

State of New Mexico  
Energy, Minerals and Natural Resources Department

Susana Martinez  
Governor

David Martin  
Cabinet Secretary

Brett F. Woods, Ph.D.  
Deputy Cabinet Secretary

David R. Catanach Division Director  
Oil Conservation Division



New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-3 APD form.

Operator Signature Date: 7-20-15

Well information;

Operator San Juan Resources Well Name and Number Lindrieth 24 2 23 #1

API# 30-039-31336, Section 23, Township 24 N/S, Range 02 E/W


Conditions of Approval:

(See the below checked and handwritten conditions)

- ☒ Notify Aztec OCD 24hrs prior to casing & cement.
- ☐ Hold C-104 for directional survey & "As Drilled" Plat
- ☒ Hold C-104 for NSL, NSP, DHC
- ☐ Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned

Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:

- ☐ A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
- ☐ A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
- ☐ A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- ☐ Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
- ☒ Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84
- ☒ Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.
- ☒ Well-bore communication is regulated under 19.15.29 NMAC. This requires well-bore Communication to be reported in accordance with 19.15.29.8.

  
NMOCD Approved by Signature

2-26-16  
Date KC



## OIL CONS. DIV DIST. 3

RECEIVED

Form 3160-3  
(March 2012)

FEB 10 2016

JUL 24 2015

FORM APPROVED  
OMB No. 1004-0137  
Expires October 31, 2014UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENTFarmington Field Office  
Bureau of Land Management

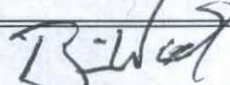
## APPLICATION FOR PERMIT TO DRILL OR REENTER

|  |   |  |
|--|---|--|
| 1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER   |   | 5. Lease Serial No.<br>NMM-128373                                    |
| 1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input checked="" type="checkbox"/> Multiple Zone |   | 6. If Indian, Allottee or Tribe Name<br>N/A                          |
| 2. Name of Operator SAN JUAN RESOURCES, INC.   |   | 7. If Unit or CA Agreement, Name and No.<br>N/A                      |
| 3a. Address 1499 BLAKE ST., SUITE 10C<br>DENVER, CO 80202  | 3b. Phone No. (include area code)<br>303 573-6333 | 8. Lease Name and Well No.<br>LINDRITH 24-2-23 #1                    |
| 4. Location of Well (Report location clearly and in accordance with any State requirements.)<br>At surface 1735' FSL & 233' FEL<br>At proposed prod. zone SAME   |   | 9. API Well No.<br>30-039- 31336                                     |
| 14. Distance in miles and direction from nearest town or post office*<br>2 AIR MILES ESE OF LINDRITH, NM   |   | 10. Field and Pool, or Exploratory<br>GAVIL. GREEN-GRAN-DK & MANCOS  |
| 15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 233'   | 16. No. of acres in lease 480                     | 11. Sec., T. R. M. or Blk. and Survey or Area<br>NESE 23-24N-2W NMPM |
| 18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 1119' (P & A)   | 19. Proposed Depth 8150'                          | 12. County or Parish<br>RIO ARRIBA                                   |
| 21. Elevations (Show whether DF, KDB, RT, GL, etc.) 7284' GL   | 22. Approximate date work will start* 11/01/2015  | 13. State<br>NM  |
| 23. Estimated duration 1 MONTH   |   |  |

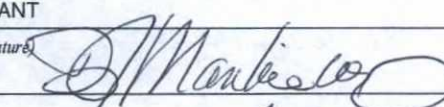
## 24. Attachments

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

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

|   |  |                    |
|---|--|--------------------|
| 25. Signature  | Name (Printed/Typed)<br>BRIAN WOOD (PHONE: 505 466-8120) | Date<br>07/20/2015 |
|---|--|--------------------|

Title CONSULTANT (FAX: 505 466-9682)

|   |                      |             |
|---|----------------------|-------------|
| Approved by (Signature)  | Name (Printed/Typed) | Date 2/5/16 |
|---|----------------------|-------------|

Title AFM Office FFO

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4

BLM'S APPROVAL OR ACCEPTANCE OF THIS ACTION DOES NOT RELIEVE THE LESSEE AND OPERATOR FROM OBTAINING ANY OTHER AUTHORIZATION REQUIRED FOR OPERATIONS ON FEDERAL AND INDIAN LANDS

