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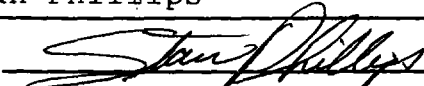
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**APPLICATION FOR AUTHORIZATION TO INJECT**

- I. PURPOSE: Secondary Recovery Pressure Maintenance X Disposal Storage  
Application qualifies for administrative approval? X Yes No
- II. OPERATOR: MW Petroleum c/o Apache Corporation  
ADDRESS: 304 N. Behrend Ave. Farmington, NM 87401  
CONTACT PARTY: Stan Phillips - Production Foreman PHONE: 325-0318
- III. WELL DATA: Complete the data required on the reverse side of this form for each well processed for injection. Additional sheets may be attached if necessary. See Attachment "A"
- IV. Is this an expansion of an existing project: Yes X No  
If yes, give the Division order number authorizing the project \_\_\_\_\_
- V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review. See Attachment "B"
- VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail. There are not any wells in the area of review that penetrate the proposed injection zone. See Attachment "C"
- VII. Attach data on the proposed operation, including:  
1. Proposed average and maximum daily rate and volume of fluids to be injected; See Attachment "D"  
2. Whether the system is open or closed; See Attachment "E"  
3. Proposed average and maximum injection pressure; See Attachment "E"  
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and See Attachment "F"  
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.). See Attachment "F"
- \*VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval. See Attachment "G"
- IX. Describe the proposed stimulation program, if any. Anticipated stimulation is 100 gal/ft of 15% HCL acid. Fracture stimulation would depend on the acidizing results.
- \* X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted.) See Attachment "H"
- \* XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken. See Attachment "I"
- XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water. See Attachment "J"
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
- NAME: Stan Phillips TITLE: Production Foreman  
SIGNATURE:  DATE: Feb. 3, 1994
- \* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstance of the earlier submittal. \_\_\_\_\_

### III. WELL DATA See Attachment "A"

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

- (1) Lease name; Well No.; Location by Section, Township, and Range; and footage location within the section.
- (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
- (3) A description of the tubing to be used including its size, lining material, and setting depth.
- (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated. See Attachment "A", page 3.

- (1) The name of the injection formation and, if applicable, the field or pool name.
- (2) The injection interval and whether it is perforated or open-hole.
- (3) State if the well was drilled for injection or, if not, the original purpose of the well.
- (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
- (5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

### XIV. PROOF OF NOTICE See Attachment "K"

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

- (1) The name, address, phone number, and contact party for the applicant;
- (2) The intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;
- (3) The formation name and depth with expected maximum injection rates and pressures; and
- (4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, PO Box 2088, Santa Fe, NM 87504-2088 within 15 days.

**NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.**

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**NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.**

MW Petroleum % Apache Corporation  
 Jicarilla Apache 124 #7  
 Jicarilla Contract #124  
 West Lindrith Gal/Dak  
 990' FSL 990' FWL  
 Sec 13 T2S R4W  
 Rio Arriba, NM

## Existing Wellbore Diagram

5 1/2" 15.5# K-55 csg.

Cement:

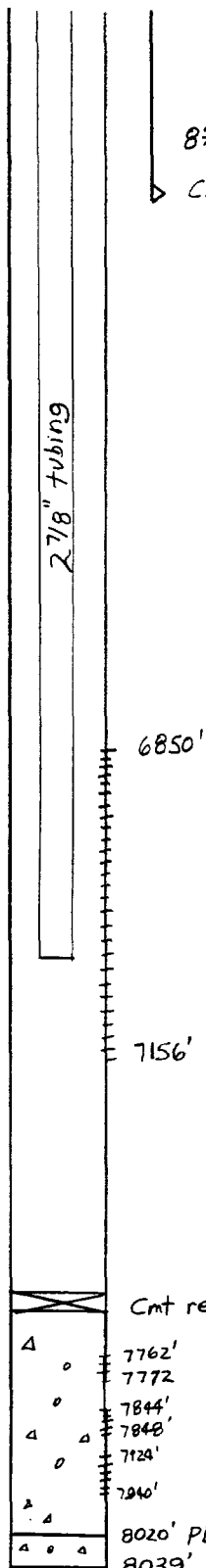
1<sup>st</sup> stage: 135 sx 50-50 POZ  
 w/ 6% gel, 410 sx  
 class B. Circ cmt to  
 surface.

2<sup>nd</sup> stage: 880 sx 65-35  
 POZ w/ 6% gel, 100 sx  
 class B. Circ cmt to  
 surface.

Gallup perfs:

|           |           |
|-----------|-----------|
| 6850-82   | 33 perfs  |
| 6891-6910 | 20        |
| 6920-6938 | 19        |
| 6948-69   | 22        |
| 7010-84   | 66        |
| 7088-95   | 7         |
| 7106-56   | <u>51</u> |
|           | 218 perfs |

Note: Determination  
 of cement circulated  
 to surface was from the  
 drilling report.



8 5/8" 24#

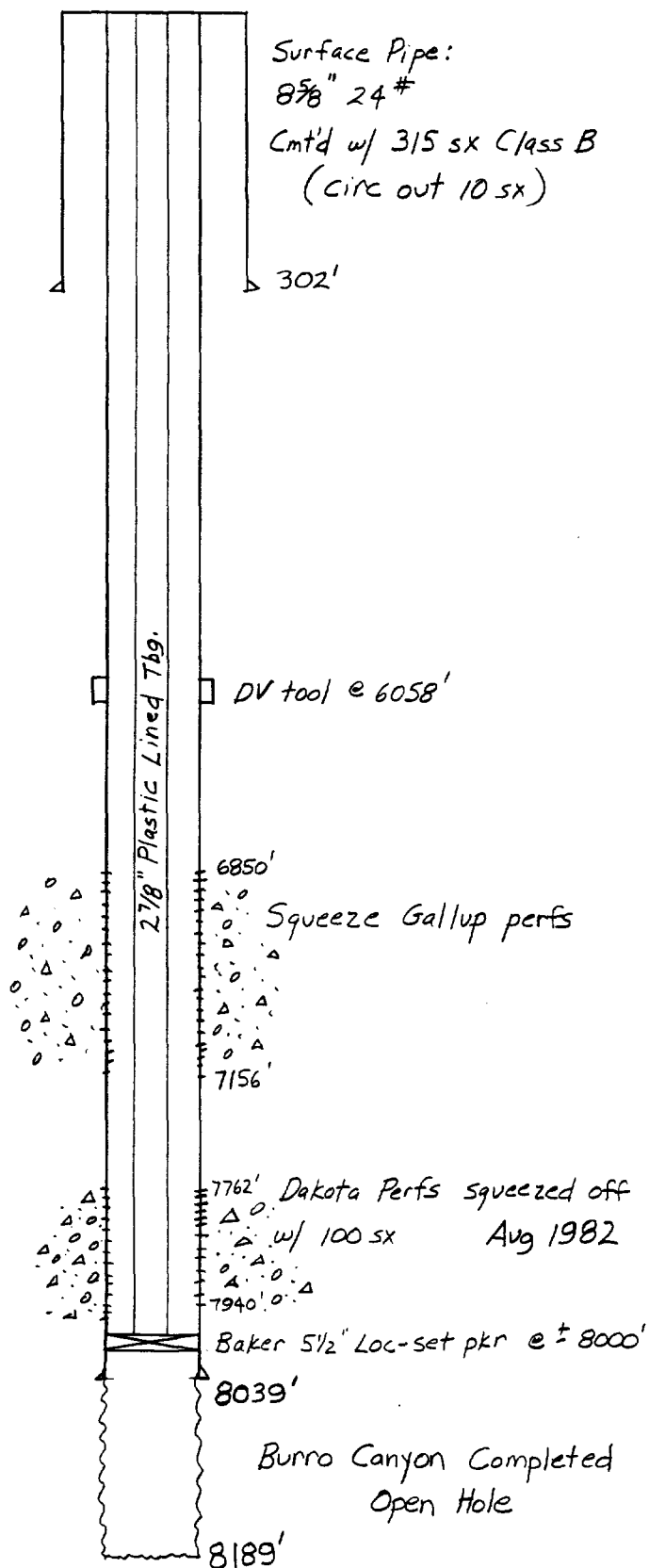
↳ Cmt'd w/ 315 sx (circ 10 sx to surface)

- 8-1980. Perf, frac 7844'-7940'  
 Perf 7762'-7772', frac
- Swab all perfs 7 days final 200 bbls fld.
- Perf frac Gallup.
- Swab test Gallup. Final 150 bbls fluid.
- Swab test Gal/Dak 1 1/4 months  
 Final 22 BO, 150 BW
- Ran rods. Pump 1 1/2 months.  
 Final 25 BO, 159 BW 91 MCFD
- Drill out FC. Set RBP @ 7794'.  
 Swab 2 days 352 BW 0 BO. Pull RBP.
- Set cmt retainer @ 7715' squeeze  
 w/ 100 sx. August 1982
- 4-15-92  
 Convert well to plunger lift, prod.  
 Gallup only.

10. Jan 1994 - Present prod  
 average - 2 Bbls oil per day  
 10 MCF per day

Jicarilla Apache 124 #7  
Salt Water Injection Well

Proposed Wellbore Diagram



Proposed procedure to complete well in Burro Canyon and set up well for water injection.

1. Move in service rig. Pull tbg.
2. Trip in hole w/ packer, set @ 6700'.
3. Squeeze off Gallup perms f/ 6850' to 7156' w/ neat cement.
4. Drill out cmt, press test csg to 1000 PSI.
5. Drill out cmt retainer @ 7715', cmt to 8020'.
6. Press test csg to 1000 PSI, re-squeeze Dakota if needed.
7. Drill out cmt f/ 8020' to 8039', drill 4 3/4" open hole to 8189' w/ drlg mud as circ medium.
8. Log Burro Canyon w/ GR-CNL-FDS, GR-SP-DIL logs.
9. Swab well dry.
10. Trip in hole w/ packer on tbg workstring, set @ 8000'.
11. Injection test well. (See Attachment 'E')
12. Run plastic lined tbg w/ packer, set pkr @ 8000'.
13. Load annulus with non-corrosive packer fluid, pressure test to 300 PSI for 30 minutes.
14. Set surface equipment, inject produced water.

Wells in area of review.

DWIGHTS CD-ROM PROPERTY LISTING  
4-Nov-1993

| STATE, COUNTY<br>LOCATION   | FIELD<br>RESERVOIR                              | OPERATOR               | WELL/LEASE INFORMATION                                                                                                     |
|-----------------------------|-------------------------------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------|
| NM RIO ARRIBA<br>12A 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC CONOCO INC          | AXI APACHE N<br>RCI: 251.039.25N04W12A00PC<br>API: 30-039-08142-00<br>WELL#:000003<br>STATUS: ACT<br>LAST PROD DATE: 06/93 |
| NM RIO ARRIBA<br>12B 25N 4W | BLANCO (MESAVERTDE)<br>MESAVERTDE               | MV CONOCO INC          | AXI APACHE N<br>RCI: 251.039.25N04W12B00MV<br>API: 30-039-22290-00<br>WELL#:00011A<br>STATUS: 1NA<br>LAST PROD DATE: 01/88 |
| NM RIO ARRIBA<br>12C 25N 4W | BLANCO (MESAVERTDE)<br>MESAVERTDE               | MV CONOCO INC          | AXI APACHE N<br>RCI: 251.039.25N04W12C00MV<br>API: 30-039-21982-00<br>WELL#:00016A<br>STATUS: ACT<br>LAST PROD DATE: 06/93 |
| NM RIO ARRIBA<br>12D 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC CONOCO INC          | AXI APACHE N<br>RCI: 251.039.25N04W12D00PC<br>API: 30-039-06090-00<br>WELL#:000004<br>STATUS: ACT<br>LAST PROD DATE: 06/93 |
| NM RIO ARRIBA<br>12L 25N 4W | BLANCO (MESAVERTDE)<br>MESAVERTDE               | MV CONOCO INC          | AXI APACHE N<br>RCI: 251.039.25N04W12L00MV<br>API: 30-039-21983-00<br>WELL#:000016<br>STATUS: ACT<br>LAST PROD DATE: 06/93 |
| NM RIO ARRIBA<br>12M 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC CONOCO INC          | AXI APACHE N<br>RCI: 251.039.25N04W12M00PC<br>API: 30-039-06050-00<br>WELL#:000007<br>STATUS: ACT<br>LAST PROD DATE: 06/93 |
| NM RIO ARRIBA<br>12P 25N 4W | BLANCO (MESAVERTDE)<br>MESAVERTDE               | MV CONOCO INC          | AXI APACHE N<br>RCI: 251.039.25N04W12P00MV<br>API: 30-039-21255-00<br>WELL#:000011<br>STATUS: 1NA<br>LAST PROD DATE: 02/86 |
| NM RIO ARRIBA<br>12P 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC CONOCO INC          | AXI APACHE N<br>RCI: 251.039.25N04W12P00PC<br>API: 30-039-21255-00<br>WELL#:000011<br>STATUS: ACT<br>LAST PROD DATE: 06/93 |
| NM RIO ARRIBA<br>13A 25N 4W | BLANCO (MESAVERTDE)<br>MESAVERTDE               | MV CONOCO INC          | AXI APACHE N<br>RCI: 251.039.25N04W13A00MV<br>API: 30-039-22291-00<br>WELL#:000007<br>STATUS: ACT<br>LAST PROD DATE: 06/93 |
| NM RIO ARRIBA<br>13A 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC CONOCO INC          | AXI APACHE N<br>RCI: 251.039.25N04W13A00PC<br>API: 30-039-06037-00<br>WELL#:000003<br>STATUS: ACT<br>LAST PROD DATE: 06/93 |
| NM RIO ARRIBA<br>13D 25N 4W | BLANCO (MESAVERTDE)<br>MESAVERTDE               | MV SOUTHLAND ROYALTY C | AXI APACHE N<br>RCI: 251.039.25N04W13D00MV<br>API: 30-039-21823-00<br>WELL#:000005<br>STATUS: ACT<br>LAST PROD DATE: 06/93 |
| NM RIO ARRIBA<br>13D 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC SOUTHLAND ROYALTY C | AXI APACHE N<br>RCI: 251.039.25N04W13D00PC<br>API: 30-039-22797-00<br>WELL#:000005<br>STATUS: ACT<br>LAST PROD DATE: 06/93 |

