

RECEIVED

Form 3160-3  
(June 2015)

JAN 30 2019

FORM APPROVED  
OMB No. 1004-0137  
Expires: January 31, 2018

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
DISTRICT II-ARTESIA O.C.D.

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.  
NMNM0504364B

6. If Indian, Allottee or Tribe Name

7. If Unit or CA Agreement, Name and No.

8. Lease Name and Well No.  
LAKEWOOD FEDERAL COM  
5H  
324926

9. API Well No.  
30-015-45673

1a. Type of work:  DRILL  REENTER  
1b. Type of Well:  Oil Well  Gas Well  Other  
1c. Type of Completion:  Hydraulic Fracturing  Single Zone  Multiple Zone

2. Name of Operator  
PERCUSSION PETROLEUM OPERATING LLC

3a. Address  
919 Milam Street, Suite 2475 Houston TX 77002

3b. Phone No. (include area code)  
(713)589-2337

10. Field and Pool, or Exploratory  
N. SEVEN RIVERS; GLORIETA -YESO 9756

4. Location of Well (Report location clearly and in accordance with any State requirements. \*)  
At surface SWSE / 500 FSL / 1710 FEL / LAT 32.625801 / LONG -104.469636  
At proposed prod. zone SWSE / 20 FSL / 1786 FEL / LAT 32.60976 / LONG -104.46986

11. Sec., T. R. M. or Blk. and Survey or Area  
SEC 27 / T19S / R25E / NMP

14. Distance in miles and direction from nearest town or post office\*  
15 miles

12. County or Parish  
EDDY

13. State  
NM

15. Distance from proposed\* location to nearest property or lease line, ft.  
(Also to nearest drig. unit line, if any)  
930 feet

16. No of acres in lease  
480

17. Spacing Unit dedicated to this well  
160

18. Distance from proposed location\* to nearest well, drilling, completed, applied for, on this lease, ft.  
20 feet

19. Proposed Depth  
3140 feet / 8643 feet

20. BLM/BIA Bond No. in file  
FED: NMB001424

21. Elevations (Show whether DF, KDB, RT, GL., etc.)  
3503 feet

22. Approximate date work will start\*  
10/01/2018

23. Estimated duration  
30 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

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

25. Signature (Electronic Submission)  
Name (Printed/Typed) Brian Wood / Ph: (505)466-8120  
Date 08/23/2018

Title  
President

Approved by (Signature) (Electronic Submission)  
Name (Printed/Typed) Ty Allen / Ph: (575)234-5978  
Date 12/20/2018

Title  
Wildlife Biologist  
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.



RW 2-1-19

## INSTRUCTIONS

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

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

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

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

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

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

**ITEM 24:** If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

## NOTICES

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

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

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

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

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

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

The BLM connects this information to a new evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

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

## **Additional Operator Remarks**

### **Location of Well**

1. SHL: SWSE / 500 FSL / 1710 FEL / TWSP: 19S / RANGE: 25E / SECTION: 27 / LAT: 32.625801 / LONG: -104.469636 ( TVD: 0 feet, MD: 0 feet )  
PPP: SWSE / 1320 FSL / 1818 FEL / TWSP: 19S / RANGE: 25E / SECTION: 34 / LAT: 32.613296 / LONG: -104.469839 ( TVD: 3127 feet, MD: 7428 feet )  
PPP: NWSE / 2640 FSL / 1843 FEL / TWSP: 19S / RANGE: 25E / SECTION: 34 / LAT: 32.616889 / LONG: -104.469826 ( TVD: 3114 feet, MD: 6134 feet )  
PPP: SWSE / 500 FSL / 1710 FEL / TWSP: 19S / RANGE: 25E / SECTION: 27 / LAT: 32.625801 / LONG: -104.469636 ( TVD: 0 feet, MD: 0 feet )  
BHL: SWSE / 20 FSL / 1786 FEL / TWSP: 19S / RANGE: 25E / SECTION: 34 / LAT: 32.60976 / LONG: -104.46986 ( TVD: 3140 feet, MD: 8643 feet )

## **BLM Point of Contact**

Name: Katrina Ponder  
Title: Geologist  
Phone: 5752345969  
Email: [kponder@blm.gov](mailto:kponder@blm.gov)

## **Review and Appeal Rights**

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

## PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Percussion Petroleum Operating LLC
LEASE NO.:	NMNM0504364B
WELL NAME & NO.:	Lakewood Federal Com 5H
SURFACE HOLE FOOTAGE:	500'S & 1710'E
BOTTOM HOLE FOOTAGE:	20'S & 1786'E
LOCATION:	Section 27, T.19 S., R.25 E., NMPM
COUNTY:	Eddy County, New Mexico

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

### A. HYDROGEN SULFIDE

1. Hydrogen Sulfide (H<sub>2</sub>S) monitors shall be installed prior to drilling out the surface shoe. If H<sub>2</sub>S 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 7" X 5-1/2" CASING WILL NEED TO BE MODIFIED AND THE BLM IS TO BE CONTACTED PRIOR TO RUNNING THE CASING. A MINIMUM OF TWO CASING STRINGS CEMENTED TO SURFACE IS REQUIRED IN HIGH CAVE/KARST AREAS. THE CEMENT MUST BE IN A SOLID SHEATH THEREFORE, ONE INCH OPERATIONS WILL NOT BE PERMITTED. A DV TOOL WILL BE REQUIRED.**

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

1. The **13 3/8** inch contingency surface casing shall be set at approximately **400** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
  - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
  - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
  - d. If cement falls back, remedial cementing will be done prior to drilling out that string.

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

2. The **9 5/8** inch surface casing shall be set at approximately **1279** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
  - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
  - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
  - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
3. The minimum required fill of cement behind the **7 X 5 1/2** inch production casing is:
  - Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

### **C. PRESSURE CONTROL**

1. **Contingency** - Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **13-3/8 inch** surface casing shoe shall be **3000 (3M) psi**.
2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8 inch** surface casing shoe shall be **3000 (3M) psi**.

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

#### **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.

**MHH 12152018**

## GENERAL REQUIREMENTS

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

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

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

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

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

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
  - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
  - b. When the operator proposes to set surface casing with Spudder Rig
    - Notify the BLM when moving in and removing the Spudder Rig.
    - Notify the BLM when moving in the 2<sup>nd</sup> Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
    - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

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

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

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

**B. PRESSURE CONTROL**

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
  - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
  - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
  - c. Manufacturer representative shall install the test plug for the initial BOP test.
  - d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
  - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the

plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

- b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.
- c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- e. The results of the test shall be reported to the appropriate BLM office.
- f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
- g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

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

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



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

# Operator Certification Data Report

12/27/2018

## 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:** 08/23/2018

**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:**



APD ID: 10400033408

Submission Date: 08/23/2018

Highlighted data  
reflects the most  
recent changes

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 5H

Show Final Text

Well Type: OIL WELL

Well Work Type: Drill

### Section 1 - General

APD ID: 10400033408

Tie to previous NOS?

Submission Date: 08/23/2018

BLM Office: CARLSBAD

User: Brian Wood

Title: President

Federal/Indian APD: FED

Is the first lease penetrated for production Federal or Indian? FED

Lease number: NMNM0504364B

Lease Acres: 480

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? NO

Permitting Agent? YES

APD Operator: PERCUSSION PETROLEUM OPERATING LLC

Operator letter of designation:

### Operator Info

Operator Organization Name: PERCUSSION PETROLEUM OPERATING LLC

Operator Address: 919 Milam Street, Suite 2475

Zip: 77002

Operator PO Box:

Operator City: Houston

State: TX

Operator Phone: (713)589-2337

Operator Internet Address:

### Section 2 - Well Information

Well in Master Development Plan? NO

Master Development Plan name:

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: LAKEWOOD FEDERAL COM

Well Number: 5H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: N. SEVEN RIVERS; Pool Name:  
GLORIETA -YESO

Is the proposed well in an area containing other mineral resources? USEABLE WATER,NATURAL GAS,OIL

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** LAKEWOOD FEDERAL COM

**Well Number:** 5H

**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:**  
LAKEWOOD FEDERAL COM

**Number:** 4H

**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:** 15 Miles

**Distance to nearest well:** 20 FT

**Distance to lease line:** 930 FT

**Reservoir well spacing assigned acres Measurement:** 160 Acres

**Well plat:** Lake\_5H\_Plat\_GasCap\_Plan\_20180823135406.pdf

**Well work start Date:** 10/01/2018

**Duration:** 30 DAYS

### Section 3 - Well Location Table

**Survey Type:** RECTANGULAR

**Describe Survey Type:**

**Datum:** NAD83

**Vertical Datum:** NAVD88

**Survey number:** 3239

	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	500	FSL	1710	FEL	19S	25E	27	Aliquot SWSE 1	32.625801	-104.469636	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 050436 4B	3503	0	0
KOP Leg #1	28	FNL	1843	FEL	19S	25E	34	Aliquot NWNE	32.62415	-104.46979	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 050436 4B	9777	252	2526
PPP Leg #1	500	FSL	1710	FEL	19S	25E	27	Aliquot SWSE 1	32.625801	-104.469636	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 050436 4B	3503	0	0

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** LAKEWOOD FEDERAL COM

**Well Number:** 5H

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
PPP Leg #1	264 0	FSL	184 3	FEL	19S	25E	34	Aliquot NWSE	32.61688 9	- 104.4698 26	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 015291	389	613 4	311 4
PPP Leg #1	132 0	FSL	181 8	FEL	19S	25E	34	Aliquot SWSE	32.61329 6	- 104.4698 39	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 031200	376	742 8	312 7
EXIT Leg #1	20	FSL	178 6	FEL	19S	25E	34	Aliquot SWSE	32.60976	- 104.4698 6	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 031200	363	864 3	314 0
BHL Leg #1	20	FSL	178 6	FEL	19S	25E	34	Aliquot SWSE	32.60976	- 104.4698 6	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 031200	363	864 3	314 0



APD ID: 10400033408

Submission Date: 08/23/2018

Highlighted data  
reflects the most  
recent changes

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 5H

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	QUATERNARY	3503	0	0	OTHER : Caliche	USEABLE WATER	No
2	GRAYBURG	2870	633	633	DOLOMITE	NATURAL GAS,OIL	No
3	SAN ANDRES	2685	818	818	DOLOMITE	NATURAL GAS,OIL	No
4	GLORIETA	1125	2378	2379	DOLOMITE	NATURAL GAS,OIL	No
5	YESO	970	2533	2534	DOLOMITE	NATURAL GAS,OIL	Yes

**Section 2 - Blowout Prevention**

Pressure Rating (PSI): 3M

Rating Depth: 5000

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

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:

Lake\_5H\_Choke\_20180823140129.pdf

BOP Diagram Attachment:

Lake\_5H\_BOP\_20180823140141.pdf

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 5H

**Section 3 - Casing**

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	12.25	9.625	NEW	API	N	0	1279	0	1279	3503		1279	J-55	36	LTC	1.125	1.125	DRY	1.8	DRY	1.8
2	PRODUCTI ON	8.75	7.0	NEW	API	Y	0	2825	0	2809	3503		2825	L-80	32	BUTT	1.125	1.125	DRY	1.8	DRY	1.8
3	PRODUCTI ON	8.75	5.5	NEW	API	Y	2825	8643	2809	3140			5818	L-80	17	BUTT	1.125	1.125	DRY	1.8	DRY	1.8

**Casing Attachments**

Casing ID: 1 String Type: SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Lake\_5H\_Casing\_Design\_Assumptions\_20180823140249.pdf

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** LAKEWOOD FEDERAL COM

**Well Number:** 5H

**Casing Attachments**

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

Lake\_5H\_Casing\_Design\_Assumptions\_20181012120711.pdf

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

Lake\_5H\_Casing\_Design\_Assumptions\_20180823140354.pdf

**Casing ID:** 3                    **String Type:** PRODUCTION

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

Lake\_5H\_Casing\_Design\_Assumptions\_20181012120854.pdf

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

Lake\_5H\_Casing\_Design\_Assumptions\_20180823140342.pdf

**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	1279	636	1.32	14.8	840	100	Class C	2% CaCl + ¼ pound per sack celloflake

PRODUCTION	Lead		0	2825	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	2825	1450	1.32	14.8	1914	50	Class C	2% CaCl + ¼ pound per sack celloflake
PRODUCTION	Lead		0	8643	495	1.97	12.6	975	50	65/65/6 Class C	6% gel + 5% salt + ¼ pound per sack

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** LAKEWOOD FEDERAL COM

**Well Number:** 5H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Tail		0	8643	1450	1.32	14.8	1914	50	Class C	celloflake + 0.2% C41-P 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	1270	OTHER : Fresh water/gel	8.4	9.2							
1279	2528	OTHER : Fresh water/cut brine	8.3	9.2							
2528	8643	OTHER : Cut brine	8.6	9.2							

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** LAKEWOOD FEDERAL COM

**Well Number:** 5H

### **Section 6 - Test, Logging, Coring**

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

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

No electric logs are planned at this time.

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

MUDLOG

**Coring operation description for the well:**

No core or drill stem test is planned.

### **Section 7 - Pressure**

**Anticipated Bottom Hole Pressure:** 1338

**Anticipated Surface Pressure:** 647.2

**Anticipated Bottom Hole Temperature(F):** 117

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

**Describe:**

**Contingency Plans geohazards description:**

**Contingency Plans geohazards attachment:**

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

**Hydrogen sulfide drilling operations plan:**

Lake\_5H\_H2S\_Plan\_20180823140650.pdf

### **Section 8 - Other Information**

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

Lake\_5H\_Horizontal\_Drill\_Plan\_20180823140736.pdf

**Other proposed operations facets description:**

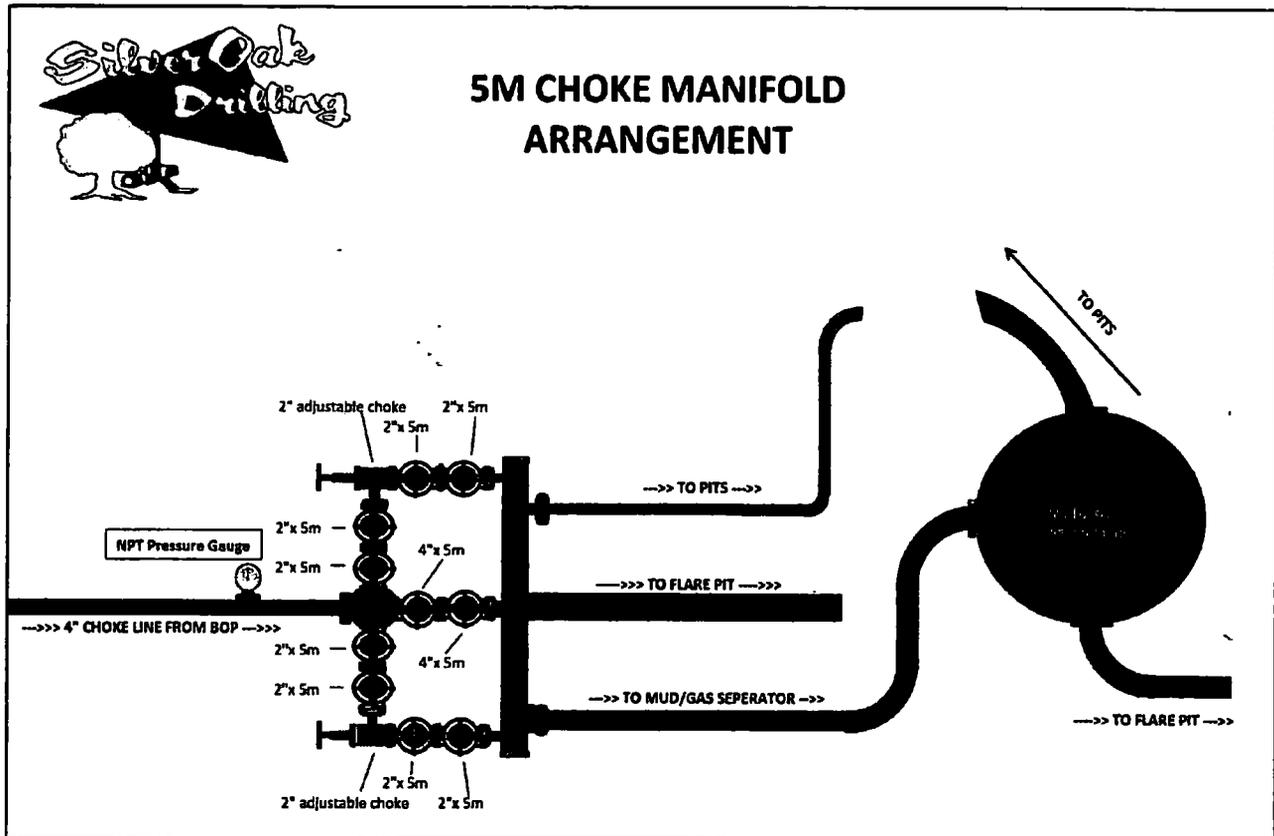
Deficiencies addressed: Added PPP for NMNM 15291; revised 5.5 in top MD; added contingency plan

**Other proposed operations facets attachment:**

Lake\_5H\_Drill\_Plan\_20181012132346.pdf

Lake\_5H\_Contingency\_Plan\_20181012132452.pdf

**Other Variance attachment:**



### Pressure Testing

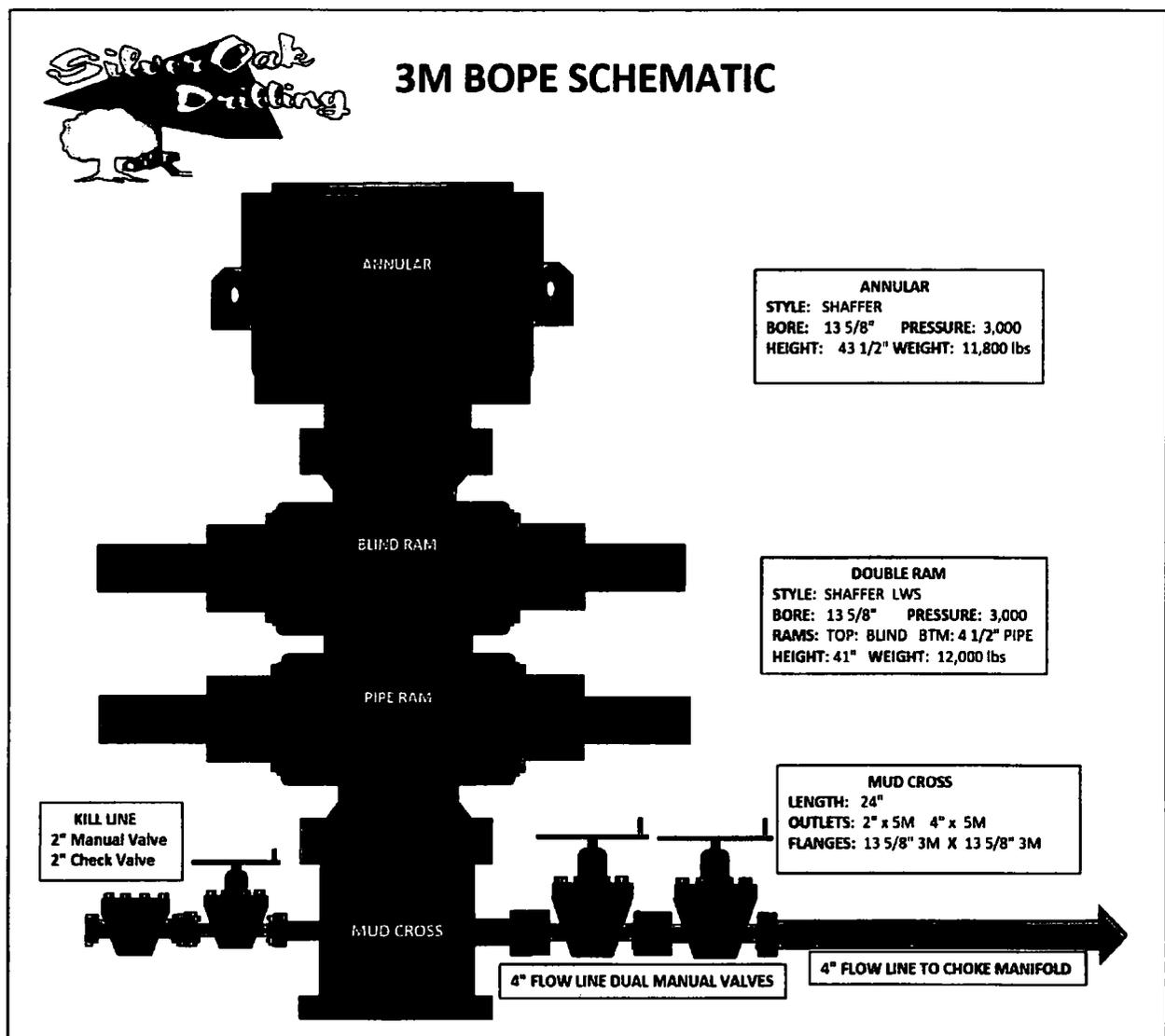
- a. All testing to be done with 3<sup>rd</sup> party testing crews
- b. All tests should be done for each BOP/Valve/Choke Manifold:
  1. Recorded for 10 minutes on low pressure (500 psi)
  2. Recorded for 10 minutes on high pressure (3000 psi)
  3. All BOP testing will be completed with a test plug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

### Gas Buster Operation

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

### Nipple-Up

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





## Casing Design Criteria and Load Case Assumptions

Percussion Petroleum Operating, LLC.  
 919 Milam Street, Suite 2475  
 Houston, TX 77002

### Lakewood Federal Com horizontal 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:  $DF_g=1.125$ 
  - 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: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (10.5 ppg).