\*(Instructions on page 2)  
DRILLING OPERATIONS AUTHORIZED ARE SUBJECT TO COMPLIANCE WITH ATTACHED "GENERAL REQUIREMENTS"

NMOCDPV



**District I**

1625 N. French Dr, Hobbs, NM 88240  
Phone: (575)393-6161 Fax: (575)393-0720

**District II**

811 S. First St., Artesia, NM 88210  
Phone: (575) 748-1283 Fax: (575) 748-9720

**District III**

1000 Rio Brazos Rd., Aztec, NM 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170

**District IV**

1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

## State of New Mexico

Energy, Minerals &amp; Natural Resources Department

## OIL CONSERVATION DIVISION

1220 South St. Francis Dr.

Santa Fe, NM 87505

Form C-102

Revised August 1, 2011

Submit one copy to appropriate  
District Office☐ AMENDED REPORT

## WELL LOCATION AND ACREAGE DEDICATION PLAT

|   |   |  |
|---|---|--|
| <sup>1</sup> API Number<br><b>30-039- 31336</b> | <sup>2</sup> Pool Code<br><b>27192</b>                        | <sup>3</sup> Pool Name<br><b>GAVILAN GREENHORN GRANEROS DK (OIL)</b> |
| <sup>4</sup> Property Code<br><b>3116005</b>    | <sup>5</sup> Property Name<br><b>LINDRITH 24-2-23</b>         |  |
| <sup>7</sup> OGRID No.<br><b>20208</b>          | <sup>8</sup> Operator Name<br><b>SAN JUAN RESOURCES, INC.</b> |  |
|   |   | <sup>6</sup> Well Number<br><b>1</b>                                 |
|   |   | <sup>9</sup> Elevation<br><b>7284</b>                                |


<sup>10</sup> Surface Location

| UL or Lot No. | Section   | Township    | Range      | Lot Idn. | Feet from the | North/South Line | Feet from the | East/West Line | County            |
|---------------|-----------|-------------|------------|----------|---------------|------------------|---------------|----------------|-------------------|
| <b>I</b>      | <b>23</b> | <b>24 N</b> | <b>2 W</b> |          | <b>1735</b>   | <b>South</b>     | <b>233</b>    | <b>East</b>    | <b>Rio Arriba</b> |

<sup>11</sup> Bottom Hole Location If Different From Surface

| UL or Lot No.                               | Section | Township                      | Range | Lot Idn.                         | Feet from the | North/South Line        | Feet from the | East/West Line | County |
|---|---------|-------------------------------|-------|----------------------------------|---------------|-------------------------|---------------|----------------|--------|
|   |         |                               |       |                                  |               |                         |               |                |        |
| <sup>12</sup> Dedicated Acres<br><b>320</b> |         | <sup>13</sup> Joint or Infill |       | <sup>14</sup> Consolidation Code |               | <sup>15</sup> Order No. |               |                |        |

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

|  |  |
|--|--|
| <div><div>16</div><div>N 89°58' W</div><div>79.92 Ch.</div><div>OIL CONS. DIV DIST. 3</div><div>FEB 18 2016</div><div>80.00 Ch.</div><div>Sec 23</div><div>Lat: 36.293624° N<br/>Long.: 107.011137° W<br/>(NAD 83)</div><div>233'</div><div>1735'</div><div>N 0°01' W</div><div>79.36 Ch.</div><div>West</div><div>Fd. GLO BC (Typ.)</div></div> | <div><div>17</div><div>OPERATOR CERTIFICATION</div><div>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order herebefore entered by the district.</div><div><div>Signature</div><div><b>Brian Wood</b></div></div><div><div>Printed Name</div><div><b>brian@permitswest.com</b></div></div><div><div>E-mail Address</div><div></div></div><div><div>7-20-15</div><div>Date</div></div></div> |
|  | <div><div>18</div><div>SURVEYOR CERTIFICATION</div><div>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</div><div><div>Date of Survey</div><div><b>13 Mar 2015</b></div></div><div><div>Signature and Seal of Professional Surveyor</div><div></div></div><div><div>Certificate Number</div><div><b>8466</b></div></div></div>  |
|  |  |
|  |  |