DWIGHTS CD-ROM PROPERTY LISTING  
4-Nov-1993

| STATE, COUNTY<br>LOCATION   | FIELD<br>RESERVOIR                              | OPERATOR               | WELL/LEASE INFORMATION                                                                                                                      |
|-----------------------------|-------------------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| NM RIO ARriba<br>13J 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD M W PETROLEUM CORP  | JICARILLA APACHE TRIBAL 124<br>RCI: 151.039.25N04W13J00GD<br>API: 30-039-22140-00<br>LAST PROD DATE: 06/93<br>WELL#: 000003<br>STATUS: ACT  |
| NM RIO ARriba<br>13J 25N 4W | BLANCO (MESAUERDE)<br>MESAUERDE                 | MV CONOCO INC          | AXI APACHE M<br>RCI: 251.039.25N04W13J00WV<br>API: 30-039-23467-00<br>LAST PROD DATE: 06/93<br>WELL#: 00007A<br>STATUS: ACT                 |
| NM RIO ARriba<br>13K 25N 4W | BLANCO (MESAUERDE)<br>MESAUERDE                 | MV SOUTHLAND ROYALTY C | ARIZONA JICARILLA A<br>RCI: 251.039.25N04W13K00WV<br>API: 30-039-22797-00<br>LAST PROD DATE: 06/93<br>WELL#: 00005A<br>STATUS: ACT          |
| NM RIO ARriba<br>13K 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC SOUTHLAND ROYALTY C | ARIZONA JICARILLA A<br>RCI: 251.039.25N04W13K00PC<br>API: 30-039-22797-00<br>LAST PROD DATE: 06/93<br>WELL#: 00005A<br>STATUS: ACT          |
| NM RIO ARriba<br>13M 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD M W PETROLEUM CORP  | JICARILLA APACHE TRIBAL 124<br>RCI: 151.039.25N04W13M00GD<br>API: 30-039-22403-00<br>LAST PROD DATE: 06/93<br>WELL#: 000007<br>STATUS: ACT  |
| NM RIO ARriba<br>13P 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC SOUTHLAND ROYALTY C | ARIZONA JICARILLA A<br>RCI: 251.039.25N04W13P00PC<br>API: 30-039-05986-00<br>LAST PROD DATE: 10/92<br>WELL#: 000003<br>STATUS: INA          |
| NM RIO ARriba<br>14A 25N 4W | BLANCO (MESAUERDE)<br>MESAUERDE                 | MV CONOCO INC          | AXI APACHE M<br>RCI: 251.039.25N04W14A00WV<br>API: 30-039-22280-00<br>LAST PROD DATE: 06/93<br>WELL#: 000008<br>STATUS: ACT                 |
| NM RIO ARriba<br>14A 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC CONOCO INC          | AXI APACHE M<br>RCI: 251.039.25N04W14A00PC<br>API: 30-039-21117-00<br>LAST PROD DATE: 06/93<br>WELL#: 000005<br>STATUS: ACT                 |
| NM RIO ARriba<br>14F 25N 4W | LINDRITH SOUTH (GALLUP DAKOTA)<br>GALLUP DAKOTA | GD CHACE OIL CO INC    | JICARILLA TRIBAL CONTRACT 47<br>RCI: 151.039.25N04W14F00GD<br>API: 30-039-00000-00<br>LAST PROD DATE: 06/93<br>WELL#: 000025<br>STATUS: ACT |
| NM RIO ARriba<br>14F 25N 4W | BLANCO (MESAUERDE)<br>MESAUERDE                 | MV CONOCO INC          | AXI APACHE M<br>RCI: 251.039.25N04W14F00WV<br>API: 30-039-22950-00<br>LAST PROD DATE: 06/93<br>WELL#: 000006<br>STATUS: ACT                 |
| NM RIO ARriba<br>14F 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC CONOCO INC          | AXI APACHE M<br>RCI: 251.039.25N04W14F00PC<br>API: 30-039-22950-00<br>LAST PROD DATE: 06/93<br>WELL#: 000006<br>STATUS: ACT                 |
| NM RIO ARriba<br>14J 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD M W PETROLEUM CORP  | JICARILLA APACHE TRIBAL 124<br>RCI: 151.039.25N04W14J00GD<br>API: 30-039-22404-00<br>LAST PROD DATE: 06/93<br>WELL#: 000008<br>STATUS: ACT  |

DWIGHTS CD-ROM PROPERTY LISTING  
4-Nov-1993

| STATE, COUNTY<br>LOCATION   | FIELD<br>RESERVOIR                              | OPERATOR            | WELL/LEASE INFORMATION                                                                                                      |
|-----------------------------|-------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------|
| NM RIO ARRIBA<br>14P 25N 4W | BLANCO (MESASVERDE)<br>MESASVERDE               | NV CONOCO INC       | AXI APACHE M<br>RCI: 251.039.25N04W14P00MV<br>API: 30-039-23268-00<br>WELL#:00008A<br>STATUS: ACT<br>LAST PROD DATE: 06/93  |
| NM RIO ARRIBA<br>14P 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC CONOCO INC       | AXI APACHE M<br>RCI: 251.039.25N04W14P00PC<br>API: 30-039-23268-00<br>WELL#:00008A<br>STATUS: ACT<br>LAST PROD DATE: 06/93  |
| NM RIO ARRIBA<br>15D 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD BAYLESS ROBERT L | JICARILLA 65B<br>RCI: 151.039.25N04W15D00GD<br>API: 30-039-23015-00<br>WELL#:000001<br>STATUS: ACT<br>LAST PROD DATE: 06/93 |
| NM RIO ARRIBA<br>15H 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD CONOCO INC       | JICARILLA 22<br>RCI: 151.039.25N04W15H00GD<br>API: 30-039-22744-00<br>WELL#:000012<br>STATUS: INA<br>LAST PROD DATE: 06/91  |
| NM RIO ARRIBA<br>15H 25N 4W | BLANCO (MESASVERDE)<br>MESASVERDE               | NV CONOCO INC       | JICARILLA 22<br>RCI: 251.039.25N04W15H00MV<br>API: 30-039-22744-00<br>WELL#:000012<br>STATUS: ACT<br>LAST PROD DATE: 06/93  |
| NM RIO ARRIBA<br>15J 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD CONOCO INC       | JICARILLA 22<br>RCI: 151.039.25N04W15J00GD<br>API: 30-039-20227-00<br>WELL#:00012A<br>STATUS: ACT<br>LAST PROD DATE: 06/93  |
| NM RIO ARRIBA<br>15J 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD CONOCO INC       | JICARILLA 22<br>RCI: 151.039.25N04W15J00GD<br>API: 30-039-20227-00<br>WELL#:000004<br>STATUS: INA<br>LAST PROD DATE: 01/89  |
| NM RIO ARRIBA<br>15J 25N 4W | BLANCO (MESASVERDE)<br>MESASVERDE               | NV CONOCO INC       | JICARILLA 22<br>RCI: 251.039.25N04W15J00MV<br>API: 30-039-20227-00<br>WELL#:00012A<br>STATUS: ACT<br>LAST PROD DATE: 06/93  |
| NM RIO ARRIBA<br>15M 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC MERIDIAN OIL INC | JICARILLA C<br>RCI: 251.039.25N04W15M00PC<br>API: 30-039-05981-00<br>WELL#:000002<br>STATUS: ACT<br>LAST PROD DATE: 06/93   |
| NM RIO ARRIBA<br>22A 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD CONOCO INC       | JICARILLA 22<br>RCI: 151.039.25N04W22A00GD<br>API: 30-039-20442-00<br>WELL#:000006<br>STATUS: ACT<br>LAST PROD DATE: 06/93  |
| NM RIO ARRIBA<br>22D 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD CONOCO INC       | JICARILLA 22<br>RCI: 151.039.25N04W22D00GD<br>API: 30-039-20207-00<br>WELL#:000003<br>STATUS: ACT<br>LAST PROD DATE: 06/93  |
| NM RIO ARRIBA<br>22D 25N 4W | BLANCO (MESASVERDE)<br>MESASVERDE               | NV CONOCO INC       | JICARILLA 22<br>RCI: 251.039.25N04W22D00MV<br>API: 30-039-20207-00<br>WELL#:000003<br>STATUS: ACT<br>LAST PROD DATE: 06/93  |

DWIGHTS CD-ROM PROPERTY LISTING  
4-NOV-1993

| STATE, COUNTY<br>LOCATION   | FIELD<br>RESERVOIR                              | OPERATOR               | WELL/LEASE INFORMATION                                                                                                                     |
|-----------------------------|-------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| NM RIO ARriba<br>22E 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC MERIDIAN OIL INC    | JICARILLA C<br>RCI: 251.039, 25N04W22E00PC<br>API: 30-039-05932-00<br>WELL#:000010<br>STATUS: ACT<br>LAST PROD DATE: 06/93                 |
| NM RIO ARriba<br>22H 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC MERIDIAN OIL INC    | JICARILLA C<br>RCI: 251.039, 25N04W22H00PC<br>API: 30-039-21157-00<br>WELL#:000011<br>STATUS: ACT<br>LAST PROD DATE: 02/93                 |
| NM RIO ARriba<br>22J 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD CONOCO INC          | JICARILLA 22<br>RCI: 151.039, 25N04W22J00GD<br>API: 30-039-05917-00<br>WELL#:000001<br>STATUS: ACT<br>LAST PROD DATE: 06/93                |
| NM RIO ARriba<br>22J 25N 4W | UNDESIGNATED (MESAVERDE)<br>MESAVERDE           | NV CONOCO INC          | JICARILLA 22<br>RCI: 151.039, 25N04W22J00NV<br>API: 30-039-05917-00<br>WELL#:000001<br>STATUS: INA<br>LAST PROD DATE: 10/91                |
| NM RIO ARriba<br>22L 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD CONOCO INC          | JICARILLA 22<br>RCI: 151.039, 25N04W22L00GD<br>API: 30-039-20418-00<br>WELL#:00003A<br>STATUS: ACT<br>LAST PROD DATE: 06/93                |
| NM RIO ARriba<br>22L 25N 4W | BLANCO (MESAVERDE)<br>MESAVERDE                 | NV CONOCO INC          | JICARILLA 22<br>RCI: 251.039, 25N04W22L00NV<br>API: 30-039-20418-00<br>WELL#:00003A<br>STATUS: ACT<br>LAST PROD DATE: 06/93                |
| NM RIO ARriba<br>22L 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC MERIDIAN OIL INC    | JICARILLA C<br>RCI: 251.039, 25N04W22L00PC<br>API: 30-039-05909-00<br>WELL#:000007<br>STATUS: ACT<br>LAST PROD DATE: 06/93                 |
| NM RIO ARriba<br>22P 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC MERIDIAN OIL INC    | JICARILLA C<br>RCI: 251.039, 25N04W22P00PC<br>API: 30-039-05888-00<br>WELL#:000005<br>STATUS: ACT<br>LAST PROD DATE: 06/93                 |
| NM RIO ARriba<br>23F 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD M W PETROLEUM CORP  | JICARILLA APACHE TRIBAL 124<br>RCI: 151.039, 25N04W23F00GD<br>API: 30-039-22141-00<br>WELL#:000002<br>STATUS: ACT<br>LAST PROD DATE: 06/93 |
| NM RIO ARriba<br>23H 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD M W PETROLEUM CORP  | JICARILLA APACHE TRIBAL 124<br>RCI: 151.039, 25N04W23H00GD<br>API: 30-039-22406-00<br>WELL#:000005<br>STATUS: INA<br>LAST PROD DATE: 06/92 |
| NM RIO ARriba<br>23I 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC SOUTHLAND ROYALTY C | ARIZONA JICARILLA A<br>RCI: 251.039, 25N04W23I00PC<br>API: 30-039-05905-00<br>WELL#:000001<br>STATUS: ACT<br>LAST PROD DATE: 06/93         |
| NM RIO ARriba<br>23J 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD M W PETROLEUM CORP  | JICARILLA APACHE TRIBAL 124<br>RCI: 151.039, 25N04W23J00GD<br>API: 30-039-22352-00<br>WELL#:000004<br>STATUS: ACT<br>LAST PROD DATE: 06/93 |

DWIGHTS CD-ROM PROPERTY LISTING  
4-Nov-1993

| STATE COUNTY<br>LOCATION    | FIELD<br>RESERVOIR                              | OPERATOR               | WELL/LEASE INFORMATION                                                                                                                    |
|-----------------------------|-------------------------------------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| NM RIO ARriba<br>23L 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD M W PETROLEUM CORP  | JICARILLA APACHE TRIBAL 124<br>RCI: 151.039.25N04W23L00GD<br>API: 30-039-21911-00<br>WELL#:000001<br>STATUS: ACT<br>LAST PROD DATE: 06/93 |
| NM RIO ARriba<br>23M 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC CONOCO INC          | AXI APACHE M<br>RCI: 251.039.25N04W23M00PC<br>API: 30-039-05887-00<br>WELL#:000001<br>STATUS: 1NA<br>LAST PROD DATE: 12/89                |
| NM RIO ARriba<br>24A 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC SOUTHLAND ROYALTY C | ARIZONA JICARILLA A<br>RCI: 251.039.25N04W24A00PC<br>API: 30-039-05957-00<br>WELL#:000002<br>STATUS: ACT<br>LAST PROD DATE: 06/93         |
| NM RIO ARriba<br>24B 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD M W PETROLEUM CORP  | JICARILLA APACHE TRIBAL 124<br>RCI: 151.039.25N04W24B00GD<br>API: 30-039-22407-00<br>WELL#:000006<br>STATUS: ACT<br>LAST PROD DATE: 06/93 |
| NM RIO ARriba<br>24E 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD M W PETROLEUM CORP  | JICARILLA APACHE TRIBAL 124<br>RCI: 151.039.25N04W24E00GD<br>API: 30-039-22408-00<br>WELL#:000009<br>STATUS: ACT<br>LAST PROD DATE: 06/93 |
| NM RIO ARriba<br>24I 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC CONOCO INC          | AXI APACHE M<br>RCI: 251.039.25N04W24I00PC<br>API: 30-039-05911-00<br>WELL#:000004<br>STATUS: ACT<br>LAST PROD DATE: 06/93                |
| NM RIO ARriba<br>24M 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC SOUTHLAND ROYALTY C | ARIZONA JICARILLA A<br>RCI: 251.039.25N04W24M00PC<br>API: 30-039-05886-00<br>WELL#:000004<br>STATUS: ACT<br>LAST PROD DATE: 05/93         |
| NM RIO ARriba<br>24N 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD M W PETROLEUM CORP  | JICARILLA APACHE TRIBAL 124<br>RCI: 151.039.25N04W24N00GD<br>API: 30-039-23248-00<br>WELL#:000014<br>STATUS: ACT<br>LAST PROD DATE: 06/93 |
| NM RIO ARriba<br>24P 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD M W PETROLEUM CORP  | JICARILLA APACHE TRIBAL 124<br>RCI: 151.039.25N04W24P00GD<br>API: 30-039-23249-00<br>WELL#:000013<br>STATUS: ACT<br>LAST PROD DATE: 06/93 |
| NM RIO ARriba<br>25A 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC CONOCO INC          | AXI APACHE L<br>RCI: 251.039.25N04W25A00PC<br>API: 30-039-05855-00<br>WELL#:000006<br>STATUS: ACT<br>LAST PROD DATE: 06/93                |
| NM RIO ARriba<br>25D 25N 4W | BLANCO SOUTH (PICTURE CLIFFS)<br>PICTURE CLIFFS | PC SOUTHLAND ROYALTY C | ARIZONA JICARILLA<br>RCI: 251.039.25N04W25D00PC<br>API: 30-039-05862-00<br>WELL#:000008<br>STATUS: ACT<br>LAST PROD DATE: 06/93           |
| NM RIO ARriba<br>25F 25N 4W | LINDRITH WEST (GALLUP DAKOTA)<br>GALLUP DAKOTA  | GD M W PETROLEUM CORP  | JICARILLA APACHE TRIBAL 125<br>RCI: 151.039.25N04W25F00GD<br>API: 30-039-23250-00<br>WELL#:000013<br>STATUS: ACT<br>LAST PROD DATE: 06/93 |

III. B.

1. We are requesting that the injection formation be the Burro Canyon formation (See Attachment "H" page 5).

2. The estimated injection interval will be from 8039' to 8100' in open hole. The actual interval could be through a perforated casing liner string, which will be determined after deepening and testing the well.

3. This well was originally completed and produced as a West Lindrith Gallup-Dakota. (See Attachment "A" page 1).

4. See Attachment "A" pages 1 and 2.

5. The next hydrocarbon productive zone is the Dakota. The base of the Dakota Sand in the well is 7940 ft. There are no lower productive zones in the area.