4. 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)
7"	32	L-80	BTC	6.094	5.969	8,600	9,060	745	0.0361
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: 86,522 lbs (assuming 8.4 ppg fluid and 3,500' TVD-worst case scenario)**



## Casing Design Criteria and Load Case Assumptions

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## Casing Design Criteria and Load Case Assumptions

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## Casing Design Criteria and Load Case Assumptions

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 Houston, TX 77002

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## Casing Design Criteria and Load Case Assumptions

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Tension	1.8	2.29	100 klbs Overpull	Mud		Mud			

**Buoyed Casing Weight: 86,522 lbs (assuming 8.4 ppg fluid and 3,500' TVD-worst case scenario)**

## Contingency Planning – Lakewood Federal Area Wells

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

### INTRODUCTION:

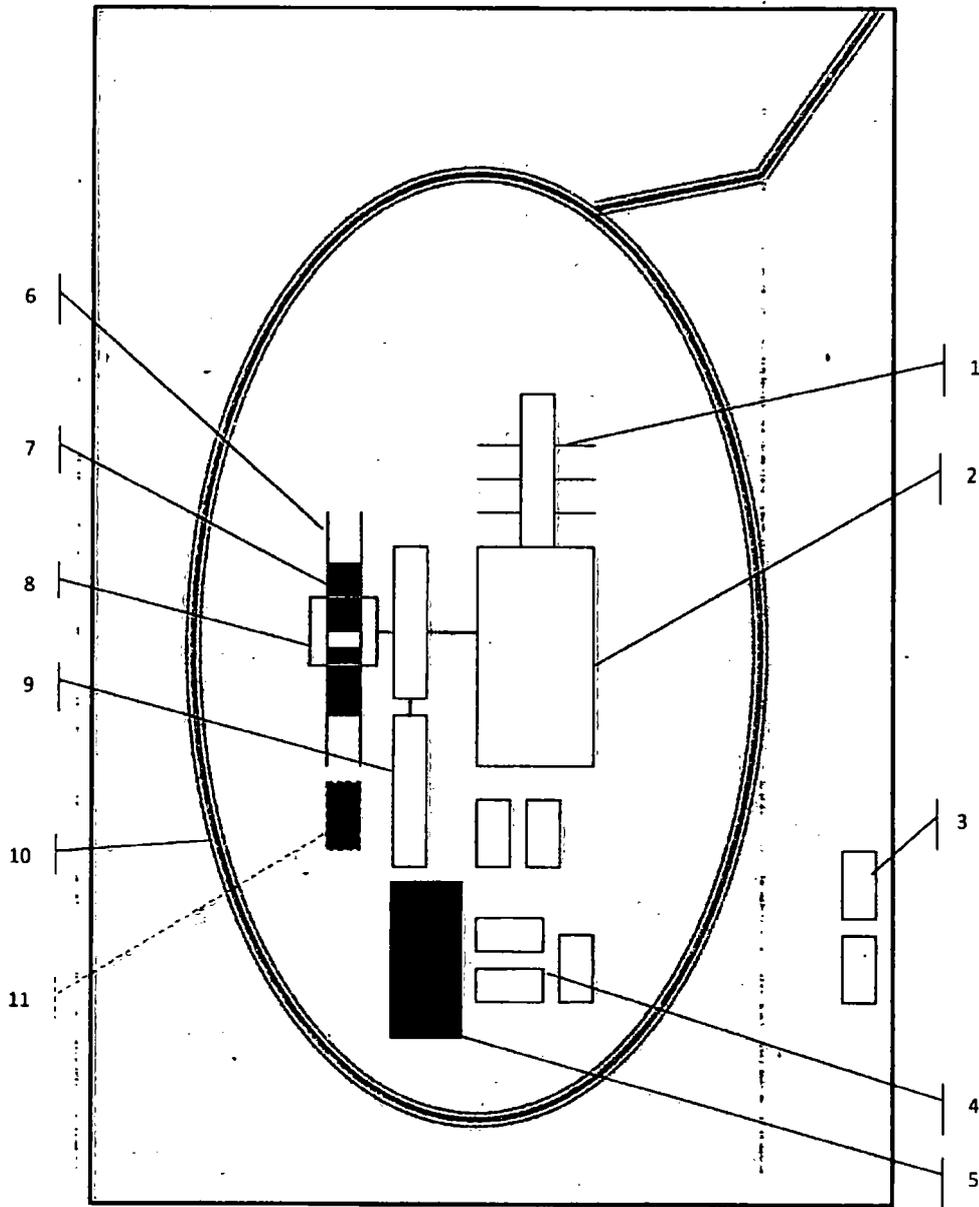
This document is designed to address the issues that could arise at any time drilling horizontal Yeso wells. Percussion Petroleum Operating (PPO) is going to follow regularly used practices and procedures in order to drill the wells to TD and still keep them economical to operate.

### SCENARIO:

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



**Schematic Closed Loop Drilling Rig\***

1. Pipe Rack
2. Drill Rig
3. House Trailers/ Offices
4. Generator/Fuel/Storage
5. Overflow-Frac Tank
6. Skids
7. Roll Offs
8. Hopper or Centrifuge
9. Mud Tanks
10. Loop Drive
11. Generator (only for use with centrifuge)

\*Not drawn to scale: Closed loop system requires at least 30 feet beyond mud tanks. Ideally 60 feet would be available

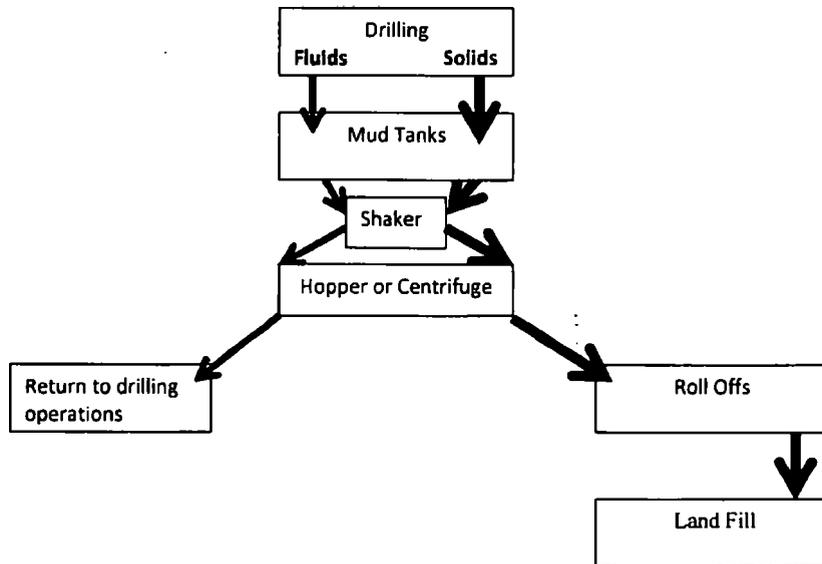


Above: Centrifugal Closed Loop System



**Closed Loop Drilling System: Mud tanks to right (1)  
 Hopper in air to settle out solids (2)  
 Water return pipe (3)  
 Shaker between hopper and mud tanks (4)  
 Roll offs on skids (5)**

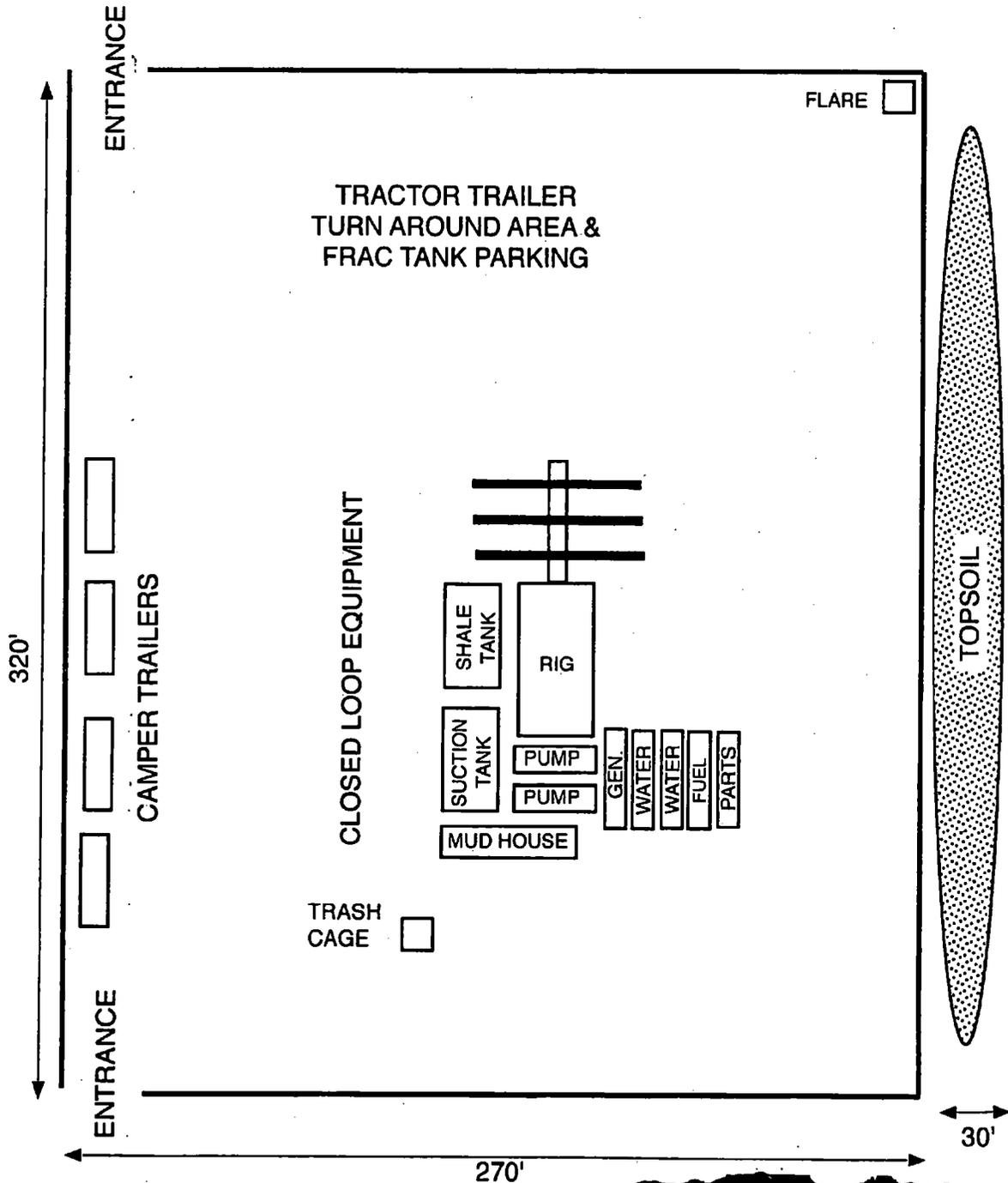
**Flow Chart for Drilling Fluids and Solids**



Photos Courtesy of Gandy Corporation Oil Field Service

Percussion's  
Lakewood Federal Com 5H  
rig diagram

Prevailing Wind  
out of South  
or SSE  NORTH  
.1" = 50'





## Hydrogen Sulfide Drilling Operations Plan

Percussion Petroleum Operating, LLC.  
919 Milam Street, Suite 2475  
Houston, TX 77002

1. H<sub>2</sub>S Safety Instructions to the following:
  - Characteristics of H<sub>2</sub>S.
  - Physical effects and hazards.
  - Principal and operation of H<sub>2</sub>S detectors, warning system and briefing areas.
  - Evacuation procedures, routes and First Aid.
  - Proper use of safety equipment and life support systems.
  - Essential personnel meeting medical evaluation criteria will receive additional training on the proper use of 30 min pressure demand air packs.
  
2. H<sub>2</sub>S Detection & Alarm Systems:
  - H<sub>2</sub>S sensor/detectors to be located on the drilling rig floor, in the base of the sub structure/cellar area, on the mud returns pits by the shale shaker. Additional H<sub>2</sub>S monitors may be placed as deemed necessary.
  - An audio alarm system will be installed on the derrick, the floor, and in the doghouse.
  
3. Windssocks and Wind Streamers:
  - Windssocks at mud pit area should be high enough to be visible.
  - Windssock on the rig floor/top of doghouse should be high enough to be visible.
  
4. Condition Flags & Signs:
  - Warning sign on access road to location
  - Flags to be displayed on sign at entrance to location
    - i. Green Flag – Normal Safe Operation Condition
    - ii. Yellow Flag – Potential Pressure and Danger
    - iii. Red Flag – Danger (H<sub>2</sub>S present in dangerous concentrations) Only H<sub>2</sub>S trained personnel admitted on location
  
5. Well Control Equipment:
  - See attached APD



6. Communications:

- While working under masks, chalkboards will be used for communications
- Hand signals will be used where chalk board is inappropriate
- Two-way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at drilling foreman's trailer or living quarters.

7. Drilling Stem Testing:

- No Drill Stem Tests or hole coring is planned at this time.

8. Drilling contractor supervisor will be required to be familiar with the effects H<sub>2</sub>S has on tubular goods and other mechanical equipment.

9. If H<sub>2</sub>S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H<sub>2</sub>S scavenger chemicals if necessary.

10. Emergency Contacts:

Emergency Contact Information - H <sub>2</sub> S 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



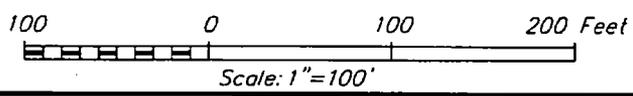
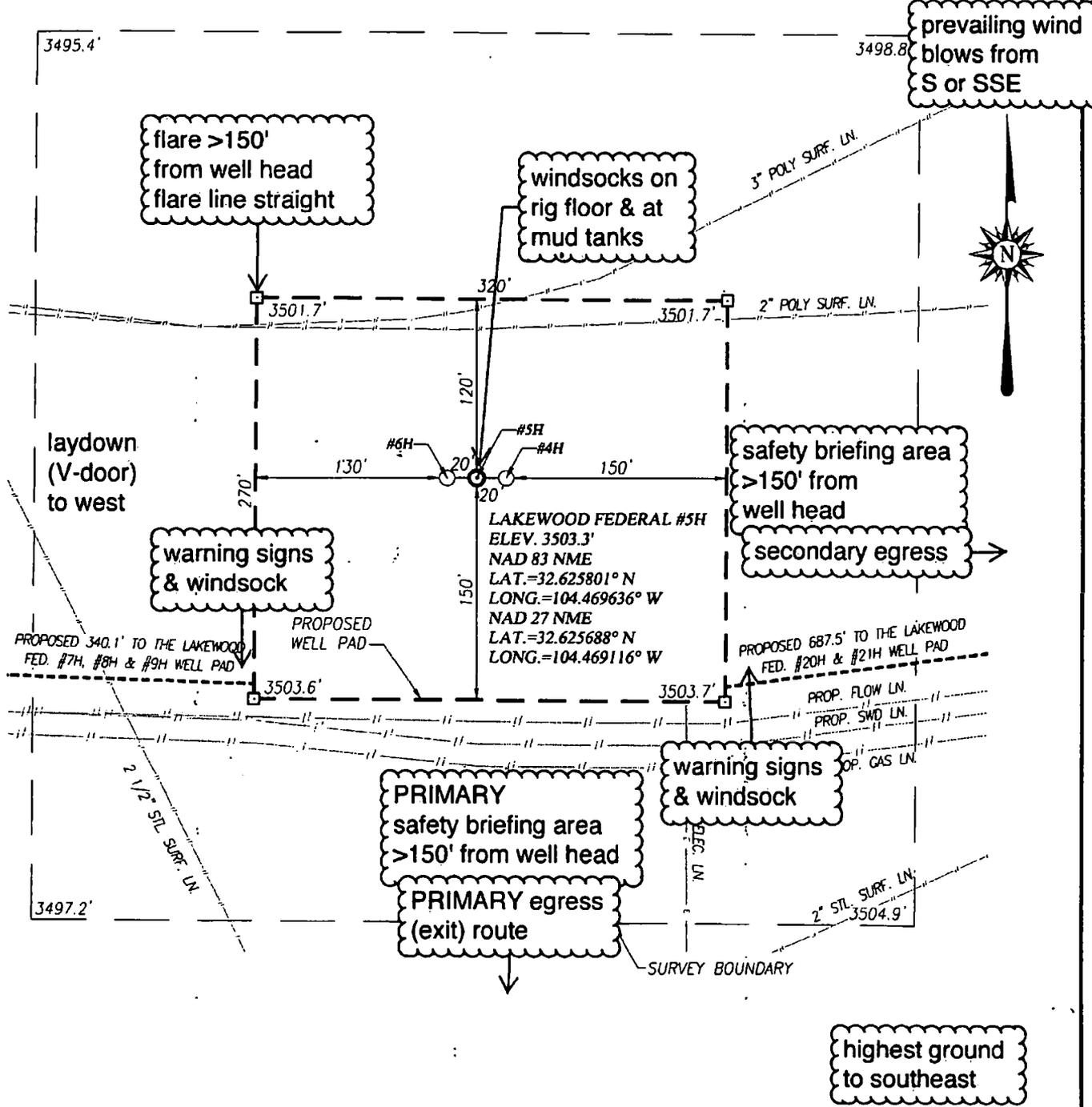
<b>Santa Fe, New Mexico:</b>	
New Mexico Emergency Response Commission	505-476-9600
New Mexico Emergency Response Commission (24 hr)	505-827-9126
New Mexico State Emergency Operations Center	505-476-9635

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

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

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

# WELL SITE PLAN



**PERCUSSION PETROLEUM OPERATING, LLC**

**LAKWOOD FEDERAL #5H WELL LOCATED 500 FEET FROM THE SOUTH LINE AND 1710 FEET FROM THE EAST LINE OF SECTION 27, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO**

PROVIDING SURVEYING SERVICES  
SINCE 1946  
**JOHN WEST SURVEYING COMPANY**  
412 N. DAL PASO HOBBS, N.M. 88240  
(575) 393-3117 www.jwsc.biz  
TBPLS# 10021000

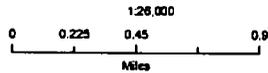
Survey Date: 02/21/18	CAD Date: 3/07/18	Drawn By: ACK
W.O. No.: 18110107	Rev: 06/18/18	Rel. W.O.:
		Sheet 1 of 1

# Percussion Petroleum Operating, LLC

Lakewood Federal Com 6W/5H/4H  
H<sub>2</sub>S Contingency Plan:  
Radius Map

Section 27, Township 19S, Range 25E  
Eddy County, New Mexico

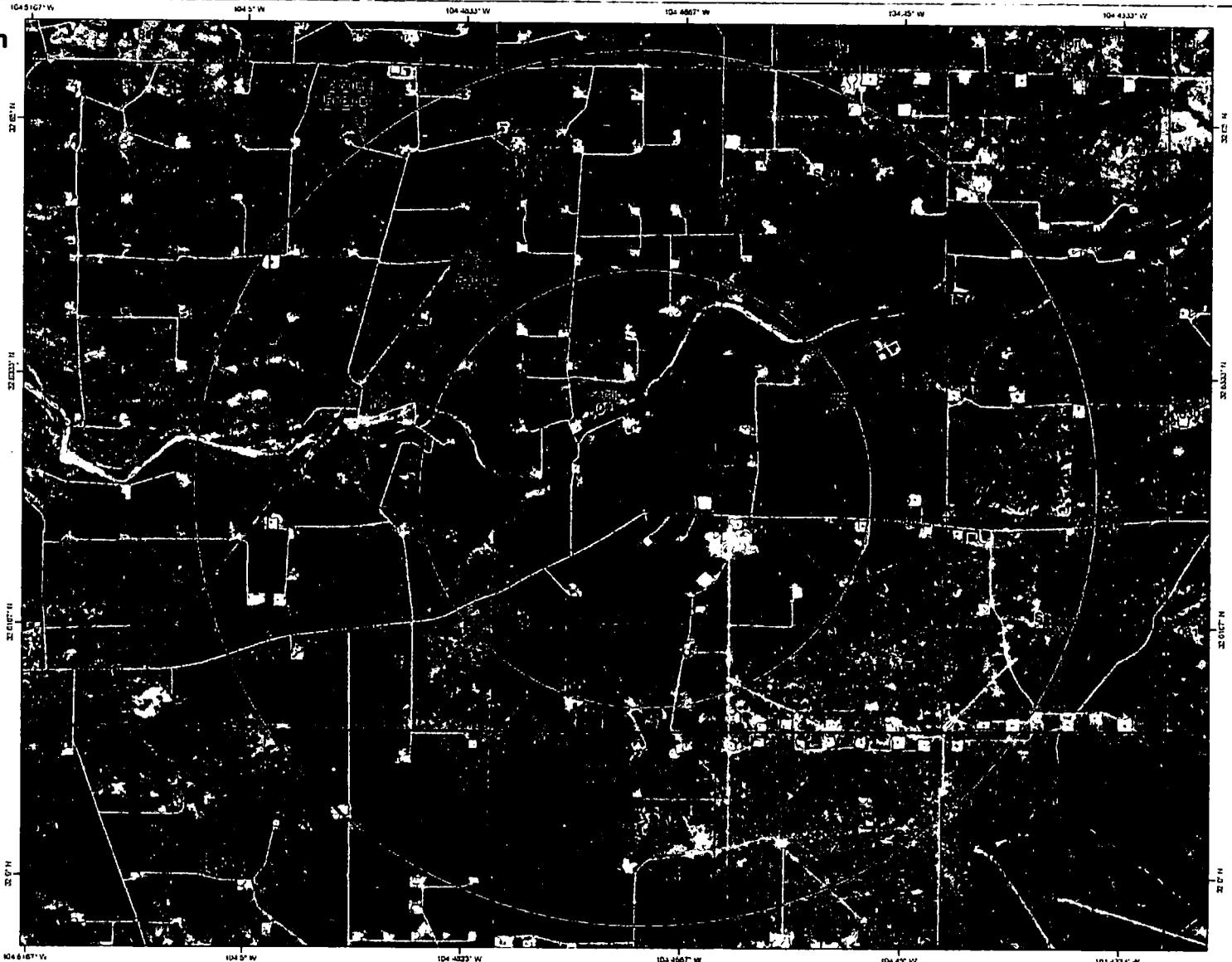
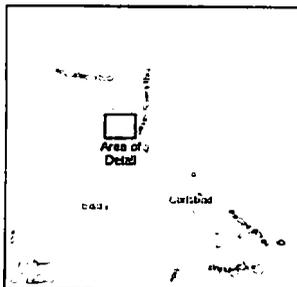
 Surface Hole Location



NAD 1983 New Mexico State Plane East  
FIPS 3001 Foot

**PERMITS WEST**  
PROFESSIONAL ENGINEERS

Prepared by Permits West, Inc., June 26, 2018  
for Percussion Petroleum Operating, LLC





Company: Percussion Petroleum, LLC  
 Project: Eddy County, NM  
 Site: Lakewood Federal  
 Well: 5H  
 Rig: Silver Oak 1  
 Designer: Plan #2 / 10:40, May 01 2018

PROJECT DETAILS: Eddy County, NM  
 Coordinate System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 80  
 Zone: New Mexico Eastern Zone  
 System Datum: Mean Sea Level



**TOTAL CORRECTION**  
 Magnetic North is 7.38° East of Grid North (Magnetic Convergence)

WELL DETAILS: 5H

RKB=17 @ 3520.00uoft (Silver Oak 1)

3603.00  
 Northing 591424.10 Easting 499374.80  
 Longitude -104.469836  
 Latitude 31.625801

Sec	MD	Inc	+E-W	+N-S	TVD	+N-S	+E-W	Diag	V-Sect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	118.98	2.00	224.25	328.94	118.98	1.22	0.00	0.00	0.00
3	2527.43	2.00	224.25	2528.67	271.32	-32.07	0.00	33.09	0.00
4	3407.01	68.40	180.31	3085.05	-598.60	-48.60	10.00	698.85	0.00
5	8563.37	89.40	180.31	3138.15	-2765.60	-78.17	0.00	6768.93	0.00
6	8563.37	89.40	180.31	3140.00	-6635.80	-78.60	0.00	6938.93	0.00

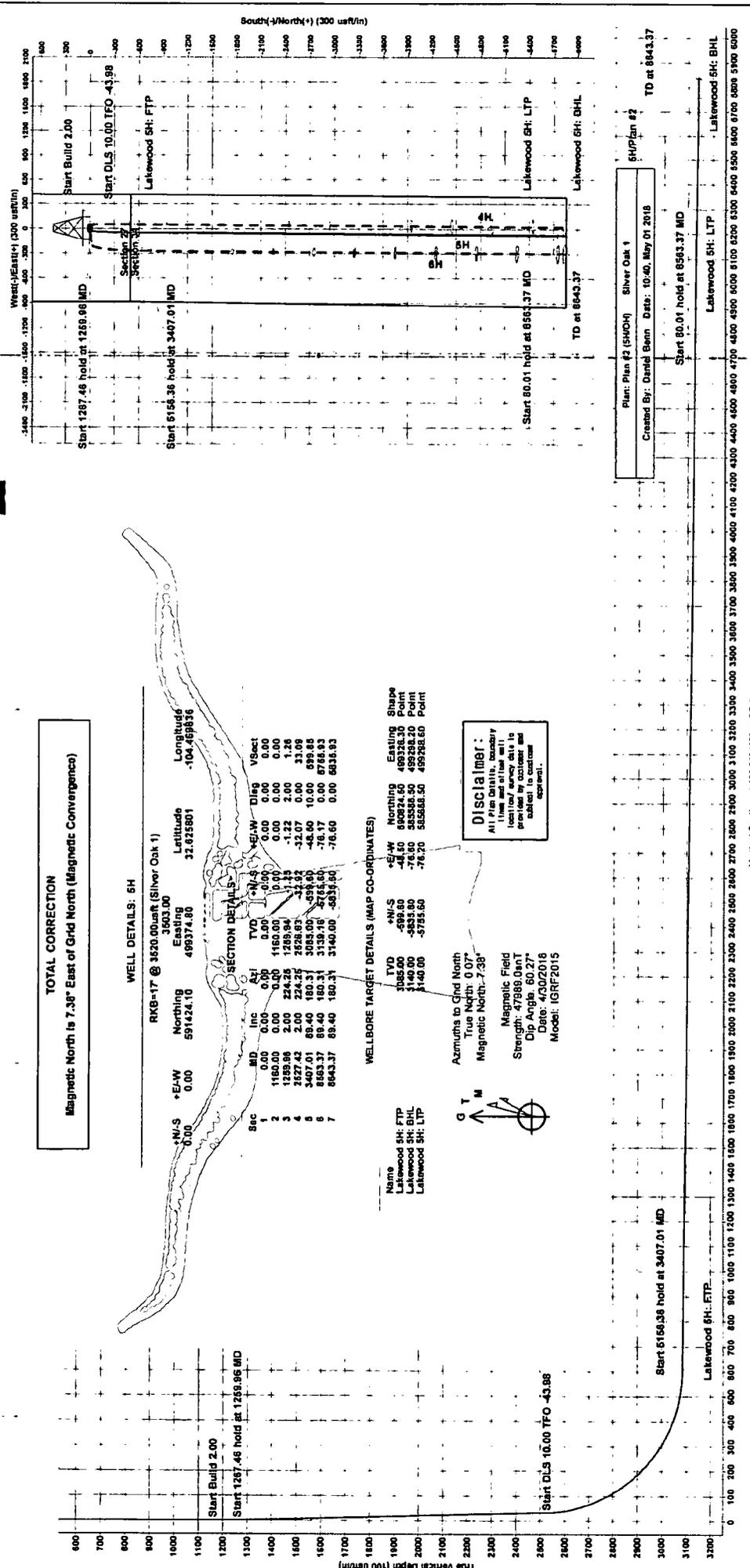
WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+E-W	+N-S	Northing	Eastng	Shape
Lakewood 5H: FTP	1140.00	-5831.80	-748.50	563588.50	499288.20	Point
Lakewood 5H: BHL	1140.00	-5831.80	-748.50	563588.50	499288.20	Point
Lakewood 5H: LTP	1140.00	-5831.80	-748.50	563588.50	499288.20	Point

Azimuths to Grid North  
 True North: 0.07°  
 Magnetic North: 7.38°

Magnetic Field  
 Strength: 47989.0anT  
 Dip Angle: 60.27°  
 Date: 4/30/2018  
 Model: IGRF2015

**Disclaimer:**  
 All plan details, boundary locations, survey data is provided by customer and subject to customer approval.