Bearings from GLO Plat



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**State of New Mexico****Energy, Minerals & Natural Resources Department****OIL CONSERVATION DIVISION****1220 South St. Francis Dr.****Santa Fe, NM 87505****Form C-102****Revised August 1, 2011****Submit one copy to appropriate  
District Office**☐ **AMENDED REPORT****WELL LOCATION AND ACREAGE DEDICATION PLAT**

|  |   |   |
|--|---|---|
| <sup>1</sup> API Number<br><b>30-039-31336</b> | <sup>2</sup> Pool Code<br><b>27194</b>                        | <sup>3</sup> Pool Name<br><b>GAVILAN MANCOS</b> |
| <sup>4</sup> Property Code<br><b>316005</b>    | <sup>5</sup> Property Name<br><b>LINDRITH 24-2-23</b>         | <sup>6</sup> Well Number<br><b>1</b>            |
| <sup>7</sup> OGRID No.<br><b>20208</b>         | <sup>8</sup> Operator Name<br><b>SAN JUAN RESOURCES, INC.</b> | <sup>9</sup> Elevation<br><b>7284</b>           |

**<sup>10</sup> Surface Location**

|                           |                      |                         |                     |          |                              |                                  |                             |                               |                             |
|---------------------------|----------------------|-------------------------|---------------------|----------|------------------------------|----------------------------------|-----------------------------|-------------------------------|-----------------------------|
| UL or Lot No.<br><b>1</b> | Section<br><b>23</b> | Township<br><b>24 N</b> | Range<br><b>2 W</b> | Lot Idn. | Feet from the<br><b>1735</b> | North/South Line<br><b>South</b> | Feet from the<br><b>233</b> | East/West Line<br><b>East</b> | County<br><b>Rio Arriba</b> |
|---------------------------|----------------------|-------------------------|---------------------|----------|------------------------------|----------------------------------|-----------------------------|-------------------------------|-----------------------------|

**<sup>11</sup> Bottom Hole Location If Different From Surface**

|   |                               |  |                         |          |               |                  |               |                |        |
|---|-------------------------------|--|-------------------------|----------|---------------|------------------|---------------|----------------|--------|
| UL or Lot No.                               | Section                       | Township                                     | Range                   | Lot Idn. | Feet from the | North/South Line | Feet from the | East/West Line | County |
| <sup>12</sup> Dedicated Acres<br><b>640</b> | <sup>13</sup> Joint or Infill | <sup>14</sup> Consolidation Code<br><b>C</b> | <sup>15</sup> Order No. |          |               |                  |               |                |        |

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

|  |   |
|--|---|
| <b>16</b><br>N 89°58' W<br>79.92 Ch.<br><b>OIL CONS. DIV DIST. 3</b><br>FEB 18 2016<br>80.00 Ch.<br>Sec. 23<br>Lat: 36.293624° N<br>Long.: 107.011137° W<br>(NAD 83)<br>233'<br>N 0°01' W<br>1735'<br>79.36 Ch.<br>West<br>Fd. GLO BC (Typ.) | <b>17 OPERATOR CERTIFICATION</b><br>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.<br>Signature <b>Brian Wood</b> Date <b>7-20-15</b><br>Printed Name <b>brian@permitswest.com</b><br>E-mail Address |
|  | <b>18 SURVEYOR CERTIFICATION</b><br>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.<br>Date of Survey <b>13 Mar 2015</b><br>Signature and Seal of Professional Surveyor<br><b>William E. Mahnke II</b><br>Certificate Number <b>8466</b>  |

**Bearings from GLO Plat**



San Juan Resources, Inc.  
Lindrith 24-2-23 #1  
1735' FSL & 233' FEL  
Sec. 23, T. 24 N., R. 2 W.  
Rio Arriba County, New Mexico