PC - Pictured Cliffs FC - Fruitland Coal

MV - Mesa Verde

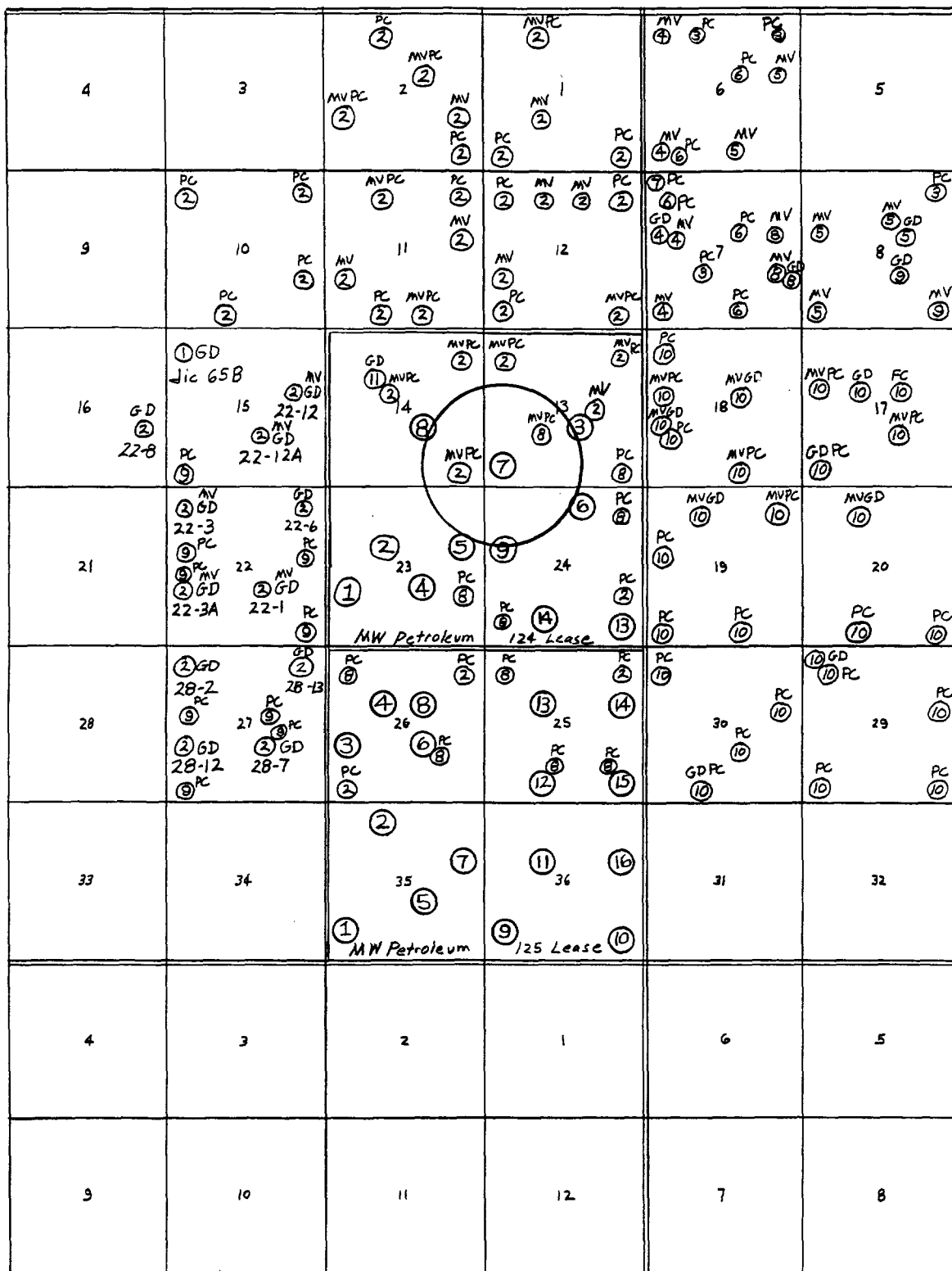
GD - Gallup/Dakota

R 4 W

R 3 W

T 25 N

T 24 N



① Bayless Robert L.

④ Beartooth Oil & Gas

⑦ Jet Gas Co., Inc

⑩ Texaco Expl & Prod

② Conoco Inc.

⑤ Scha/k John E

⑧ Southland Royalty

⑪ Chace Oil Co.

③ Dugan Production

⑥ Minei, Inc

⑨ Meridian Oil

MW Petroleum ○ (well Number)

Attachment 'R' pg. 1 of 1

VII. 1. Per November, 1993 Daily Water Production

|                                                                             |           |
|-----------------------------------------------------------------------------|-----------|
| Total Apache Corporation Wells (Bbls / month)<br>(Contract 126, 127 leases) | 1211      |
| Total MW Petroleum Corporation Wells<br>(Bbls / month)                      | 2915      |
| Total Monthly Average water to be injected                                  | 4126 Bbls |
| Total Daily Average water to be injected                                    | 136 Bbls  |

For complete list of wells - See Attachment "F"

We are requesting higher allowables on injection rates and quantities due to the possibility of further well development in the area.

VII. #2, 3. Proposed injection pressures.

1. The system is an open system with water trucked from producing properties to the water storage tanks on the well location.
2. At this time, we are anticipating an average injection pressure of 800 PSI with an injection rate of .69 BPM maximum and 0.5 BPM average.
3. Per OCD regulations, we are not anticipating reaching the maximum allowable, without step-rate testing, injection pressure of 1608 PSI ( 8039' X .2 ). If we encounter higher pressures, we will request a step-rate test from the OCD to determine a new maximum injection pressure.
4. The Monthly Water Disposal Report (Form C-120A) will be submitted once injection operations start.
5. See Attachment "H" pg. 6 to 11.

VII. 4, 5

1. At this time we do not have an analysis on the Burro Canyon formation water.
2. Following is a complete list of the wells and an average water production per month for the month of November 1993.
3. Also, following are representative water analyses on some of these wells.
4. After the proposed injection well is completed downhole (See III. Attachment "A"), a water analysis will be done on the Burro Canyon formation water. At that time, the analysis will be forwarded to the OCD.
5. The only water to be injected into this well at this time is to be produced water only from the MW Petroleum Corporation and Apache Corporation wells on the following list. Due to further development plans in the area, we do anticipate adding more wells to this list.

Jicarilla Contract 126 and 127  
Leases

MASTER WELL FILE  
COMPLETE LIST

Apache Corporation

| LEASE  | WELL NO. | RUN NO. | LEGALS                        | FORMATION           | November 1993<br>Water Prod. Bbls | WZ #  | PROPERTY |
|--------|----------|---------|-------------------------------|---------------------|-----------------------------------|-------|----------|
| APACHE | 10       | 5       | 1850 FSL & 1795 FWL 12-24N-4W | S. BLANCO PC        | 0                                 | 14965 | 919801   |
| APACHE | 11       | 4       | 790 FSL & 790 FEL 2-24N-4W    | S. BLANCO PC        | 0                                 | 14966 | 919901   |
| APACHE | 12       | 5       | 790 FNL & 1850 FWL 13-24N-4W  | S. BLANCO PC        | 0                                 | 15068 | 923601   |
| APACHE | 13       | 5       | 1850 FSL & 690 FEL 13-24N-4W  | S. BLANCO PC        | 0                                 | 15071 | 923701   |
| APACHE | 14       | 4       | 1850 FNL & 1140 FWL 3-24N-4W  | S. BLANCO PC        | 0                                 | 14974 | 920801   |
| APACHE | 15       | 4       | 1040 FSL & 819 FWL 4-24N-4W   | S. BLANCO PC        | 0                                 | 14975 | 920802   |
| APACHE | 16       | 4       | 990 FNL & 990 FWL 9-24N-4W    | S. BLANCO PC        | 0                                 | 14977 | 920803   |
| APACHE | 17       | 5       | 1850 FSL & 790 FEL 11-24N-4W  | S. BLANCO PC        | 0                                 | 14968 | 920101   |
| APACHE | 18       | 4       | 1850 FSL & 1795 FWL 2-24N-4W  | S. BLANCO PC        | 0                                 | 14970 | 920301   |
| APACHE | 19       | 4       | 790 FSL & 790 FWL 3-24N-4W    | S. BLANCO PC        | 0                                 | 14978 | 920804   |
| APACHE | 20       | 4       | 1075 FNL & 1450 FEL 4-24N-4W  | S. BLANCO PC        | 0                                 | 14979 | 920805   |
| APACHE | 21       | 4       | 1660 FSL & 1850 FEL 4-24N-4W  | S. BLANCO PC        | 0                                 | 14980 | 920806   |
| APACHE | 22       | 5       | 1450 FSL & 1080 FWL 9-24N-4W  | S. BLANCO PC        | 0                                 | 14981 | 920807   |
| APACHE | 23       | 5       | 2310 FSL & 1850 FWL 11-24N-4W | S. BLANCO PC        | 0                                 | 14972 | 920501   |
| APACHE | 24       | 5       | 790 FNL & 790 FEL 14-24N-4W   | S. BLANCO PC        | 0                                 | 15072 | 923802   |
| APACHE | 25       | 5       | 790 FNL & 790 FEL 24-24N-4W   | S. BLANCO PC/CHACRA | 0                                 | 15073 | 923901   |
| APACHE | 26       | 5       | 1850 FSL & 820 FWL 13-24N-4W  | S. BLANCO PC/CHACRA | 0                                 | 15074 | 924001   |
| APACHE | 27       | 5       | 1600 FSL & 820 FEL 24-24N-4W  | S. BLANCO PC        | 0                                 | 15075 | 924101   |
| APACHE | 28       | 5       | 1750 FSL & 1610 FWL 24-24N-4W | S. BLANCO PC        | 0                                 | 15076 | 924201   |
| APACHE | 29       | 5       | 900 FNL & 1850 FWL 14-24N-4W  | S. BLANCO PC/CHACRA | 0                                 | 15079 | 924301   |
| APACHE | 30       | 4       | 1850 FSL & 1850 FEL 3-24N-4W  | S. BLANCO PC/CHACRA | 0                                 | 15055 | 923001   |
| APACHE | 31       | 5       | 1810 FSL & 840 FEL 23-24N-4W  | S. BLANCO PC        | 0                                 | 15082 | 924401   |
| APACHE | 101      | 3       | 500 FNL & 774 FEL 2-24N-4W    | W LINDRITH GAL/DK   | 17                                | 14983 | 920901   |
| APACHE | 102      | 4       | 845 FNL & 1190 FWL 2-24N-4W   | W LINDRITH GAL/DK   | 15                                | 14984 | 921001   |
| APACHE | 103      | 4       | 2000 FNL & 895 FWL 3-24N-4W   | W LINDRITH GAL/DK   | 20                                | 14985 | 921101   |
| APACHE | 104      | 4       | 790 FSL & 790 FEL 3-24N-4W    | W LINDRITH GAL/DK   | 10                                | 14986 | 921102   |
| APACHE | 105      | 5       | 800 FNL & 990 FEL 24-24N-4W   | W LINDRITH GAL/DK   | 27                                | 15085 | 924501   |
| APACHE | 106      | 4       | 2040 FNL & 945 FEL 1-24N-4W   | W LINDRITH GAL/DK   | 26                                | 15008 | 921201   |
| APACHE | 107      | 4       | 1970 FWL & 1780 FEL 2-24N-4W  | W LINDRITH GAL/DK   | 12                                | 15027 | 921301   |
| APACHE | 108      | 4       | 2100 FWL & 660 FEL 10-24N-4W  | W LINDRITH GAL/DK   | 28                                | 14987 | 921103   |
| APACHE | 109      | 5       | 1950 FNL & 1820 FWL 11-24N-4W | W LINDRITH GAL/DK   | 33                                | 15029 | 921401   |
| APACHE | 110      | 5       | 825 FSL & 540 FEL 11-24N-4W   | W LINDRITH GAL/DK   | 47                                | 15030 | 921501   |
| APACHE | 111      | 5       | 2165 FSL & 1920 FWL 13-24N-4W | W LINDRITH GAL/DK   | 33                                | 15010 | 921202   |
| APACHE | 112      | 5       | 660 FNL & 1830 FWL 24-24N-4W  | W LINDRITH GAL/DK   | 3                                 | 15012 | 921203   |
| APACHE | 113      | 4       | 2010 FWL & 2070 FEL 1-24N-4W  | W LINDRITH GAL/DK   | 20                                | 15031 | 921601   |
| APACHE | 114      | 5       | 1780 FWL & 990 FEL 24-24N-4W  | W LINDRITH GAL/DK   | 29                                | 15014 | 921204   |
| APACHE | 115      | 4       | 660 FSL & 660 FWL 3-24N-4W    | W LINDRITH GAL/DK   | 15                                | 14988 | 921104   |
| APACHE | 116      | 4       | 660 FNL & 1980 FWL 12-24N-4W  | W LINDRITH GAL/DK   | 20                                | 15034 | 921701   |
| APACHE | 117      | 4       | 660 FNL & 610 FEL 12-24N-4W   | W LINDRITH GAL/DK   | 14                                | 15035 | 921801   |
| APACHE | 118      | 5       | 1980 FSL & 1980 FWL 12-24N-4W | W LINDRITH GAL/DK   | 14                                | 15038 | 921901   |
| APACHE | 119      | 5       | 1980 FSL & 660 FEL 12-24N-4W  | W LINDRITH GAL/DK   | 29                                | 15040 | 922001   |
| APACHE | 120      | 5       | 660 FNL & 1850 FWL 13-24N-4W  | W LINDRITH GAL/DK   | 24                                | 15015 | 921205   |
| APACHE | 121      | 5       | 480 FNL & 980 FEL 13-24N-4W   | W LINDRITH GAL/DK   | 14                                | 15016 | 921206   |
| APACHE | 122      | 5       | 1980 FSL & 660 FEL 13-24N-4W  | W LINDRITH GAL/DK   | 4                                 | 15017 | 921207   |
| APACHE | 123      | 4       | 560 FNL & 660 FEL 4-24N-4W    | W LINDRITH GAL/DK   | 24                                | 14990 | 921105   |
| APACHE | 124      | 4       | 1940 FSL & 660 FEL 4-24N-4W   | W LINDRITH GAL/DK   | 16                                | 14995 | 921106   |
| APACHE | 125      | 4       | 660 FNL & 1880 FWL 10-24N-4W  | W LINDRITH GAL/DK   | 18                                | 14997 | 921107   |
| APACHE | 126      | 5       | 970 FSL & 480 FEL 10-24N-4W   | W LINDRITH GAL/DK   | S.I.                              | 14999 | 921108   |
| APACHE | 127      | 5       | 600 FSL & 1980 FWL 11-24N-4W  | W LINDRITH GAL/DK   | 12                                | 15042 | 922101   |
| APACHE | 128      | 5       | 1720 FSNL & 710 FEL 14-24N-4W | W LINDRITH GAL/DK   | 32                                | 15312 | 921209   |
| APACHE | 129      | 5       | 660 FSL & 660 FEL 14-24N-4W   | DAKOTA              | 18                                | 15086 | 924601   |
| APACHE | 130      | 5       | 1980 FSL & 1980 FWL 24-24N-4W | W LINDRITH GAL/DK   | 37                                | 15019 | 921208   |
| APACHE | 131      | 4       | 660 FNL & 1980 FWL 4-24N-4W   | W LINDRITH GAL/DK   | 50                                | 15001 | 921109   |
| APACHE | 132      | 4       | 1980 FSL & 1980 FWL 4-24N-4W  | DAKOTA              | 20                                | 15004 | 921110   |
| APACHE | 134      | 5       | 1900 FWL & 1660 FWL 4-24N-4W  | DAKOTA              | 23                                | 15006 | 921111   |

