood NM 88254

Phone: (575)365-4797

Email:

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: Agreement

Surface Access Agreement Need description: Percussion Petroleum Operating, LLC has a private surface owner agreement with Ross Ranch Inc. (PO Box 216, Lakewood NM 88254) for a 22.4' long powerline, 2999.9' gas line, 2238' long SWD line, and west half of the 17H/18H/19H pad in SESE Section 27 and W2NE4 & NW4 Section 34 in T. 19 S., R. 25 E., Eddy County, NM. Their phone number is (575) 365-4797.

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

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:

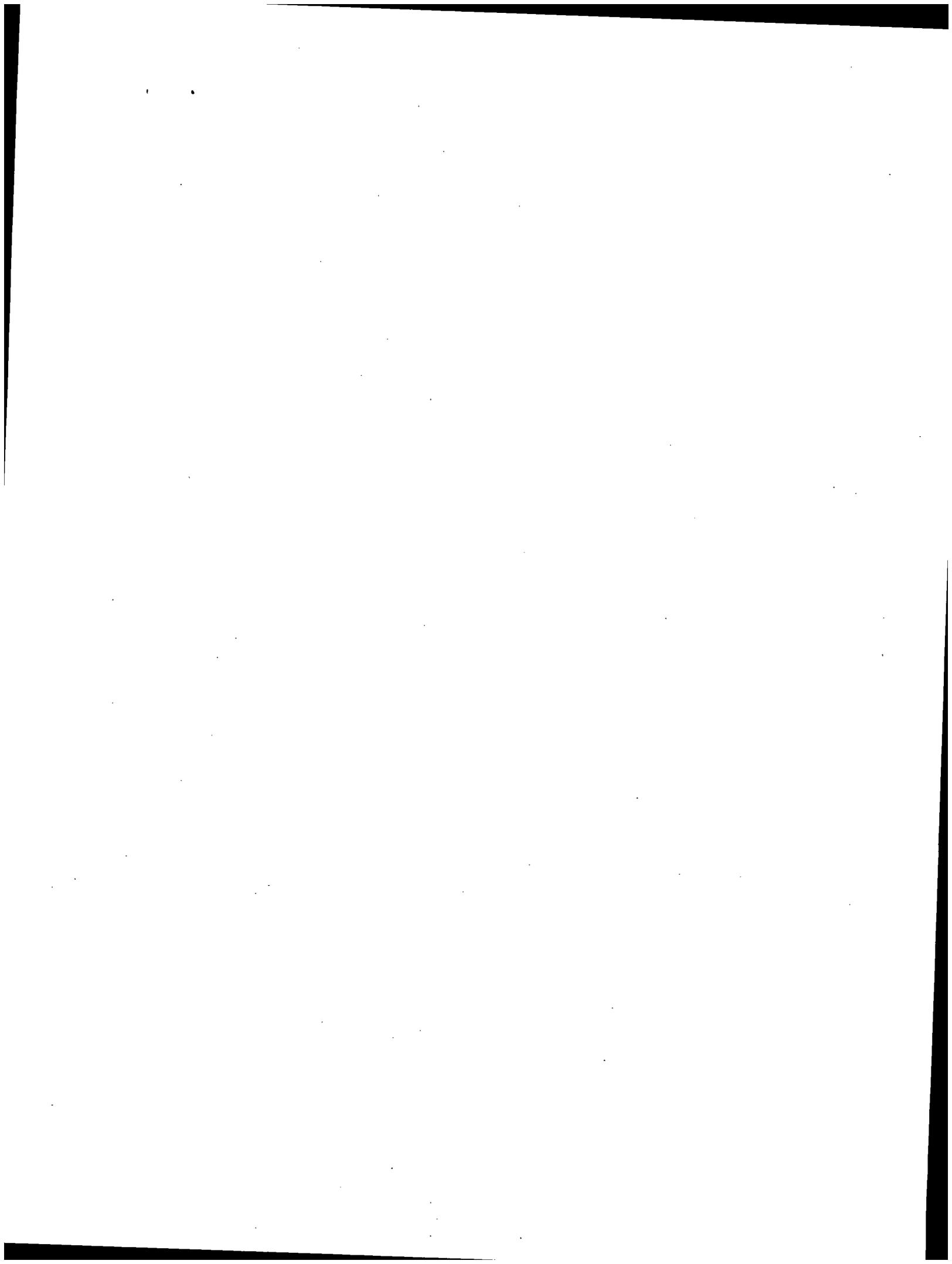
USFWS Local Office:

Other Local Office:

USFS Region:

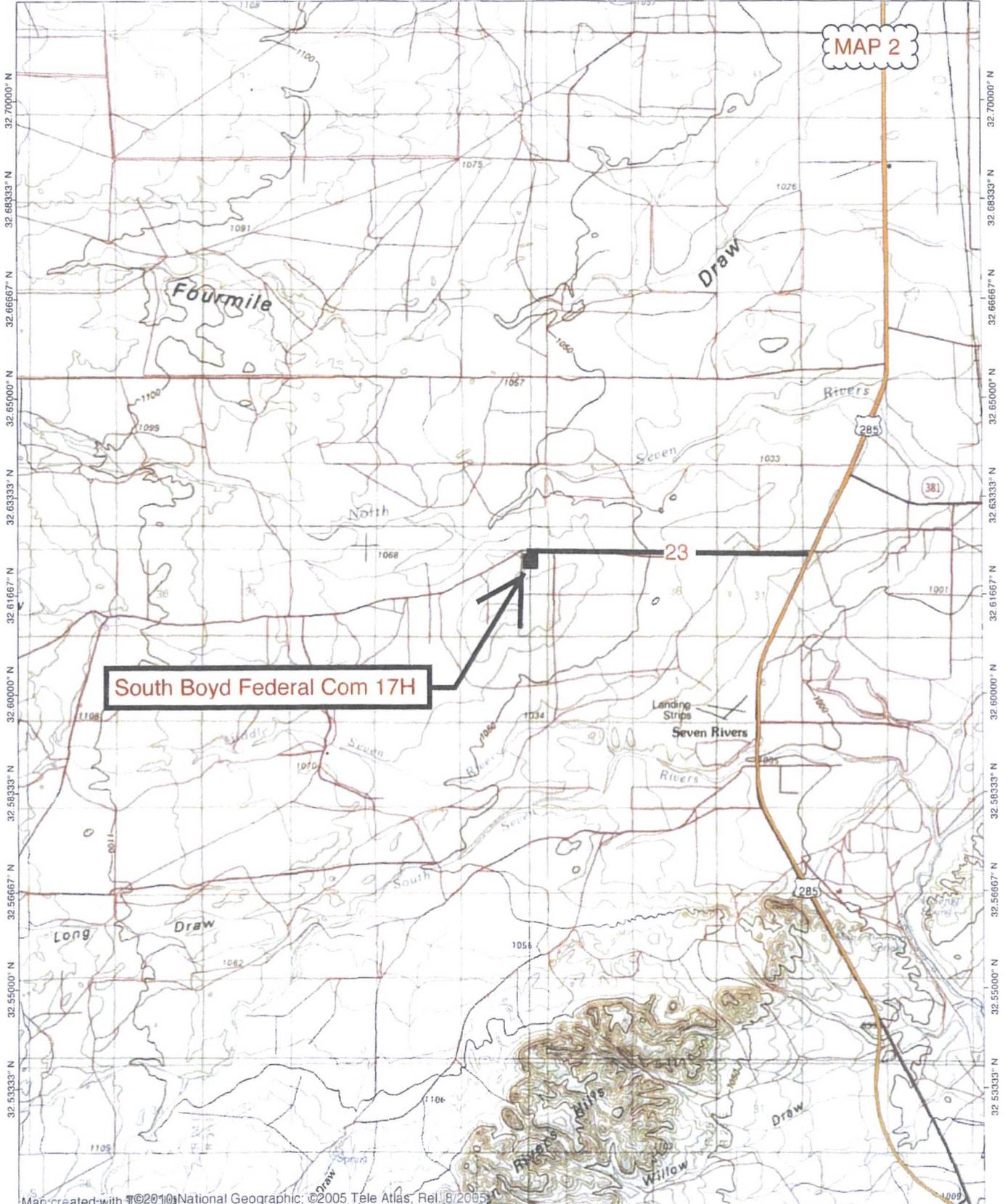
USFS Forest/Grassland:

USFS Ranger District:



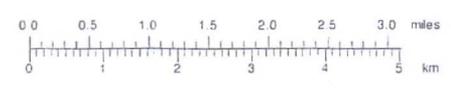
104.55000° W 104.53333° W 104.51667° W 104.50000° W 104.48333° W 104.46667° W 104.45000° W 104.43333° W 104.41667° W WGS84 104.38333° W

MAP 2



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

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





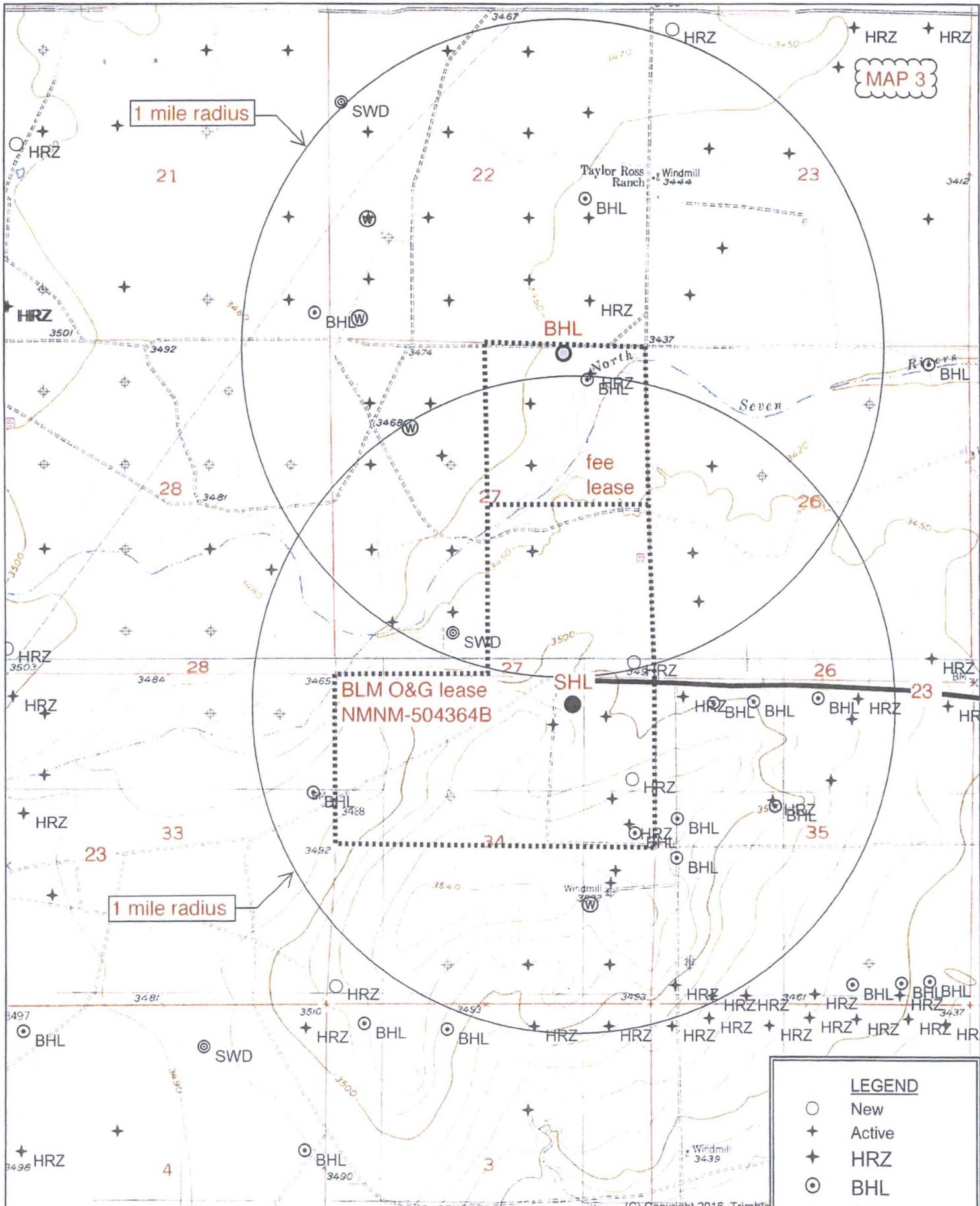
MAP 3

1 mile radius

1 mile radius

BLM O&G lease
NMNM-504364B

fee
lease