Plan: Plan #2 (5H0H) Silver Oak 1  
 Created By: David Bann Data: 10:40, May 01 2018  
 TD at 8643.37  
 Start 80.01 hold at 6563.37 MD  
 Lakewood 5H: LTP  
 Lakewood 5H: BHL  
 Lakewood 5H: FTP  
 TD at 8643.37  
 Start 1287.48 hold at 1288.96 MD  
 Start DLS 10.00 TFO -43.88  
 Lakewood 5H: FTP  
 Start 5158.38 hold at 3407.01 MD  
 Lakewood 5H: LTP  
 TD at 8643.37  
 Lakewood 5H: BHL

Vertical Section at 160.31° (100 uoft/in)



# Wellbenders Planning Report



**Database:** WBDS\_SQL\_2  
**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Site:** Lakewood Federal  
**Well:** 5H  
**Wellbore:** OH  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well 5H  
**TVD Reference:** RKB=17' @ 3520.00usft (Silver Oak 1)  
**MD Reference:** RKB=17' @ 3520.00usft (Silver Oak 1)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature

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

<b>Site</b>	Lakewood Federal				
<b>Site Position:</b>		<b>Northing:</b>	590,773.07 usft	<b>Latitude:</b>	32.624012
<b>From:</b>	Lat/Long	<b>Easting:</b>	499,537.28 usft	<b>Longitude:</b>	-104.469106
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	-0.07 °

<b>Well:</b>	5H				
<b>Well Position</b>	+N/-S	651.04 usft	<b>Northing:</b>	591,424.10 usft	<b>Latitude:</b> 32.625801
	+E/-W	-162.48 usft	<b>Easting:</b>	499,374.80 usft	<b>Longitude:</b> -104.469636
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>		<b>Ground Level:</b> 3,503.00 usft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	4/30/2018	7.31	60.27	47,989.01265263

<b>Design</b>	Plan #2			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	180.31

<b>Plan Survey Tool Program</b>	Date 5/1/2018			
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.00	8,643.06 Plan #2 (OH)	MWD+IGRF	OWSG MWD + IGRF or WA

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	
1,160.00	0.00	0.00	1,160.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,259.96	2.00	224.25	1,259.94	-1.25	-1.22	2.00	2.00	0.00	224.25	
2,527.42	2.00	224.25	2,526.63	-32.92	-32.07	0.00	0.00	0.00	0.00	
3,407.01	89.40	180.31	3,085.00	-599.60	-48.50	10.00	9.94	-5.00	-43.98	Lakewood 5H: FTP
8,563.37	89.40	180.31	3,139.16	-5,755.60	-76.17	0.00	0.00	0.00	0.00	Lakewood 5H: LTP
8,643.37	89.40	180.31	3,140.00	-5,835.60	-76.60	0.00	0.00	0.00	0.00	Lakewood 5H: BHL

<b>Database:</b>	WBDS_SQL_2	<b>Local Co-ordinate Reference:</b>	Well 5H
<b>Company:</b>	Percussion Petroleum, LLC	<b>TVD Reference:</b>	RKB=17' @ 3520.00usft (Silver Oak 1)
<b>Project:</b>	Eddy County, NM	<b>MD Reference:</b>	RKB=17' @ 3520.00usft (Silver Oak 1)
<b>Site:</b>	Lakewood Federal	<b>North Reference:</b>	Grid
<b>Well:</b>	5H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2		

Planned Survey:									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,160.00	0.00	0.00	1,160.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.80	224.25	1,200.00	-0.20	-0.19	0.20	2.00	2.00	0.00
1,259.96	2.00	224.25	1,259.94	-1.25	-1.22	1.26	2.00	2.00	0.00
1,300.00	2.00	224.25	1,299.96	-2.25	-2.19	2.26	0.00	0.00	0.00
1,400.00	2.00	224.25	1,399.89	-4.75	-4.63	4.77	0.00	0.00	0.00
1,500.00	2.00	224.25	1,499.83	-7.25	-7.06	7.29	0.00	0.00	0.00
1,600.00	2.00	224.25	1,599.77	-9.75	-9.50	9.80	0.00	0.00	0.00
1,700.00	2.00	224.25	1,699.71	-12.24	-11.93	12.31	0.00	0.00	0.00
1,800.00	2.00	224.25	1,799.65	-14.74	-14.36	14.82	0.00	0.00	0.00
1,900.00	2.00	224.25	1,899.59	-17.24	-16.80	17.33	0.00	0.00	0.00
2,000.00	2.00	224.25	1,999.53	-19.74	-19.23	19.84	0.00	0.00	0.00
2,100.00	2.00	224.25	2,099.47	-22.24	-21.67	22.36	0.00	0.00	0.00
2,200.00	2.00	224.25	2,199.41	-24.74	-24.10	24.87	0.00	0.00	0.00
2,300.00	2.00	224.25	2,299.35	-27.24	-26.54	27.38	0.00	0.00	0.00
2,400.00	2.00	224.25	2,399.29	-29.74	-28.97	29.89	0.00	0.00	0.00
2,500.00	2.00	224.25	2,499.22	-32.24	-31.41	32.40	0.00	0.00	0.00
2,527.42	2.00	224.25	2,526.63	-32.92	-32.07	33.09	0.00	0.00	0.00
2,550.00	3.95	200.84	2,549.18	-33.93	-32.62	34.11	10.00	8.63	-103.67
2,600.00	8.81	189.29	2,598.86	-39.32	-33.86	39.50	10.00	9.72	-23.10
2,650.00	13.77	185.97	2,647.87	-49.02	-35.09	49.21	10.00	9.92	-6.64
2,700.00	18.75	184.39	2,695.86	-62.96	-36.33	63.15	10.00	9.96	-3.16
2,750.00	23.74	183.45	2,742.45	-81.02	-37.55	81.22	10.00	9.98	-1.87
2,800.00	28.73	182.83	2,787.28	-103.08	-38.75	103.29	10.00	9.98	-1.25
2,850.00	33.72	182.37	2,830.03	-128.97	-39.92	129.18	10.00	9.99	-0.91
2,900.00	38.72	182.02	2,870.35	-158.48	-41.04	158.70	10.00	9.99	-0.70
2,950.00	43.71	181.75	2,907.95	-191.40	-42.12	191.62	10.00	9.99	-0.56
3,000.00	48.71	181.51	2,942.54	-227.47	-43.15	227.70	10.00	9.99	-0.47
3,050.00	53.71	181.31	2,973.85	-266.42	-44.10	266.65	10.00	10.00	-0.40
3,100.00	58.71	181.14	3,001.65	-307.95	-44.99	308.19	10.00	10.00	-0.35
3,150.00	63.71	180.98	3,025.73	-351.74	-45.80	351.99	10.00	10.00	-0.32
3,200.00	68.70	180.83	3,045.90	-397.47	-46.52	397.72	10.00	10.00	-0.29
3,250.00	73.70	180.70	3,062.00	-444.79	-47.15	445.04	10.00	10.00	-0.27
3,300.00	78.70	180.57	3,073.92	-493.33	-47.69	493.58	10.00	10.00	-0.26
3,350.00	83.70	180.45	3,081.57	-542.72	-48.13	542.97	10.00	10.00	-0.25
3,400.00	88.70	180.32	3,084.88	-592.59	-48.46	592.85	10.00	10.00	-0.24
3,407.01	89.40	180.31	3,085.00	-599.60	-48.50	599.85	10.00	10.00	-0.24
3,500.00	89.40	180.31	3,085.98	-692.59	-49.00	692.84	0.00	0.00	0.00
3,600.00	89.40	180.31	3,087.03	-792.58	-49.54	792.84	0.00	0.00	0.00
3,700.00	89.40	180.31	3,088.08	-892.57	-50.07	892.83	0.00	0.00	0.00
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4,000.00	89.40	180.31	3,091.23	-1,192.55	-51.68	1,192.81	0.00	0.00	0.00



# Wellbenders Planning Report



**Database:** WBDS\_SQL\_2  
**Company:** Percussion Petroleum, LLC  
**Project:** Eddy County, NM  
**Site:** Lakewood Federal  
**Well:** 5H  
**Wellbore:** OH  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well 5H  
**TVD Reference:** RKB=17' @ 3520.00usft (Silver Oak 1)  
**MD Reference:** RKB=17' @ 3520.00usft (Silver Oak 1)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature

## Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,100.00	89.40	180.31	3,092.28	-1,292.54	-52.22	1,292.81	0.00	0.00	0.00
4,200.00	89.40	180.31	3,093.33	-1,392.54	-52.76	1,392.80	0.00	0.00	0.00
4,300.00	89.40	180.31	3,094.38	-1,492.53	-53.29	1,492.80	0.00	0.00	0.00
4,400.00	89.40	180.31	3,095.43	-1,592.52	-53.83	1,592.79	0.00	0.00	0.00
4,500.00	89.40	180.31	3,096.48	-1,692.52	-54.37	1,692.79	0.00	0.00	0.00
4,600.00	89.40	180.31	3,097.53	-1,792.51	-54.90	1,792.78	0.00	0.00	0.00
4,700.00	89.40	180.31	3,098.58	-1,892.50	-55.44	1,892.77	0.00	0.00	0.00
4,800.00	89.40	180.31	3,099.63	-1,992.50	-55.98	1,992.77	0.00	0.00	0.00
4,900.00	89.40	180.31	3,100.68	-2,092.49	-56.51	2,092.76	0.00	0.00	0.00
5,000.00	89.40	180.31	3,101.73	-2,192.48	-57.05	2,192.76	0.00	0.00	0.00
5,100.00	89.40	180.31	3,102.78	-2,292.47	-57.59	2,292.75	0.00	0.00	0.00
5,200.00	89.40	180.31	3,103.83	-2,392.47	-58.12	2,392.75	0.00	0.00	0.00
5,300.00	89.40	180.31	3,104.88	-2,492.46	-58.66	2,492.74	0.00	0.00	0.00
5,400.00	89.40	180.31	3,105.93	-2,592.45	-59.20	2,592.74	0.00	0.00	0.00
5,500.00	89.40	180.31	3,106.98	-2,692.45	-59.73	2,692.73	0.00	0.00	0.00
5,600.00	89.40	180.31	3,108.03	-2,792.44	-60.27	2,792.73	0.00	0.00	0.00
5,700.00	89.40	180.31	3,109.08	-2,892.43	-60.80	2,892.72	0.00	0.00	0.00
5,800.00	89.40	180.31	3,110.13	-2,992.43	-61.34	2,992.71	0.00	0.00	0.00
5,900.00	89.40	180.31	3,111.19	-3,092.42	-61.88	3,092.71	0.00	0.00	0.00
6,000.00	89.40	180.31	3,112.24	-3,192.41	-62.41	3,192.70	0.00	0.00	0.00
6,100.00	89.40	180.31	3,113.29	-3,292.41	-62.95	3,292.70	0.00	0.00	0.00
6,200.00	89.40	180.31	3,114.34	-3,392.40	-63.49	3,392.69	0.00	0.00	0.00
6,300.00	89.40	180.31	3,115.39	-3,492.39	-64.02	3,492.69	0.00	0.00	0.00
6,400.00	89.40	180.31	3,116.44	-3,592.38	-64.56	3,592.68	0.00	0.00	0.00
6,500.00	89.40	180.31	3,117.49	-3,692.38	-65.10	3,692.68	0.00	0.00	0.00
6,600.00	89.40	180.31	3,118.54	-3,792.37	-65.63	3,792.67	0.00	0.00	0.00
6,700.00	89.40	180.31	3,119.59	-3,892.36	-66.17	3,892.66	0.00	0.00	0.00
6,800.00	89.40	180.31	3,120.64	-3,992.36	-66.71	3,992.66	0.00	0.00	0.00
6,900.00	89.40	180.31	3,121.69	-4,092.35	-67.24	4,092.65	0.00	0.00	0.00
7,000.00	89.40	180.31	3,122.74	-4,192.34	-67.78	4,192.65	0.00	0.00	0.00
7,100.00	89.40	180.31	3,123.79	-4,292.34	-68.32	4,292.64	0.00	0.00	0.00
7,200.00	89.40	180.31	3,124.84	-4,392.33	-68.85	4,392.64	0.00	0.00	0.00
7,300.00	89.40	180.31	3,125.89	-4,492.32	-69.39	4,492.63	0.00	0.00	0.00
7,400.00	89.40	180.31	3,126.94	-4,592.31	-69.93	4,592.63	0.00	0.00	0.00
7,500.00	89.40	180.31	3,127.99	-4,692.31	-70.46	4,692.62	0.00	0.00	0.00
7,600.00	89.40	180.31	3,129.04	-4,792.30	-71.00	4,792.62	0.00	0.00	0.00
7,700.00	89.40	180.31	3,130.09	-4,892.29	-71.54	4,892.61	0.00	0.00	0.00
7,800.00	89.40	180.31	3,131.14	-4,992.29	-72.07	4,992.60	0.00	0.00	0.00
7,900.00	89.40	180.31	3,132.19	-5,092.28	-72.61	5,092.60	0.00	0.00	0.00
8,000.00	89.40	180.31	3,133.24	-5,192.27	-73.15	5,192.59	0.00	0.00	0.00
8,100.00	89.40	180.31	3,134.29	-5,292.27	-73.68	5,292.59	0.00	0.00	0.00
8,200.00	89.40	180.31	3,135.34	-5,392.26	-74.22	5,392.58	0.00	0.00	0.00
8,300.00	89.40	180.31	3,136.39	-5,492.25	-74.76	5,492.58	0.00	0.00	0.00
8,400.00	89.40	180.31	3,137.44	-5,592.25	-75.29	5,592.57	0.00	0.00	0.00
8,500.00	89.40	180.31	3,138.49	-5,692.24	-75.83	5,692.57	0.00	0.00	0.00
8,563.37	89.40	180.31	3,139.16	-5,755.60	-76.17	5,755.93	0.00	0.00	0.00
8,600.00	89.40	180.31	3,139.54	-5,792.23	-76.37	5,792.56	0.00	0.00	0.00
8,643.37	89.40	180.31	3,140.00	-5,835.60	-76.60	5,835.93	0.00	0.00	0.00



# Wellbenders Planning Report



<b>Database:</b>	WBDS_SQL_2	<b>Local Co-ordinate Reference:</b>	Well 5H
<b>Company:</b>	Percussion Petroleum, LLC	<b>TVD Reference:</b>	RKB=17' @ 3520.00usft (Silver Oak 1)
<b>Project:</b>	Eddy County, NM	<b>MD Reference:</b>	RKB=17' @ 3520.00usft (Silver Oak 1)
<b>Site:</b>	Lakewood Federal	<b>North Reference:</b>	Grid
<b>Well:</b>	5H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
Lakewood 5H: FTP - plan hits target center - Point	0.00	360.00	3,085.00	-599.60	-48.50	590,824.50	499,326.30	32.624153	-104.469791
Lakewood 5H: BHL - plan hits target center - Point	0.00	360.00	3,140.00	-5,835.60	-76.60	585,588.50	499,298.20	32.609760	-104.469861
Lakewood 5H: LTP - plan misses target center by 0.84usft at 8563.38usft MD (3139.16 TVD, -5755.61 N, -76.17 E) - Point	0.00	360.00	3,140.00	-5,755.60	-76.20	585,668.50	499,298.60	32.609980	-104.469860



**PERCUSSION**  
PETROLEUM  
LLC

# **Percussion Petroleum, LLC**

**Eddy County, NM  
Lakewood Federal  
5H**

**OH  
Plan #2**

## **Anticollision Report**

**01 May, 2018**

**WELLBENDERS**  
DIRECTIONAL SERVICES LLC





# Wellbenders Anticollision Report



Company: Percussion Petroleum, LLC	Local Co-ordinate Reference: Well 5H	
Project: Eddy County, NM	TVD Reference: RKB=17' @ 3520.00usft (Silver Oak 1)	
Reference Site: Lakewood Federal	MD Reference: RKB=17' @ 3520.00usft (Silver Oak 1)	
Site Error: 0.00 usft	North Reference: Grid	
Reference Well: 5H	Survey Calculation Method: Minimum Curvature	
Well Error: 0.00 usft	Output errors are at: 2.00 sigma	
Reference Wellbore: OH	Database: WBDS_SQL_2	
Reference Design: Plan #2	Offset TVD Reference: Reference Datum	

Reference	Plan #2	
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria	
Interpolation Method:	MD + Stations Interval 100.00usft	Error Model: ISCWSA
Depth Range:	Unlimited	Scan Method: Closest Approach 3D
Results Limited by:	Maximum center-center distance of 9,999.00 us	Error Surface: Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method: Not applied

Survey Tool Program	Date 5/1/2018	
From (usft)	To (usft)	Survey (Wellbore)
0.00	8,643.06	Plan #2 (OH)
		Tool Name
		Description
		MWD+IGRF
		OWSG MWD + IGRF or WMM

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Lakewood Federal						
4H - OH - Plan #2	700.00	700.00	20.00	15.40	4.349	CC
4H - OH - Plan #2	800.00	799.67	20.61	15.31	3.887	ES
4H - OH - Plan #2	1,160.00	1,159.44	28.88	21.07	3.697	SF
6H - OH - Plan #2	409.41	409.41	20.00	17.48	7.950	CC
6H - OH - Plan #2	500.00	499.69	20.35	17.19	6.439	ES
6H - OH - Plan #2	8,643.82	8,388.94	340.58	179.97	2.120	SF

Offset Design Lakewood Federal - 4H - OH - Plan #2													Offset Site Error: 0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error: 0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Separation Factor	Warning
				Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		
0.00	0.00	0.00	0.00	0.00	0.00	90.29	-0.10	20.00	20.00				
100.00	100.00	100.00	100.00	0.15	0.15	90.29	-0.10	20.00	20.00	19.70	0.30	67.221	
200.00	200.00	200.00	200.00	0.51	0.51	90.29	-0.10	20.00	20.00	18.99	1.01	19.715	
300.00	300.00	300.00	300.00	0.87	0.87	90.29	-0.10	20.00	20.00	18.27	1.73	11.551	
400.00	400.00	400.00	400.00	1.22	1.22	90.29	-0.10	20.00	20.00	17.55	2.45	8.169	
500.00	500.00	500.00	500.00	1.58	1.58	90.29	-0.10	20.00	20.00	16.83	3.17	6.319	
600.00	600.00	600.00	600.00	1.94	1.94	90.29	-0.10	20.00	20.00	16.12	3.88	5.152	
700.00	700.00	700.00	700.00	2.30	2.30	90.29	-0.10	20.00	20.00	15.40	4.60	4.349	CC
800.00	800.00	799.67	799.66	2.66	2.65	92.43	-0.87	20.59	20.61	15.31	5.30	3.887	ES
900.00	900.00	900.44	899.51	3.02	2.98	98.32	-3.28	22.42	22.66	16.67	6.00	3.780	
1,000.00	1,000.00	1,000.49	999.41	3.38	3.32	103.23	-5.70	24.27	24.94	18.25	6.69	3.727	
1,100.00	1,100.00	1,100.53	1,099.32	3.73	3.66	107.29	-8.13	26.12	27.36	19.97	7.39	3.702	
1,160.00	1,160.00	1,159.44	1,159.26	3.95	3.87	109.40	-9.59	27.23	28.88	21.07	7.81	3.697	SF
1,200.00	1,200.00	1,200.58	1,199.23	4.09	4.01	-114.04	-10.56	27.97	30.02	21.93	8.09	3.711	
1,259.96	1,259.94	1,259.34	1,259.12	4.28	4.22	-114.63	-12.01	29.08	32.16	23.67	8.49	3.787	
1,300.00	1,299.96	1,300.66	1,299.10	4.42	4.36	-115.65	-12.99	29.82	33.77	25.00	8.77	3.851	
1,400.00	1,399.89	1,400.75	1,398.96	4.75	4.71	-117.82	-15.41	31.66	37.84	28.38	9.45	4.002	
1,500.00	1,499.83	1,500.84	1,498.83	5.09	5.07	-119.57	-17.84	33.51	41.94	31.80	10.14	4.135	
1,600.00	1,599.77	1,600.93	1,598.69	5.43	5.42	-121.00	-20.26	35.36	46.08	35.24	10.84	4.251	
1,700.00	1,699.71	1,701.02	1,698.55	5.78	5.78	-122.20	-22.69	37.21	50.25	38.71	11.54	4.355	
1,800.00	1,799.65	1,801.12	1,798.41	6.13	6.14	-123.21	-25.12	39.06	54.43	42.19	12.24	4.447	