# Jicarilla Contract 126 and 127 Leases

| LEASE      | WELL NO. | RUN NO. | LEGALS                        | FORMATION         | November 1993<br>Water Prod Bbls. | WZ #  | PROPERTY |
|------------|----------|---------|-------------------------------|-------------------|-----------------------------------|-------|----------|
| APACHE     | 138      | 5       | 1980 FNL & 1980 FWL 12-24N-4W | DAKOTA            | 17                                | 15045 | 922201   |
| APACHE     | 143      | 4       | 3006 FNL & 2171 FEL 2-24N-4W  | W LINDRITH GAL/DK | 14                                | 15048 | 922301   |
| APACHE     | 144      | 5       | 718 FSL & 2035 FEL 13-24N-4W  | W LINDRITH GAL/DK | 21                                | 15087 | 924701   |
| APACHE     | 145      | 5       | 2000 FSL & 1900 FEL 11-24N-4W | W LINDRITH GAL/DK | 46                                | 15049 | 922401   |
| APACHE     | 146      | 5       | 2100 FNL & 1820 FEL 24-24N-4W | W LINDRITH GAL/DK | 35                                | 15088 | 924801   |
| APACHE     | 147      | 5       | 2310 FNL & 1650 FEL 13-24N-4W | DAKOTA            | 22                                | 15089 | 924901   |
| APACHE     | 149      | 4       | 680 FWL & 935 FEL 1-24N-4W    | DAKOTA            | 39                                | 15050 | 922501   |
| APACHE     | 150      | 4       | 2970 FSL & 2310 FWL 3-24N-4W  | DAKOTA            | 73                                | 15056 | 923101   |
| APACHE     | 151      | 5       | 990 FSL & 1860 FEL 12-24N-4W  | DAKOTA            | 26                                | 15051 | 922601   |
| APACHE     | 152      | 5       | 2000 FNL & 610 FWL 12-24N-4W  | DAKOTA            | 30                                | 15052 | 922701   |
| APACHE     | 153      | 4       | 410 FNL & 2140 FEL 1-24N-4W   | DAKOTA            | 34                                | 15053 | 922801   |
| APACHE     | 154      | 4       | 990 FSL & 2310 3-24N-4W       | DAKOTA            | 27                                | 15057 | 923201   |
| APACHE     | 155      | 4       | 2710 FNL & 510 FEL 3-24N-4W   | W LINDRITH GAL/DK | 13                                | 15061 | 925701   |
| APACHE     | 156      | 4       | 645 FNL & 2225 FWL 3-24N-4W   | DAKOTA            | 39                                | 15063 | 923401   |
| APACHE     | 157      | 4       | 2735 FNL & 1810 FEL 4-24N-4W  | DAKOTA            | 24                                | 15065 | 923501   |
| APACHE     | 158      | 4       | 400 FNL & 700 FWL 11-24N-4W   | DAKOTA            | 47                                | 15054 | 922901   |
| KEETOM JIC | 1        | 5       | 1850 FNL & 790 FWL 12-24N-4W  | S.BLANCO PC       | 0                                 | 15094 | 925401   |

1211 Bbls/month

## MW PETROLEUM WELLS

| LEASE           | WELL NO. | RUN NO. | LEGALS           | FORMATION         | November 1993<br>Water Prod Bbls | WZ #        | PROPERTY  |
|-----------------|----------|---------|------------------|-------------------|----------------------------------|-------------|-----------|
| BADLAND FLATS   | 1        | 6       | SWNW - 3-23N-1W  | UNDES MANCOS      | 0                                | 42310       | 118362701 |
| BEAR CANYON     | 1        | 1       | SWNE - 15-26N-2W | GAVILAN MANCOS    | 83                               | 42338       | 118422401 |
| BEAR CANYON     | 2        | 1       | NENW - 10-26N-2W | GAVILAN MANCOS    | 25                               | 42339       | 118422401 |
| BEAR CANYON     | 3        | 1       | NWSW - 10-26N-2W | GAVILAN MANCOS    | 47                               | 42340       | 118422401 |
| BEAR CANYON     | 4        | 1       | SWSW - 2-26N-2W  | GAVILAN MANCOS    | 0                                | 42254       | 118339201 |
| BEAR CANYON     | 5        |         | SWSW - 12-26N-2W | GAVILAN MANCOS    | 0                                | 49486       | 118422401 |
| BEAR CANYON     | 8        | 1       | NESW - 14-26N-2W | GAVILAN MANCOS    | 36                               | 49946       | 118422401 |
| DIVIDE          | 1        | 1       | SENE - 35-26N-2W | BMV-GAVILAN MANCO | 0                                | 49967/42330 | 118403301 |
| DIVIDE          | 3        | 1       | NESW - 35-26N-2W | GAVILAN MANCOS    | 1                                | 42331       | 118403301 |
| HILL TRUST      | 1        | 2       | SENW - 5-25N-2W  | GAVILAN MANCOS    | 49                               | 41926       | 116189001 |
| JIC APACHE A118 | 2        | 2       | SESE - 25-26N-3W | PC                | 0                                | 44616       | 129045001 |
| JIC APACHE A118 | 3        | 2       | NENE - 25-26N-3W | PC                | 0                                | 44617       | 129045001 |
| JIC APACHE A118 | 5        | 2       | NENW - 25-26N-3W | GAVILAN PC        | 0                                | 44618       | 129045001 |
| JIC APACHE A118 | 6        | 2       | SESW - 35-26N-3W | TAPACITO PC       | 1                                | 44605       | 129045001 |
| JIC APACHE A118 | 7        | 2       | SESW - 25-26N-3W | GAVILAN PC        | 18                               | 44606       | 129045001 |
| JIC APACHE A118 | 10       | 2       | SENE - 35-26N-3W | NE OJITOGALLUP/DK | 0                                | 44607       | 129045001 |
| JIC APACHE A118 | 11       | 2       | SESW - 36-26N-3W | NE OJITOGALLUP/DK | 0                                | 44608       | 129045001 |
| JIC APACHE A118 | 13       | 2       | SENW - 35-26N-3W | NE OJITOGALLUP/DK | 0                                | 44609       | 129045001 |
| JIC APACHE A118 | 14       | 2       | NENW - 36-26N-3W | NE OJITOGALLUP/DK | 73                               | 44610       | 129045001 |
| JIC APACHE A118 | 15       | 2       | SESE - 25-26N-3W | NE OJITOGALLUP/DK | 409                              | 44611       | 129045001 |
| JIC APACHE A118 | 16       | 2       | SENW - 26-26N-3W | NE OJITOGALLUP/DK | 17                               | 44612       | 129045001 |
| JIC APACHE A118 | 17       | 2       | SESE - 26-26N-3W | NE OJITOGALLUP/DK | 54                               | 44613       | 129045001 |
| JIC APACHE A118 | 19       | 2       | SESE - 36-26N-3W | NE OJITOGALLUP/DK | 7                                | 44614       | 129045001 |
| JIC APACHE A118 | 24       | 2       | SENE - 25-26N-3W | NE OJITOGALLUP/DK | 226                              | 44615       | 129045001 |
| JIC APACHE 124  | 1        | 3       | NWSW - 23-25N-3W | W.LINDRITH GAL/DK | 6                                | 40633       | 115184001 |
| JIC APACHE 124  | 2        | 3       | SENW - 23-25N-4W | W.LINDRITH GAL/DK | 173                              | 40635       | 115184001 |
| JIC APACHE 124  | 3        | 3       | NWSE - 13-25N-4W | W.LINDRITH GAL/DK | 328                              | 40634       | 115184001 |
| JIC APACHE 124  | 4        | 3       | NWSE - 23-25N-4W | W.LINDRITH GAL/DK | 106                              | 40625       | 115184001 |
| JIC APACHE 124  | 5        | 3       | SENE - 23-25N-4W | W.LINDRITH GAL/DK | 0                                | 40626       | 115184001 |
| JIC APACHE 124  | 6        | 3       | NWNE - 24-25N-4W | W.LINDRITH GAL/DK | 121                              | 40627       | 115184001 |
| JIC APACHE 124  | 7        | 3       | SWSW - 13-25N-4W | W.LINDRITH GAL    | 0                                | 40628       | 115184001 |
| JIC APACHE 124  | 8        | 3       | NWSE - 14-25N-4W | W.LINDRITH GAL/DK | 0                                | 40660       | 115184001 |
| JIC APACHE 124  | 9        | 3       | SENW - 24-25N-4W | W.LINDRITH GAL/DK | 104                              | 40629       | 115184001 |
| JIC APACHE 124  | 13       | 3       | SESE - 24-25N-4W | W.LINDRITH GAL/DK | 22                               | 40631       | 115184001 |
| JIC APACHE 124  | 14       | 3       | SESW - 24-25N-4W | W.LINDRITH GAL/DK | 40                               | 40632       | 115184001 |
| JIC APACHE 125  | 1        | 3       | SWSW - 35-25N-4W | W.LINDRITH GAL/DK | 29                               | 44600       | 129010201 |
| JIC APACHE 125  | 2        | 3       | NENW - 35-25N-4W | W.LINDRITH GAL/DK | 17                               | 44601       | 129010201 |
| JIC APACHE 125  | 3        | 3       | NWSW - 26-25N-4W | W.LINDRITH GAL/DK | 0                                | 44602       | 129010201 |
| JIC APACHE 125  | 4        | 3       | SENW - 26-25N-4W | W.LINDRITH GAL/DK | 52                               | 44603       | 129010201 |
| JIC APACHE 125  | 5        | 3       | NWSE - 35-25N-4W | W.LINDRITH GAL/DK | 10                               | 44588       | 129010201 |
| JIC APACHE 125  | 6        | 3       | NWSE - 26-25N-4W | W.LINDRITH GAL/DK | 52                               | 44589       | 129010201 |
| JIC APACHE 125  | 7        | 3       | SENE - 35-25N-4W | W.LINDRITH GAL/DK | 39                               | 44590       | 129010201 |
| JIC APACHE 125  | 8        | 3       | SWNE - 26-25N-4W | W.LINDRITH GAL/DK | 58                               | 44591       | 129010201 |
| JIC APACHE 125  | 9        | 3       | SWSW - 36-25N-4W | W.LINDRITH GAL/DK | 23                               | 44592       | 129010201 |
| JIC APACHE 125  | 10       | 3       | SESE - 36-25N-4W | W.LINDRITH GAL/DK | 6                                | 44593       | 129010201 |
| JIC APACHE 125  | 11       | 3       | SENW - 36-25N-4W | W.LINDRITH GAL/DK | 40                               | 44594       | 129010201 |
| JIC APACHE 125  | 12       | 3       | SESW - 25-25N-4W | W.LINDRITH GAL/DK | 40                               | 44595       | 129010201 |
| JIC APACHE 125  | 13       | 3       | SENW - 25-25N-4W | W.LINDRITH GAL/DK | 5                                | 44596       | 129010201 |
| JIC APACHE 125  | 14       | 3       | SENE - 25-25N-4W | W.LINDRITH GAL/DK | 9                                | 44597       | 129010201 |
| JIC APACHE 125  | 15       | 3       | SESE - 25-25N-4W | W.LINDRITH GAL/DK | 6                                | 44598       | 129010201 |
| JIC APACHE 125  | 16       | 3       | SENE - 36-25N-4W | W.LINDRITH GAL/DK | 35                               | 44599       | 129010201 |
| JIC TRIBAL 363  | 1        | 6       | NENE - 15-24N-4W | W.LINDRITH GAL/DK | 41                               |             | 115255201 |
| JIC TRIBAL 396  | 1        | 6       | NENE - 8-23N-3W  | W.LINDRITH GAL/DK | 0                                |             | 115255301 |
| JIC TRIBAL 396  | 2        | 6       | SESE - 8-23N-3W  | W.LINDRITH GAL/DK | 46                               |             | 115255301 |
| JIC TRIBAL 396  | 3        | 6       | NENW - 8-23N-3W  | W.LINDRITH GAL/DK | 25                               |             | 115255301 |
| JIC TRIBAL 396  | 4        | 6       | NENE - 17-23N-3W | W.LINDRITH GAL/DK | 21                               |             | 115255301 |
| JIC TRIBAL 396  | 5        | 6       | NESE - 8-23N-3W  | W.LINDRITH GAL/DK | 14                               |             | 115255301 |
| JIC TRIBAL 396  | 6        | 6       | NENW - 17-23N-3W | W.LINDRITH GAL/DK | 19                               |             | 115255301 |
| JIC TRIBAL 396  | 7        | 6       | NESE - 17-23N-3W | W.LINDRITH GAL/DK | 12                               |             | 115255301 |

| LEASE                  | WELL NO. | RUN NO. | LEGALS           | FORMATION          | November 1993<br>Water Prod Bbls | WZ #        | PROPERTY  |
|------------------------|----------|---------|------------------|--------------------|----------------------------------|-------------|-----------|
| JIC TRIBAL 396         | 8        | 6       | NESW - 17-23N-3W | W.LINDRITH GAL/DK  | 23                               |             | 115255301 |
| JIC TRIBAL 396         | 9        | 6       | NESE - 7-23N-3W  | W.LINDRITH GAL/DK  | 19                               |             | 115255301 |
| OSO CANYON FED A       | 1        | 6       | SENW - 14-24N-2W | GAVILAN MANCOS/DK  | 50                               | 41158       | 116043801 |
| OSO CANYON FED B       | 1        | 6       | SENW - 11-24N-2W | GAVILAN MANCOS     | 29                               | 41159       | 116043901 |
| FED OSO CANYON(TR      | 1        | 6       | SWNW - 24-24N-2W | UNDES. GL/DK       | 0                                |             | 116009801 |
| PHILLIPS, FRED A       | 1        | 2       | NENE - 10-25N-3W | TAPACITO PC        | 0                                | 44643       | 129067401 |
| PHILLIPS, FRED C       | 1        | 2       | SENE - 15-25N-3W | TAPACITO PC        | 0                                | 49964       | 100011201 |
| PHILLIPS, FRED C       | 3        | 2       | SENE - 15-25N-3W | BMV/W.LIND.GAL/DK  | 33                               | 49962/49654 | 100011101 |
| PHILLIPS, FRED CA      | 3        | 2       | SWNW - 15-25N-3W | BMV/W.LIND.GAL/DK  | 87                               | 49962/49963 | 129067301 |
| PHILLIPS, FRED D       | 1        | 2       | NESE - 10-25N-3W | TAPACITO PC        | 0                                | 44644       | 129067701 |
| PHILLIPS, FRED E       | 1        | 2       | NENW - 10-25N-3W | TAPACITO PC        | 0                                | 44638       | 129067101 |
| PHILLIPS, FRED F       | 1        | 2       | NESE - 10-25N-3W | BMV/W.LIND.GAL/DK  | 29                               | 49959       | 116033701 |
| PHILLIPS, FRED FA      | 1        | 2       | NESW - 10-25N-3W | BMV/W.LIND.GAL/DK  | 24                               | 49960/41143 | 116033601 |
| PHILLIPS, FRED G       | 1        | 2       | NENE - 10-25N-3W | BMV/W.LIND.GAL/DK  | 28                               | 49956       | 116033901 |
| PHILLIPS, FRED GA      | 1        | 2       | NENW - 10-25N-3W | BMV/W.LIND.GAL/DK  | 23                               | 41147/49957 | 116033801 |
| SCHMITZ ANTICLINE      | 1        | 6       | NESW - 25-24N-1W | PUERTO CHIQUITA/DK | 0                                | 49475/41162 | 116049201 |
| SEIFERT GAS COM A      | 1        | 1       | SESE - 22-26N-2W | GAVILAN MANCOS/DK  | 0                                | 41758       | 116158601 |
| SIMMONS FED COM        | 1        | 1       | SENW - 3-26N-2W  | GAVILAN MANCOS     | 25                               | 42308       | 118352201 |
| STATE COM CC           | 1        | 6       | NWSE - 26-24N-1W | PUERTO CHIQUITA    | 0                                | 41927       | 116190101 |
| TAPACITOS COM A        | 2        | 1       | NWSW - 25-26N-2W | GAVILAN MANCOS     | 0                                | 42328       | 118403001 |
| TAPACITOS COM B        | 4        | 1       | SWSE - 36-26N-2W | GAVILAN MANCOS     | 0                                | 42329       | 118403201 |
| SEIFERT GAS SYSTEM CDP |          |         |                  |                    |                                  |             |           |
| BEAR CANYON UNIT CDP   |          |         |                  |                    |                                  |             |           |
| DUGAN BRIDGE COM       |          |         |                  |                    |                                  |             |           |
| DIVIDE GAS SYSTEM CDP  |          |         |                  |                    |                                  |             |           |
| EVAPORATION POND       |          |         |                  |                    |                                  |             | 113127501 |