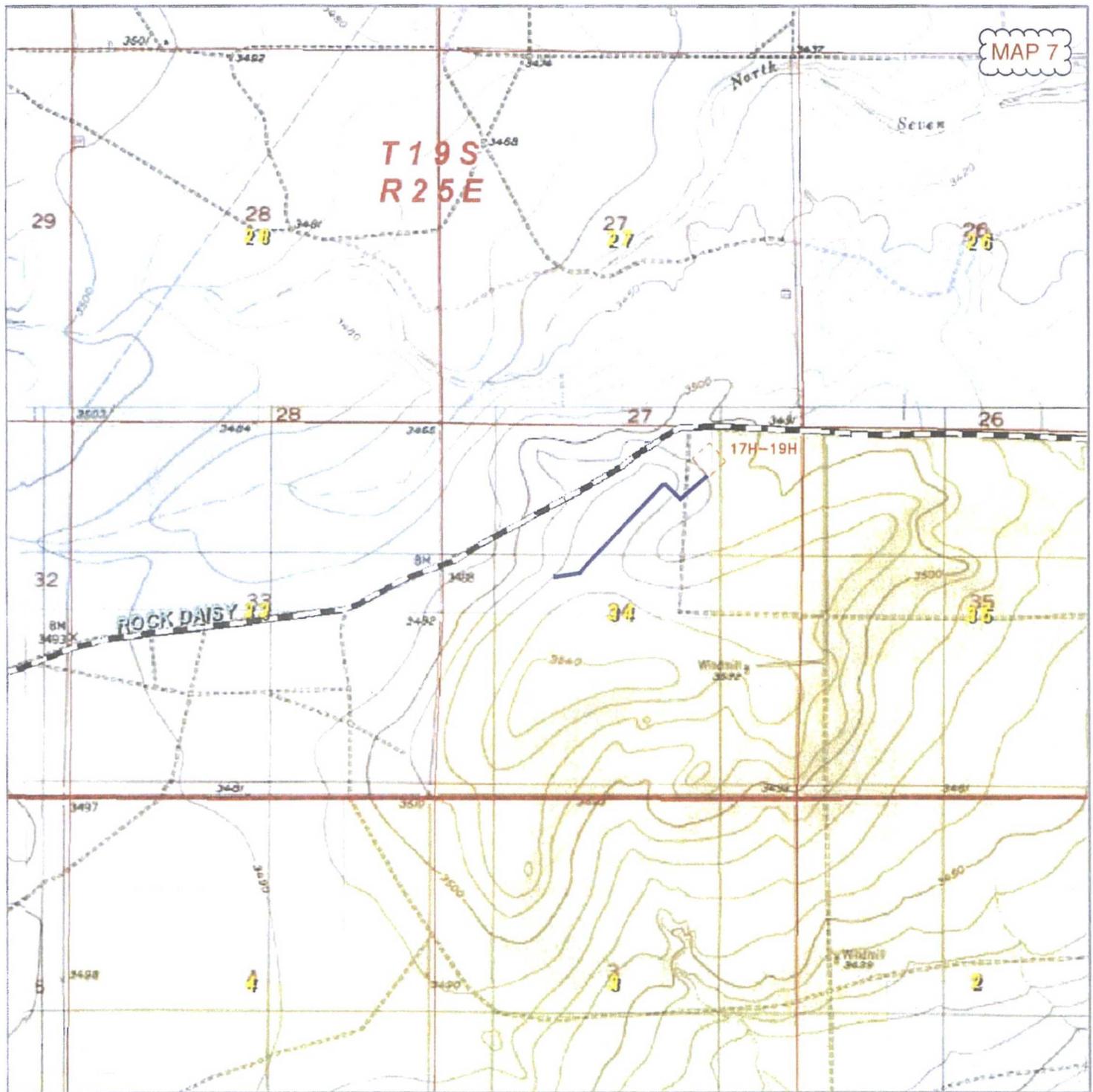


LEGEND	
○	New
+	Active
✦	HRZ
⊙	BHL
⊕	P&A
⊗	INJ
⊙	SWD
⊗	Water

(C) Copyright 2016, Trimble



Quad: DAYTON
Scale: 1 inch = 2,000 ft.



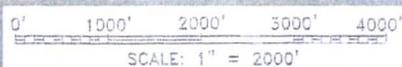
MAP 7

T 19 S
R 25 E

PROPOSED DCP TIE-IN TO SOUTH BOYD 17H, 18H, 19H
 Section 34, Township 19 South, Range 25 East,
 N.M.P.M., Eddy County, New Mexico.



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SCALE: 1" = 2000'