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



# Wellbenders Anticollision Report



<b>Company:</b>	Percussion Petroleum, LLC	<b>Local Co-ordinate Reference:</b>	Well 5H
<b>Project:</b>	Eddy County, NM	<b>TVD Reference:</b>	RKB=17' @ 3520.00usft (Silver Oak 1)
<b>Reference Site:</b>	Lakewood Federal	<b>MD Reference:</b>	RKB=17' @ 3520.00usft (Silver Oak 1)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	5H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	WBDS_SQL_2
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design Lakewood Federal - 4H - OH - Plan#2													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
1,900.00	1,899.59	1,901.21	1,898.27	6.48	6.49	-124.08	-27.54	40.90	58.63	45.68	12.95	4.529		
2,000.00	1,999.53	1,998.70	1,998.13	6.83	6.84	-124.83	-29.97	42.75	62.84	49.20	13.64	4.606		
2,100.00	2,099.47	2,098.14	2,097.50	7.18	7.20	-124.97	-33.00	44.59	67.15	52.80	14.35	4.680		
2,200.00	2,199.41	2,194.49	2,192.57	7.53	7.57	-115.91	-47.82	46.28	74.38	59.37	15.01	4.955		
2,300.00	2,299.35	2,284.34	2,277.85	7.89	7.95	-100.58	-75.82	47.71	91.30	75.88	15.42	5.923		
2,400.00	2,399.29	2,364.51	2,349.41	8.25	8.35	-86.86	-111.77	48.85	123.59	108.25	15.34	8.059		
2,500.00	2,499.22	2,433.87	2,406.78	8.60	8.77	-77.41	-150.68	49.71	170.75	155.81	14.94	11.428		
2,527.42	2,526.63	2,450.00	2,419.41	8.70	8.87	-75.57	-160.71	49.89	185.86	171.09	14.77	12.585		
2,550.00	2,549.18	2,464.80	2,430.75	8.78	8.98	-49.91	-170.21	50.05	198.58	183.88	14.70	13.511		
2,600.00	2,598.86	2,494.99	2,453.10	8.96	9.19	-34.52	-190.50	50.35	226.25	211.81	14.44	15.671		
2,650.00	2,647.87	2,524.81	2,474.11	9.15	9.43	-28.29	-211.66	50.63	252.97	238.81	14.17	17.856		
2,700.00	2,695.86	2,550.00	2,490.97	9.35	9.64	-24.62	-230.37	50.84	278.58	264.85	13.73	20.289		
2,750.00	2,742.45	2,583.56	2,512.13	9.56	9.95	-21.76	-256.42	51.09	302.77	289.16	13.61	22.244		
2,800.00	2,787.28	2,612.58	2,529.17	9.79	10.23	-19.73	-279.90	51.28	325.57	312.24	13.33	24.428		
2,850.00	2,830.03	2,641.40	2,544.89	10.05	10.53	-18.14	-304.05	51.44	346.85	333.80	13.05	26.587		
2,900.00	2,870.35	2,670.04	2,569.30	10.33	10.84	-16.88	-328.80	51.57	366.53	353.76	12.77	28.702		
2,950.00	2,907.95	2,700.00	2,573.02	10.66	11.18	-15.85	-355.43	51.68	384.56	372.01	12.55	30.640		
3,000.00	2,942.54	2,726.93	2,584.15	11.02	11.51	-15.03	-379.94	51.75	400.87	388.61	12.26	32.697		
3,050.00	2,973.85	2,750.00	2,592.77	11.44	11.80	-14.39	-401.35	51.80	415.49	403.60	11.88	34.964		
3,100.00	3,001.65	2,783.38	2,603.69	11.90	12.23	-13.81	-432.89	51.83	428.20	416.35	11.85	36.127		
3,150.00	3,025.73	2,811.49	2,611.45	12.40	12.61	-13.37	-459.90	51.82	439.15	427.44	11.71	37.513		
3,200.00	3,045.90	2,839.54	2,617.87	12.96	13.00	-13.02	-487.20	51.79	448.25	436.64	11.61	38.609		
3,250.00	3,062.00	2,867.54	2,622.93	13.55	13.39	-12.75	-514.74	51.74	455.47	443.90	11.57	39.366		
3,300.00	3,073.92	2,900.00	2,627.11	14.19	13.86	-12.55	-546.92	51.64	460.85	449.15	11.69	39.412		
3,350.00	3,081.57	2,923.44	2,628.99	14.85	14.21	-12.44	-570.29	51.55	464.24	452.56	11.68	39.741		
3,400.00	3,084.88	2,956.97	2,629.97	15.54	14.71	-12.39	-596.60	51.42	465.76	453.91	11.86	39.288		
3,407.01	3,085.00	2,956.79	2,630.03	15.64	14.71	-12.38	-603.61	51.38	465.83	453.93	11.89	39.163		
3,500.00	3,085.98	3,049.78	2,630.74	16.99	16.16	-12.38	-696.60	50.88	466.09	452.99	13.09	35.593		
3,600.00	3,087.03	3,149.78	2,631.50	18.53	17.78	-12.37	-796.59	50.35	466.37	451.90	14.47	32.230		
3,700.00	3,088.08	3,249.78	2,632.26	20.13	19.45	-12.36	-896.59	49.81	466.65	450.73	15.92	29.319		
3,800.00	3,089.13	3,349.78	2,633.03	21.79	21.17	-12.36	-996.58	49.28	466.93	449.51	17.42	26.811		
3,900.00	3,090.18	3,449.78	2,633.79	23.48	22.91	-12.35	-1,096.58	48.75	467.21	448.25	18.95	24.648		
4,000.00	3,091.23	3,549.78	2,634.56	25.20	24.68	-12.34	-1,196.57	48.21	467.49	446.96	20.53	22.776		
4,100.00	3,092.28	3,649.78	2,635.32	26.95	26.48	-12.33	-1,296.57	47.68	467.77	445.65	22.12	21.146		
4,200.00	3,093.33	3,749.78	2,636.08	28.72	28.28	-12.33	-1,396.57	47.14	468.05	444.31	23.74	19.720		
4,300.00	3,094.38	3,849.78	2,636.85	30.51	30.10	-12.32	-1,496.56	46.61	468.33	442.96	25.37	18.463		
4,400.00	3,095.43	3,949.78	2,637.61	32.31	31.94	-12.31	-1,596.56	46.07	468.61	441.60	27.01	17.351		
4,500.00	3,096.48	4,049.77	2,638.38	34.13	33.78	-12.30	-1,696.55	45.54	468.89	440.23	28.66	16.359		
4,600.00	3,097.53	4,149.77	2,639.14	35.95	35.62	-12.30	-1,796.55	45.00	469.17	438.84	30.32	15.472		
4,700.00	3,098.58	4,249.77	2,639.90	37.78	37.48	-12.29	-1,896.54	44.47	469.45	437.46	31.99	14.673		
4,800.00	3,099.63	4,349.77	2,640.67	39.63	39.34	-12.28	-1,996.54	43.93	469.73	436.06	33.67	13.952		
4,900.00	3,100.68	4,449.77	2,641.43	41.47	41.21	-12.28	-2,096.53	43.40	470.01	434.66	35.35	13.296		
5,000.00	3,101.73	4,549.77	2,642.20	43.33	43.08	-12.27	-2,196.53	42.86	470.29	433.25	37.03	12.699		
5,100.00	3,102.78	4,649.77	2,642.96	45.19	44.95	-12.26	-2,296.52	42.33	470.57	431.85	38.72	12.152		
5,200.00	3,103.83	4,749.77	2,643.72	47.05	46.83	-12.25	-2,396.52	41.79	470.85	430.43	40.42	11.650		
5,300.00	3,104.88	4,849.77	2,644.49	48.92	48.71	-12.25	-2,496.51	41.26	471.13	429.02	42.11	11.188		
5,400.00	3,105.93	4,949.77	2,645.25	50.79	50.59	-12.24	-2,596.51	40.72	471.41	427.60	43.81	10.761		
5,500.00	3,106.98	5,049.77	2,646.02	52.66	52.47	-12.23	-2,696.50	40.19	471.69	426.18	45.51	10.365		
5,600.00	3,108.03	5,149.77	2,646.78	54.54	54.36	-12.23	-2,796.50	39.65	471.97	424.76	47.21	9.997		
5,700.00	3,109.08	5,249.77	2,647.54	56.42	56.25	-12.22	-2,896.49	39.12	472.25	423.34	48.91	9.655		
5,800.00	3,110.13	5,349.77	2,648.31	58.30	58.14	-12.21	-2,996.49	38.58	472.53	421.91	50.62	9.335		
5,900.00	3,111.19	5,449.77	2,649.07	60.18	60.03	-12.20	-3,096.48	38.05	472.81	420.49	52.33	9.036		

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



# Wellbenders Anticollision Report



<b>Company:</b> Percussion Petroleum, LLC	<b>Local Co-ordinate Reference:</b> Well 5H
<b>Project:</b> Eddy County, NM	<b>TVD Reference:</b> RKB=17' @ 3520.00usft (Silver Oak 1)
<b>Reference Site:</b> Lakewood Federal	<b>MD Reference:</b> RKB=17' @ 3520.00usft (Silver Oak 1)
<b>Site Error:</b> 0.00 usft	<b>North Reference:</b> Grid
<b>Reference Well:</b> 5H	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Well Error:</b> 0.00 usft	<b>Output errors are at</b> 2.00 sigma
<b>Reference Wellbore</b> OH	<b>Database:</b> WBDS_SQL_2
<b>Reference Design:</b> Plan #2	<b>Offset TVD Reference:</b> Reference Datum

Offset Design Lakewood Federal - 4H - OH - Plan#2													Offset Site Error: 0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset +N/-S (usft)	Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
6,000.00	3,112.24	5,549.77	2,649.84	62.07	61.92	-12.20	-3,196.48	37.52	473.09	419.06	54.03	8.756	
6,100.00	3,113.29	5,649.77	2,650.60	63.95	63.82	-12.19	-3,296.47	36.98	473.37	417.63	55.74	8.492	
6,200.00	3,114.34	5,749.77	2,651.36	65.84	65.71	-12.18	-3,396.47	36.45	473.65	416.20	57.45	8.245	
6,300.00	3,115.39	5,849.77	2,652.13	67.73	67.61	-12.18	-3,496.47	35.91	473.93	414.77	59.16	8.011	
6,400.00	3,116.44	5,949.77	2,652.89	69.62	69.51	-12.17	-3,596.46	35.38	474.21	413.34	60.87	7.791	
6,500.00	3,117.49	6,049.77	2,653.66	71.51	71.41	-12.16	-3,696.46	34.84	474.49	411.91	62.58	7.582	
6,600.00	3,118.54	6,149.77	2,654.42	73.41	73.30	-12.15	-3,796.45	34.31	474.77	410.48	64.29	7.385	
6,700.00	3,119.59	6,249.77	2,655.18	75.30	75.20	-12.15	-3,896.45	33.77	475.05	409.05	66.01	7.197	
6,800.00	3,120.64	6,349.77	2,655.95	77.20	77.11	-12.14	-3,996.44	33.24	475.33	407.62	67.72	7.019	
6,900.00	3,121.69	6,449.77	2,656.71	79.09	79.01	-12.13	-4,096.44	32.70	475.62	406.18	69.43	6.850	
7,000.00	3,122.74	6,549.76	2,657.48	80.99	80.91	-12.13	-4,196.43	32.17	475.90	404.75	71.14	6.689	
7,100.00	3,123.79	6,649.76	2,658.24	82.89	82.81	-12.12	-4,296.43	31.63	476.18	403.32	72.86	6.536	
7,200.00	3,124.84	6,749.76	2,659.00	84.79	84.71	-12.11	-4,396.42	31.10	476.46	401.89	74.57	6.389	
7,300.00	3,125.89	6,849.76	2,659.77	86.69	86.62	-12.11	-4,496.42	30.56	476.74	400.45	76.28	6.249	
7,400.00	3,126.94	6,949.76	2,660.53	88.59	88.52	-12.10	-4,596.41	30.03	477.02	399.02	78.00	6.116	
7,500.00	3,127.99	7,049.76	2,661.30	90.49	90.43	-12.09	-4,696.41	29.49	477.30	397.59	79.71	5.988	
7,600.00	3,129.04	7,149.76	2,662.06	92.39	92.33	-12.08	-4,796.40	28.96	477.58	396.15	81.43	5.865	
7,700.00	3,130.09	7,249.76	2,662.82	94.29	94.24	-12.08	-4,896.40	28.42	477.86	394.72	83.14	5.748	
7,800.00	3,131.14	7,349.76	2,663.59	96.19	96.14	-12.07	-4,996.39	27.89	478.14	393.28	84.86	5.635	
7,900.00	3,132.19	7,449.76	2,664.35	98.10	98.05	-12.06	-5,096.39	27.35	478.42	391.85	86.57	5.526	
8,000.00	3,133.24	7,549.76	2,665.11	100.00	99.95	-12.06	-5,196.38	26.82	478.70	390.42	88.28	5.422	
8,100.00	3,134.29	7,649.76	2,665.88	101.90	101.86	-12.05	-5,296.38	26.28	478.98	388.98	90.00	5.322	
8,200.00	3,135.34	7,749.76	2,666.64	103.81	103.77	-12.04	-5,396.37	25.75	479.26	387.55	91.71	5.226	
8,300.00	3,136.39	7,849.76	2,667.41	105.71	105.67	-12.04	-5,496.37	25.22	479.54	386.12	93.43	5.133	
8,400.00	3,137.44	7,949.76	2,668.17	107.62	107.58	-12.03	-5,596.37	24.68	479.82	384.68	95.14	5.043	
8,500.00	3,138.49	8,049.76	2,668.93	109.52	109.49	-12.02	-5,696.36	24.15	480.10	383.25	96.85	4.957	
8,563.37	3,139.16	8,113.12	2,669.42	110.73	110.70	-12.02	-5,759.72	23.81	480.28	382.34	97.94	4.904	
8,600.00	3,139.54	8,149.76	2,669.70	111.43	111.40	-12.01	-5,796.36	23.61	480.38	381.82	98.57	4.874	
8,643.37	3,140.00	8,193.13	2,670.03	112.18	112.22	-12.01	-5,839.73	23.38	480.50	381.35	99.16	4.846	
8,643.82	3,140.00	8,193.58	2,670.03	112.19	112.23	-12.01	-5,840.17	23.38	480.51	381.35	99.16	4.846	

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



# Wellbenders Anticollision Report



<b>Company:</b> Percussion Petroleum, LLC	<b>Local Co-ordinate Reference:</b> Well 5H
<b>Project:</b> Eddy County, NM	<b>TVD Reference:</b> RKB=17' @ 3520.00usft (Silver Oak 1)
<b>Reference Site:</b> Lakewood Federal	<b>MD Reference:</b> RKB=17' @ 3520.00usft (Silver Oak 1)
<b>Site Error:</b> 0.00 usft	<b>North Reference:</b> Grid
<b>Reference Well:</b> 5H	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Well Error:</b> 0.00 usft	<b>Output errors are at</b> 2.00 sigma
<b>Reference Wellbore</b> OH	<b>Database:</b> WBDS_SQL_2
<b>Reference Design:</b> Plan #2	<b>Offset TVD Reference:</b> Reference Datum

Offset Design Lakewood Federal - 6H - OH - Plan #2													Offset Site Error: 0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Tooface (")	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	-90.00	0.00	-20.00	20.00				
100.00	100.00	100.00	100.00	0.15	0.15	-90.00	0.00	-20.00	20.00	19.70	0.30	67.220	
200.00	200.00	200.00	200.00	0.51	0.51	-90.00	0.00	-20.00	20.00	18.99	1.01	19.715	
300.00	300.00	300.00	300.00	0.87	0.87	-90.00	0.00	-20.00	20.00	18.27	1.73	11.551	
400.00	400.00	400.00	400.00	1.22	1.22	-90.00	0.00	-20.00	20.00	17.55	2.45	8.169	
409.41	409.41	409.41	409.41	1.26	1.26	-90.00	0.00	-20.00	20.00	17.48	2.52	7.950 CC	
500.00	500.00	499.69	499.69	1.58	1.58	-90.17	-0.06	-20.34	20.35	17.19	3.16	6.439 ES	
600.00	600.00	598.89	598.83	1.94	1.92	-91.55	-0.64	-23.56	23.59	19.74	3.86	6.115	
700.00	700.00	697.75	697.45	2.30	2.27	-93.44	-1.81	-30.12	30.28	25.72	4.56	6.643	
800.00	800.00	796.25	795.45	2.66	2.63	-95.10	-3.57	-39.94	40.35	35.10	5.26	7.678	
900.00	900.00	895.61	894.17	3.02	3.02	-96.20	-5.55	-51.00	51.63	45.67	5.96	8.658	
1,000.00	1,000.00	1,005.03	992.89	3.38	3.45	-96.91	-7.52	-62.07	62.92	56.21	6.71	9.376	
1,100.00	1,100.00	1,094.33	1,091.61	3.73	3.80	-97.40	-9.50	-73.13	74.22	66.84	7.39	10.047	
1,160.00	1,160.00	1,153.94	1,150.84	3.95	4.04	-97.63	-10.69	-79.77	81.00	73.19	7.82	10.364	
1,200.00	1,200.00	1,206.29	1,190.36	4.09	4.25	38.04	-11.48	-84.20	85.31	77.17	8.14	10.479	
1,259.96	1,259.94	1,253.40	1,249.67	4.28	4.44	38.36	-12.67	-90.85	90.94	82.43	8.51	10.691	
1,300.00	1,299.96	1,306.71	1,289.30	4.42	4.66	38.75	-13.47	-95.29	94.38	85.54	8.83	10.687	
1,400.00	1,399.89	1,407.09	1,388.27	4.75	5.06	39.62	-15.45	-106.38	102.98	93.45	9.53	10.807	
1,500.00	1,499.83	1,507.48	1,487.25	5.09	5.47	40.35	-17.43	-117.48	111.60	101.37	10.23	10.907	
1,600.00	1,599.77	1,607.86	1,586.23	5.43	5.88	40.97	-19.42	-128.57	120.23	109.29	10.94	10.991	
1,700.00	1,699.71	1,691.76	1,685.21	5.78	6.23	41.51	-21.40	-139.67	128.88	117.29	11.59	11.121	
1,800.00	1,799.65	1,808.62	1,784.19	6.13	6.71	41.99	-23.39	-150.76	137.54	125.18	12.36	11.126	
1,900.00	1,899.59	1,909.00	1,883.17	6.48	7.12	42.40	-25.37	-161.85	146.21	133.13	13.08	11.180	
2,000.00	1,999.53	2,009.38	1,982.15	6.83	7.53	42.78	-27.36	-172.95	154.88	141.09	13.79	11.228	
2,100.00	2,099.47	2,090.23	2,081.13	7.18	7.87	43.11	-29.34	-184.04	163.56	149.12	14.44	11.326	
2,200.00	2,199.41	2,189.85	2,180.11	7.53	8.28	43.40	-31.32	-195.14	172.24	157.09	15.16	11.362	
2,300.00	2,299.35	2,289.20	2,278.80	7.89	8.69	43.54	-33.71	-206.20	180.95	165.07	15.88	11.398	
2,400.00	2,399.29	2,386.04	2,373.95	8.25	9.11	40.21	-47.43	-216.91	190.46	173.91	16.56	11.505	
2,500.00	2,499.22	2,476.66	2,459.73	8.60	9.52	33.27	-74.70	-226.63	203.65	186.53	17.12	11.893	
2,527.42	2,526.63	2,499.93	2,480.96	8.70	9.64	31.03	-83.87	-229.04	208.51	191.27	17.24	12.095	
2,550.00	2,549.18	2,518.67	2,497.79	8.78	9.73	52.16	-91.88	-230.96	212.92	195.60	17.33	12.289	
2,600.00	2,598.86	2,559.48	2,533.49	8.96	9.94	59.02	-111.23	-235.03	223.42	205.95	17.47	12.786	
2,650.00	2,647.87	2,599.44	2,567.03	9.15	10.16	58.14	-132.60	-238.87	234.63	217.05	17.57	13.352	
2,700.00	2,695.86	2,638.65	2,598.42	9.35	10.39	55.99	-155.81	-242.48	246.20	228.57	17.63	13.961	
2,750.00	2,742.45	2,677.21	2,627.67	9.56	10.64	53.62	-180.68	-245.86	257.87	240.20	17.67	14.595	
2,800.00	2,787.28	2,715.19	2,654.80	9.79	10.90	51.35	-207.07	-249.00	269.39	251.71	17.69	15.233	
2,850.00	2,830.03	2,752.66	2,679.81	10.05	11.19	49.26	-234.82	-251.91	280.56	262.86	17.70	15.851	
2,900.00	2,870.35	2,789.70	2,702.70	10.33	11.49	47.39	-263.80	-254.59	291.21	273.47	17.73	16.420	
2,950.00	2,907.95	2,826.35	2,723.47	10.66	11.82	45.74	-293.89	-257.04	301.21	283.41	17.80	16.922	
3,000.00	2,942.54	2,862.67	2,742.13	11.02	12.17	44.31	-324.96	-259.25	310.44	292.53	17.91	17.334	
3,050.00	2,973.85	2,900.00	2,759.23	11.44	12.55	43.05	-358.08	-261.30	318.81	300.71	18.10	17.610	
3,100.00	3,001.65	2,934.49	2,773.09	11.90	12.93	42.03	-389.61	-262.98	326.23	307.91	18.32	17.806	
3,150.00	3,025.73	2,970.08	2,785.39	12.40	13.34	41.17	-422.97	-264.49	332.66	314.01	18.65	17.841	
3,200.00	3,045.90	3,005.50	2,795.56	12.96	13.77	40.47	-456.87	-265.76	338.03	318.97	19.06	17.736	
3,250.00	3,062.00	3,040.79	2,803.61	13.55	14.21	39.92	-491.20	-266.80	342.30	322.72	19.57	17.490	
3,300.00	3,073.92	3,075.98	2,809.53	14.19	14.67	39.53	-525.88	-267.60	345.44	325.25	20.18	17.117	
3,350.00	3,081.57	3,111.10	2,813.31	14.85	15.15	39.28	-560.78	-268.16	347.43	326.54	20.89	16.631	
3,400.00	3,084.88	3,152.20	2,814.96	15.54	15.71	39.18	-594.76	-268.48	348.24	326.48	21.76	16.004	
3,407.01	3,085.00	3,152.13	2,815.04	15.64	15.71	39.18	-601.77	-268.52	348.27	326.44	21.83	15.956	
3,500.00	3,085.98	3,245.13	2,816.20	16.99	17.06	39.19	-694.75	-269.02	348.13	324.38	23.75	14.657	
3,600.00	3,087.03	3,345.13	2,817.44	18.53	18.59	39.21	-794.74	-269.55	347.98	322.05	25.93	13.418	
3,700.00	3,088.08	3,445.13	2,818.68	20.13	20.18	39.23	-894.74	-270.09	347.83	319.62	28.21	12.331	