2915 Bbls /month



WELCHEM, INC.  
6310 Rothway, Suite 130  
Houston, Texas 77040  
P.O. Box 920941  
Houston, Texas 77292-0941  
713-462-4783

LATS NO. 57558  
CC: J.A. STEGMAN  
B.M. WINN  
H.S. CARSON

ANALYTICAL SERVICES REPORT  
WATER ANALYSIS

Date Received: 06/08/92

By:

Date Out: 06/09/92

Tracking#: T-1047-0

Company: APACHE CORPORATION

Salesman: B.D. HENSLEY

Lease: JICARRILLA A118

Source:

Date Sampled: 06/02/92

County:

State:

Well: WELL #17

DISSOLVED SOLIDS  
CATIONS

OTHER PROPERTIES

|                  |        |        |                           |              |
|------------------|--------|--------|---------------------------|--------------|
| Sodium, Na(calc) | mg/l   | me/l   | pH                        | 6.90         |
| Calcium, Ca      | 4208.0 | 182.97 | Specific Gravity, 60/60 F | 1.010        |
| Magnesium, Mg    | 126    | 6.29   | Nomograph Sp. Gr.         | 1.006- 1.014 |
| Iron, Fe         | 17     | 1.39   | Specific Gravity, Uncorr  | 1.007        |
| Manganese, Mn    | 22     | 0.79   | Temperature (F)           | 73.0         |
| Barium, Ba       | 2      | 0.07   | Resistivity, OHMS-CM      | @ 73.0F      |
| Strontium, Sr    | 0      | 0.0    |                           |              |
|                  | 18     | 0.41   |                           |              |

ANIONS

|                   |      |        |
|-------------------|------|--------|
| Chloride, Cl      | mg/l | me/l   |
| Sulfate, SO4      | 6416 | 180.73 |
| Carbonate, CO3    | 308  | 6.42   |
| Bicarbonate, HCO3 | 0    | 0.0    |
|                   | 291  | 4.77   |

Total Dissolved Solids (calc.) 11,408 ppm

SCALING TENDENCIES (MG/L):

| TEMP (F) | P (PSI) | CO2 (PSI) | PH  | CASO4 | SCALE INDEX (MG/L) | CACO3 |      |
|----------|---------|-----------|-----|-------|--------------------|-------|------|
|          |         |           |     |       | BASO4              | SRSO4 |      |
| 80       | 14.7    | 0.625     | 6.9 | -4314 | -0                 | -199  | -155 |
| 110      | 14.7    | 0.625     | 6.9 | -3183 | -0                 | -203  | -60  |
| 140      | 14.7    | 0.625     | 6.9 | -2387 | -0                 | -153  | 13   |
| 170      | 14.7    | 0.625     | 6.9 | -1788 | -0                 | -41   | 71   |
| 200      | 14.7    | 0.625     | 6.9 | -1326 | -1                 | -5    | 115  |

Remarks & Recommendations:

Calculations based upon entered pH.

WELCHEM Representative

*Kay K*  
*Winn*

**Schlumberger****Dowell**

Client : APACHE CORPORATION  
 Well : JICARILLA A-118 #~~9~~ #6 ~~1~~  
 Formation : PICTURED CLIFF  
 District : FARMINGTON, NM.  
 Country : RIO ARriba COUNTY, NM.

*Water Sample  
 from A-118 #6 (PC)*

*Chris Kersey*

## DATA FORM

| ..... Data .....  | .....          |
|-------------------|----------------|
| Water Source      | Pictured Cliff |
| Perforations      | ---            |
| Date of Sample    | 8/27/93        |
| Test Date         | 8/27/93        |
| Test Performed By | Pat Darby      |

## API WATER ANALYSIS

| ..... Dissolved Solids ..... | ... mg/L ... | ... me/L ... |
|------------------------------|--------------|--------------|
| <b>Cations</b>               |              |              |
| Sodium, Na (Calc)            | 12266        | 533          |
| Calcium, Ca                  | 401          | 20.01        |
| Magnesium, Mg                | 462.4        | 38.03c       |
| Barium, Ba                   | 0            | 0            |
| <b>Anions</b>                |              |              |
| Chloride, Cl                 | 20509        | 580.6        |
| Sulfate, SO4                 | 75           | 1.56         |
| Carbonate, CO3               | 0            | 0            |
| Bicarbonate, HCO3            | 561.2        | 9.2          |
| Hydroxide                    | 0            | 0            |

## OTHER PROPERTIES

| ..... Other Properties ..... | .....    |
|------------------------------|----------|
| Total Dissolved Solids, mg/l | 34274.66 |
| Iron, mg/l                   | -        |
| pH                           | 7.0      |
| Specific Gravity             | 1.03     |
| Resistivity, ohm-meter       | -        |

# WATER ANALYSIS REPORT

Company : APACHE CORP.  
 Address : FARMINGTON, NM  
 Lease : A-118  
 Well : 11  
 Sample Pt. : SEPARATOR

Date : 5/27/92  
 Date Sampled : 5/19/92  
 Analysis No. :

| ANALYSIS                              |       | mg/L  |      | * meq/L |
|---------------------------------------|-------|-------|------|---------|
| -----                                 |       | ----  |      | -----   |
| 1. pH                                 | 6.4   |       |      |         |
| 2. H2S                                | 2.5   |       |      |         |
| 3. Specific Gravity                   | 1.000 |       |      |         |
| 4. Total Dissolved Solids             |       | 245.2 |      |         |
| 5. Suspended Solids                   |       |       |      |         |
| 6. Dissolved Oxygen                   |       |       |      |         |
| 7. Dissolved CO2                      |       |       |      |         |
| 8. Oil In Water                       |       |       |      |         |
| 9. Phenolphthalein Alkalinity (CaCO3) |       |       |      |         |
| 10. Methyl Orange Alkalinity (CaCO3)  |       |       |      |         |
| 11. Bicarbonate                       | HCO3  | 146.0 | HCO3 | 2.4     |
| 12. Chloride                          | Cl    | 10.6  | Cl   | 0.3     |
| 13. Sulfate                           | SO4   | 0.0   | SO4  | 0.0     |
| 14. Calcium                           | Ca    | 4.0   | Ca   | 0.2     |
| 15. Magnesium                         | Mg    | 0.0   | Mg   | 0.0     |
| 16. Sodium (calculated)               | Na    | 57.3  | Na   | 2.5     |
| 17. Iron                              | Fe    | 27.2  |      |         |
| 18. Barium                            | Ba    | 0.0   |      |         |
| 19. Strontium                         | Sr    | 0.0   |      |         |
| 20. Total Hardness (CaCO3)            |       | 10.0  |      |         |

## PROBABLE MINERAL COMPOSITION

| *milli equivalents per Liter       |            |           | Compound      Equiv wt X meq/L      =      mg/L |             |      |     |     |
|------------------------------------|------------|-----------|-------------------------------------------------|-------------|------|-----|-----|
| +-----+                            |            |           | +-----+                                         |             |      |     |     |
| 0                                  | *Ca <----- | *HCO3     | 2                                               | Ca (HCO3) 2 | 81.0 | 0.2 | 16  |
|                                    | /----->    |           |                                                 | CaSO4       | 68.1 |     |     |
| 0                                  | *Mg -----> | *SO4      | 0                                               | CaCl2       | 55.5 |     |     |
|                                    | <-----/    |           |                                                 | Mg (HCO3) 2 | 73.2 | 0.0 | 0   |
| 2                                  | *Na -----> | *Cl       | 0                                               | MgSO4       | 60.2 |     |     |
| +-----+                            |            |           | +-----+                                         |             |      |     |     |
| Saturation Values Dist. Water 20 C |            |           |                                                 | MgCl2       | 47.6 |     |     |
| CaCO3                              |            | 13 mg/L   |                                                 | NaHCO3      | 84.0 | 2.2 | 184 |
| CaSO4 * 2H2O                       |            | 2090 mg/L |                                                 | Na2SO4      | 71.0 |     |     |
| BaSO4                              |            | 2.4 mg/L  |                                                 | NaCl        | 58.4 | 0.3 | 18  |

REMARKS:

Petrolite Oilfield Chemicals Group

Respectfully submitted,  
 GARY J. SHELTON

# HALLIBURTON DIVISION LABORATORY

## WATER ANALYSIS DATA SHEET

TAL

Analysis Date 8-7-92

Report No. \_\_\_\_\_

To Apache

Stan Phillips 325-0318

Submitted By \_\_\_\_\_ Date Received 8-7-92

Well Number OSO Canyon A #1

Location \_\_\_\_\_ Formation \_\_\_\_\_

### Data For Report

Specific Gravity 1.010

pH 6.63

Aliquot or  
Dilution

Ion Calculation

Fe Log

K %T

Na %T

10 Ca 8.2 .5839

10 Mg (10.3-8.2) .3550

10 Cl 35 2.238

5 So<sub>4</sub> Log .4 55 x  $\frac{100}{5}$

CO<sub>3</sub>

50 HCO<sub>3</sub> 2

TDS

Nil

464

479

74

7833

1100

585

14,682

Sugar (Guar, Cellulose) + -

Rw .44 at 62 °F

LP-55 data \_\_\_\_\_

Hours, \_\_\_\_\_ °F  
Compressive Strength  
(PSI)

Class G Cement mixed 4.97 gal/sk with submitted water

Class G Cement mixed 4.97 gal/sk with \_\_\_\_\_ water

These data would indicate that the submitted water should be suitable for use in cementing.

Test results indicate the presence of components of fracturing fluid additives.

Remarks:

LP-55 content:

cc

Tech: M.U.

**HALLIBURTON DISTRICT LABORATORY  
WATER ANALYSIS DATA SHEET**

Analysis Date: 9-18-92

Report No. \_\_\_\_\_

To APACHE CORP.  
\_\_\_\_\_  
\_\_\_\_\_

Submitted By \_\_\_\_\_ Date Received 9-18-92

Well Number: FED. OSO CANYON

Location \_\_\_\_\_ Formation \_\_\_\_\_

**Data for Report**

Specific Gravity 1.008

pH 6.88

| Aliquot or Dilution | Ion                 | Calculation  | ppm           |
|---------------------|---------------------|--------------|---------------|
| _____               | Fe Log              | _____        | <u>20</u>     |
| _____               | K %T                | _____        | <u>100</u>    |
| _____               | Na %T               | _____        | _____         |
| _____               | Ca                  | <u>6.5</u>   | <u>344</u>    |
| _____               | Mg                  | <u>8-6.5</u> | <u>52</u>     |
| _____               | Cl                  | <u>8.5</u>   | <u>19,000</u> |
| _____               | SO <sub>4</sub> Log | _____        | <u>&lt;10</u> |
| _____               | CO <sub>3</sub>     | _____        | _____         |
| _____               | HCO <sub>3</sub>    | <u>3.7</u>   | <u>541</u>    |
| _____               | TDS                 | _____        | _____         |

Rw .45 at 72 ° F

**NOTICE**

This report is based on sound engineering practices, but because of variable well conditions and other information which must be relied upon, Halliburton makes no warranty, express or implied, as to the accuracy of the data or of any calculations or opinions expressed herein. You agree that Halliburton shall not be liable for any loss or damage whether due to negligence or otherwise arising out of or in connection with such data calculations or opinions.

Tech: T.C.

**HALLIBURTON DISTRICT LABORATORY  
WATER ANALYSIS DATA SHEET**

Analysis Date: 10-01-92

Report No. \_\_\_\_\_

To APACHE CORPORATION  
\_\_\_\_\_  
\_\_\_\_\_

Submitted By \_\_\_\_\_ Date Received 10-01-92

Well Number JICARIILA APACHE #125

Location 7TH RUN 6300' 3:00 Formation \_\_\_\_\_

Data for Report

Specific Gravity 1.021

pH 5.74

| Aliquot or<br>Dilution | Ion            | Calculation     | ppm          |
|------------------------|----------------|-----------------|--------------|
| <u>5</u>               | <u>Fe Log</u>  | <u>6.1</u>      | <u>18.3</u>  |
|                        | <u>K %T</u>    |                 | <u>150</u>   |
|                        | <u>Na %T</u>   |                 |              |
| <u>1</u>               | <u>Ca</u>      | <u>8.4</u>      | <u>4504</u>  |
| <u>1</u>               | <u>Mg</u>      | <u>13.2-8.4</u> | <u>4686</u>  |
| <u>1</u>               | <u>Cl</u>      | <u>8.2</u>      | <u>18351</u> |
| <u>5</u>               | <u>SO4 Log</u> | <u>.02</u>      | <u>60</u>    |
|                        | <u>CO3</u>     |                 |              |
| <u>100</u>             | <u>HCO3</u>    | <u>1.4</u>      | <u>205</u>   |
|                        | <u>TDS</u>     |                 |              |

Rw .317 at 69 ° F

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# ANALYTICAL LABORATORY REPORT

Apache Corp.  
Jicarilla, New Mexico

25-JUL-88

A107  
Separator

Page 1

## >>> Oil Field Water Analysis <<<

### DISSOLVED SOLIDS

| Cations        | mg/l    | meq/l |          | mg/l  |
|----------------|---------|-------|----------|-------|
| =====          | =====   | ===== |          | ===== |
| Sodium Na+     | 1,279.8 | 55.6  | as NaCl  |       |
| Calcium Ca++   | 340.0   | 17.0  | as CaCO3 | 850.0 |
| Magnesium Mg++ | 72.9    | 6.0   | as CaCO3 | 300.0 |
| Barium Ba++    |         |       | as CaCO3 |       |
| Strontium Sr++ |         |       | as CaCO3 |       |
| Total Cations  | 1,692.7 | 78.6  |          |       |

| Anions         | mg/l    | meq/l |           | mg/l    |
|----------------|---------|-------|-----------|---------|
| =====          | =====   | ===== |           | =====   |
| Chloride Cl-   | 2,397.7 | 67.6  | as NaCl   | 3,950.0 |
| Sulfate SO4=   | 87.9    | 1.8   | as Na2SO4 | 130.0   |
| Carbonate CO3= | 72.0    | 2.4   | as CaCO3  | 120.0   |
| Bicarb. HCO3-  | 414.8   | 6.8   | as CaCO3  | 340.0   |
| Total Anions   | 2,972.3 | 78.6  |           |         |

Total Solids 4,665.0

### METALS

|                   |      |          |      |
|-------------------|------|----------|------|
| Total Iron, Fe    | 18.4 | as Fe    | 18.4 |
| Acid to Phen, CO2 |      | as CaCO3 |      |

### OTHER PROPERTIES

|                    |     |
|--------------------|-----|
| pH                 | 8.3 |
| Specific Gravity   | 1.0 |
| Turbidity          |     |
| Oxygen, as O2 ppm  |     |
| Sulfide as H2S ppm | 8.0 |
| Temperature F      |     |

NALCO CHEMICAL COMPANY

Form 738 (2-88)

ANALYTICAL LABORATORIES

One Nalco Center  
Naperville, IL 60566-1024

P. O. Box 87  
Sugar Land, Texas 77487



# ANALYTICAL LABORATORY REPORT

Apache Corp.  
Jicarilla, New Mexico

25-JUL-88

A107  
Separator

Page 2

## >>> Scaling Indices <<<

Positive values indicate scaling tendencies

| Temperature<br>(Deg. F) | Calcium<br>Carbonate | Calcium<br>Sulfate | Barium<br>Sulfate | Strontium<br>Sulfate |
|-------------------------|----------------------|--------------------|-------------------|----------------------|
| 60                      | +1.58                | -22.43             | NA                | NA                   |
| 80                      | +1.78                | -23.12             | NA                | NA                   |
| 100                     | +1.98                | -23.64             | NA                | NA                   |
| 120                     | +2.20                | -23.68             | NA                | NA                   |
| 140                     | +2.42                | -22.77             | NA                | NA                   |
| 160                     | +2.66                | -21.73             | NA                | NA                   |
| 180                     | +2.90                | -20.65             | NA                | NA                   |
| 200                     | +3.16                | NA                 | NA                | NA                   |
| 220                     | NA                   | NA                 | NA                | NA                   |
| 240                     | NA                   | NA                 | NA                | NA                   |
| 260                     | NA                   | NA                 | NA                | NA                   |
| 280                     | NA                   | NA                 | NA                | NA                   |
| 300                     | NA                   | NA                 | NA                | NA                   |
| 320                     | NA                   | NA                 | NA                | NA                   |