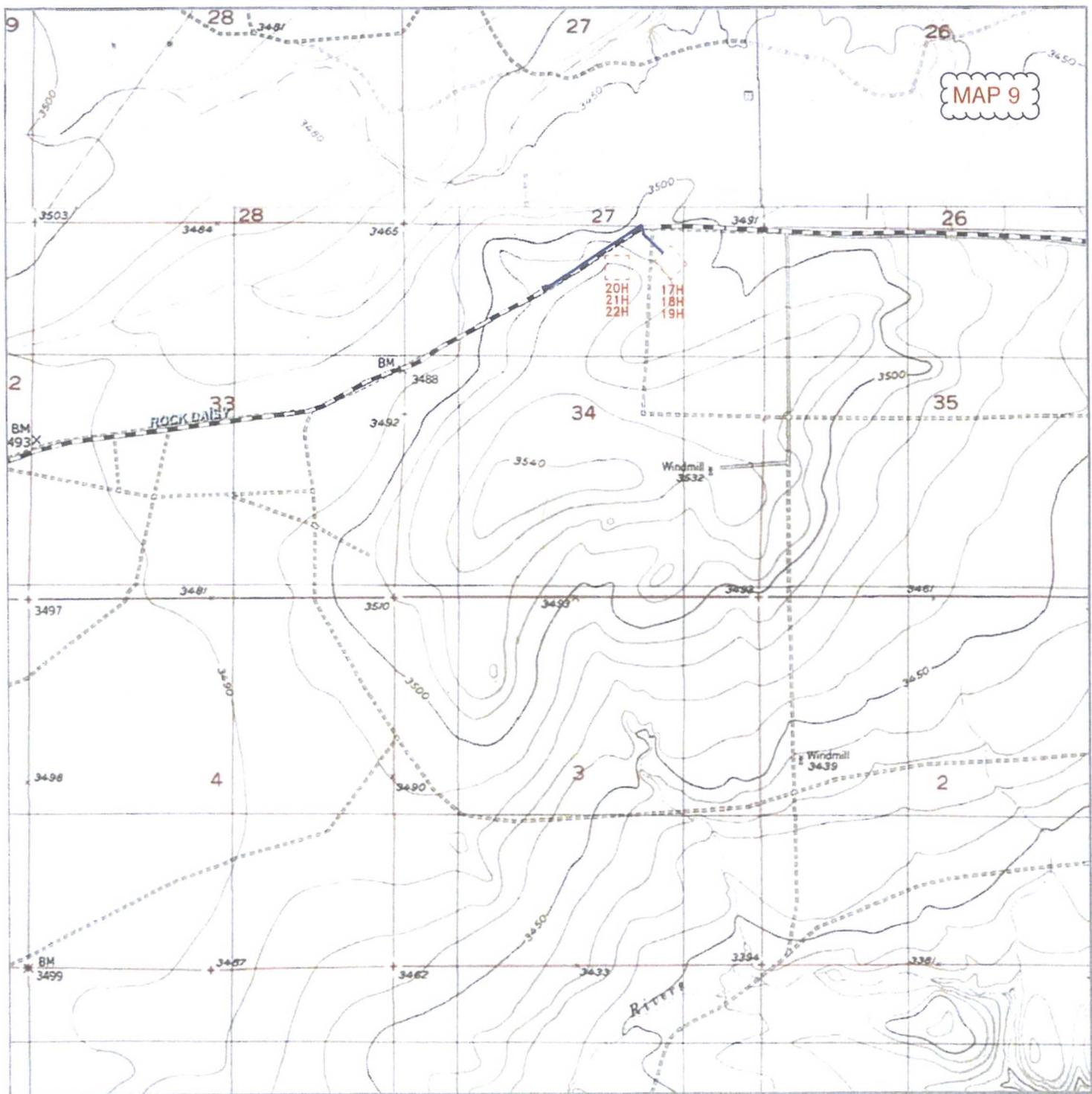
W.O. Number: JG 33048

Survey Date: 6-8-2017

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



**PERCUSSION
 PETROLEUM,
 LLC**

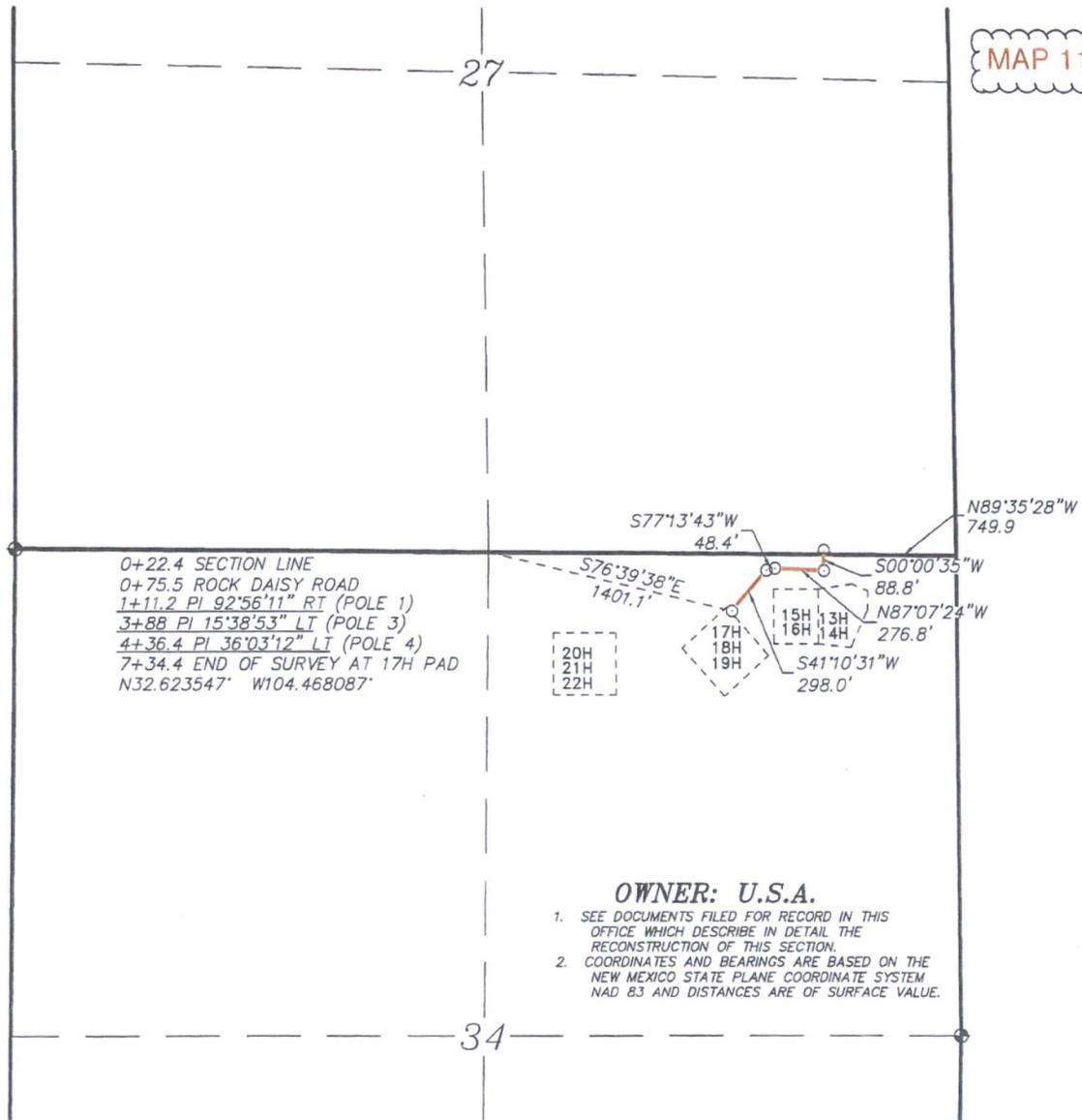


PROPOSED SOUTH BOYD 17H-19H SWD LINE
 Section 34, Township 19 South, Range 25 East,
 N.M.P.M., Eddy County, New Mexico.

 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 33235 Survey Date: 08-22-2017 YELLOW TINT - USA LAND BLUE TINT - STATE LAND NATURAL COLOR - FEE LAND	 <p align="center">PERCUSSION PETROLEUM, LLC</p>

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

MAP 11



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. 34 712.0 FEET = 0.13 MILES = 43.15 RODS = 0.49 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