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

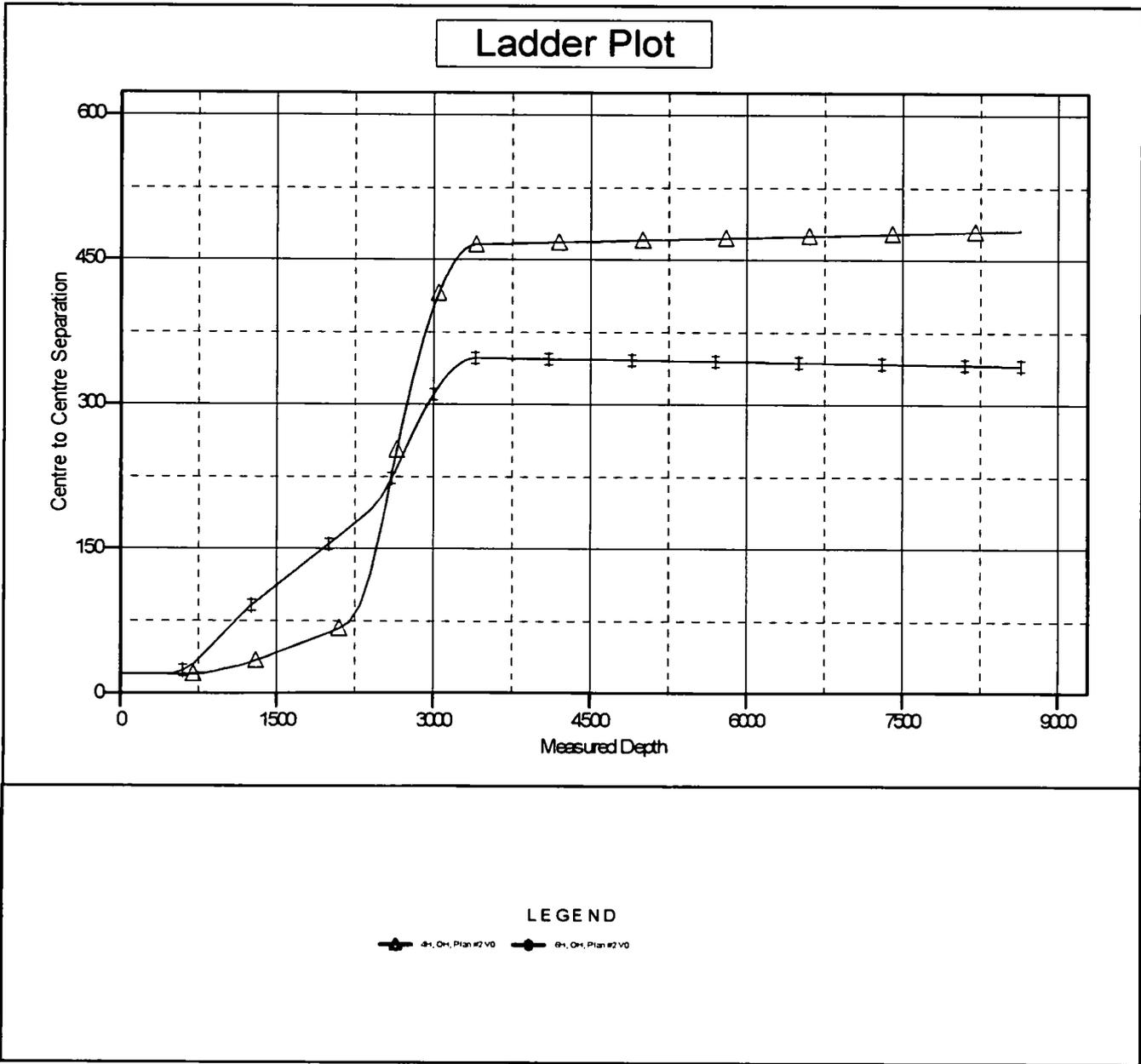
<b>Company:</b> Percussion Petroleum, LLC	<b>Local Co-ordinate Reference:</b> Well 5H
<b>Project:</b> Eddy County, NM	<b>TVD Reference:</b> RKB=17' @ 3520.00usft (Silver Oak 1)
<b>Reference Site:</b> Lakewood Federal	<b>MD Reference:</b> RKB=17' @ 3520.00usft (Silver Oak 1)
<b>Site Error:</b> 0.00 usft	<b>North Reference:</b> Grid
<b>Reference Well:</b> 5H	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Well Error:</b> 0.00 usft	<b>Output errors are at:</b> 2.00 sigma
<b>Reference Wellbore:</b> OH	<b>Database:</b> WBDS_SQL_2
<b>Reference Design:</b> Plan #2	<b>Offset TVD Reference:</b> Reference Datum

Offset Design Lakewood Federal - 6H - OH - Plan #2													Offset Site Error: 0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
3,800.00	3,089.13	3,545.13	2,819.92	21.79	21.83	39.25	-994.73	-270.63	347.69	317.13	30.56	11.378	
3,900.00	3,090.18	3,645.13	2,821.16	23.48	23.51	39.27	-1,094.72	-271.16	347.54	314.57	32.96	10.543	
4,000.00	3,091.23	3,745.13	2,822.40	25.20	25.23	39.29	-1,194.71	-271.70	347.39	311.97	35.42	9.808	
4,100.00	3,092.28	3,845.13	2,823.64	26.95	26.97	39.31	-1,294.70	-272.24	347.24	309.33	37.91	9.160	
4,200.00	3,093.33	3,945.13	2,824.88	28.72	28.74	39.33	-1,394.69	-272.77	347.09	306.66	40.43	8.585	
4,300.00	3,094.38	4,045.13	2,826.13	30.51	30.52	39.35	-1,494.68	-273.31	346.95	303.97	42.98	8.072	
4,400.00	3,095.43	4,145.12	2,827.37	32.31	32.32	39.37	-1,594.67	-273.85	346.80	301.25	45.55	7.614	
4,500.00	3,096.48	4,245.12	2,828.61	34.13	34.13	39.39	-1,694.66	-274.38	346.65	298.51	48.14	7.201	
4,600.00	3,097.53	4,345.12	2,829.85	35.95	35.96	39.41	-1,794.65	-274.92	346.50	295.76	50.74	6.829	
4,700.00	3,098.58	4,445.12	2,831.09	37.78	37.79	39.43	-1,894.64	-275.46	346.36	293.00	53.36	6.491	
4,800.00	3,099.63	4,545.12	2,832.33	39.63	39.63	39.45	-1,994.63	-275.99	346.21	290.22	55.99	6.183	
4,900.00	3,100.68	4,645.12	2,833.57	41.47	41.47	39.47	-2,094.62	-276.53	346.06	287.43	58.63	5.902	
5,000.00	3,101.73	4,745.12	2,834.81	43.33	43.32	39.49	-2,194.61	-277.07	345.92	284.63	61.28	5.644	
5,100.00	3,102.78	4,845.12	2,836.05	45.19	45.18	39.51	-2,294.60	-277.60	345.77	281.82	63.94	5.407	
5,200.00	3,103.83	4,945.12	2,837.30	47.05	47.04	39.53	-2,394.60	-278.14	345.62	279.01	66.61	5.189	
5,300.00	3,104.88	5,045.12	2,838.54	48.92	48.91	39.55	-2,494.59	-278.68	345.47	276.19	69.29	4.986	
5,400.00	3,105.93	5,145.12	2,839.78	50.79	50.78	39.57	-2,594.58	-279.21	345.33	273.36	71.97	4.798	
5,500.00	3,106.98	5,245.12	2,841.02	52.66	52.65	39.59	-2,694.57	-279.75	345.18	270.53	74.65	4.624	
5,600.00	3,108.03	5,345.12	2,842.26	54.54	54.52	39.62	-2,794.56	-280.28	345.03	267.69	77.35	4.461	
5,700.00	3,109.08	5,445.12	2,843.50	56.42	56.40	39.64	-2,894.55	-280.82	344.89	264.84	80.04	4.309	
5,800.00	3,110.13	5,545.12	2,844.74	58.30	58.28	39.66	-2,994.54	-281.36	344.74	261.99	82.75	4.166	
5,900.00	3,111.19	5,645.12	2,845.98	60.18	60.16	39.68	-3,094.53	-281.89	344.59	259.14	85.45	4.033	
6,000.00	3,112.24	5,745.12	2,847.22	62.07	62.05	39.70	-3,194.52	-282.43	344.44	256.28	88.16	3.907	
6,100.00	3,113.29	5,845.12	2,848.47	63.95	63.94	39.72	-3,294.51	-282.97	344.30	253.42	90.88	3.789	
6,200.00	3,114.34	5,945.12	2,849.71	65.84	65.82	39.74	-3,394.50	-283.50	344.15	250.56	93.60	3.671	
6,300.00	3,115.39	6,045.12	2,850.95	67.73	67.71	39.76	-3,494.49	-284.04	344.00	247.69	96.32	3.572	
6,400.00	3,116.44	6,145.12	2,852.19	69.62	69.60	39.78	-3,594.48	-284.58	343.86	244.81	99.04	3.472	
6,500.00	3,117.49	6,245.12	2,853.43	71.51	71.49	39.80	-3,694.47	-285.11	343.71	241.94	101.77	3.377	
6,600.00	3,118.54	6,345.12	2,854.67	73.41	73.39	39.82	-3,794.47	-285.65	343.56	239.06	104.50	3.288	
6,700.00	3,119.59	6,445.12	2,855.91	75.30	75.28	39.84	-3,894.46	-286.19	343.42	236.18	107.24	3.202	
6,800.00	3,120.64	6,545.12	2,857.15	77.20	77.18	39.86	-3,994.45	-286.72	343.27	233.29	109.98	3.121	
6,900.00	3,121.69	6,645.12	2,858.39	79.09	79.07	39.88	-4,094.44	-287.26	343.13	230.41	112.72	3.044	
7,000.00	3,122.74	6,745.12	2,859.64	80.99	80.97	39.90	-4,194.43	-287.80	342.98	227.52	115.46	2.971	
7,100.00	3,123.79	6,845.12	2,860.88	82.89	82.87	39.92	-4,294.42	-288.33	342.83	224.63	118.21	2.900	
7,200.00	3,124.84	6,945.12	2,862.12	84.79	84.76	39.94	-4,394.41	-288.87	342.69	221.73	120.95	2.833	
7,300.00	3,125.89	7,045.12	2,863.36	86.69	86.66	39.96	-4,494.40	-289.41	342.54	218.83	123.71	2.769	
7,400.00	3,126.94	7,145.12	2,864.60	88.59	88.56	39.98	-4,594.39	-289.94	342.39	215.93	126.46	2.708	
7,500.00	3,127.99	7,245.12	2,865.84	90.49	90.46	40.00	-4,694.38	-290.48	342.25	213.03	129.22	2.649	
7,600.00	3,129.04	7,345.12	2,867.08	92.39	92.36	40.02	-4,794.37	-291.02	342.10	210.13	131.97	2.592	
7,700.00	3,130.09	7,445.12	2,868.32	94.29	94.27	40.04	-4,894.36	-291.55	341.95	207.22	134.73	2.538	
7,800.00	3,131.14	7,545.12	2,869.56	96.19	96.17	40.06	-4,994.35	-292.09	341.81	204.31	137.50	2.486	
7,900.00	3,132.19	7,645.12	2,870.81	98.10	98.07	40.08	-5,094.34	-292.63	341.66	201.40	140.26	2.436	
8,000.00	3,133.24	7,745.12	2,872.05	100.00	99.97	40.10	-5,194.33	-293.16	341.52	198.49	143.03	2.388	
8,100.00	3,134.29	7,845.12	2,873.29	101.90	101.88	40.13	-5,294.33	-293.70	341.37	195.57	145.80	2.341	
8,200.00	3,135.34	7,945.12	2,874.53	103.81	103.78	40.15	-5,394.32	-294.23	341.22	192.65	148.57	2.297	
8,300.00	3,136.39	8,045.12	2,875.77	105.71	105.68	40.17	-5,494.31	-294.77	341.08	189.73	151.34	2.254	
8,400.00	3,137.44	8,145.12	2,877.01	107.62	107.59	40.19	-5,594.30	-295.31	340.93	186.81	154.12	2.212	
8,500.00	3,138.49	8,245.12	2,878.25	109.52	109.49	40.21	-5,694.29	-295.84	340.79	183.89	156.90	2.172	
8,563.37	3,139.16	8,308.48	2,879.04	110.73	110.70	40.22	-5,757.65	-296.18	340.70	182.04	158.65	2.147	
8,600.00	3,139.54	8,345.12	2,879.49	111.43	111.34	40.23	-5,794.28	-296.38	340.64	181.05	159.59	2.134	
8,643.37	3,140.00	8,388.49	2,880.03	112.18	112.09	40.24	-5,837.65	-296.61	340.58	179.98	160.60	2.121	
8,643.82	3,140.00	8,388.94	2,880.04	112.19	112.10	40.24	-5,838.09	-296.62	340.58	179.97	160.61	2.120 SF	

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

Company:	Percussion Petroleum, LLC	Local Co-ordinate Reference:	Well 5H
Project:	Eddy County, NM	TVD Reference:	RKB=17' @ 3520.00usft (Silver Oak 1)
Reference Site:	Lakewood Federal	MD Reference:	RKB=17' @ 3520.00usft (Silver Oak 1)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	5H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	WBDS_SQL_2
Reference Design:	Plan #2	Offset TVD Reference:	Reference Datum

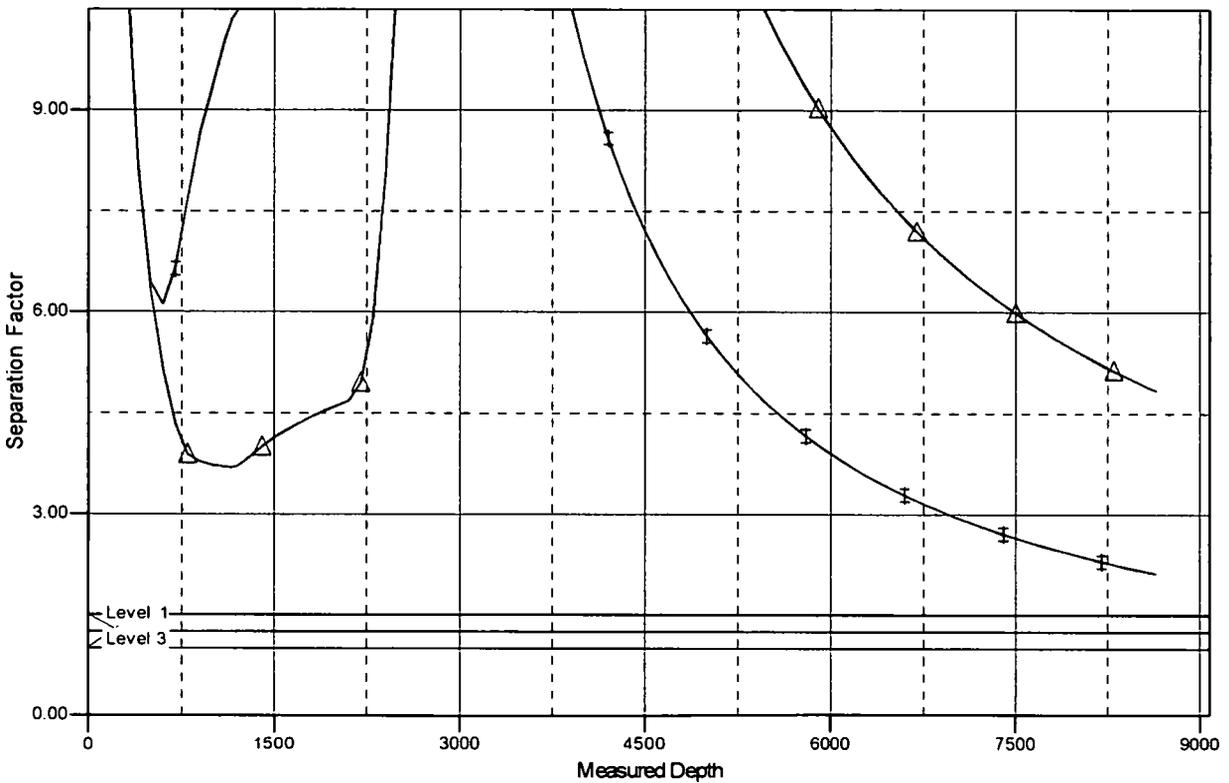
Reference Depths are relative to RKB=17' @ 3520.00usft (Silver Oak 1) Coordinates are relative to: 5H  
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, New Mexico Eastern Zone  
 Central Meridian is -104.333334 Grid Convergence at Surface is: -0.07°



Company:	Percussion Petroleum, LLC	Local Co-ordinate Reference:	Well 5H
Project:	Eddy County, NM	TVD Reference:	RKB=17' @ 3520.00usft (Silver Oak 1)
Reference Site:	Lakewood Federal	MD Reference:	RKB=17' @ 3520.00usft (Silver Oak 1)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	5H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	WBDS_SQL_2
Reference Design:	Plan #2	Offset TVD Reference:	Reference Datum

Reference Depths are relative to RKB=17' @ 3520.00usft (Silver Oak 1) Coordinates are relative to: 5H  
 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**

▲ 5H, OH, Plan #2 VD    ■ 5H, OH, Plan #2 VD

Percussion Petroleum Operating, LLC  
Lakewood Federal Com 5H  
SHL 500' FSL & 1710' FEL 27-19S-25E  
BHL 20' FSL & 1786' FEL 34-19S-25E  
Eddy County, NM

DRILL PLAN PAGE 1

Drilling Program

1. ESTIMATED TOPS

Formation/Lithology	TVD	MD	Contents
Quaternary caliche	000'	000'	water
Grayburg dolomite	633'	633'	hydrocarbons
San Andres dolomite	818'	818'	hydrocarbons
(KOP	2071'	2072'	hydrocarbons)
Glorieta silty dolomite	2378'	2379'	hydrocarbons
(KOP	2527'	2528'	
Yeso dolomite & goal	2533'	2534'	hydrocarbons
TD	2823'	8643'	hydrocarbons

2. NOTABLE ZONES

Yeso is the goal. Closest water well (RA 02958) is 3913' south-southwest. Depth to water was not recorded in this 450' deep well.

3. PRESSURE CONTROL

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

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

Percussion Petroleum Operating, LLC  
 Lakewood Federal Com 5H  
 SHL 500' FSL & 1710' FEL 27-19S-25E  
 BHL 20' FSL & 1786' FEL 34-19S-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' - 1279'	0' - 1279'	Surface 9.625"	36	J-55	LTC	1.125	1.125	1.8
8.75"	0' - 2825'	0' - 2809'	Prod. 1 7"	32	L-80	BTC	1.125	1.125	1.8
8.75"	2825' - 8643'	2809' - 3140'	Prod. 2 5.5"	17	L-80	BTC	1.125	1.125	1.8

Casing Name	Type	Sacks	Yield	Cu. Ft.	Weight	Blend
Surface	Lead	636	1.32	840	14.8	Class C + 2% CaCl + ¼ pound per sack celloflake
TOC = GL		100% Excess			Stop collar 10' above shoe with centralizer. One on 1st collar and every 4 <sup>th</sup> collar to GL.	
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	1450	1.32	1914	14.8	Class C + 2% CaCl + ¼ pound per sack celloflake
TOC = GL		50% Excess			Stop collar 10' above shoe with centralizer. One on 1st collar and every 10 collars to 1200' with 1 centralizer in 9.625" 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.

Percussion Petroleum Operating, LLC  
Lakewood Federal Com 5H  
SHL 500' FSL & 1710' FEL 27-19S-25E  
BHL 20' FSL & 1786' FEL 34-19S-25E  
Eddy County, NM

DRILL PLAN PAGE 3

Type	Interval (MD)	lb/gal	Viscosity	Fluid Loss	Plastic Viscosity	Yield Point
fresh water/gel	0' - 1279'	8.4 - 9.2	36-42	NC	3-5	5-7
fresh water/cut brine	1279' - 2528'	8.3 - 9.2	28-30	NC	1	1
cut brine	2528' - 8643'	8.6 - 9.2	29-32	NC	4-5	6-10

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

No core or drill stem test is planned.

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

No electric logs are planned at this time.

#### 7. DOWN HOLE CONDITIONS

No abnormal pressure or temperature is expected. Maximum expected bottom hole pressure is  $\approx 1338$  psi. Expected bottom hole temperature is  $\approx 117^{\circ}$  F.

A Hydrogen Sulfide Drilling Operation Plan is attached.

#### 8. OTHER INFORMATION

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

St. Devote LLC has operating rights in NMNM-0504364B and NMNM-031200. St. Devote LLC is a subsidiary of Percussion.

## Contingency Planning – Lakewood Federal Area Wells

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

### INTRODUCTION:

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

### SCENARIO:

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 200% excess cement
      1. 400 sks 65/35/6 Class C Cement, 12.8 ppg, 1.87 yield, 10.15 gal/sk to be used on initial cement job.
    - ii. Top off cement from surface using 1" if necessary
      1. Top off will be 200 sks of 65/35/6 Class C Cement, 12.8 ppg, 1.87 yield, 10.15 gal/sk
      2. Second top off will be performed with same cement if needed.
    - iii. Insure that cement has cured for a minimum of 12 hours prior to drilling out
  4. Install 13-3/8" 3M wellhead and drill to surface casing depth with 12-1/4" OD bit
  5. Run and cement surface casing as planned



APD ID: 10400033408

Submission Date: 08/23/2018

Highlighted data  
reflects the most  
recent changes

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 5H

Show Final Text

Well Type: OIL WELL

Well Work Type: Drill

### Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Lake\_5H\_Road\_Map\_20180823140814.pdf

Existing Road Purpose: ACCESS

Row(s) Exist? NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

### Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

Lake\_5H\_New\_Road\_Map\_20180823140837.pdf

New road type: RESOURCE

Length: 1027.6 Feet

Width (ft.): 30

Max slope (%): 0

Max grade (%): 2

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 14

New road access erosion control: Crowned and ditched

New road access plan or profile prepared? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** LAKEWOOD FEDERAL COM

**Well Number:** 5H

**Access surfacing type:** OTHER

**Access topsoil source:** ONSITE

**Access surfacing type description:** Caliche

**Access onsite topsoil source depth:** 6

**Offsite topsoil source description:**

**Onsite topsoil removal process:** Grader

**Access other construction information:**

**Access miscellaneous information:**

**Number of access turnouts:**

**Access turnout map:**

### Drainage Control

**New road drainage crossing:** OTHER

**Drainage Control comments:** Crowned and ditched

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

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

### Access Additional Attachments

**Additional Attachment(s):**

### Section 3 - Location of Existing Wells

**Existing Wells Map?** YES

**Attach Well map:**

Lake\_5H\_Well\_Map\_20180823140855.pdf

**Existing Wells description:**

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

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

**Production Facilities description:** A 1324.4' long 4" O D. HDPE flow line will be laid on the surface south 15' and east 1309.4' to a proposed central tank battery (CTB) on the existing Pan Canadian 5H pad. Maximum operating pressure will be 100 psi. A 333.4' long overhead raptor safe 3-phase power line will be built south to an existing power line. CTB details are in the 20H/21H APDs.

**Production Facilities map:**

Lake\_5H\_Production\_Facilities\_20180823140914.pdf

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** LAKEWOOD FEDERAL COM

**Well Number:** 5H

## Section 5 - Location and Types of Water Supply

### Water Source Table

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

**Water source type:** FRESH WATER LAKE

**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:** PRIVATE

**Water source volume (barrels):** 9000

**Source volume (acre-feet):** 1.1600379

**Source volume (gal):** 378000

#### Water source and transportation map:

Lake\_5H\_Water\_Source\_Map\_20180823140947.pdf

**Water source comments:** A 1324.4' long 4" O D. HDPE flow line will be laid on the surface south 15' and east 1309.4' to a proposed central tank battery (CTB) on the existing Pan Canadian 5H pad. Maximum operating pressure will be 100 psi. A 333.4' long overhead raptor safe 3-phase power line will be built south to an existing power line. CTB details are in the 20H/21H APDs.

**New water well?** NO

### New Water Well Info

**Well latitude:**

**Well Longitude:**

**Well datum:**

**Well target aquifer:**

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

**Est thickness of aquifer:**

**Aquifer comments:**

**Aquifer documentation:**

**Well depth (ft):**

**Well casing type:**

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

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

**New water well casing?**

**Used casing source:**

**Drilling method:**

**Drill material:**

**Grout material:**

**Grout depth:**

**Casing length (ft.):**

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

**Well Production type:**

**Completion Method:**

**Water well additional information:**

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** LAKEWOOD FEDERAL COM

**Well Number:** 5H

**State appropriation permit:**

**Additional information attachment:**

### Section 6 - Construction Materials

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

**Construction Materials source location attachment:**

Lake\_5H\_Construction\_Methods\_20180823141008.pdf

### Section 7 - Methods for Handling Waste

**Waste type:** DRILLING

**Waste content description:** Drill cuttings, mud, salts, and other chemicals

**Amount of waste:** 1000 barrels

**Waste disposal frequency :** Daily

**Safe containment description:** Steel tanks

**Safe containmant attachment:**

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

**Disposal type description:**

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

### Reserve Pit

**Reserve Pit being used?** NO

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

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

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

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

**Reserve pit liner**

**Reserve pit liner specifications and installation description**

### Cuttings Area

**Cuttings Area being used?** NO

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

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** LAKEWOOD FEDERAL COM

**Well Number:** 5H

**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:**

Lake\_5H\_Well\_Site\_Layout\_20180823141029.pdf

**Comments:**

### **Section 10 - Plans for Surface Reclamation**

**Type of disturbance:** New Surface Disturbance

**Multiple Well Pad Name:** LAKEWOOD FEDERAL COM

**Multiple Well Pad Number:** 4H

**Recontouring attachment:**

Lake\_5H\_Interim\_Reclamation\_Diagram\_20180823141135.pdf

Lake\_5H\_Recontour\_Plat\_20180823141151.pdf

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

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

**Well pad proposed disturbance (acres):** 1.98

**Well pad interim reclamation (acres):** 0.15

**Well pad long term disturbance (acres):** 1.83

**Road proposed disturbance (acres):** 0.71

**Road interim reclamation (acres):** 0

**Road long term disturbance (acres):** 0.71

**Powerline proposed disturbance (acres):** 0.23

**Powerline interim reclamation (acres):** 0.23

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

**Pipeline proposed disturbance (acres):** 6.28

**Pipeline interim reclamation (acres):** 6.28

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

**Other proposed disturbance (acres):** 0

**Other interim reclamation (acres):** 0

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

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** LAKEWOOD FEDERAL COM

**Well Number:** 5H

**Total proposed disturbance:** 9.2

**Total interim reclamation:** 6.66

**Total long term disturbance:** 2.54

**Disturbance Comments:**

**Reconstruction method:** Interim reclamation will be completed within 6 months of completing the well. Interim reclamation will consist of shrinking the well pad 0.15 acre by removing caliche and reclaiming 20' on the north side of the pad. This will leave 1.83 acres for the anchors, pump jacks, and tractor-trailer turn around. Disturbed areas will be contoured to match pre-construction grades. Soil and brush will be evenly spread over disturbed areas and harrowed on the contour. Disturbed areas will be seeded in accordance with surface owner's requirements.