REMARKS: Iron Oxide Precipitate

NALCO CHEMICAL COMPANY

Form 738 (2-88)

ANALYTICAL LABORATORIES

One Nalco Center  
Naperville, IL 60566-1024

P. O. Box 87  
Sugar Land, Texas 77487



# ANALYTICAL LABORATORY REPORT

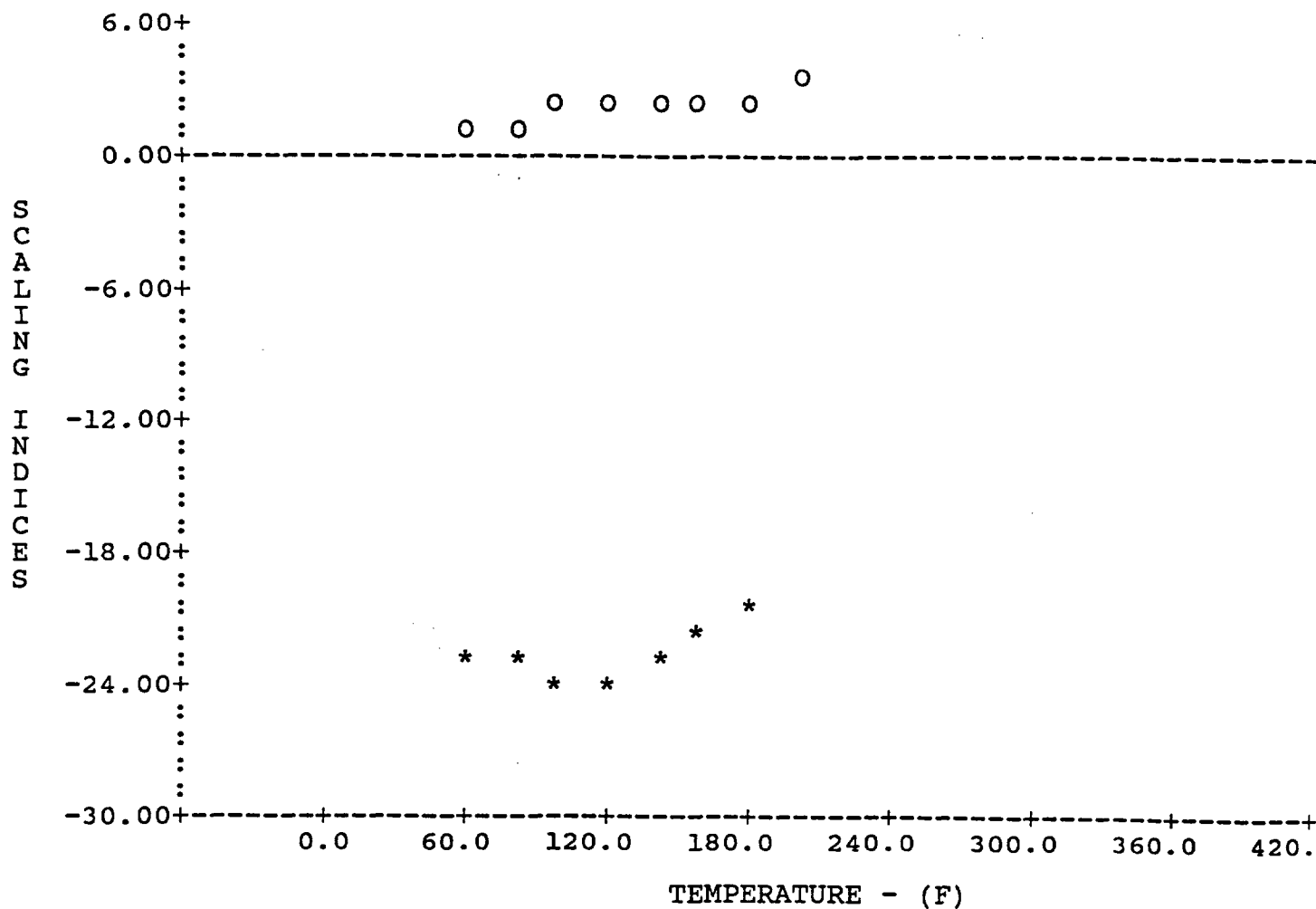
Apache Corp.  
Jicarilla, New Mexico

25-JUL-88

A107  
Separator

Page 3

>>> Scaling Indices <<<



O = CaCO3  
\* = CaSO4  
# = BaSO4  
X = SrSO4

NALCO CHEMICAL COMPANY

Form 738 (2-88)

ANALYTICAL LABORATORIES

One Nalco Center  
Naperville, IL 60566-1024

P. O. Box 87  
Sugar Land, Texas 77487

VIII.

1. The injection interval would be the Burro Canyon Sandstone. Log top in this well is 8004 ft KB. The well would require deepening approximately 150 ft to allow for disposal. Estimated gross injection interval is approximately 8039' - 8100', based on wells in the area. The actual interval would be determined after deepening the well.
2. The Ojo Alamo aquifer is the only potential source of potable water penetrated in the well. The base of this sand is approximately 3300 ft based on offset well information (the interval was not logged in this well). No potable sources are known below the Burro Canyon.

X.      Enclosed are:

1. Copies of the log data. (They are on file with the NMOCD).
2. Approval from the NMOCD approving the formation designation from Dakota "E" Sandstone to the Burro Canyon formation on a Mobil Oil Corporation SWD well - the Lindrith "B" #25 located in Unit O, Section 9, T24N, R3W. This well is 5.9 miles from our proposed JAT 124 #7 SWD well.
3. Mobil Oil Corporation's C-120A filing on the Lindrith "B" #25 well from October 1992 to February 1993.
4. After the well is completed and tested, the results will be submitted to the NMOCD. We are not anticipating much variation from Mobil's SWD.

X.

**WIRELINE SERVICES**  
**GEARHART - OWEN**

## EQUIPMENT DATA

| EQUIPMENT DATA |              |          |           |         |            |         |     |         |                   |          |         |   |       |
|----------------|--------------|----------|-----------|---------|------------|---------|-----|---------|-------------------|----------|---------|---|-------|
| RUN NO         | LOGGING UNIT | LOCATION | GAMMA RAY |         |            | DENSITY |     |         | SIDE WALL NEUTRON |          |         |   |       |
|                |              |          | TOOL NO   | TOOL NO | Source No. | TYPE    | STO | TOOL NO | Source No         | TYPE     | STO     |   |       |
| 7546           |              | 29-062   | 4110      | 2385    | CSV 478    | Cs 137  | 2   | Curie   | 7136              | 71-1-188 | AmBx241 | 5 | Curie |
|                |              |          |           |         |            |         |     |         |                   |          |         |   |       |
|                |              |          |           |         |            |         |     |         |                   |          |         |   |       |

| CALIBRATION DATA |           |         |           |          |            |         |                   |            |         |
|------------------|-----------|---------|-----------|----------|------------|---------|-------------------|------------|---------|
| RUN NO           | GAMMA RAY |         | DENSITY   |          |            |         | SIDE WALL NEUTRON |            |         |
|                  | BKG. CPS  | STD CPS | MAGNESIUM | ALUMINUM | TEST BLOCK | CALIPER | BKG. CPS          | Calibrator | CALIPER |
|                  |           |         | 1.2       | 1.2      |            |         | 0.00              | 0.00       | 1       |

| Bore-Hole Record |        |                  |         |      | Casing Record |      |         |     |
|------------------|--------|------------------|---------|------|---------------|------|---------|-----|
| No.              | Bit    | Level or Contact | From    | To   | Size          | Wgt. | From    | To  |
| One              | 12 1/4 |                  | Surface | 304  | 8 5/8         | 24   | Surface | 304 |
| One              | 7 7/8  |                  | 304     | 8034 |               |      |         |     |

Attachment 'H' pg 2 of 11

08000

2 0.918 68 155 3000 9 20 2.650 1.00

-0.25  $\Delta P$  0.2

2.00

P(B)

3.0

30

 $\phi$ (CDL)

-1

07-26-80

11:48

8039.0

104896

0061-20

1

1

- CALIBRATION BEFORE SURVEY

07-26-80

11:45

8039.0

104896

0061-20

1

0

0 GR API 200

2.00

-0.25  $\Delta P$  0.2

6 CALIPER X 16

P(B)

3.0

6 CALIPER Y 16

30

 $\phi$ (CDL)

-1



WIRELINE SERVICES  
GEARHART - OWEN

DUAL INDUCTION-LAT

Marked

COMPANY AMOCO PRODUCTION COMPANY

WELL JICARILLA APACHE TRIBAL 124

FIELD W. LINDRITH GALLUP DAKOTA

COUNTY RIO ARriba STATE NEW MEX

990' FSL x 990' FW L

CDL

13

25N

4W

Permanent Datum GROUND LEVEL.

7051

Log Measurement from K.B.

13

Active Perm Datum

Drilling Measurement from K.B.

KB

DL

GL

Date 7-26-80

Run No One

Depth Driller 8034

Depth Logger 8029

Bottom Logged Interval 8027

Top Logged Interval 5200

Casing Driller 8 5/8" 304

Casing Logger

Bit Size 7 7/8

Type Fluid in Hole LSND

Density and Viscosity 9.2 41

pH and Fluid Loss 9 7.6

Source of Sample Flowline

Rm @ Meas Temp 2.4 @ 70

Rmt @ Meas Temp 1.7 @ 88

Rmc @ Meas Temp 2.0 @ 88

Source of Rmt and Rm M M

Rm @ BHT 1.08 @ 155

End Circumfer of 3:30

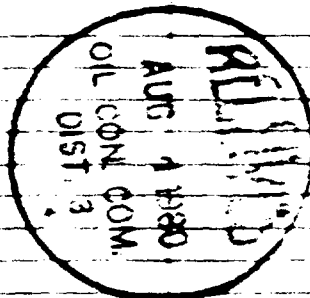
Logger at Bottom 9:00

Max Rec. Temp Deg F 155

Equip. No and Location 7518 129-062

Recorded By Gillingham

Witnessed By Mr. Volz



ILLEGIBLE

07900

08000  
Bureau  
Cyn

0.2

0.2

0.2

0.2

-1101+  
0 GR API 200

|     |            |    |
|-----|------------|----|
| 0.2 | R(ILO) 0-M | 20 |
| 0.2 | R(ILM) 0-M | 20 |
| 0.2 | R(ILL) 0-M | 20 |

STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION

July 19, 1990

GARREY CARRUTHERS  
GOVERNOR

POST OFFICE BOX 2000  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87501  
(505) 827-5800

Mobil Exploration & Producing U.S. Inc.  
P.O. Box 633  
Midland, Texas 79702

Attention: D.P. Klancher

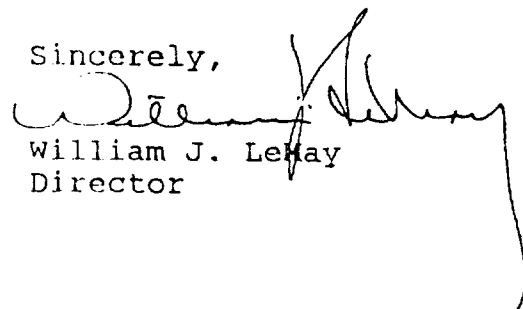
Re: Amendment of Order No. SWD-355

Dear Ms. Klancher:

Reference is made to your request dated June 8, 1990, to amend Division Order No. SWD-355, which order authorized the use of the Lindrith "B" Unit Well No. 25, located in Unit O of Section 9, Township 24 North, Range 3 West, NMPM, Rio Arriba County, New Mexico, to dispose of produced water into the Dakota "E" Sandstone from approximately 7570 feet to 7594 feet. It is our understanding that you wish to expand the injection interval to include the interval from approximately 7600 feet to 7660 feet, and that you also wish to designate the injection formation as the Burro Canyon instead of the Dakota "E" Sandstone. It is also our understanding that you have consulted with the Aztec district office staff geologist and that he concurs with the redesignation of the injection formation.

You are therefore authorized to expand the injection interval within the subject well to include the interval from approximately 7600 feet to 7660 feet. The injection formation is hereby redesignated as the Burro Canyon formation. All other provision contained within Division Order No. SWD-355 shall remain in full force and effect.

Sincerely,



William J. LeMay  
Director

xc: OCD-Aztec  
File-SWD-355  
T. Gallegos

Attachment 'H' pg 6 of 11

Submit 1 Copy to Santa Fe  
and 1 Copy to Appropriate  
District Office by 15th of  
Second Successing Month.

State of New Mexico  
Energy, Minerals and Natural Resources Department

Form C-120-A  
Revised 1-1-89

OIL CONSERVATION DIVISION

P.O. Box 2088  
Santa Fe, New Mexico 87504-2088

DISTRICT I  
P.O. Box 1940, Hobbs, NM 88240

DISTRICT II  
P.O. Box 1000, Aztec, NM 88210

DISTRICT III  
1000 Elm Avenue Rd., Aztec, NM 87410

MONTHLY WATER DISPOSAL REPORT

Disposal System

Operator Mobil Oil Corporation

Disposal System Water Waste Disposal

Address P O Box 219031, Dallas TX 75221-9031

County Rio Arriba Month February 19 93

| LEASE           | WELL<br>NO. | LOCATION |    |    |    | PREVIOUS - CUM<br>DISPOSED WATER<br>BARRELS | CURRENT MONTH<br>DISPOSED WATER<br>BARRELS | NEW-CUMULATIVE<br>DISPOSED WATER<br>BARRELS | AVERAGE<br>INJECTION<br>PRESSURES |
|-----------------|-------------|----------|----|----|----|---------------------------------------------|--------------------------------------------|---------------------------------------------|-----------------------------------|
|                 |             | UL       | S  | T  | R  |                                             |                                            |                                             |                                   |
| Lindrith B Unit | 25          | 0        | 09 | 24 | 3W | 219,395                                     | 3,405                                      | 222,800                                     | 640                               |

RECEIVED  
APR 5 1993  
OIL CON. DIV.  
DIST. 3

I hereby certify that the above is true and complete to the best of my knowledge and belief

Signature

Date

Printed Name

T. R. Shavers

Mobil Exploration & Producing U.S. Inc.  
Company as agent for Mobil Producing TX & NM Inc.