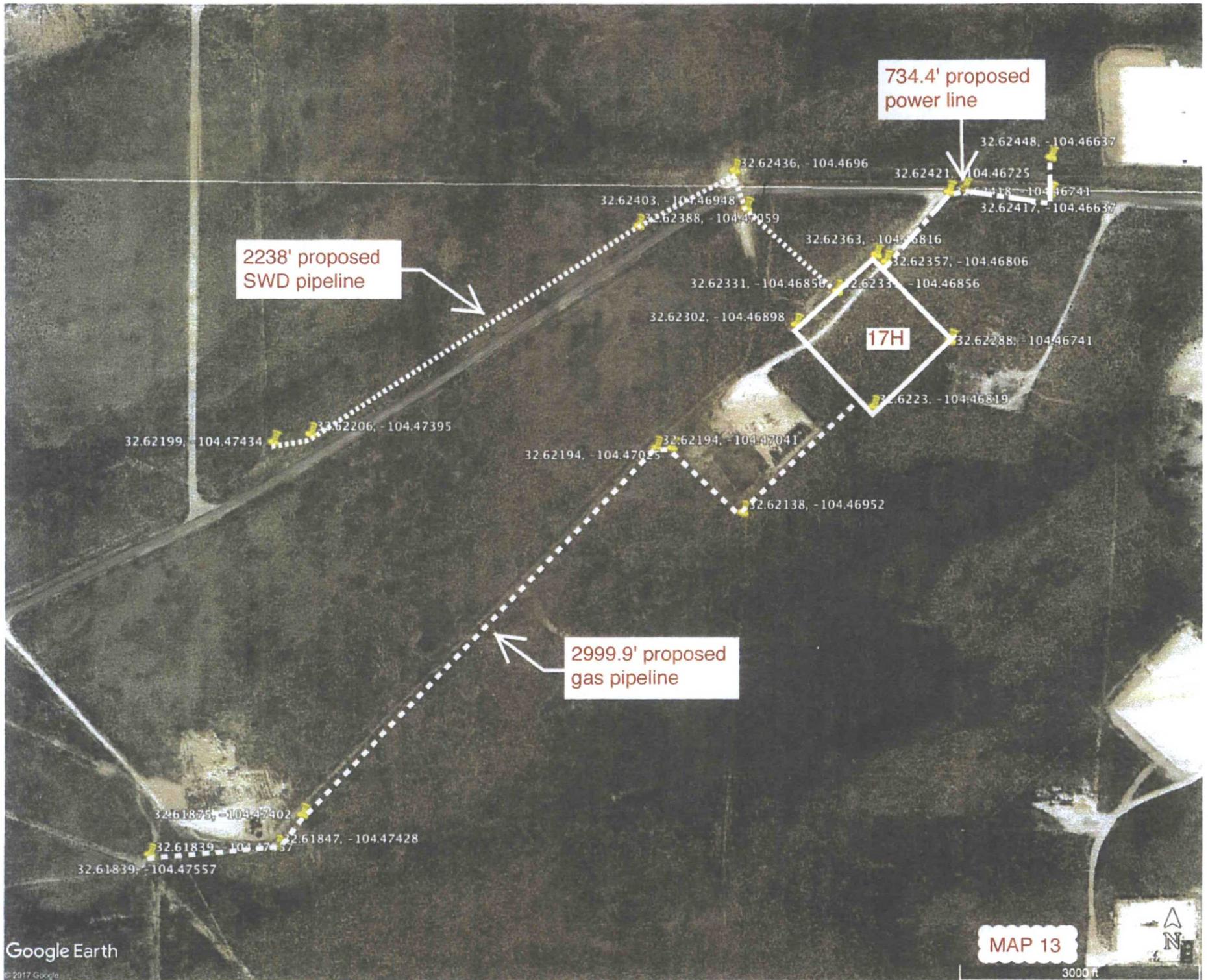
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 (575) 392-2206 - Fax
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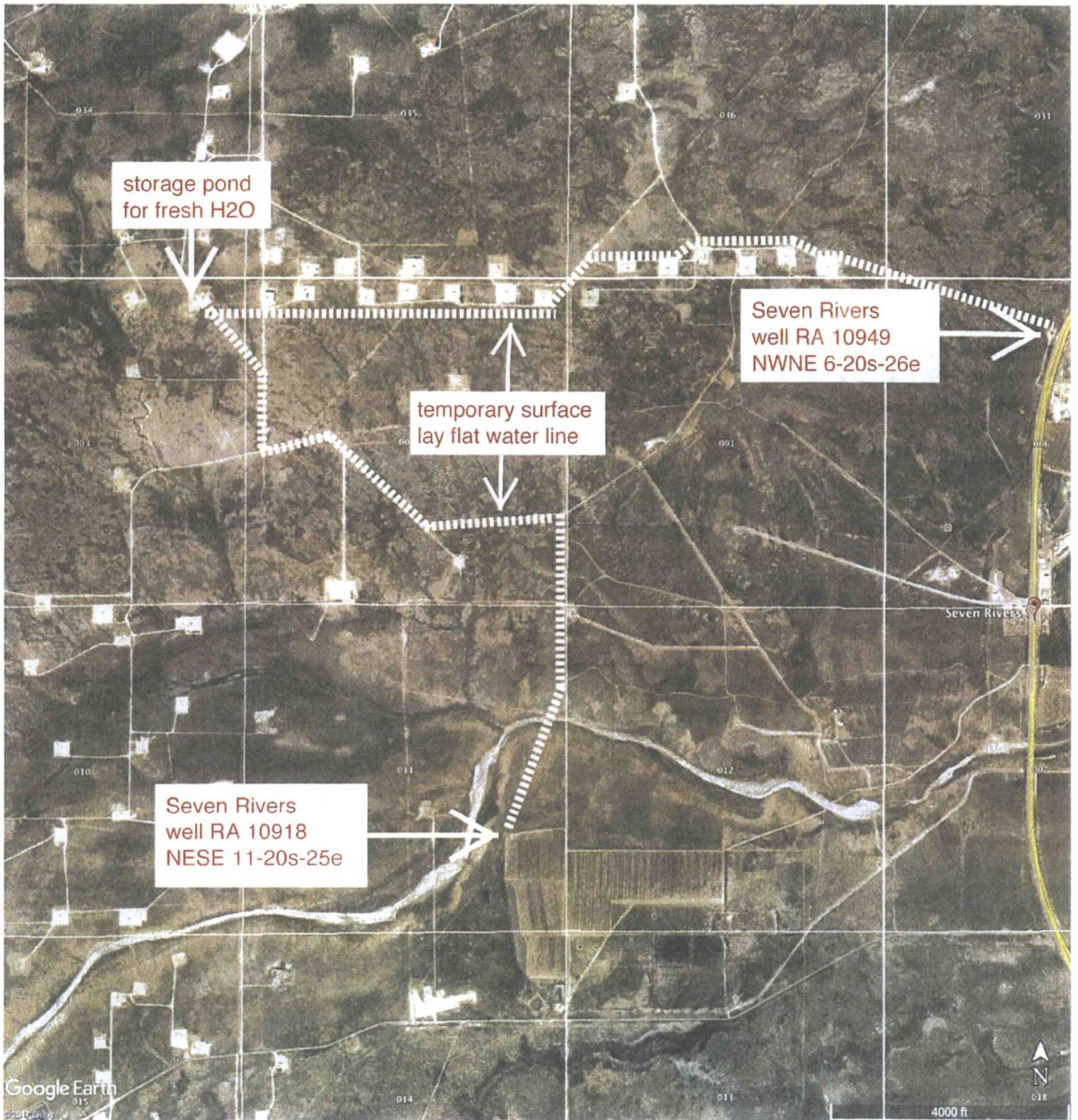
1000 0 1000 2000 FEET