**Topsoil redistribution:** Enough stockpiled topsoil will be retained to cover the remainder of the pad when the well is plugged. Once the last well is plugged, then the rest of the pad and new road will be similarly reclaimed within 6 months of plugging. Noxious weeds will be controlled.

**Soil treatment:** None

**Existing Vegetation at the well pad:**

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

**Existing Vegetation Community at the road:**

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

**Existing Vegetation Community at the pipeline:**

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

**Existing Vegetation Community at other disturbances:**

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

**Non native seed used?** NO

**Non native seed description:**

**Seedling transplant description:**

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

**Seedling transplant description attachment:**

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

**Seed harvest description:**

**Seed harvest description attachment:**

**Seed Management**

**Seed Table**

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** LAKEWOOD FEDERAL COM

**Well Number:** 5H

**Seed type:**

**Seed source:**

**Seed name:**

**Source name:**

**Source address:**

**Source phone:**

**Seed cultivar:**

**Seed use location:**

**PLS pounds per acre:**

**Proposed seeding season:**

<b>Seed Summary</b>	
<b>Seed Type</b>	<b>Pounds/Acre</b>

**Total pounds/Acre:**

**Seed reclamation attachment:**

**Operator Contact/Responsible Official Contact Info**

**First Name:**

**Last Name:**

**Phone:**

**Email:**

**Seedbed prep:**

**Seed BMP:**

**Seed method:**

**Existing invasive species? NO**

**Existing invasive species treatment description:**

**Existing invasive species treatment attachment:**

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

**Weed treatment plan attachment:**

**Monitoring plan description:** To BLM standards

**Monitoring plan attachment:**

**Success standards:** To BLM satisfaction

**Pit closure description:** No pit

**Pit closure attachment:**

**Section 11 - Surface Ownership**

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** LAKEWOOD FEDERAL COM

**Well Number:** 5H

**Disturbance type:** OTHER

**Describe:** Power Line

**Surface Owner:** PRIVATE OWNERSHIP

**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:**

**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:** To be provided

**Surface Access Bond BLM or Forest Service:**

**BLM Surface Access Bond number:**

**USFS Surface access bond number:**

**Disturbance type:** WELL PAD

**Describe:**

**Surface Owner:** PRIVATE OWNERSHIP

**Other surface owner description:**

**BIA Local Office:**

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** LAKEWOOD FEDERAL COM

**Well Number:** 5H

**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:**

**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:** To be provided

**Surface Access Bond BLM or Forest Service:**

**BLM Surface Access Bond number:**

**USFS Surface access bond number:**

**Disturbance type:** PIPELINE

**Describe:**

**Surface Owner:** PRIVATE OWNERSHIP

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** LAKEWOOD FEDERAL COM

**Well Number:** 5H

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

**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:** To be provided

**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:** PRIVATE OWNERSHIP

**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:**

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** LAKEWOOD FEDERAL COM

**Well Number:** 5H

**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:** To be provided

**Surface Access Bond BLM or Forest Service:**

**BLM Surface Access Bond number:**

**USFS Surface access bond number:**

**Disturbance type:** NEW ACCESS ROAD

**Describe:**

**Surface Owner:** PRIVATE OWNERSHIP

**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:**

**Operator Name:** PERCUSSION PETROLEUM OPERATING LLC

**Well Name:** LAKEWOOD FEDERAL COM

**Well Number:** 5H

**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:** To be provided

**Surface Access Bond BLM or Forest Service:**

**BLM Surface Access Bond number:**

**USFS Surface access bond number:**

### Section 12 - Other Information

**Right of Way needed?** NO

**Use APD as ROW?**

**ROW Type(s):**

### ROW Applications

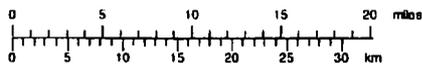
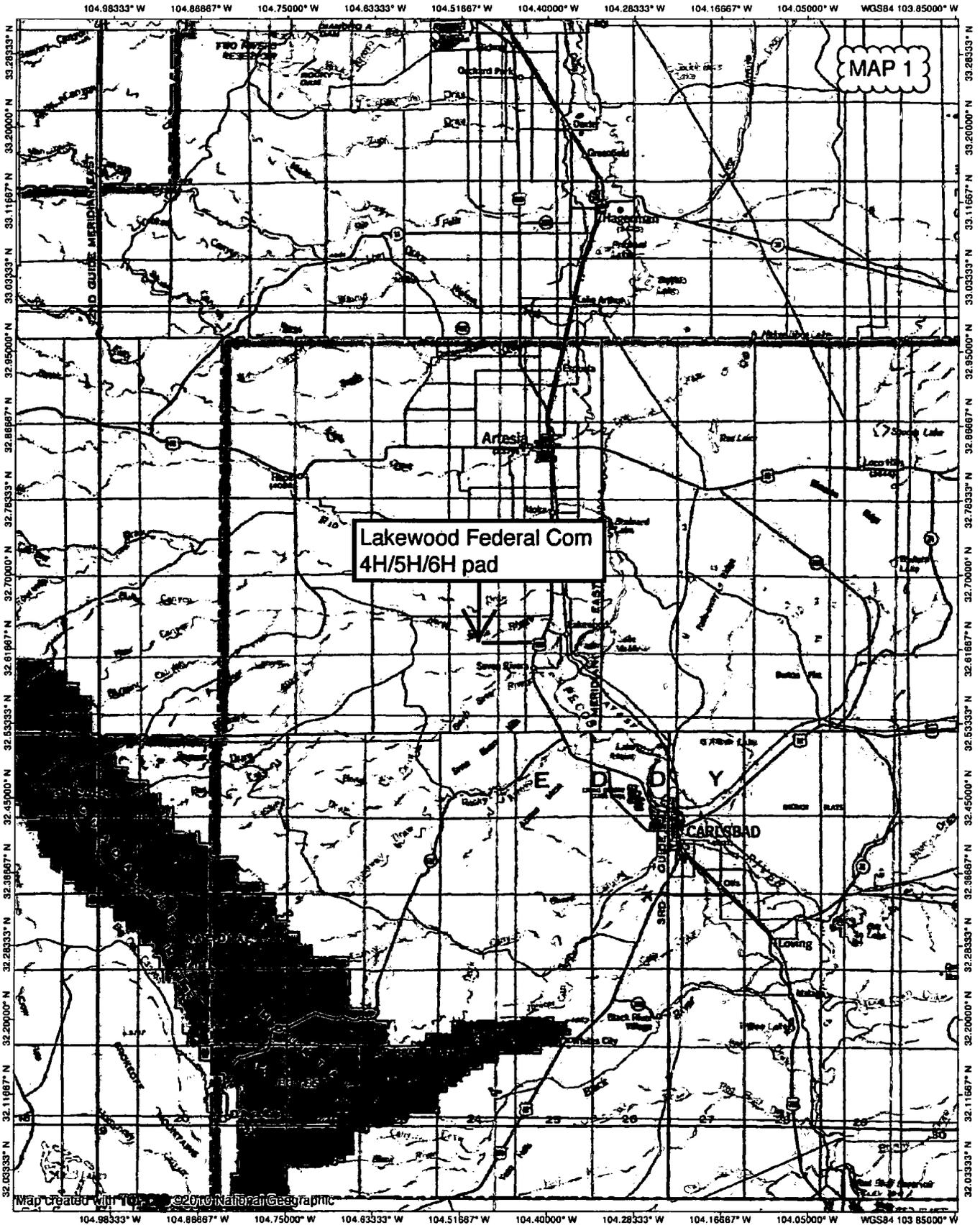
**SUPO Additional Information:**

**Use a previously conducted onsite?** YES

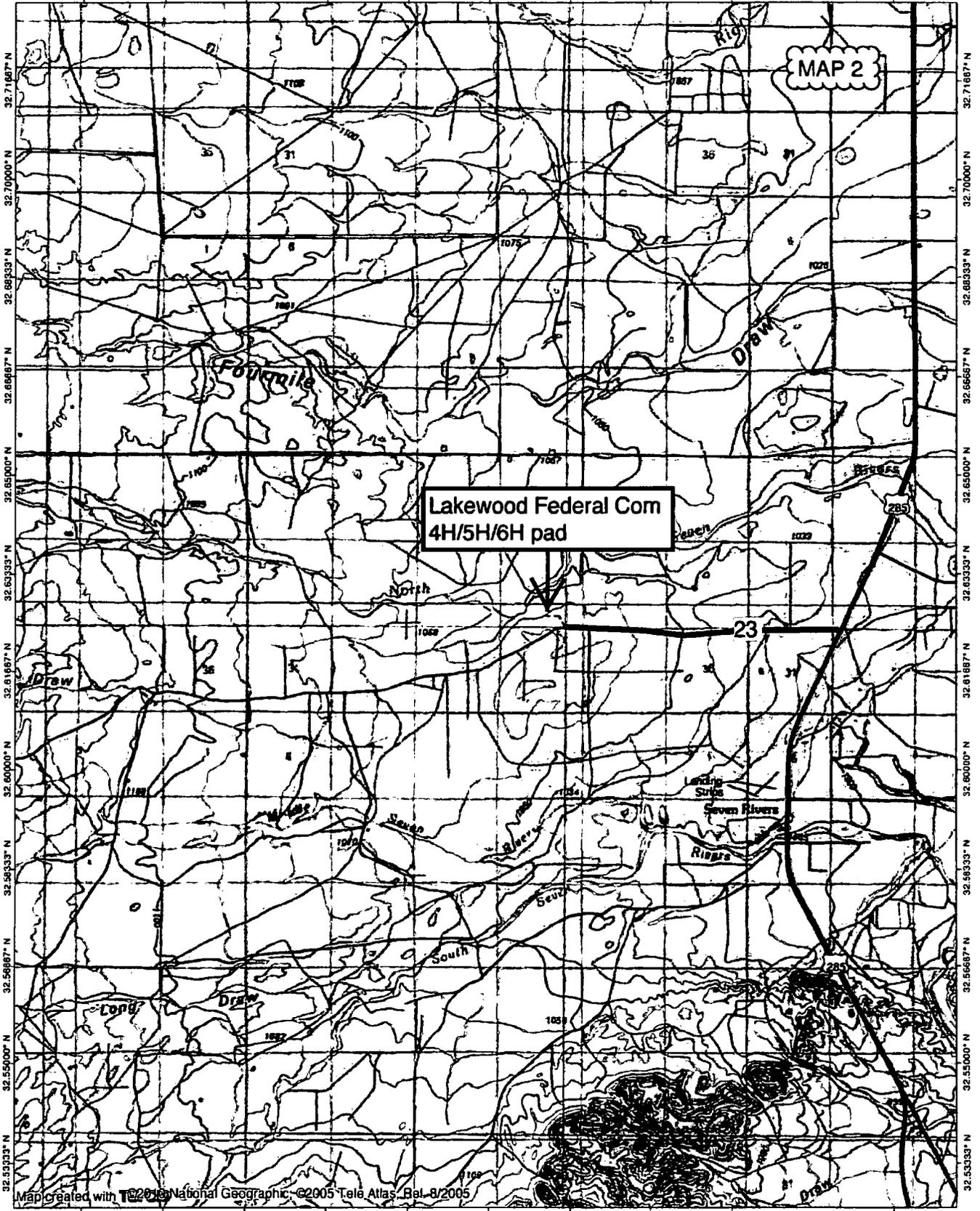
**Previous Onsite Information:** On-site inspection was held with Jessie Bassett (BLM) on April 3, 2018. Lone Mountain inspected the project area and submitted archaeology report NMCRIS-140197 on April 11, 2018.

### Other SUPO Attachment

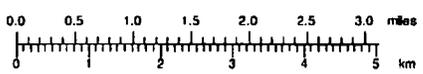
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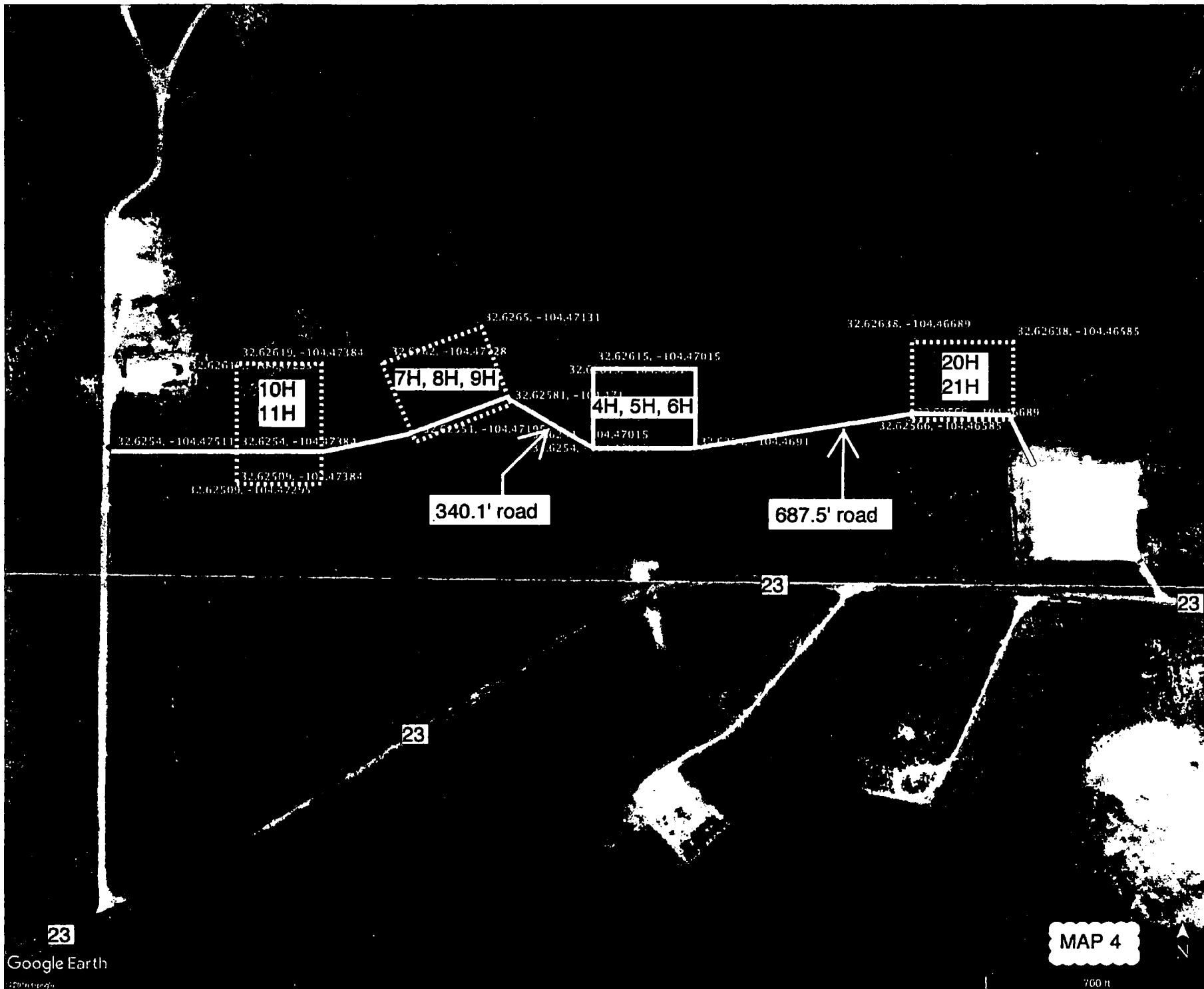
104.56887° W 104.55000° W 104.53333° W 104.51887° W 104.50000° W 104.48333° W 104.46667° W 104.45000° W 104.43333° W WGS84 104.40000° W



Map generated with National Geographic, ©2005 Tele Atlas, Bel. 8/2005

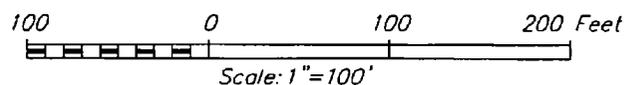
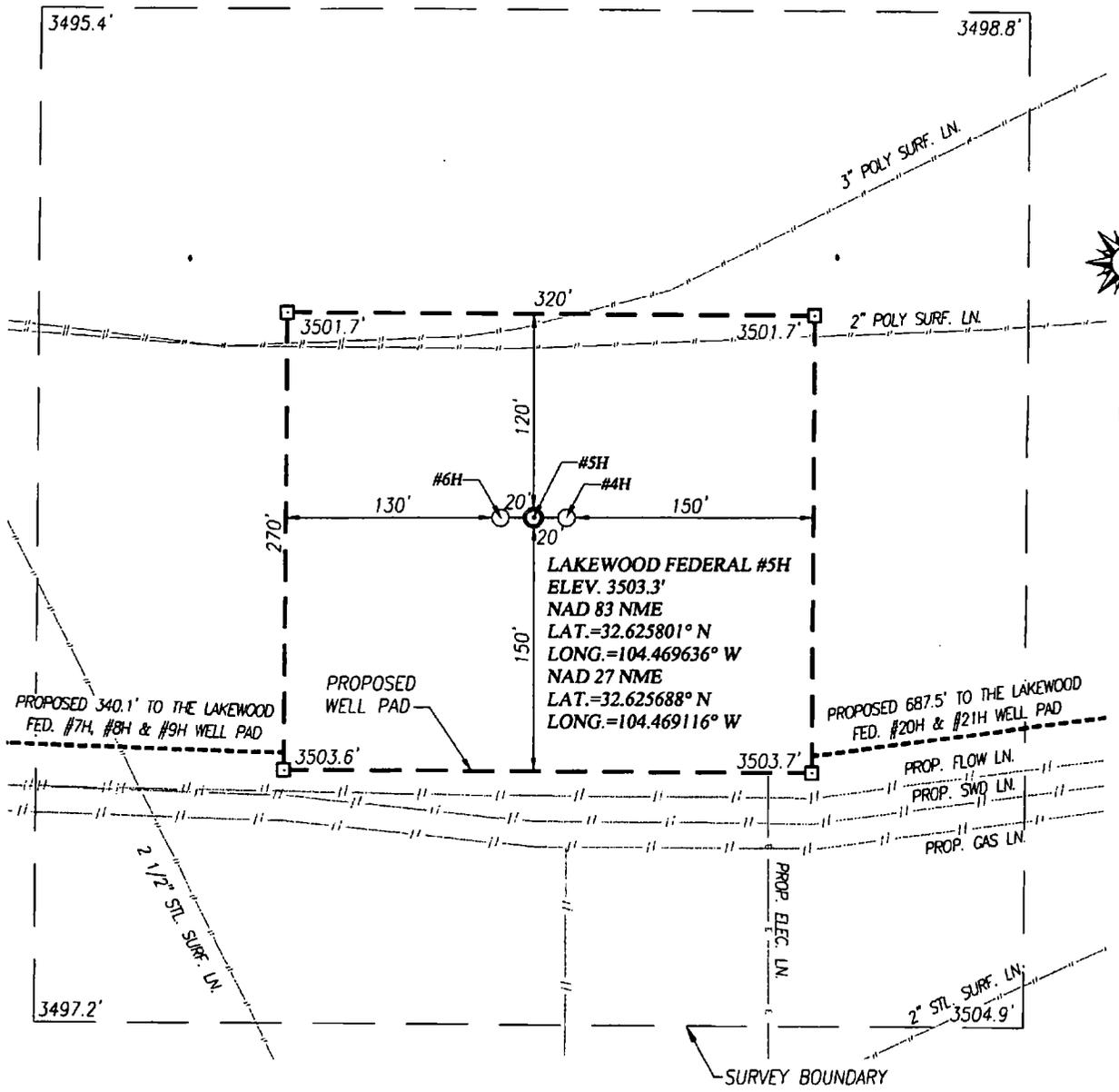






# WELL SITE PLAN

MAP 5



**PERCUSSION PETROLEUM OPERATING, LLC**

**LAKEWOOD FEDERAL #5H WELL LOCATED 500 FEET FROM THE SOUTH LINE AND 1710 FEET FROM THE EAST LINE OF SECTION 27, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO**

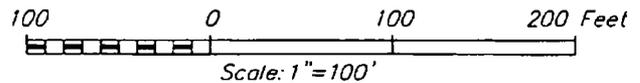
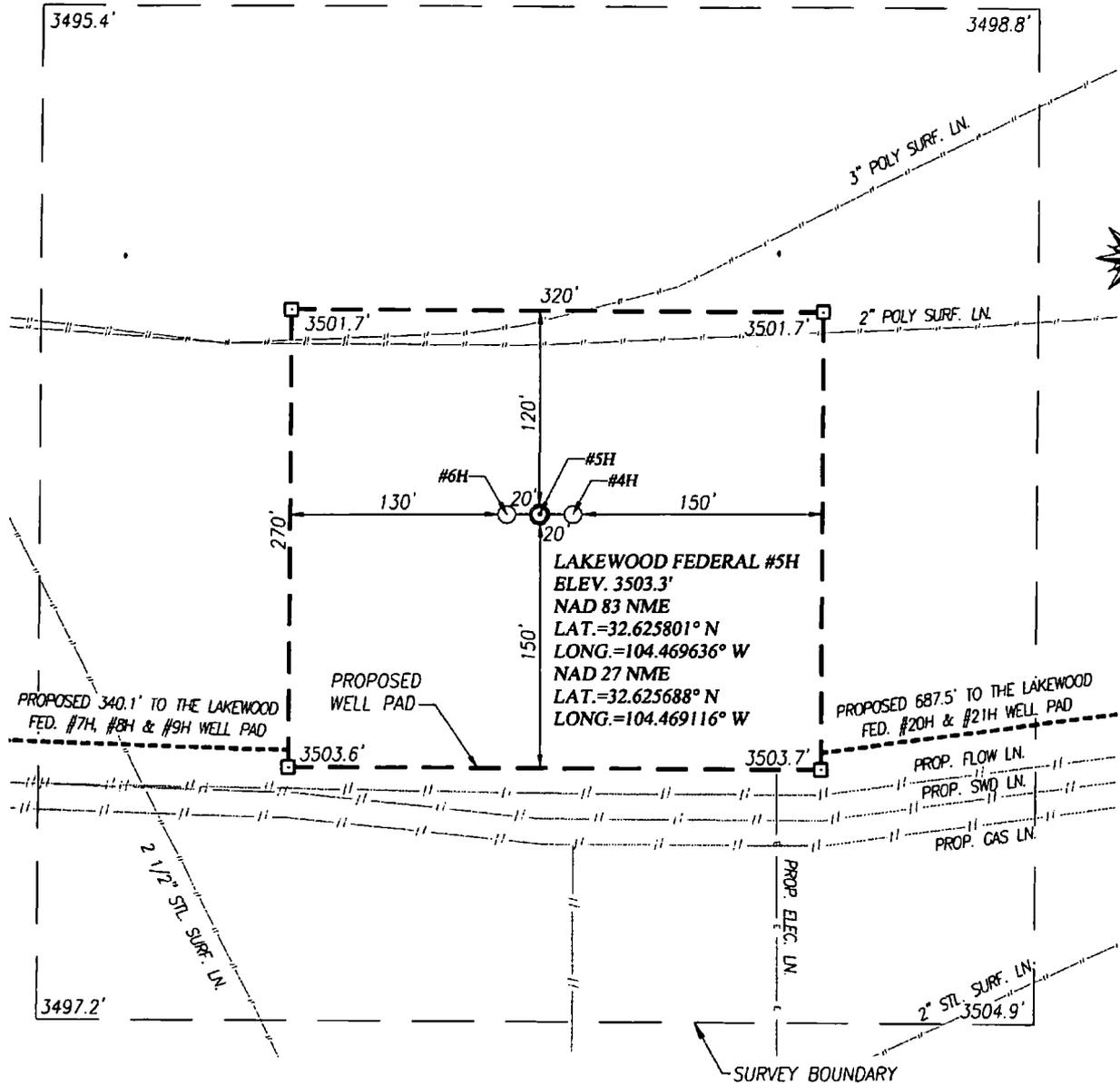
PROVIDING SURVEYING SERVICES  
SINCE 1946  
**JOHN WEST SURVEYING COMPANY**  
412 N. DAL PASO HOBBS, N.M. 88240  
(575) 393-3117 www.jwsc.biz  
TBPLS# 10021000