Title Authorized Agent

Telephone No. (214) 658-5550

Attachment 'H' pg 7 of 11

1 Copy to Santa Fe  
1 Copy to Appropriate  
District Office by 15th of  
Month Succeeding Month.

State of New Mexico  
Energy, Minerals and Natural Resources Department

Form C-120-A  
Revised 1-1-89

**OIL CONSERVATION DIVISION**

P.O. Box 2088  
Santa Fe, New Mexico 87504-2088

DISTRICT I  
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II  
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III  
1000 Rio Brazos Rd., Artesia, NM 87410

**MONTHLY WATER DISPOSAL REPORT**

Disposal System Mobil Oil Corporation Disposal System Water Waste Disposal

Address P O Box 219031, Dallas TX 75221-9031 County Rio Arriba Month January 19 93

| LEASE                                                            | WELL<br>NO. | LOCATION |    |    |    | PREVIOUS - CUM<br>DISPOSED WATER<br>BARRELS | CURRENT MONTH<br>DISPOSED WATER<br>BARRELS | NEW-CUMULATIVE<br>DISPOSED WATER<br>BARRELS | AVERAGE<br>INJECTION<br>PRESSURES |
|------------------------------------------------------------------|-------------|----------|----|----|----|---------------------------------------------|--------------------------------------------|---------------------------------------------|-----------------------------------|
|                                                                  |             | UL       | S  | T  | R  |                                             |                                            |                                             |                                   |
| Lindrith B Unit                                                  | 25          | 0        | 09 | 24 | 3W | 215264                                      | 4131                                       | 219395                                      | 640                               |
| <div>RECEIVED<br/>MAR 8 1993<br/>OIL CON. DIV.<br/>DIST. 3</div> |             |          |    |    |    |                                             |                                            |                                             |                                   |
|                                                                  |             |          |    |    |    |                                             |                                            |                                             |                                   |
|                                                                  |             |          |    |    |    |                                             |                                            |                                             |                                   |
|                                                                  |             |          |    |    |    |                                             |                                            |                                             |                                   |
|                                                                  |             |          |    |    |    |                                             |                                            |                                             |                                   |
|                                                                  |             |          |    |    |    |                                             |                                            |                                             |                                   |
|                                                                  |             |          |    |    |    |                                             |                                            |                                             |                                   |
|                                                                  |             |          |    |    |    |                                             |                                            |                                             |                                   |
|                                                                  |             |          |    |    |    |                                             |                                            |                                             |                                   |
|                                                                  |             |          |    |    |    |                                             |                                            |                                             |                                   |

I hereby certify that the above is true and complete to the best of my knowledge and belief.

Signature

*T. R. Shavers*

Remarks: \_\_\_\_\_

Printed Name

T. R. Shavers

Mobil Exploration & Producing U.S. Inc.

Company as agent for Mobil Producing TX & NM Inc.

Title Authorized Agent

Telephone No. (214) 658-7774

Title Authorized Agent Telephone No. (214) 658-5353

Submit 1 Copy to Santa Fe  
and 1 Copy to Appropriate  
District Office by 15th of  
Second Succeeding Month.

State of New Mexico  
Energy, Minerals and Natural Resources Department

Form C-120  
Revised 1-1-59

**OIL CONSERVATION DIVISION**

P.O. Box 2088  
Santa Fe, New Mexico 87504-2088

DISTRICT I  
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II  
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III  
10001 Rin Brator Rd., Aztec, NM 87410

**MONTHLY WATER DISPOSAL REPORT**

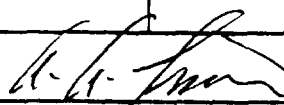
Disposal System Operator Mobil Oil Corporation Disposal System Water Waste Disposal

Address P O Box 219031, Dallas TX 75221-9031 County Rio Arriba Month Nov. 1993

| LEASE                                                             | WELL<br>NO. | LOCATION |    |    |    | PREVIOUS - CUM<br>DISPOSED WATER<br>BARRELS | CURRENT MONTH<br>DISPOSED WATER<br>BARRELS | NEW-CUMULATIVE<br>DISPOSED WATER<br>BARRELS | AVERAGE<br>INJECTION<br>PRESSURES |
|-------------------------------------------------------------------|-------------|----------|----|----|----|---------------------------------------------|--------------------------------------------|---------------------------------------------|-----------------------------------|
|                                                                   |             | UL       | S  | T  | R  |                                             |                                            |                                             |                                   |
| Lindrith B Unit                                                   | 25          | 0        | 09 | 24 | 3W | 208678                                      | 3002                                       | 211680                                      | 640                               |
| <div>RECEIVED<br/>JAN 11 1993<br/>OIL CON. DIV.<br/>DIST. 3</div> |             |          |    |    |    |                                             |                                            |                                             |                                   |
|                                                                   |             |          |    |    |    |                                             |                                            |                                             |                                   |
|                                                                   |             |          |    |    |    |                                             |                                            |                                             |                                   |

I hereby certify that the above is true and complete to the best of my knowledge and belief.

Signature



Remarks: \_\_\_\_\_

Printed Name A. A. Trevino

Mobil Exploration & Producing U.S. Inc.  
Company as agent for Mobil Producing TX & NM Inc.

Title Authorized Agent Telephone No. (214) 658-5356

Title Authorized Agent Telephone No. (214) 658-5356

**WATER ANALYSIS REPORT**

**Culligan**

Culligan International Company  
One Culligan Parkway  
Northbrook, IL 60062  
708 205-6000

Fresh water well 750' deep  
located approx. .86 miles  
from JAT 124 #7.

PAGE: 1  
SAMPLE 01 OF 01

12/04/91

Unit I Sec 23 T25N R4W

QUALITY WATER SYSTEMS, INC.  
CULLIGAN WATER CONDITIONING  
209 WEST BROADWAY  
P. O. BOX 171  
FARMINGTON, NM 87499

ANALYSIS NUMBER: W667491 A  
CONSUMER : APACHE CORP  
FARMINGTON, NM  
ZIP CODE: 87401  
SOURCE: PRIVATE WELL

FILE NUMBER 30086-EH  
SAMPLED 11/20/91  
RECEIVED 11/25/91

SAMPLING POINT: LINDRITH - CTB  
SAMPLE REPRESENTS: UNTREATED WATER

|                    |               |                      |           |
|--------------------|---------------|----------------------|-----------|
| TURBIDITY AS REC'D | 78 NTU        | TURB AFTER FILTERED  | 1 NTU     |
| CONDUCTIVITY       | 2980 MMHGS/CM | EST TDS BY COND.     | 1800 MG/L |
| COLOR AS RECEIVED  | 9             | COLOR AFTER ACIDIFIC | 8         |
| PH                 | 7.5           | TANNINS              | TRACE     |

(CONCENTRATIONS REPORTED AS MG/L (PPM) UNLESS OTHERWISE INDICATED)

| -CATIONS-      | AS ELEMENT | AS CaCO3 | -ANIONS-            | AS ELEMENT | AS CaCO3 |
|----------------|------------|----------|---------------------|------------|----------|
| CALCIUM (CA)   | 155.30     | 388.25   | CHLORIDE (CL)       | 22.5       | 31.8     |
| MAGNESIUM (MG) | 44.40      | 182.93   | NITRATE/NITRITE (N) | 1.5        | 5.4      |
| SODIUM (NA)    | 500.50     | 1091.09  | SULFATE (SO4)       | 1169.0     | 1215.8   |
| POTASSIUM (K)  | 2.32       | 2.97     | BICARBONATE (HCO3)  | 475.2      | 389.1    |
| IRON (FE)      | 2.88       |          | FLUORIDE (F)        | 0.33       | 0.88     |
| MANGANESE (MN) | 1.81       |          | SILICA (SiO2)       | 12.0       |          |
| COPPER (CU)    | <0.03      |          |                     |            |          |
| ZINC (ZN)      | <0.05      |          |                     |            |          |

|                 | MG/L   | GPG  |                | MG/L   | GPG  |
|-----------------|--------|------|----------------|--------|------|
| CATIONS (CaCO3) | 1665.2 | 97.4 | ANIONS (CaCO3) | 1643.3 | 97.4 |
| TOTAL HARDNESS  | 571.2  | 33.4 |                |        |      |

A COPY OF THIS REPORT IS IN THE COMMERCIAL\INDUSTRIAL ENGINEERING DEPARTMENT  
PLEASE CALL THE COMMERCIAL\INDUSTRIAL DEPARTMENT 708-205-5716, 5715.

PETE SMITH  
CHEMIST

CC: COMMER\INDUST

Attachment 'I' pg 1 of 2

(SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

# WATER ANALYSIS REPORT



Culligan International Company  
One Culligan Parkway  
Northbrook, IL 60062  
708 205-6000

PAGE: 2  
SAMPLE 01 OF 01

12/04/91

ANALYSIS NUMBER: W667491 A  
CONSUMER :APACHE CORP

## FEDERAL SAFE DRINKING WATER ACT

ALL TESTED PARAMETERS EXCEEDING THE MAXIMUM CONCENTRATION LEVELS (MCL)  
ESTABLISHED UNDER THE "FEDERAL SAFE DRINKING WATER ACT" ARE LISTED BELOW:

|           | PARAMETER          | FOUND  | MCL   |
|-----------|--------------------|--------|-------|
| PRIMARY   | TURBIDITY AS REC'D | 78     | 5     |
| SECONDARY | IRON (FE)          | 2.88   | 0.30  |
|           | MANGANESE (MN)     | 1.81   | 0.05  |
|           | EST TDS BY COND.   | 1800   | 500   |
|           | SULFATE (SO4)      | 1169.0 | 250.0 |

## - FOR D.I. CALCULATIONS -

|                 |      |   |                    | GPG  | MG/L    |
|-----------------|------|---|--------------------|------|---------|
| SODIUM          | 65.7 | % | WEAK BASE FACT X   | 73.3 | 1253.77 |
| ALKALINITY      | 23.4 | % | CARBONIC ACID      | 25.8 | 441.69  |
| CHLORIDE        | 2.5  | % | CATION FACT Y      | 97.4 | 1665.24 |
| CARBONIC ACID   | 1.8  | % | SILICA             | 0.58 | 9.96    |
| MONOVALENT IONS | 1.9  | % | CARBON DIOXIDE     | 1.53 | 26.10   |
| SILICA          | 0.6  | % | STRONG BASE FACT Z | 99.4 | 1699.18 |

XII. Available geologic and engineering data has been examined and no evidence of open faults or any other hydraulic connection between the disposal zone and any underground source of drinking water was found.

XIII. Proof of Notice

1. This application was sent to the U. S. Bureau of Indian Affairs - Realty, c/o Darrell Tafoya. The well is located on the Jicarilla Apache Reservation.
2. This application was sent to the Jicarilla Apache Tribe, Oil and Gas Administration c/o Thurman Velarde. The well is located on the Jicarilla Apache Reservation.
3. This application was also sent to the two lease operators within the area of review.
  - a. Meridian Oil Co.- Farmington, NM c/o Bruce Voiles
  - b. Conoco Inc.- Farmington, NM c/o Dan Coy
4. The enclosed Sundry Notice was sent to the BLM - Rio Puerco District on January 25, 1994.

# MW PETROLEUM CORPORATION

MW Petroleum Coporation  
c/o Apache Corporation  
304 N. Behrend Avenue  
Farmington, New Mexico 87401  
(505)-325-0318

Thurman Velarde  
Jicarilla Apache Tribe  
Oil and Gas Administration  
P. O. Box 507  
Dulce, New Mexico 87528

February 3, 1994

Gentlemen:

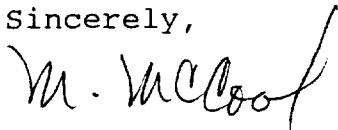
Enclosed is our application to the NMOCD for a salt water disposal well in a presently completed West Lindrith Gallup/Dakota well, the JAT 124 #7, located 990' FSL, 990' FWL, Section 13, T25N, R4W. The well will be drilled out for injection of produced water in the Burro Canyon.

As part of NMOCD Form C-108, we are required to furnish this application to the owner of the surface land and to each leasehold operator within one-half mile of the well location.

The application states that surface owners or offset operators must file any objections or requests for hearing of administrative applications within fifteen days from when the application was mailed to them.

Thank you for your efforts and consideration in this matter.

Sincerely,



MW Petroleum Corporation  
Farmington District  
Mark McCool

# MW PETROLEUM CORPORATION

■

MW Petroleum Coporation  
c/o Apache Corporation  
304 N. Behrend Avenue  
Farmington, New Mexico 87401  
(505)-325-0318

Darrell Tafoya  
BIA - Branch of Realty  
P. O. Box 167  
Dulce, New Mexico 87528

February 3, 1994

Gentlemen:

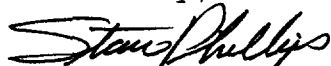
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Thank you for your efforts and consideration in this matter.

Sincerely,



Stan Phillips  
Production Foreman  
MW Petroleum Corporation  
Farmington District

# MW PETROLEUM CORPORATION

MW Petroleum Coporation  
c/o Apache Corporation  
304 N. Behrend Avenue  
Farmington, New Mexico 87401  
(505)-325-0318

Dan Coy  
Conoco Inc.  
7415 E. Main St.  
Farmington, NM 87402

February 3, 1994

Gentlemen:

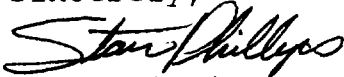
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As part of NMOCD Form C-108, we are required to furnish this application to the owner of the surface land and to each leasehold operator within one-half mile of the well location.

The application states that surface owners or offset operators must file any objections or requests for hearing of administrative applications within fifteen days from when the application was mailed to them.

Thank you for your efforts and consideration in this matter.

Sincerely,



Stan Phillips  
Production Foreman  
MW Petroleum Corporation  
Farmington District

# MW PETROLEUM CORPORATION

■

MW Petroleum Coporation  
c/o Apache Corporation  
304 N. Behrend Avenue  
Farmington, New Mexico 87401  
(505)-325-0318

Bruce Voiles  
Meridian Oil Co.  
P. O. Box 4289  
Farmington, NM 87499-4289

February 3, 1994

Gentlemen:

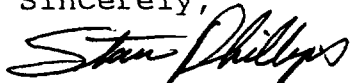
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MW Petroleum Corporation  
Farmington District

# MW PETROLEUM CORPORATION

c/o Apache Corporation  
304 N. Behrend Avenue  
Farmington, NM 87401  
(505)-325-0318

Farmington Daily Times  
201 N. Allen Ave.  
Farmington, NM 87401

February 3, 1994

RE: Legal Publications

Gentlemen:

Enclosed is a draft of a Notice of Application for a water disposal well which requires publication in a newspaper of general circulation in the state. We request that this notice be published one day in your newspaper at the earliest possible date and that proof of publication be furnished to the following:

State of New Mexico  
Oil Conservation Division  
P. O. Box 2088  
Santa Fe, New Mexico 87504-2088

and

MW Petroleum Corporation  
304 N. Behrend Avenue  
Farmington, New Mexico 87401

Thank you,



Stan Phillips  
Production Foreman  
MW Petroleum Corporation  
Apache Corporation

Legal Notice of Application for Water Disposal Well

1. Contact Party for Applicant:

Stan Phillips  
MW Petroleum Corporation  
304 N. Behrend Avenue  
Farmington, NM 87401  
505-325-0318

2. Purpose of the Injection Well:

Dispose of produced water from the wells operated by MW Petroleum Corporation and Apache Corporation in the Jicarilla Area and/or throughout the San Juan Basin of New Mexico.

Well Location:  
Jicarilla Apache Tribal 124 #7  
990' FSL and 990' FWL, Section 13, T25N, R4W  
Rio Arriba County, New Mexico

3. Injection Details:

Formation and depth: Burro Canyon, 8039' - 8100'  
Maximum injection rate: 1000 BWPD  
Maximum injection pressure: 1608 PSI

4. Filing of Objections or Requests for Hearing:

Filing must be made to:  
Oil Conservation Division  
P. O. Box 2088  
Santa Fe, NM 87504-2088

Period for Filing:  
Fifteen days from date of this publication.

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

**SUNDRY NOTICES AND REPORTS ON WELLS**

Do not use this form for proposals to drill or to deepen  
or reentry to a different reservoir.

Use "APPLICATION FOR PERMIT" For such proposals

**SUBMIT IN TRIPLICATE**

1. Type of Well:

Oil Well      Gas Well    ☒    Other Recomplete Gal/Dk to Burro Canyon SWD well.