PERCUSSION PETROLEUM, LLC

REF: PROPOSED ELECTRIC LINE TO THE SOUTH BOYD 17H

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







32.60865, -104.46764

existing pond

Huber Fed'l. 3H

proposed pond expansion

32.60751, -104.46742 32.60751, -104.46742

MAP 17

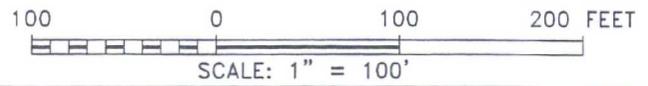
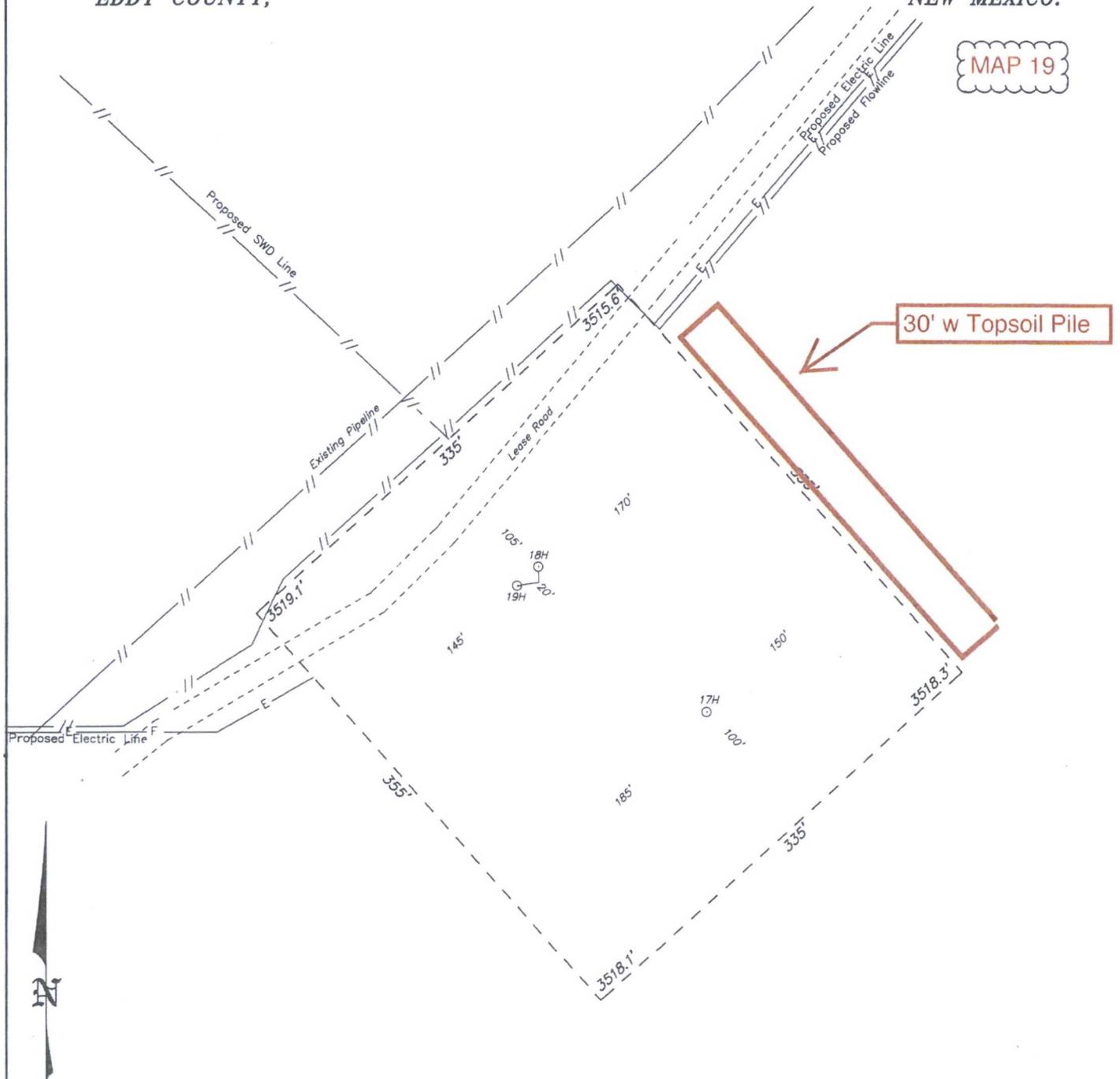