PAGE 1

Drilling Program

1. FORMATION DEPTHS (tops shown unless otherwise noted)

| <u>Formation</u>                | <u>GL Depth</u> | <u>Elevation</u> |
|---------------------------------|-----------------|------------------|
| San Jose                        | 0'              | +7,284'          |
| Ojo Alamo Ss                    | 2,704'          | +4,580'          |
| Ojo Alamo bottom/Fruitland      | 3,024'          | +4,260'          |
| Fruitland coal                  | 3,154'          | +4,130'          |
| Pictured Cliffs Ss              | 3,236'          | +4,048'          |
| Cliff House                     | 4,969'          | +2,315'          |
| Menefee                         | 5,052'          | +2,232'          |
| Menefee bottom/Point Lookout Ss | 5,420'          | +1,864'          |
| Gallup Ss                       | 6,494'          | +790'            |
| Niobrara A                      | 6,591'          | +693'            |
| Niobrara B                      | 6,677'          | +607'            |
| Niobrara C                      | 6,786'          | +498'            |
| Niobrara bottom/Greenhorn Ls    | 7,568'          | -284'            |
| Greenhorn bottom/Dakota Ss      | 7,696'          | -412'            |
| Dakota D                        | 7,825'          | -541'            |
| Burro Canyon                    | 8,015'          | -731'            |
| Morrison                        | 8,145'          | -861'            |
| Total Depth                     | 8,150'          | -866'            |

2. NOTABLE ZONES

Oil & Gas Zones

Pictured Cliffs  
Niobrara (secondary goal)  
Dakota (primary goal)

Water Zones

San Jose  
Ojo Alamo

Coal Zone

Fruitland



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Deepest water well within a mile radius is 780'. Water zones will be protected with casing, cement, and weighted mud. Fresh water will be recorded by depth, cased, and cemented. Oil and gas shows will be tested for commercial potential based on the well site geologist's recommendations.

### 3. PRESSURE CONTROL (See PAGE 3)

The drilling contract has not yet been awarded, thus the exact BOP model to be used is not yet known. A typical 3000 psi model is on the following page. Minimum specifications for such a system are:

- 9 5/8" slip-on / welded x 11" 3,000 psi casing head.
- One 11" 3000 psi WP double-ram preventer with 1 set of blind rams on top and 1 set of pipe rams on bottom complete with hand wheels and extension arms.
- The choke and kill lines will be connected to outlets between the bottom and top rams, using either the ram body outlet or a drilling spool with side outlets for a 2" kill line and a minimum 3" choke line.
- One 11" x 3000 psi WP Hydril GK (or equivalent) annular preventer.
- Accumulator - Four Station Koomey (or equivalent) 120 gallon closing unit with remote backup. The accumulator will have sufficient capacity to open the hydraulically-controlled gate valve and close all rams plus the annular preventer, with a 50% safety factor and retain a minimum of 200 psi above the pre-charge on the closing manifold without the use of the closing unit pumps. The reservoir capacity will be double the usable accumulator capacity, and the fluid level will be maintained at the manufacturer's recommendations.
- The BOP system shall have two independent power sources (electric and air) available for powering the closing unit pumps. Sufficient nitrogen bottles are suitable as a backup power source only, and will be recharged when the pressure falls below manufacturer's specification.
- A valve will be installed in the closing line as close as possible to the annular preventer to act as a locking device. This valve will be maintained in the open position and will be closed only when the power source for the accumulator system is inoperative.



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All BOPE will be hydraulically operated with controls accessible on the rig floor.

The wellhead BOP equipment will be nipped-up on the 9-5/8" x 11" 3000 psi WP casing head before drilling out from under surface casing. All ram preventers and related equipment will be tested to 3000 psi for 10 minutes. Annular preventers will be tested to 50% of rated working pressure for 10 minutes. Surface casing will be tested to 70% of internal yield pressure. All preventers and surface casing will be tested before drilling out of the surface casing. BOP equipment will be tested every 14 days, after any repairs are made to the BOP equipment, and after the BOP equipment is subjected to pressure. Annular preventers will be functionally operated at least once per week. Pipe rams will be activated daily and blind rams will be activated each trip, or at least weekly. The OCD and the BLM will be notified 24 hours before testing of BOPE.

#### 4. CASING & CEMENT

| Type       | Depth Set | Hole   | Casing | #/ft | Grade | Thread  | API | Age |
|------------|-----------|--------|--------|------|-------|---------|-----|-----|
| Conductor  | 60'       | 26"    | 16"    |      |       |         | No  | New |
| Surface    | 500'      | 12.25" | 9.625" | 36   | K-55  | L T & C | Yes | New |
| Production | 8150'     | 7.875" | 5.5"   | 17   | J-55  | L T & C | Yes | New |

Casing strings below the conductor pipe will be tested to 0.22 psi/foot of casing string length, or to 1500 psi, whichever is greater, but not to exceed 70% of the minimum internal yield. Minimum casing design factors used are:

Burst  
1.0

Collapse  
1.125

Joint Strength  
1.60

Surface casing will have a guide shoe, 2 joint shoe track, and float collar. One bow spring centralizer will be stop-locked on the first joint, then one bow spring



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centralizer on each of the next two joints, and then one on every other joint to surface. A total of approximately 8 bow spring centralizers will be used.