2. Name of Operator

MW Petroleum Co.      c/o Apache Corporation

3. Address and Telephone No.

304 N. Behrend Farmington, NM 87401 505-325-0318

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

990' FSL, 990' FWL      Sec. 13      T25N R4W

5. Lease Designation and Ser. No.

Jicarilla Contrat 124

6. If Indian, Allottee or Tribe Name

Jicarilla Apache

7. If Unit or CA, Agreement Designation

8. Well Name and No.

JAT 124 #7

9. API Well No.

30-039-22403

10. Field and Pool, or Exploratory Area

W. Lind. GL/DK

11. County or Parish, State

Rio Arriba Co, NM

**12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

| TYPE OF SUBMISSION                                   | TYPE OF ACTION                                              |
|------------------------------------------------------|-------------------------------------------------------------|
| <input checked="" type="checkbox"/> Notice of Intent | Abandonment                                                 |
|                                                      | Recompletion                                                |
| Subsequent Report                                    | Plugging Back                                               |
|                                                      | Casing Repair                                               |
| Final Abandonment Notice                             | Altering Casing                                             |
|                                                      | Other                                                       |
|                                                      | Change of Plans                                             |
|                                                      | New Construction                                            |
|                                                      | Non-Routine Fracturing                                      |
|                                                      | Water Shut-Off                                              |
|                                                      | <input checked="" type="checkbox"/> Conversion to Injection |
|                                                      | Dispose Water                                               |

(Note: Report results of multiple completions on Well Completion or Recompletion Report and Log Form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

We are presently making an application to the NMOCD for approval to convert this well to a SWD well in the Burro Canyon formation.  
Enclosed are an Existing Wellbore Diagram and history and a Proposed Wellbore Diagram with a proposed completion procedure.

14. I Certify that the foregoing is true and correct.

Signed

*Stan Phillips*

Title Production Foreman

Date: 1-25-94

(This space for Federal or State office use)

Approved by

Title

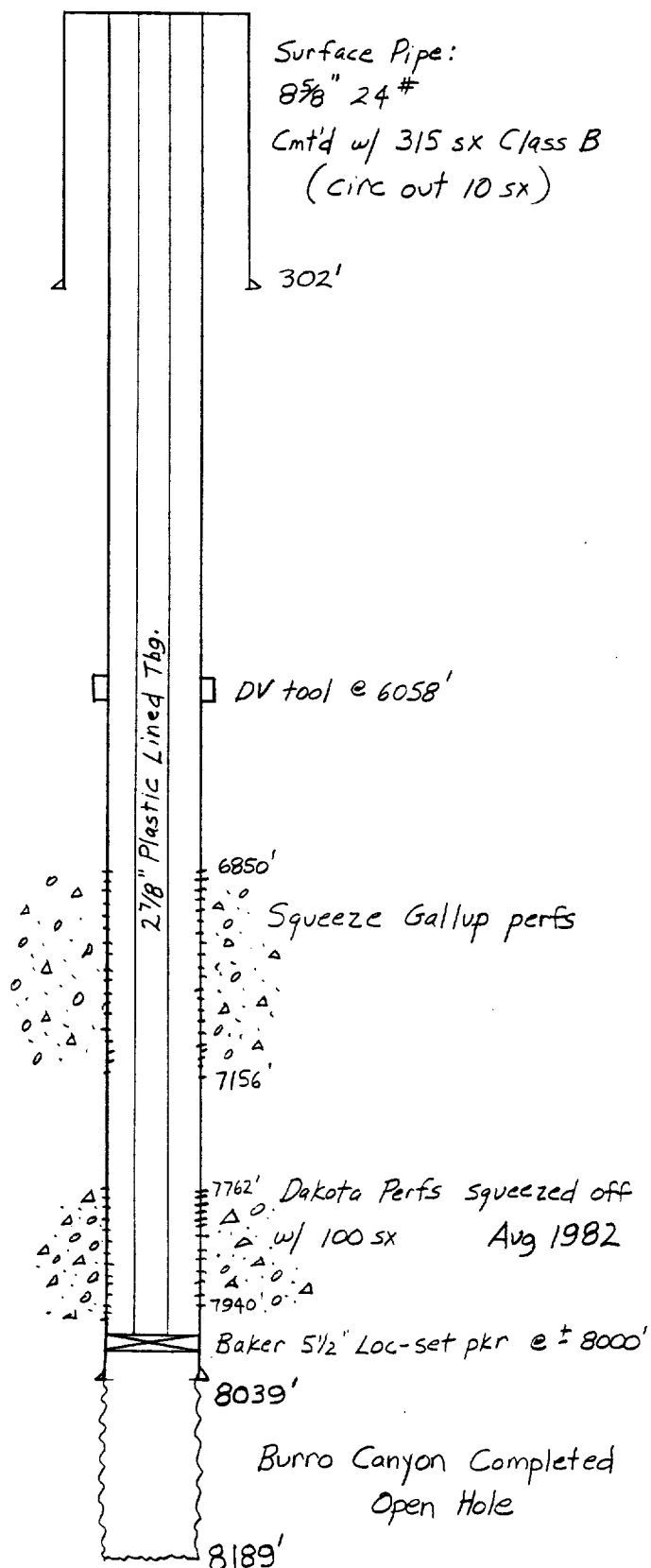
Date

Conditions of approval, if any:

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

Jicarilla Apache 124 #7  
Salt Water Injection Well

Proposed Wellbore Diagram



Proposed procedure to complete well  
in Burro Canyon and set up well for  
water injection.

1. Move in service rig. Pull tbg.
2. Trip in hole w/ packer, set @ 6700'.
3. Squeeze off Gallup perms f/ 6850'  
to 7156' w/ neat cement.
4. Drill out cmt, press test csg  
to 1000 PSI.
5. Drill out cmt retainer @ 7715',  
cmt to 8020'.
6. Press test csg to 1000 PSI,  
re-squeeze Dakota if needed.
7. Drill out cmt f/ 8020' to 8039',  
drill 4 3/4" open hole to 8189' w/  
drlg mud as circ medium.
8. Log Burro Canyon w/ GR-CNL-FDS,  
GR-SP-DIL logs.
9. Swab well dry.
10. Trip in hole w/ packer on tbg  
workstring, set @ 8000'.
11. Injection test well. (See Attachment 'E')
12. Run plastic lined tbg w/ packer,  
set pkr @ 8000'.
13. Load annulus with non-corrosive  
packer fluid, pressure test to  
300 PSI for 30 minutes.
14. Set surface equipment, inject  
produced water.

MW Petroleum % Apache Corporation  
 Jicarilla Apache 124 #7  
 Jicarilla Contract #124  
 West Lindrith Gal/Dak  
 990' FSL 990' FWL  
 Sec 13 T25 R4W  
 Rio Arriba, NM

## Existing Wellbore Diagram

5 1/2" 15.5# K-55 csg.

Cement:

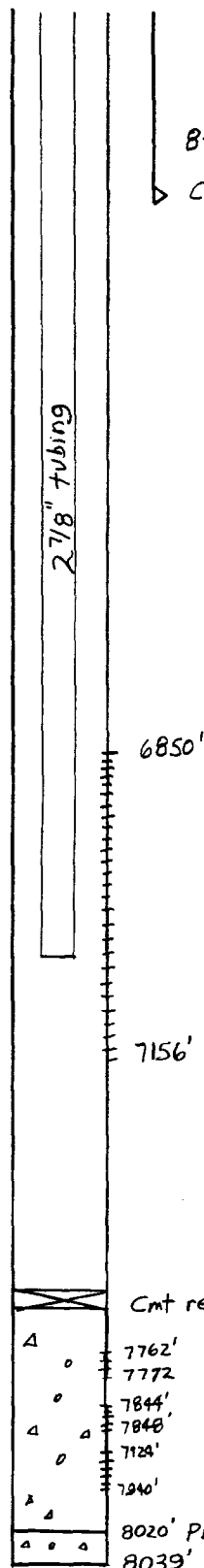
1<sup>st</sup> stage: 135 sx 50-50 POZ  
 w/ 6% gel, 410 sx  
 class B. Circ cmt to  
 surface.

2<sup>nd</sup> stage: 880 sx 65-35  
 POZ w/ 6% gel, 100 sx  
 class B. Circ cmt to  
 surface.

Gallup perfs:

|           |           |
|-----------|-----------|
| 6850-82   | 33 perfs  |
| 6891-6910 | 20        |
| 6920-6938 | 19        |
| 6948-69   | 22        |
| 7019-84   | 66        |
| 7089-95   | 7         |
| 7106-56   | <u>51</u> |
|           | 218 perfs |

Note: Determination  
 of cement circulated  
 to surface was from the  
 drilling report.



8 5/8" 24#

↳ Cmt'd w/ 315 sx (circ 10 sx to surface)

- 8-1980. Perf, frac 7844' - 7940'  
 Perf 7762' - 7772', frac
- Swab all perfs 7 days final 200 bbls fld.
- Perf frac Gallup.
- Swab test Gallup. Final 150 bbls fluid.
- Swab test Gal/Dak 1 1/4 months  
 Final 22 BO, 150 BW
- Ran rods. Pump 1 1/2 months.  
 Final 25 BO, 159 BW 91 mCFD
- Drill out FC. Set RBP @ 7794'.  
 Swab 2 days 352 BW 0 BO. Pull RBP.
- Set cmt retainer @ 7715' squeeze  
 w/ 100 sx. August 1982
- 4-15-92  
 Convert well to plunger lift, prod.  
 Gallup only.

10. Jan 1994 - Present prod  
 average - 2 Bbls oil per day  
 10 mCF per day

Z 688 079 364



# **Receipt for Certified Mail**

No Insurance Coverage Provided  
Do not use for International Mail  
(See Reverse)

|                                                               |                                           |  |
|---------------------------------------------------------------|-------------------------------------------|--|
| Sent to                                                       | SIA-RENTAL → TRAFYA                       |  |
| Street and No.                                                | P.O. Box 167                              |  |
| P.O., State and ZIP Code                                      | Dulce, N.M. 87528                         |  |
| Postage                                                       | \$2.36                                    |  |
| Certified Fee                                                 | 1.00                                      |  |
| Special Delivery Fee                                          |                                           |  |
| Restricted Delivery Fee                                       |                                           |  |
| Return Receipt Showing to Whom & Date Delivered               | 1.00                                      |  |
| Return Receipt Showing to Whom, Date, and Addressee's Address |                                           |  |
| TOTAL Postage & Fees                                          | 4.36                                      |  |
| Postmark of Date                                              | FEB 3 1994<br>FARMINGTON NM 87401<br>USPS |  |

PS Form 3800, March 1993

Z 688 079 365



# **Receipt for Certified Mail**

No Insurance Coverage Provided  
Do not use for International Mail  
(See Reverse)

|                                                               |                                           |  |
|---------------------------------------------------------------|-------------------------------------------|--|
| Sent to                                                       | MEDIAN OIL CO. - VOILES                   |  |
| Street and No.                                                | P.O. Box 4289                             |  |
| P.O., State and ZIP Code                                      | Farmington, NM 87401                      |  |
| Postage                                                       | \$2.36                                    |  |
| Certified Fee                                                 | 1.00                                      |  |
| Special Delivery Fee                                          |                                           |  |
| Restricted Delivery Fee                                       |                                           |  |
| Return Receipt Showing to Whom & Date Delivered               | 1.00                                      |  |
| Return Receipt Showing to Whom, Date, and Addressee's Address |                                           |  |
| TOTAL Postage & Fees                                          | 4.36                                      |  |
| Postmark of Date                                              | FEB 3 1994<br>FARMINGTON NM 87401<br>USPS |  |

PS Form 3800, March 1993

Z 688 079 363



# **Receipt for Certified Mail**

No Insurance Coverage Provided  
Do not use for International Mail  
(See Reverse)

|                                                               |                                           |  |
|---------------------------------------------------------------|-------------------------------------------|--|
| Sent to                                                       | CANDID INC. - LAW COY                     |  |
| Street and No.                                                | 7415 E. Main ST.                          |  |
| P.O., State and ZIP Code                                      | Farmington, NM 87402                      |  |
| Postage                                                       | \$2.36                                    |  |
| Certified Fee                                                 | 1.00                                      |  |
| Special Delivery Fee                                          |                                           |  |
| Restricted Delivery Fee                                       |                                           |  |
| Return Receipt Showing to Whom & Date Delivered               | 1.00                                      |  |
| Return Receipt Showing to Whom, Date, and Addressee's Address |                                           |  |
| TOTAL Postage & Fees                                          | 4.36                                      |  |
| Postmark of Date                                              | FEB 3 1994<br>FARMINGTON NM 87401<br>USPS |  |

PS Form 3800, March 1993

Z 688 079 366



# **Receipt for Certified Mail**

No Insurance Coverage Provided  
Do not use for International Mail  
(See Reverse)

|                                                               |                                           |  |
|---------------------------------------------------------------|-------------------------------------------|--|
| Sent to                                                       | TICARILLA APACHE - VERDE                  |  |
| Street and No.                                                | P.O. Box 507                              |  |
| P.O., State and ZIP Code                                      | Dulce, N.M. 87528                         |  |
| Postage                                                       | \$2.36                                    |  |
| Certified Fee                                                 | 1.00                                      |  |
| Special Delivery Fee                                          |                                           |  |
| Restricted Delivery Fee                                       |                                           |  |
| Return Receipt Showing to Whom & Date Delivered               | 1.00                                      |  |
| Return Receipt Showing to Whom, Date, and Addressee's Address |                                           |  |
| TOTAL Postage & Fees                                          | 4.36                                      |  |
| Postmark of Date                                              | FEB 3 1994<br>FARMINGTON NM 87401<br>USPS |  |

PS Form 3800, March 1993

Is your RETURN ADDRESS completed on the reverse side?

**SENDER:**

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

ATTN: BRUCE VOILES  
MERIDIAN OIL CO.  
P.O. BOX 4289  
FARMINGTON, N.M. 87401-4289

4a. Article Number

7-688 079 365

4b. Service Type

- |                                               |                                                     |
|-----------------------------------------------|-----------------------------------------------------|
| <input type="checkbox"/> Registered           | <input type="checkbox"/> Insured                    |
| <input checked="" type="checkbox"/> Certified | <input type="checkbox"/> COD                        |
| <input type="checkbox"/> Express Mail         | <input type="checkbox"/> Return Receipt Merchandise |

7. Date of Delivery

2-4-94

5. Signature (Addressee)

6. Signature (Agent)

*[Signature]*

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991

★U.S. GPO: 1992-323-402

**DOMESTIC RETURN RECEIPT**

Return Receipt Service

Tr-

Is your RETURN ADDRESS completed on the reverse side?

**SENDER:**

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
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- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

ATTN: DARRELL TAFOYA  
BIA-BRANCH OF REALTY  
P.O. Box 167  
DULCE, N.M. 87528

4a. Article Number

Z-688079364

4b. Service Type

- |                                               |                                                         |
|-----------------------------------------------|---------------------------------------------------------|
| <input type="checkbox"/> Registered           | <input type="checkbox"/> Insured                        |
| <input checked="" type="checkbox"/> Certified | <input type="checkbox"/> COD                            |
| <input type="checkbox"/> Express Mail         | <input type="checkbox"/> Return Receipt for Merchandise |

7. Date of Delivery

2/7/94

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

Kenny Hanning

PS Form 3811, December 1991

★U.S. GPO: 1992-323-402

**DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service

side?

**SENDER:**

- Complete items 1 and/or 2 for additional services.
  - Complete items 3, and 4a & b.
  - Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space is not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number. The Return Receipt will show to whom the article was delivered and the date received.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
  2. ☐ Restricted Delivery
- Consult postmaster for fee.

Article Addressed to:

ATTN: DAN COY  
CONOCO INC.  
7415 EAST MAIN ST.  
FARMINGTON, NM 87402

4a. Article Number

2-688 07936

4b. Service Type

- |                                               |                                                     |
|-----------------------------------------------|-----------------------------------------------------|
| <input type="checkbox"/> Registered           | <input type="checkbox"/> Insured                    |
| <input checked="" type="checkbox"/> Certified | <input type="checkbox"/> COD                        |
| <input type="checkbox"/> Express Mail         | <input type="checkbox"/> Return Receipt Merchandise |

7. Date of Delivery

2/1/94

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

L. Herring

Is your RETURN A?

PS Form 3811, December 1991

★U.S. GPO: 1992-323-402

**DOMESTIC RETURN RECEIPT**