300 ft

Google Earth

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

MAP 19



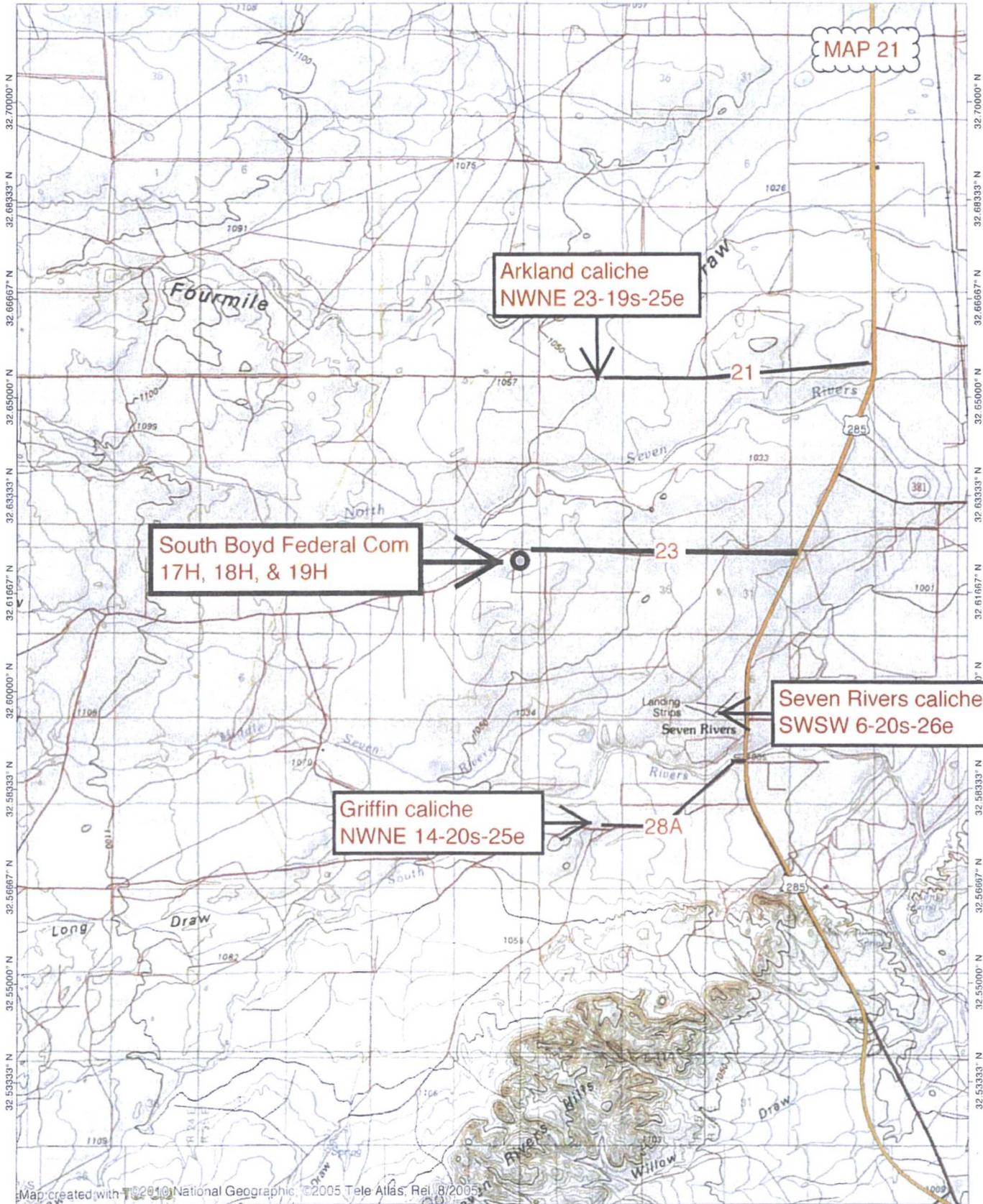
PERCUSSION PETROLEUM OPERATING, LLC
 REF: SOUTH BOYD FEDERAL COM #17H / WELL PAD TOPO
 THE SOUTH BOYD FEDERAL COM #17H LOCATED 584' FROM
 THE NORTH LINE AND 1244' FROM THE EAST LINE OF
 SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST,
 N.M.P.M., EDDY COUNTY, NEW MEXICO.

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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 21



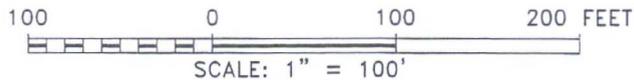
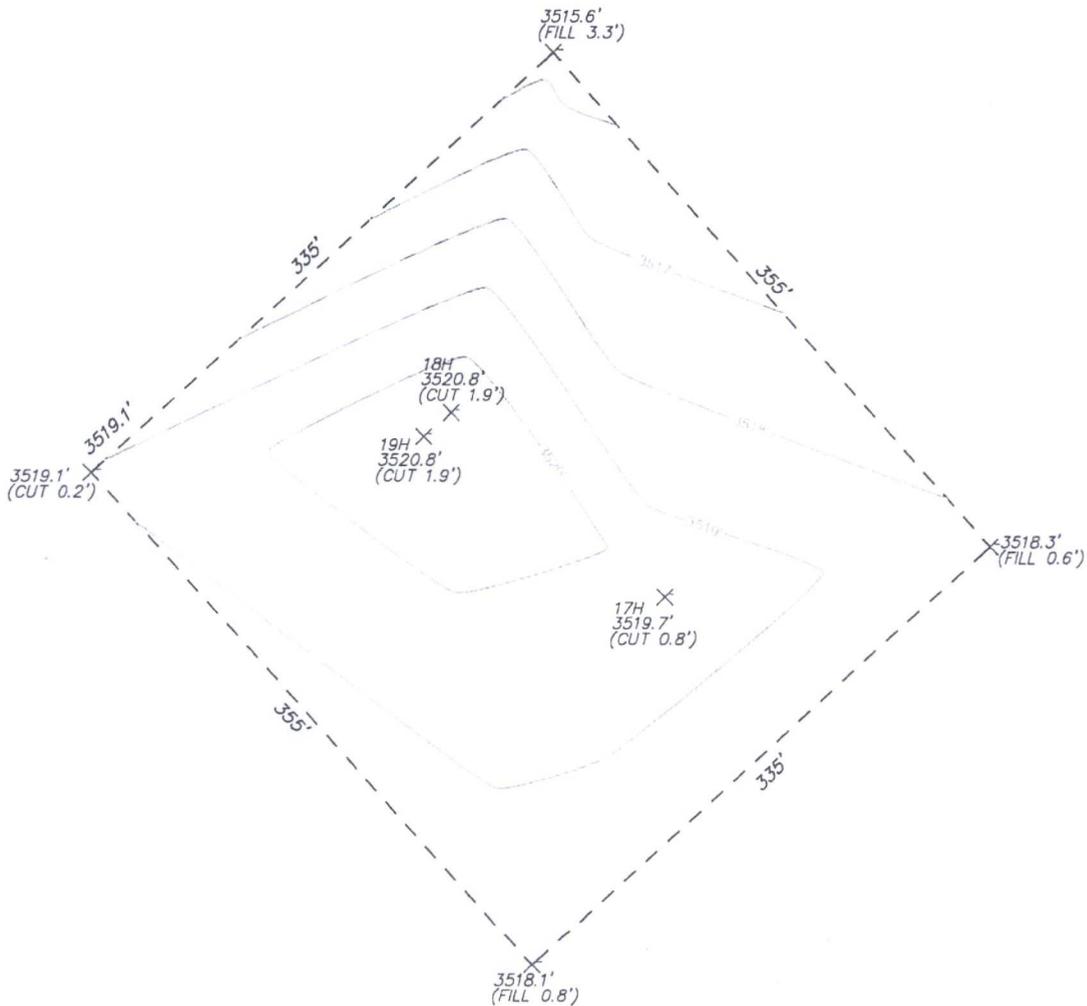
Map created with ©2010 National Geographic, ©2005 Tele Atlas, Rel. 8/2005