Survey Date: 02/21/18	CAD Date: 3/07/18	Drawn By: ACK
W.O. No.: 18110107	Rev: .06/18/18	Rel. W.O.:
		Sheet 1 of 1



# WELL SITE PLAN

MAP 5



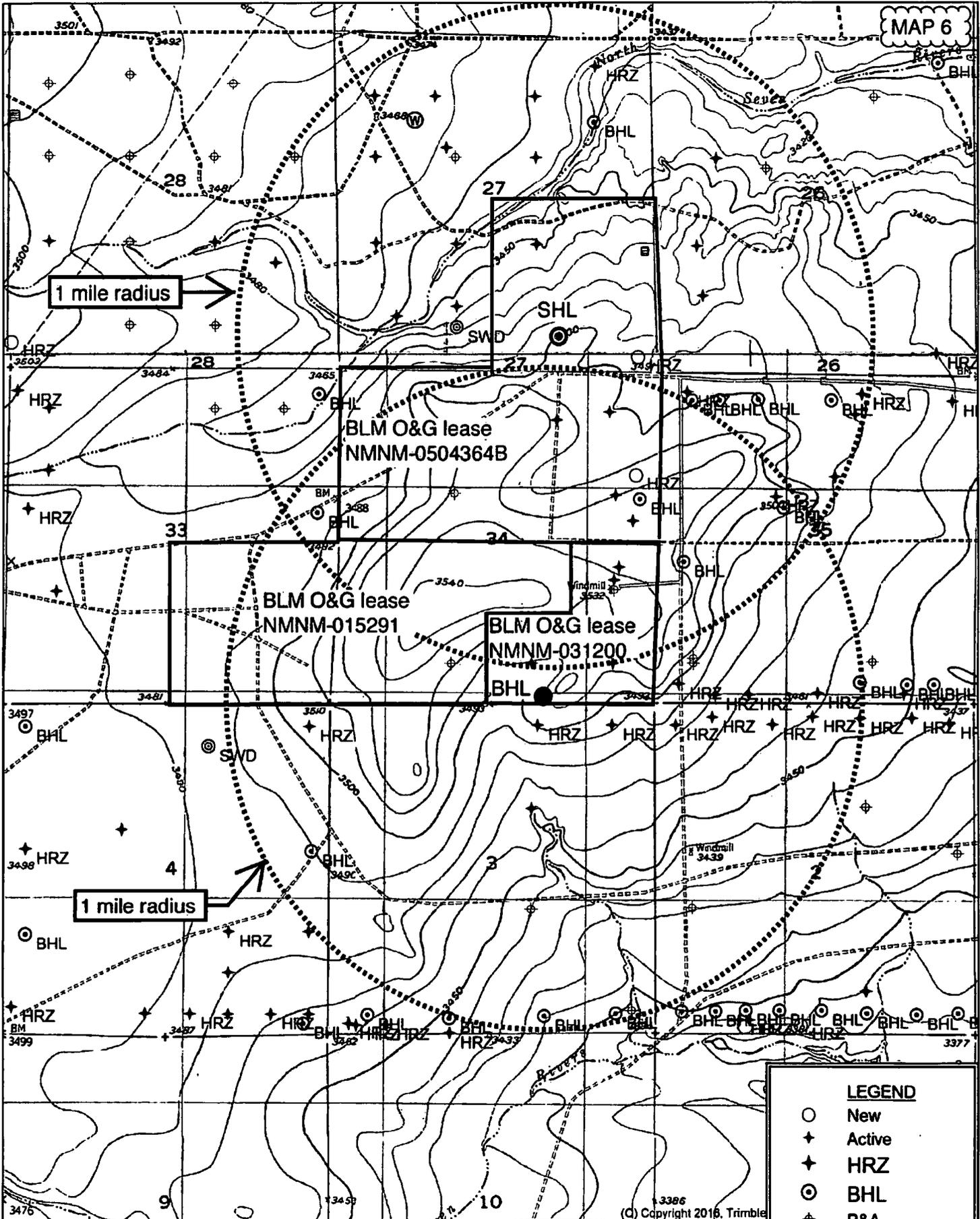
**PERCUSSION PETROLEUM OPERATING, LLC**

**LAKEWOOD FEDERAL #5H WELL LOCATED 500 FEET FROM THE SOUTH LINE AND 1710 FEET FROM THE EAST LINE OF SECTION 27, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO**



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Survey Date: 02/21/18	CAD Date: 3/07/18	Drawn By: ACK
W.O. No.: 18110107	Rev: 06/18/18	Rel. W.O.:
		Sheet 1 of 1

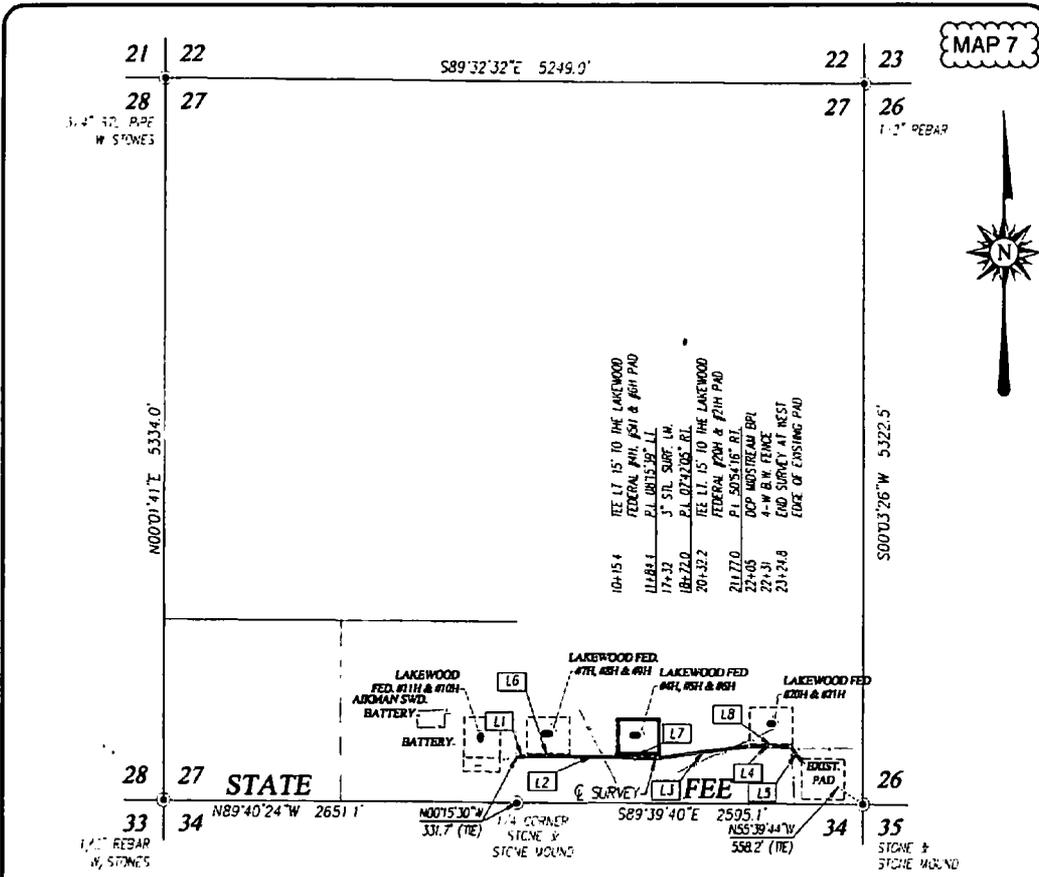


LEGEND	
○	New
+	Active
✦	HRZ
⊙	BHL
⊕	P&A
⊗	INJ
⊗	SWD
⊗	Water

(C) Copyright 2016, Trimble

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

N



**DESCRIPTION**

SURVEY FOR A FLOW LINE CROSSING SECTION 27, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE WEST LINE OF THE SW/4 SE/4 OF SECTION 27, WHICH LIES N00°15'30"W 331.7 FEET FROM THE SOUTH QUARTER CORNER OF SAID SECTION; THEN N80°29'41"E 77.2 FEET; THEN S89°05'02"E 150.0 FEET TO A SURVEY LINE WHICH BEARS N00°32'10"E 15.0 FEET THEN CONTINUING S89°05'02"E 661.2 FEET TO A SURVEY LINE WHICH BEARS N00°19'25"W 15.0 FEET THEN CONTINUING S89°05'02"E 169.0 FEET, 980.2 FEET IN ALL; THEN N82°39'19"E 687.6 FEET; THEN S89°38'36"E 160.2 FEET TO A SURVEY LINE WHICH BEARS N00°07'51"W 15.0 FEET THEN CONTINUING S89°38'36"E 144.8 FEET, 305.0 FEET IN ALL; THEN S38°44'20"E 147.8 FEET TO A POINT IN THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION, WHICH LIES N55°39'44"W 558.2 FEET FROM THE SOUTHEAST CORNER OF SAID SECTION.

TOTAL LENGTH EQUALS 2242.8 FEET OR 135.93 RODS.

LINE	BEARING	DISTANCE
L1	N80°29'41"E	77.2'
L2	S89°05'02"E	980.2'
L3	N82°39'19"E	687.6'
L4	S89°38'36"E	305.0'
L5	S38°44'20"E	147.8'
L6	N00°32'10"E	15.0'
L7	N00°19'25"W	15.0'
L8	N00°07'51"W	15.0'

**NOTE**

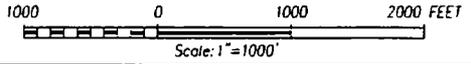
BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM, 1983. DISTANCES ARE SURFACE VALUES.

I, RONALD J. EIDSON, NEW MEXICO PROFESSIONAL SURVEYOR No. 3239, DO HEREBY CERTIFY THAT THIS SURVEY PLAN AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH THIS PLAN IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE HIGHEST STANDARDS FOR SURVEYING IN NEW MEXICO, AND THAT THIS IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

RONALD J. EIDSON, *Ronald J. Eidson*  
 DATE: 03/26/2018

**LEGEND**

⊙ DENOTES FOUND CORNER AS NOTED



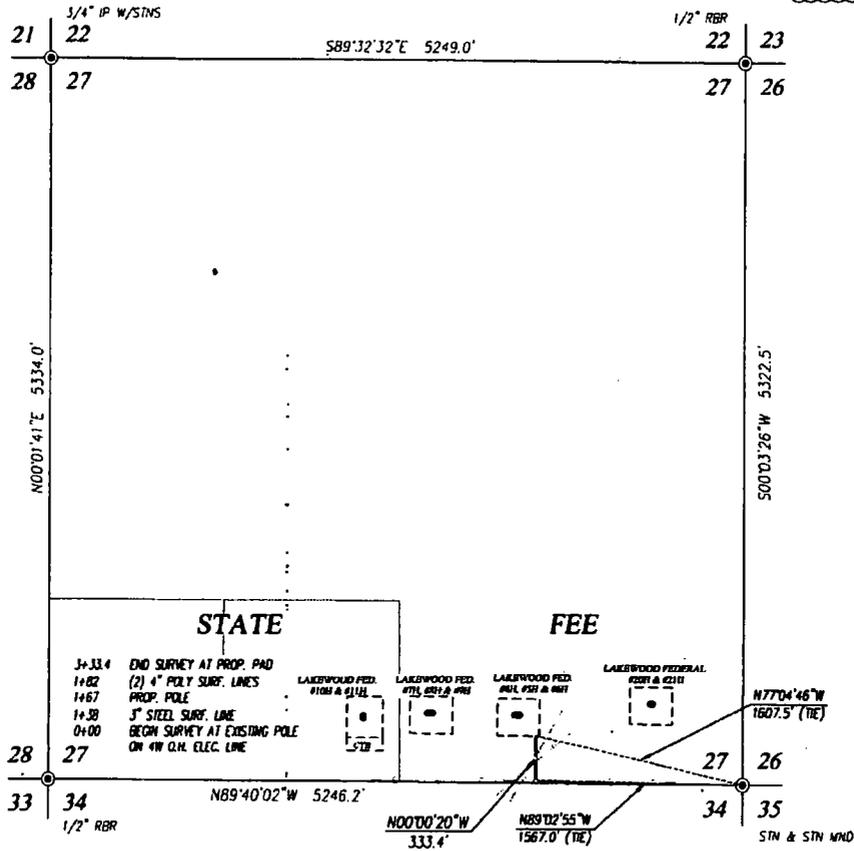
**PERCUSSION PETROLEUM OPERATING, LLC**

**SURVEY FOR A FLOW LINE FROM THE LAKEWOOD FEDERAL #10H & #11H BATTERY TO AN EXISTING PAD CROSSING SECTION 27, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO**

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 FBPL# 10021000

Survey Date: 2/26/18	CAD Date 3/22/18	Drawn By: ACK
W.O. No. 13110365	Rev.	Rel W.O.:

MAP 8



**DESCRIPTION**

SURVEY FOR AN ELECTRIC LINE CROSSING SECTION 27, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT IN THE SOUTHEAST QUARTER, WHICH LIES N88°02'55"W 1567.0 FEET FROM THE SOUTHEAST CORNER; THEN N00°00'20"W 333.4 FEET TO A POINT IN SAID SOUTHEAST QUARTER, WHICH LIES N77°04'46"W 1607.5 FEET FROM THE SOUTHEAST CORNER.

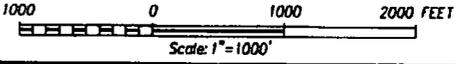
TOTAL LENGTH EQUALS 333.4 FEET OR 20.21 RODS.

**NOTE**

- 1) BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.
- 2) LATITUDE AND LONGITUDE VALUES SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN DATUM 1983 (NAD83).

**LEGEND**

- ⊙ - DENOTES FOUND CORNER AS NOTED
- - DENOTES CENTERLINE SURVEY



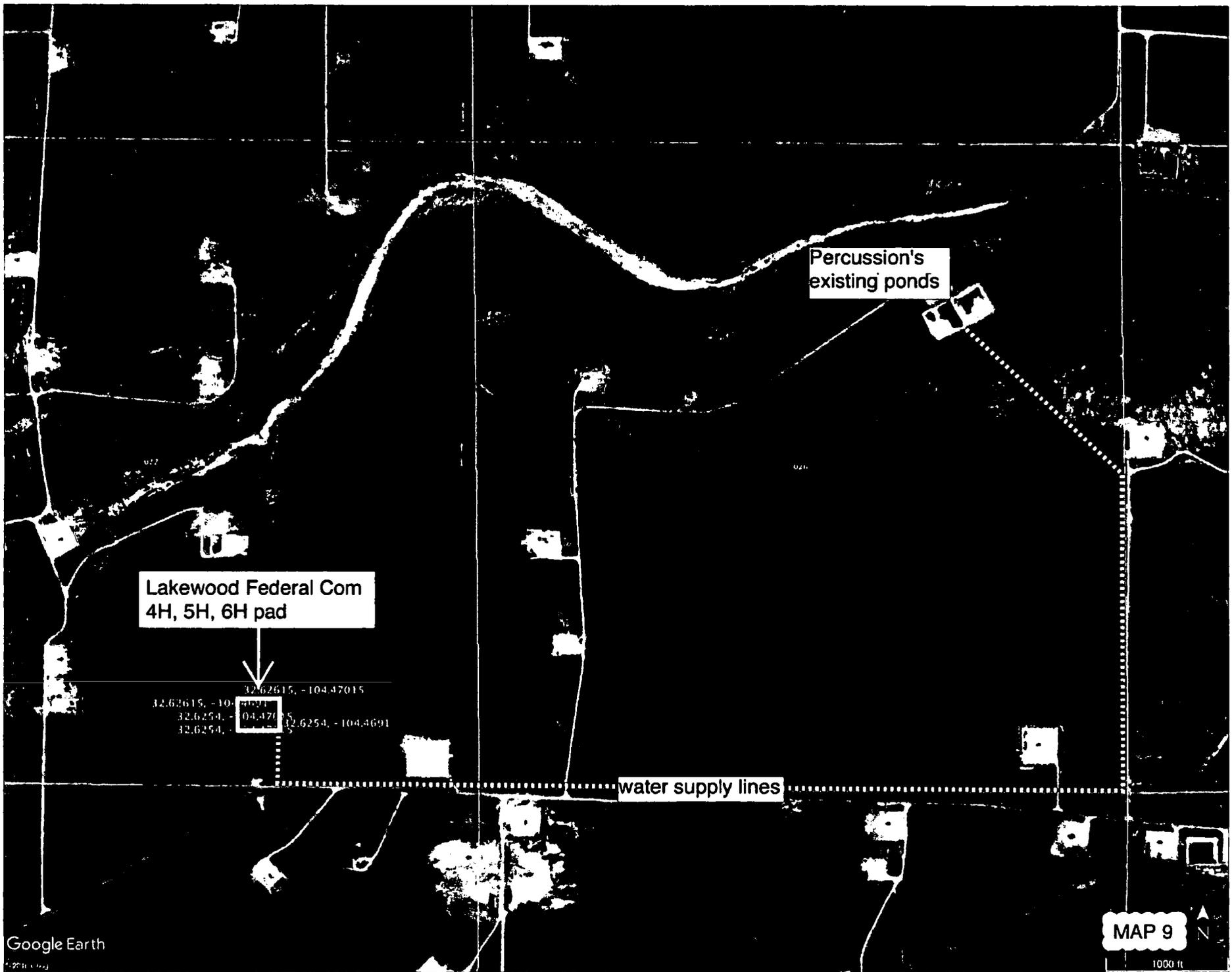
I, RONALD J. EIDSON, NEW MEXICO PROFESSIONAL SURVEYOR No. 3239, DO HEREBY CERTIFY THAT THIS SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION AND I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT THIS IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

RONALD J. EIDSON *Ronald J. Eidson*  
 DATE: 6/18/2018

**PERCUSSION PETROLEUM OPERATING, LLC**  
 SURVEY FOR AN ELECTRIC LINE TO THE  
 LAKEWOOD FEDERAL #4H, #5H & #6H  
 CROSSING SECTION 27,  
 TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.  
 EDDY COUNTY, NEW MEXICO

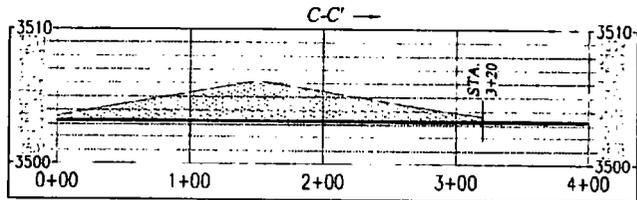
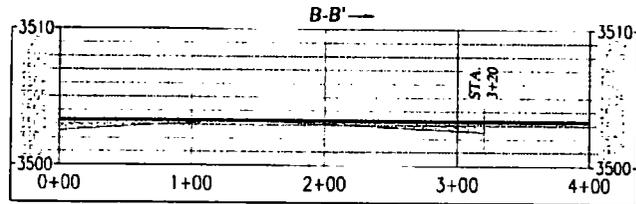
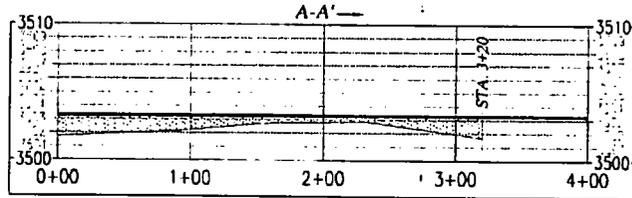
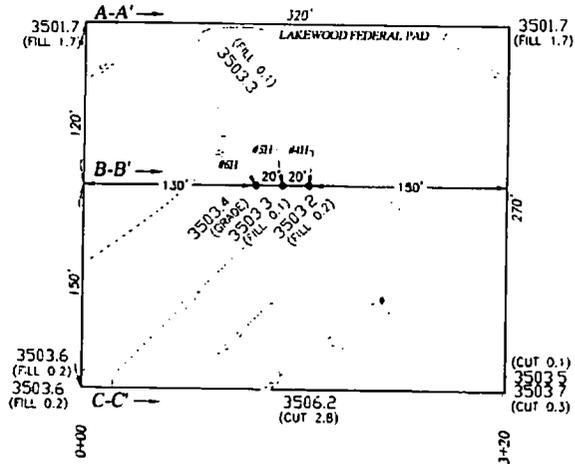
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W.O. No.: 18110695	Rev.	Rel. W.O.:



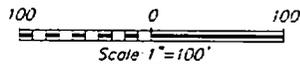


MAP 11



**PERCUSSION PETROLEUM OPERATING, LLC**

LAKWOOD FEDERAL #4H, #5H & #6H WELL PAD IN SECTION 27, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO

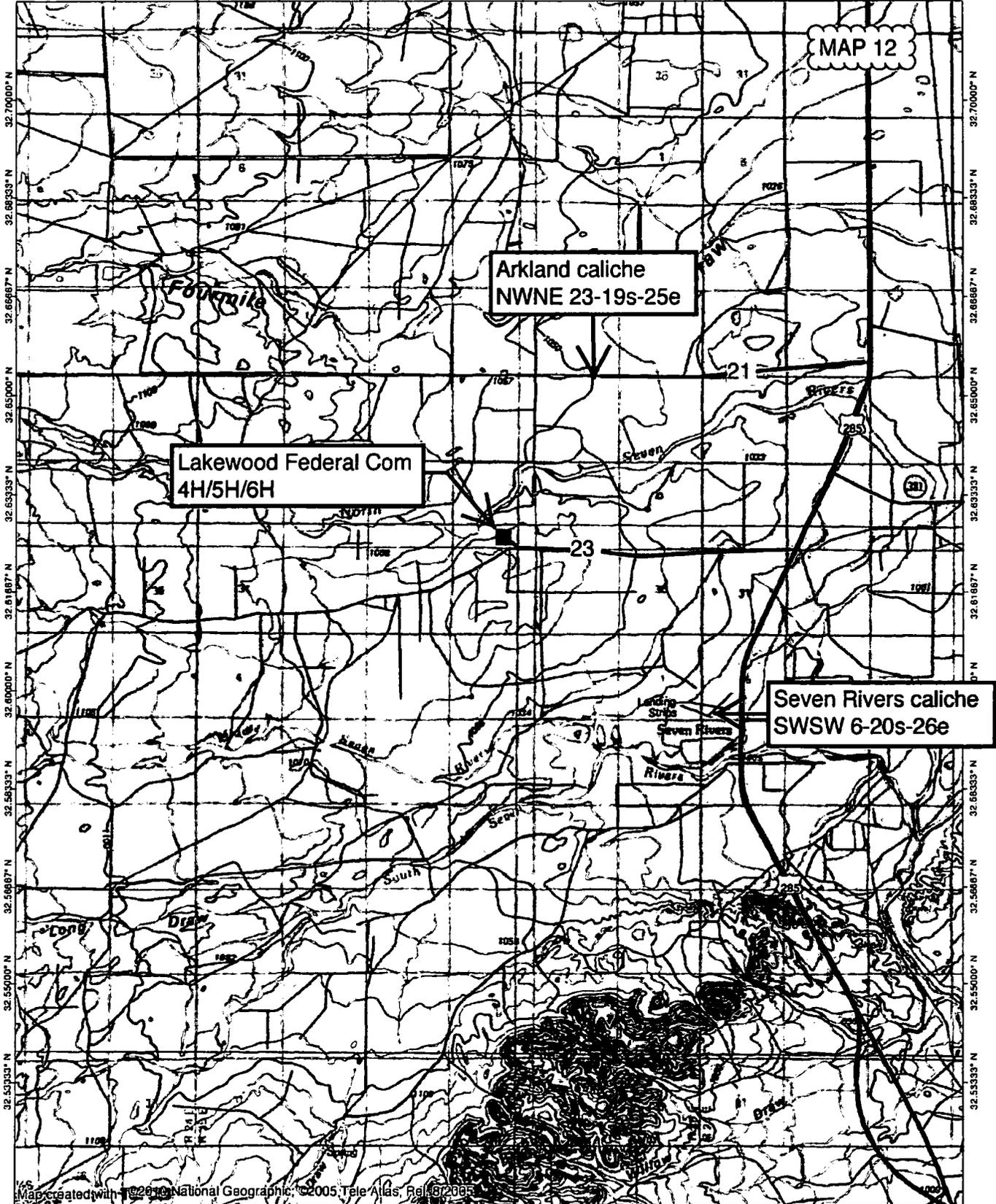


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 TBLPS# 10021000

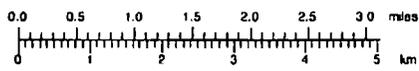
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W.O. No.: 18130756	Rev.:	Rel. W.O.: 18110106

Sheet 1 of 1

MAP 12



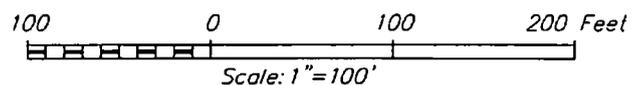
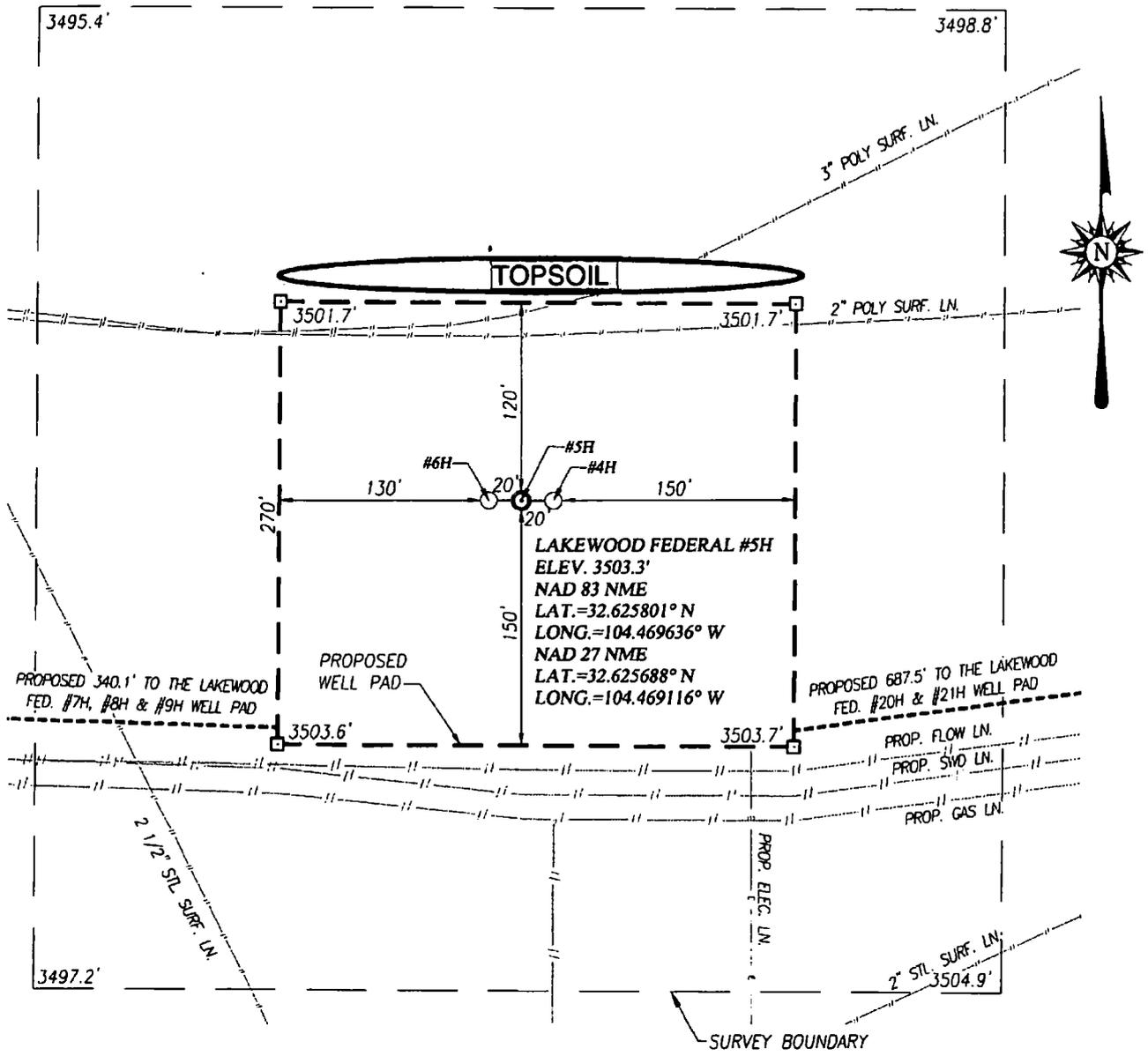
Map created with ©2010 National Geographic, ©2005 Tele Atlas, Release 2005



TN MN  
7.5°  
07/28/17

# WELL SITE PLAN

MAP 13



## PERCUSSION PETROLEUM OPERATING, LLC

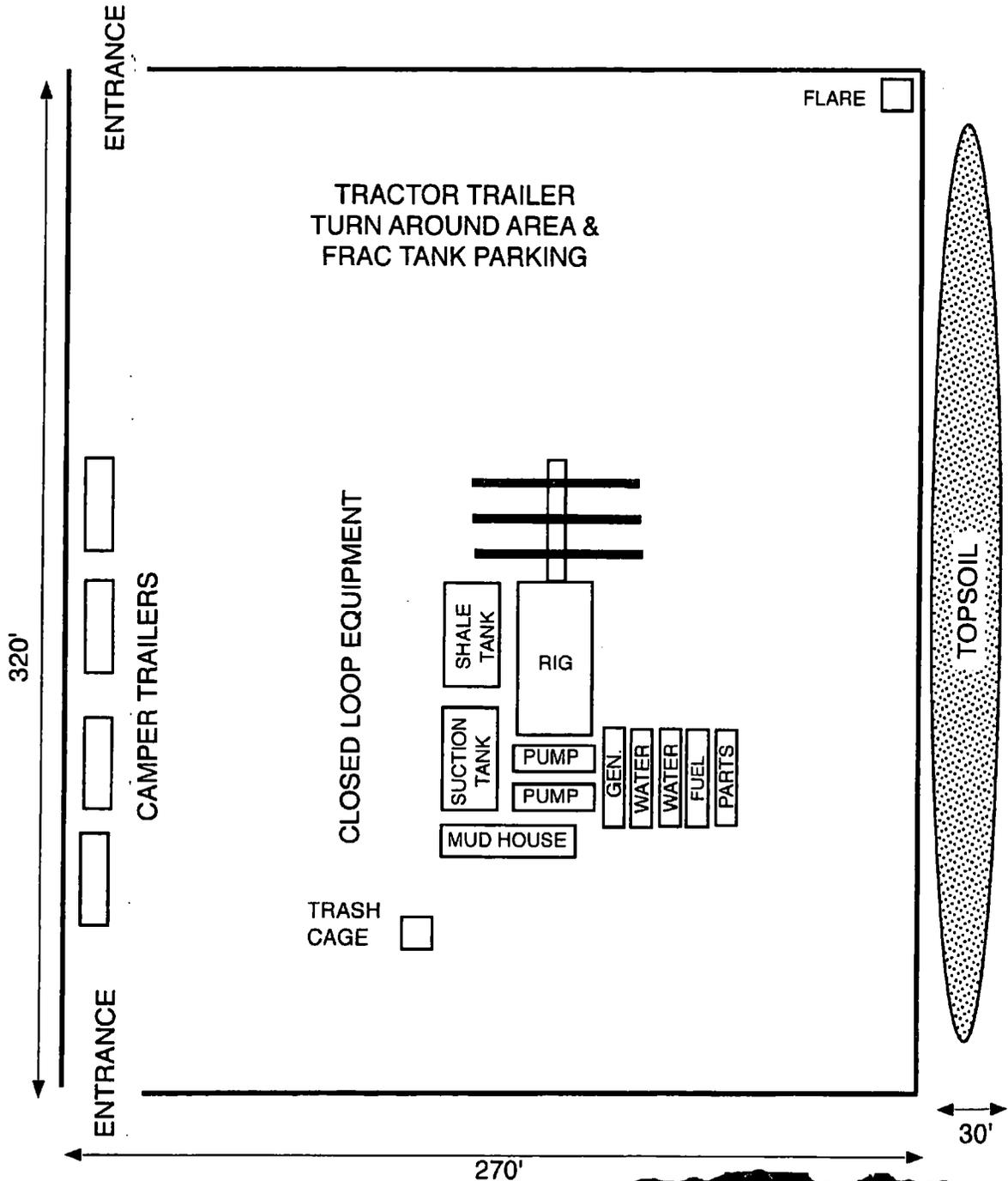
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PROVIDING SURVEYING SERVICES  
SINCE 1946  
**JOHN WEST SURVEYING COMPANY**  
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TBPLS# 10021000

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W.O. No.: 18110107	Rev: 06/18/18	Rel. W.O.:
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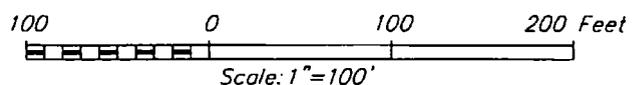
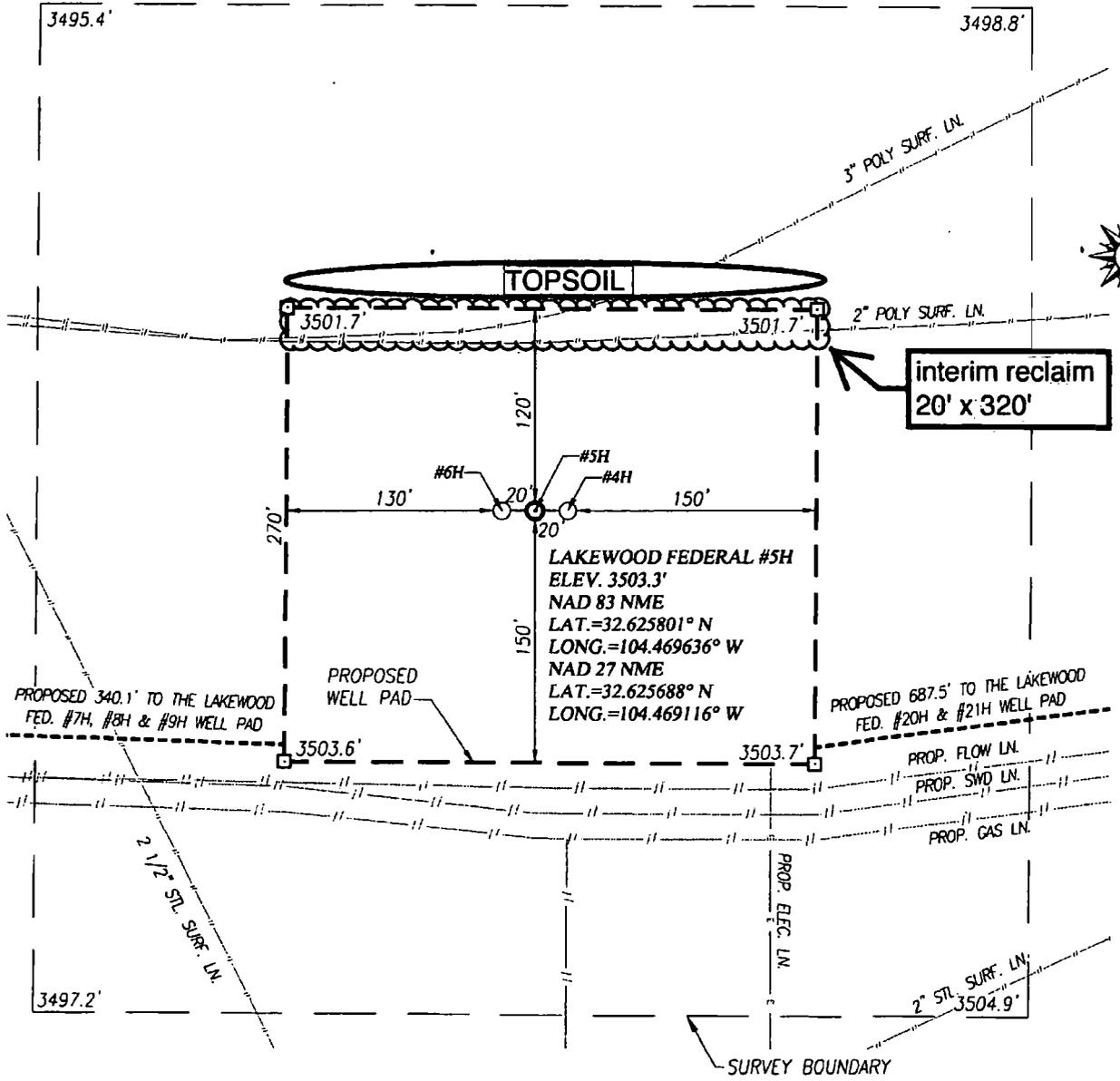
Percussion's  
Lakewood Federal Com 5H  
rig diagram

Prevailing Wind  
out of South  
or SSE  NORTH  
1" = 50'



# WELL SITE PLAN

MAP 14



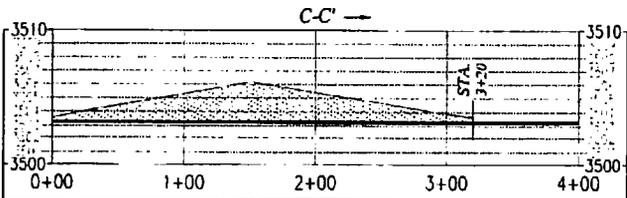
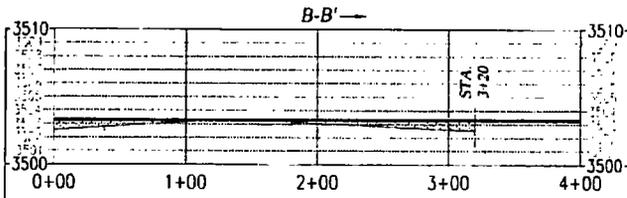
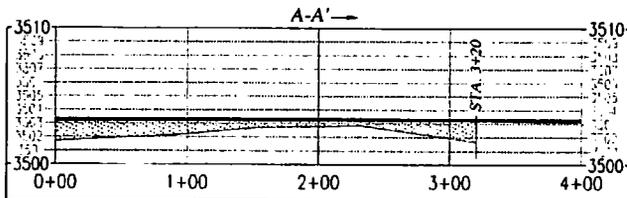
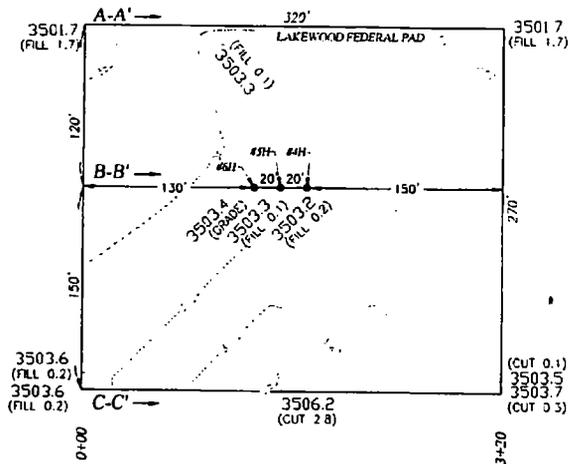
## PERCUSSION PETROLEUM OPERATING, LLC

LAKWOOD FEDERAL #5H WELL LOCATED 500 FEET FROM THE SOUTH LINE AND 1710 FEET FROM THE EAST LINE OF SECTION 27, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO

PROVIDING SURVEYING SERVICES SINCE 1946  
**JOHN WEST SURVEYING COMPANY**  
 412 N. DAL PASO HOBBS, N.M. 88240  
 (575) 393-3117 www.jwsc.biz  
 TBPLS# 10021000

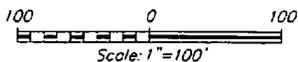
Survey Date: 02/21/18	CAD Date: 3/07/18	Drawn By: ACK
W.O. No.: 18110107	Rev: 06/18/18	Rel. W.O.:
		Sheet 1 of 1

MAP 15



**PERCUSSION PETROLEUM OPERATING, LLC**

LAKEWOOD FEDERAL #4H, #5H & #6H WELL PAD IN SECTION 27, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO



PROVIDING SURVEYING SERVICES SINCE 1946  
**JOHN WEST SURVEYING COMPANY**  
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 TBPLS# 10021000

Survey Date: 2/21/18	CAD Date: 6/29/18	Drawn By: ACK
W.O. No.: 18130756	Rev: .	Rel W.O.: 18110106

Sheet 1 of 1

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Percussion Petroleum Operating, LLC  
Lakewood Federal Com 5H  
SHL 500' FSL & 1710' 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 54.1  
Then turn right and go West 3.1 miles on paved County Road 23 (Rock Daisy)  
Then turn right and go Northwest 600' across Unit's abandoned 5H pad  
Continue Northwest 138.5' cross-country to the 20H/21H pad  
Continue West 370' across the south side of the 20H/21H pad  
Then go WSW 687.5' cross-country to the 4H/5H/6H pad

Alternatively, from the 7H/8H/9H pad (see those APDs for their road details),  
Go SE 340.1' cross-country to the 4H/5H/6H pad

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 MAPS 4 & 5)

The 1027.6' of new resource roads will be crowned and ditched, have a 14' wide driving surface, and be surfaced with caliche. Maximum disturbed width = 30'. Maximum grade = 2%. Maximum cut or fill = 1'. No culvert, cattle guard, or vehicle turn out is needed. No upgrade is needed.

### 3. EXISTING WELLS (See MAP 6)

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

4. PROPOSED PRODUCTION FACILITIES (See MAPS 7 & 8)

A 1324.4' long  $\approx 4$ " O D. HDPE flow line will be laid on the surface south 15' and east 1309.4' to a proposed central tank battery (CTB) on the existing Pan Canadian 5H pad. Maximum operating pressure will be <100 psi. A 333.4' long overhead raptor safe 3-phase power line will be built south to an existing power line. CTB details are in the 20H/21H APDs.

5. WATER SUPPLY (See MAP 9)

Water will be piped via temporary  $\approx 11,700$ ' long surface 10" Kevlar lay flat pipelines (2) from Percussion's existing lined fresh water pond on its own land in NE4 26-19s-25e. Pipeline route will not be bladed or excavated. Route is all private.

6. CONSTRUCTION MATERIALS & METHODS (See MAPS 10 - 12)

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

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 MAP 13)

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 14 & 15)

Interim reclamation will be completed within 6 months of completing the well. Interim reclamation will consist of shrinking the well pad 0.15 acre by removing caliche and reclaiming 20' on the north side of the pad. This will leave 1.83 acres for the anchors, pump jacks, and tractor-trailer turn around. Disturbed areas will be contoured to match pre-construction grades. Soil and brush will be evenly spread over disturbed areas and harrowed on the contour. Disturbed areas will be seeded in accordance with surface owner's requirements.

Enough stockpiled topsoil will be retained to cover the remainder of the pad when the well is plugged. Once the last well is plugged, then the rest of the pad and new road will be similarly reclaimed within 6 months of plugging. Noxious weeds will be controlled. Land use will be:

30' x 1027.6' roads = 0.71 acre  
30' x 1324.4' flowline = 0.91 acre  
30' x 333.4' power line = 0.23 acre  
20' x 11,700' water line from pond = 5.37 acres  
+ 270' x 320' well pad = 1.98 acres  
9.20 acres short term  
- 0.91 acre flowline  
- 0.23 acre power line  
- 5.37 acres water line from pond  
- 0.15 acre interim reclamation on well pad  
2.54 acres long term (0.71 ac. road + 1.83 ac. pad)

Percussion Petroleum Operating, LLC  
Lakewood Federal Com 5H  
SHL 500' FSL & 1710' FEL 27-19S-25E  
Eddy County, NM

SURFACE PLAN PAGE 4

11. SURFACE OWNER

All construction will be on private land (S2SE 27-19s-25e) owned by Ross Ranch Inc. (P. O. Box 216, Lakewood NM 88254; (575) 365-4797). Percussion has an agreement with Ross.

12. OTHER INFORMATION

On-site inspection was held with Jessie Bassett (BLM) on April 3, 2018.

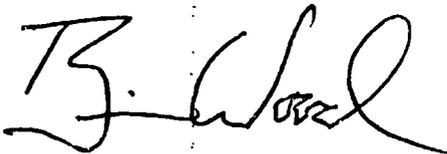
Lone Mountain inspected the project area and submitted archaeology report NMCRIS-140197 on April 11, 2018.

Percussion Petroleum Operating, LLC  
Lakewood Federal Com 5H  
SHL 500' FSL & 1710' 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 22nd day of August, 2018.



\_\_\_\_\_  
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:

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

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

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

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

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

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

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

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

### **Section 4 - Injection**

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

**Injection well type:**

**Injection well number:**

**Assigned injection well API number?**

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

**Minerals protection information:**

**Mineral protection attachment:**

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

**UIC Permit attachment:**

**Injection well name:**

**Injection well API number:**

### **Section 5 - Surface Discharge**

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

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

**PWD surface owner:**

**PWD disturbance (acres):**

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

**Surface Discharge NPDES Permit?**

**Surface Discharge NPDES Permit attachment:**

**Surface Discharge site facilities information:**

**Surface discharge site facilities map:**

### **Section 6 - Other**

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

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

**PWD surface owner:**

**PWD disturbance (acres):**

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

**Other PWD type description:**

**Other PWD type attachment:**

**Have other regulatory requirements been met?**

**Other regulatory requirements attachment:**



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

## **Bond Info Data Report**

12/27/2018

### **Bond Information**

**Federal/Indian APD: FED**

**BLM Bond number: NMB001424**

**BIA Bond number:**

**Do you have a reclamation bond? NO**

**Is the reclamation bond a rider under the BLM bond?**

**Is the reclamation bond BLM or Forest Service?**

**BLM reclamation bond number:**

**Forest Service reclamation bond number:**

**Forest Service reclamation bond attachment:**

**Reclamation bond number:**

**Reclamation bond amount:**

**Reclamation bond rider amount:**

**Additional reclamation bond information attachment:**