The production casing will have a float shoe, 1 joint shoe track, float collar, casing to DV tool. The DV tool will be placed at  $\approx 5500'$ . Production casing will be centralized using 1 bow spring centralizer stop locked in the middle of the first joint, 1 bow spring centralizer for the next 2 joints, and 1 bow spring centralizer every 4<sup>th</sup> joint to  $\approx 6500'$ . Run 1 bow spring centralizer below and above the DV tool. Run 1 bow spring centralizer every 4<sup>th</sup> joint to 2700'. A total of approximately 29 bow spring centralizers will be used. If needed, will strategically place 2 cement baskets below the DV tool.

The cement program will protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. Any isolating medium other than cement will receive approval prior to use. The casing setting depth is calculated to position the casing seat opposite a competent formation that will contain the maximum pressure to which it will be exposed during normal drilling operations. All indications of useable water will be reported.

Top plugs will be used to reduce contamination of cement by displacement fluid. A bottom plug or other acceptable technique, such as a pre-flush fluid, inner string cement method, etc. will be used to help isolate the cement from contamination by the mud fluid being displaced ahead of the cement slurry.

Surface Casing - Single Stage Job (GL' - 500'):

Excess = 125% over gauge hole (12-1/4" hole and 9-5/8" casing (0.3132 ft<sup>3</sup>/ft)  
Top of Cement (437 ft<sup>3</sup>) = surface

Lead: 85 sx (254 ft<sup>3</sup>) mixed @ 11.5 ppg, conventional cement containing:

Cement: Halliburton VARICEM CEMENT

0.125#/sk Poly-E-Flake

0.25#/sk Kwick Seal

Yield: 2.989 ft<sup>3</sup>/sx      Compressive strength @ 24 hr  $\geq 1000$  psi



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Tail: 100 sx (183 ft<sup>3</sup>) mixed @ 13.5 ppg, conventional cement containing:  
Cement: Halliburton VARICEM CEMENT  
0.125#/sk Poly-E-Flake  
0.25#/sk Kwick Seal  
Yield: 1.831 ft<sup>3</sup>/sx      Compressive strength @ 24 hr  $\geq$  1000 psi

Production Casing – Two Stage Job (GL - 8150'):

Excess = 35% over gauge hole (7-7/8" hole and 5-1/2" casing (0.1733 ft<sup>3</sup>/ft)  
Top of Cement (1923 ft<sup>3</sup>) = surface

1<sup>st</sup> Stage

Lead (7500' – 5500'): 160 sx (478 ft<sup>3</sup>) mixed @ 11.5 ppg, conventional cement:  
Cement – Halliburton VARICEM CEMENT  
0.125#/sk Poly-E-Flake  
0.25#/sk Kwick Seal  
Yield – 2.989 ft<sup>3</sup>/sx      Compressive strength @ 24 hr  $\geq$  1000 psi

Tail (8150' – 7500'): 80 sx (158 ft<sup>3</sup>) mixed @ 12.0 ppg, conventional cement:  
Cement – Halliburton HALCEM  
0.05% sa-1015  
5 LBM Kol-Seal  
0.125#/sk Poly-E-Flake  
Yield: 1.97 ft<sup>3</sup>/sx      Compressive strength @ 24 hr  $\geq$  1500 psi

2<sup>nd</sup> Stage

Lead (2700' – GL): 365 sx (1090 ft<sup>3</sup>) mixed @ 11.5 ppg, conventional cement:  
Cement – Halliburton VARICEM CEMENT  
0.125#/sk Poly-E-Flake  
0.25#/sk Kwick Seal  
Yield: 2.989 ft<sup>3</sup>/sx      Compressive strength @ 24 hr  $\geq$  1000 psi



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Tail (5500' - 4650'): 100 sx (197 ft<sup>3</sup>) mixed @ 12.0 ppg, conventional cement:  
Cement - Halliburton HALCEM  
0.05% sa-1015  
5 LBM Kol-Seal  
0.125#/sk Poly-E-Flake  
Yield: 1.97 ft<sup>3</sup>/sx      Compressive strength @ 24 hr  $\geq$  1500 psi

Cement volumes are minimums and may be adjusted based on caliper log results and hole conditions. Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum BLM and OCD requirements. Slurries used will be the slurries listed above or equivalent slurries depending on service provider selected. Cement yields may change depending on slurries selected. All waiting on cement times will be a minimum of 8 hours or adequate to achieve a minimum of 500 psi compressive strength at the casing shoe before drilling out.

## 5. MUD PROGRAM

| Hole O. D. | Interval     | Mud Type            | Density (lb/gal) | Viscosity (sec/qt) | Fluid Loss |
|------------|--------------|---------------------|------------------|--------------------|------------|
| 12.25"     | GL - 500'    | Fresh Water         | 8.3 - 9.4        | 28 - 42            | NC         |
| 7.875"     | 500' - 3650' | Fresh Water<br>LSND | 8.6 - 9.2        | 35 - 70            | 8 - 10 cc  |
| 7.875"     | 3650' - TD   | Fresh Water<br>LSND | 8.6 - 9.2        | 40 - 54            | <6 cc      |

Sufficient mud will be on location to control a blowout should one occur. Mud flow and volume will be monitored visually and with electronic pit volume totalizers. Mud tests will be performed every 24 hours after mudding up to determine, as applicable, density, viscosity, gel strength, filtration, and pH.

- ✓ A closed loop system will be used to recover drilling fluid and dry cuttings in both phases of the well and on all hole intervals. Above ground tanks will be used to hold cuttings and fluids for rig operations. A frac tank will be on site to store fresh water. Drill cuttings will be buried on site in compliance with Rule 19. Any waste



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### Surface Use Plan

#### 1. DIRECTIONS & EXISTING ROADS (See PAGES 15 - 19)

From the Lindrith Post Office...

Go South 3/4 mile on paved NM 595 to the equivalent of Mile Post 10.2  
Then turn left south of the ballpark and go east 2.4 miles on dirt County Road 394  
Then turn left and go North 1/10 mile on a dirt road to just before a fork  
Then turn left and go SW 630.63' cross-country to the proposed pad

Roads will be maintained to at least equal to their present condition. See attached Road Maintenance Plan.

#### 2. ROAD TO BE BUILT OR UPGRADED (See PAGES 17 - 19)

The final 630.63' of road will be built to BLM Gold Book standards. Road will be crowned, ditched, and have a  $\approx 14'$  wide running surface. Maximum disturbed road width will be 30'. Maximum cut or fill = 2'. Maximum grade = 3%. The existing west borrow ditch will turn out north of Station 2+48.74. A 24" x 50' culvert will be installed at Station 2+48.74. A 24" x 20' culvert will be installed at Station 8+79.37. No cattle guard or vehicle turn out is needed.

#### 3. EXISTING WELLS (See PAGE 16)

One gas well, 7 water wells, and 14 plugged and abandoned wells are within a mile radius. There are no disposal, injection, or oil wells within a mile.



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## 7. WASTE DISPOSAL

A  $\geq 20$  mil plastic liner will be installed in the reserve pit. The pit will be fenced sheep tight on 3 sides with woven wire fence topped with barbed wire. The fourth side will be fenced once the rig moves off. The fence will be kept in good repair while the pit dries. Once dry, pit contents will be buried in place.

All trash will be placed in a portable trash cage. It will be hauled to an approved landfill. Human waste will be disposed of in chemical toilets. Their contents will be hauled to a state approved dump station.

## 8. ANCILLARY FACILITIES

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

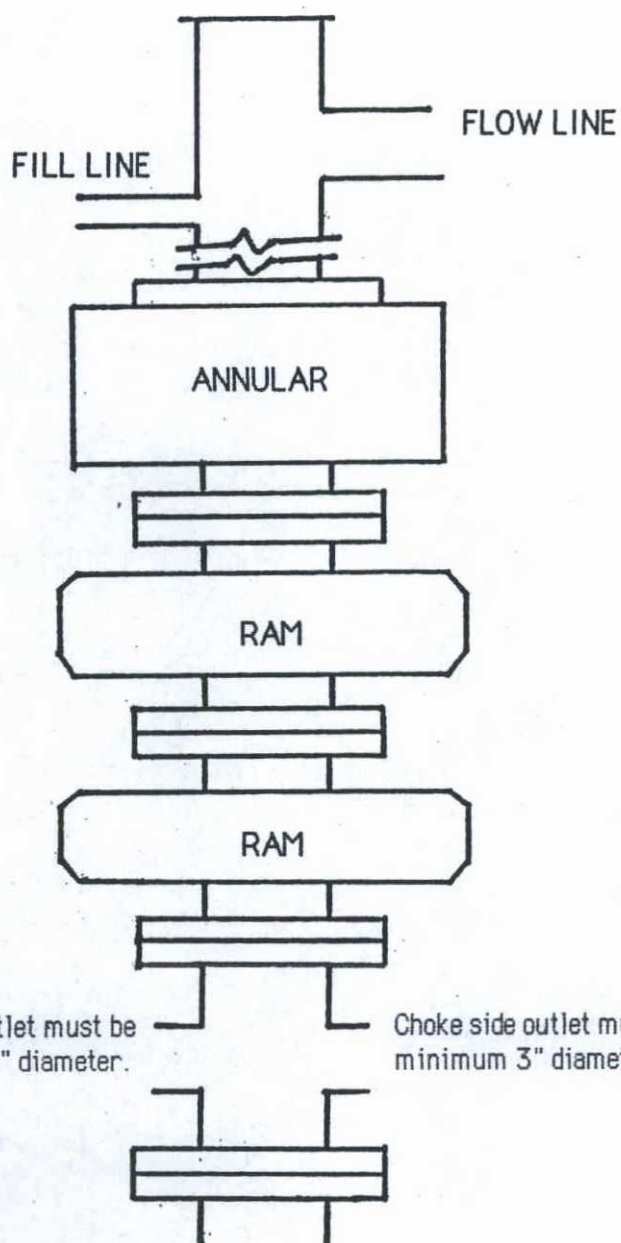
## 9. WELL SITE LAYOUT

See Pages 19 and 20 for depictions of the well pad, cross section, cut and fill diagram, reserve pit, trash cage, access onto the location, parking, living facilities, and rig orientation.

## 10. RECLAMATION

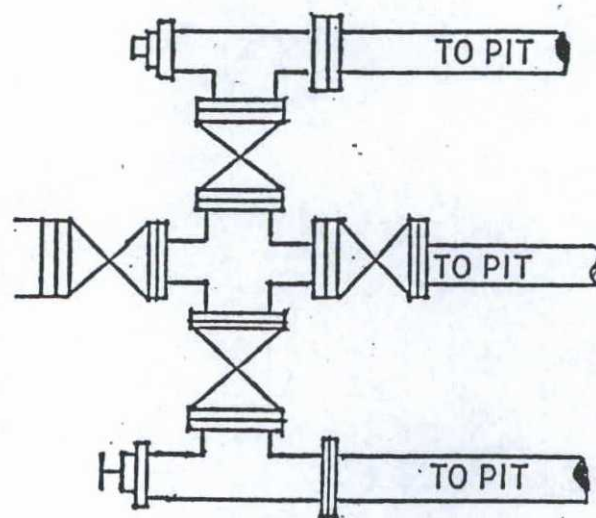
Once production equipment is installed, then the pad will be reduced in size and unneeded areas will be reclaimed. Water bars will be installed in cut every  $\approx 100'$  and skewed to drain on the pipeline route. Interim reclamation will consist of reclaiming the pipeline route and north side of the pad in accordance with Vegetation Reclamation Procedure B within 90 days of completing the well. Disturbed areas will be contoured to a natural shape and no steeper than 3:1. Soil and brush will be evenly spread over disturbed areas. Seeded areas will be ripped





TYPICAL BOP STACK  
& CHOKE MANIFOLD

There will be at least 2 chokes and 2 choke line valves (3" minimum). The choke line will be 3" in diameter. There will be a pressure gauge on the choke manifold.



Kill line will be minimum 2" diameter and have 2 valves, one of which shall be a minimum 2" check valve.

Upper kelly cock will have handle available.  
Safety valve and subs will fit all drill string connections in use.  
All BOPE connections subjected to well pressure will be flanged, welded, or clamped.