07/28/17

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

MAP 20



PERCUSSION PETROLEUM OPERATING, LLC

REF: SOUTH BOYD FEDERAL COM #17H,18H&19H / WELL PAD CUT & FILL

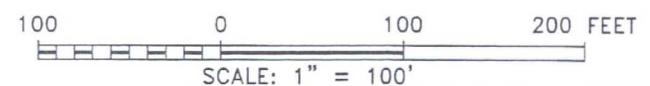
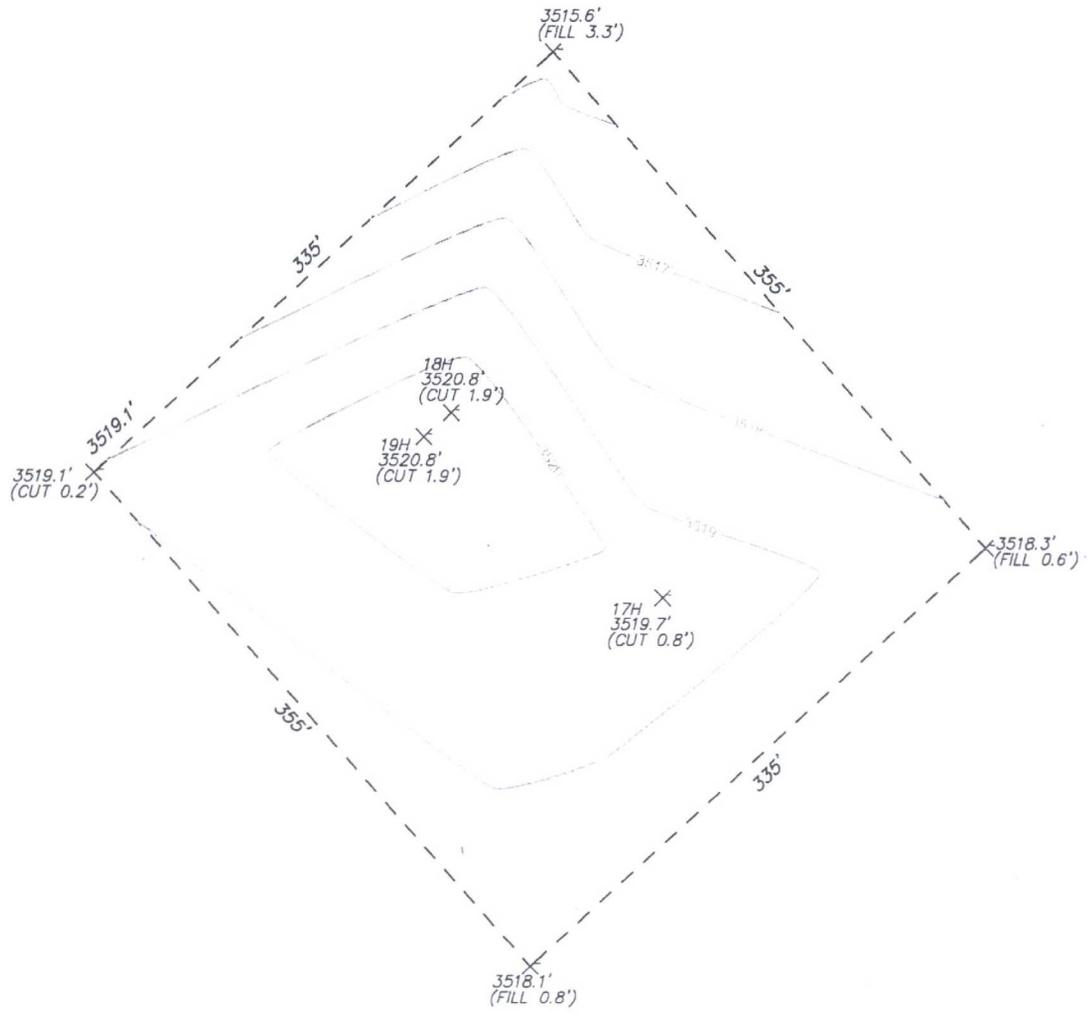
A WELL PAD LOCATED IN
 SECTION 34, TOWNSHIP 19 SOUTH, RANGE 25 EAST,
 N.M.P.M., EDDY COUNTY, NEW MEXICO.



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

MAP 20



PERCUSSION PETROLEUM OPERATING, LLC

REF: SOUTH BOYD FEDERAL COM #17H,18H&19H / WELL PAD CUT & FILL

A 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 Petroleum Operating, LLC
South Boyd Federal Com 17H
SHL 584' FNL & 1244' FEL 34-19S-25E
BHL 20' FNL & 1278' FEL 27-19S-25E
Eddy County, NM

SURFACE PLAN PAGE 1

Surface Use Plan

1. ROAD DIRECTIONS & DESCRIPTIONS (See MAPS 1 - 5)

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 3.3 miles on paved County Road 23 (Rock Daisy)
Turn left and go SW 100 yards on an existing caliche road to the proposed pad
The proposed pad overlaps the existing road.

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

2. ROAD TO BE BUILT OR UPGRADED (See MAP 4)

No new road nor upgrade is needed. Pad overlaps an existing road.

3. EXISTING WELLS (See MAP 3)

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

4. PROPOSED PRODUCTION FACILITIES (See MAPS 6 - 14)

A central production facility will be built on the northeast and southeast sides of the pad.

A 2999.9' long ≈ 8 " O. D. poly buried gas pipeline will be laid southwest to DCP's existing pipeline. One to two 2238.0' long 4" O. D. poly surface saltwater

Percussion Petroleum Operating, LLC
South Boyd Federal Com 17H
SHL 584' FNL & 1244' FEL 34-19S-25E
BHL 20' FNL & 1278' FEL 27-19S-25E
Eddy County, NM

SURFACE PLAN PAGE 3

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.

9. WELL SITE LAYOUT (See MAPS 19 & 20)

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 (See MAPS 20 & 22)

Interim reclamation will be completed within 6 months of completing the well. Interim reclamation will consist of shrinking the pad \approx 12% (0.32 acre) by removing caliche and reclaiming 50' x 280' on the southwest side. This will leave 2.41 acres for the anchors, pump jacks, central production equipment, 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 and BLM's requirements.

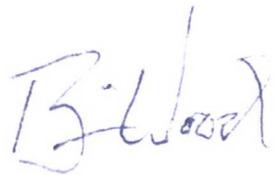
Enough stockpiled topsoil will be retained to cover the remainder of the pad when the well is plugged. Once the well is plugged, then the rest of the pad and

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South Boyd Federal Com 17H
SHL 584' FNL & 1244' FEL 34-19S-25E
BHL 20' FNL & 1278' FEL 27-19S-25E
Eddy County, NM

SURFACE PLAN PAGE 5

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 4th day of November, 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
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:

Injection well type:

Injection well number:

Injection well name:

Assigned injection well API number?

Injection well API number:

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

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: