

230453073 SWD

11/12/02

NEELEY CONSULTING SERVICE

1305 E. 33rd Street
FARMINGTON, NEW MEXICO 87401
(505) 486-0211

31 x 25 8/16
C. Lee

OCT 28

New Mexico Oil Conservation Division
1220 South Francis Drive
Santa Fe, New Mexico 87505

Attention: Mr. David Catanach

October 25, 2002

Certified Mail RRR # 7002 0510 0002 9439 4891

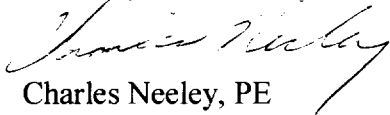
Re: Application for Administrative Approval - Authorization to Inject:
Richardson Operating Company
Salty Dog SWD No. 5

Dear Mr. Catanach:

Enclosed is an application from Richardson Operating Company for administrative approval to inject into the Salty Dog SWD No. 5. The application and information is arranged in the order specified by form C-108.

If you have any questions or concerns regarding the application, please feel free to contact me at 505-486-0211. Your consideration of this application is greatly appreciated.

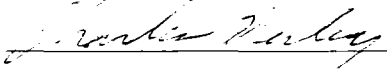
Sincerely,


Charles Neeley, PE

APPLICATION FOR AUTHORIZATION TO INJECT

- I. PURPOSE: _____ Secondary Recovery _____ Pressure Maintenance X Disposal _____ Storage
Application qualifies for administrative approval? _____ Yes _____ No
- II. OPERATOR: Richardson Operating Company
ADDRESS: 3100 La Plata Highway, Farmington, NM 87401
CONTACT PARTY: Drew Carnes PHONE: 505-564-3100
- III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection.
Additional sheets may be attached if necessary. **See Appendix 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 Appendix 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. **See Supplemental Data**
- VII. Attach data on the proposed operation, including: **See Supplemental Data**
1. Proposed average and maximum daily rate and volume of fluids to be injected;
 2. Whether the system is open or closed;
 3. Proposed average and maximum injection pressure;
 4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
 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.).
- *VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic 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 Supplemental Data**
- IX. Describe the proposed stimulation program, if any. **See Supplemental Data**
- *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 Supplemental Data
- *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. **There are no known water wells within 1 mile.**
- 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 sources of drinking water. **See Supplemental Data**
- 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: Charles Neeley TITLE: Agent

SIGNATURE:  DATE: 12/10/92

- * 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 circumstances of the earlier submittal: _____

III. WELL DATA

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.

- (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 the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

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, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

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

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.

APPLICATION FOR AUTHORIZATION TO INJECT

FORM C-108 SUPPLEMENTAL DATA

Salty Dog SWD No.5
1825' FSL & 990' FWL
SEC 30, T30N, R14W
SAN JUAN COUNTY, NEW MEXICO

Page 1

- I. Purpose to inject: Produced water disposal.
- II. Operator: Richardson Operating Company
3100 La Plata Highway
Farmington, New Mexico 87401
Contact person: Drew Carnes 505-564-3100
- III. Well data sheet is attached in Appendix A.
- IV. This is not an expansion of an existing project.
- V. See attached map that identifies all wells and leases within two miles of the proposed SWD showing the well's area of review. See Appendix B.
- VI. There is one well within the area of review that penetrated the proposed Mesa Verde injection zone. This well is the Kelly No.1 located 990' FSL & 880' FEL, Sec 25, T30N, R15W, NMPM, San Juan County, New Mexico; originally drilled by Jerome P. McHugh the well is currently operated by Redwolf Production, Inc.

Tabulation of Data

| <u>Well Type</u> | <u>Construction</u> | <u>Date Drilled</u> | <u>Depth</u> | <u>Record of Completion</u> |
|------------------|---------------------|---------------------|--------------|-----------------------------|
| Gas & Oil | Cased Hole | 7/31/85 | 5634' | Form C-105 Attached |

There are no known plugged wells of public record within the area of review which penetrated the proposed Mesa Verde injection zone.

- VII. Data on proposed injection operations are as follows:
 - 1. Mesa Verde Formation
 - Average Injection Rate: 1500 bwpd
 - Maximum Injection Rate: 2000 bwpd
 - 2. Closed system. Water would be trucked or piped into tanks on location.
 - 3. Mesa Verde Formation
 - Average injection pressure: 350 psi.
 - Maximum injection pressure: 2000 psi.
 - 4. Produced Fruitland Coal and Pictured Cliffs water with TDS of 20000 ppm to 40000 ppm will be injected into the Mesa Verde zone in the Salty Dog No.5 well. Representative analyses of produced water from the Basin Fruitland Coal and Pictured Cliffs Formations that is to be disposed are enclosed in Appendix D.

FORM C-108 SUPPLEMENTAL DATA (Continued)

Richardson Operating Company

Salty Dog SWD No. 5

Page 2

VII. Data on proposed injection operations (Continued):

5. Chemical analysis of water obtained from a Mesa Verde well in the area is attached in Appendix D.

VIII. Geologic and Lithologic data on the injection zone.

1. The proposed zone of injection is in the Mesa Verde Formation – Upper Cretaceous (includes Cliff House Ss, Menefee Fm and Pt Lookout Ss). The Mesa Verde Formation extends from 1890' to 3614'. This zone will be perforated in porous sands estimated between 2430' and 3375'. The Salty Dog No.5 (Mesa Twin Mounds No.2) was originally drilled to produce the Dakota and Gallup formations; later it was to be P&A. The Salty Dog No.5 will be reentered and the 5 1/2" casing will be cleaned out to 3500'. A cast iron bridge plug set above the existing DV tool (3665') and a casing integrity test run.
 2. Lithology: Mesa Verde Formation including sands in the Cliff House, Menefee and Pt Lookout members with porosity's ranging from 6% - 15%.
 3. There are no known sources of drinking water overlying or immediately underlying the proposed injection zones.
- IX. No stimulation procedures have been planned. At the time of completion, the zone may be acidized, a step rate test will be performed to determine if the desired injection rates and pressures can be achieved without the need for stimulation.
- X. Open hole logs that cover the well down through the Dakota Formation have been previously submitted to the NMOCD; when the well was originally drilled.
- XI. A search of the State Engineers records indicates there are no known water wells within a one mile radius of the proposed Salty Dog SWD No.5 well.
- XII. At the present time, geologic studies of the area do not indicate fault communication between the proposed injection zone and any underground potential sources of drinking water.
- XIII. Proof of notice is attached. See Appendix D.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

| | |
|------------------------|--|
| NO. OF COPIES RECEIVED | |
| DISTRIBUTION | |
| SANTA FE | |
| FILE | |
| U.S.C.S. | |
| LAND OFFICE | |
| OPERATOR | |

| |
|--|
| 5a. Indicate Type of Lease |
| State <input type="checkbox"/> Fee <input checked="" type="checkbox"/> |
| 5. State Oil & Gas Lease No. |

| | | | | | |
|--|--|---|--|--|--|
| 1. TYPE OF WELL | | OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> DRY <input type="checkbox"/> OTHER <input type="checkbox"/> | | 7. Unit Agreement Name | |
| 2. TYPE OF COMPLETION | | NEW WELL <input checked="" type="checkbox"/> WORK OVER <input type="checkbox"/> DEEPEN <input type="checkbox"/> PLUG BACK <input type="checkbox"/> DIFF. RESVR. <input type="checkbox"/> OTHER <input type="checkbox"/> | | 8. Farm or Lease Name | |
| 3. Name of Operator | | JEROME P. McHUGH | | 9. Well No. | |
| 4. Address of Operator | | P O Box 809, Farmington, NM 87499 | | 10. Field and Pool, or wellsect | |
| 5. Location of well | | UNIT LETTER <u>P</u> LOCATED <u>990</u> FEET FROM THE <u>South</u> LINE AND <u>880</u> FEET FROM <u>East</u> LINE OF SEC. <u>25</u> TWP. <u>30N</u> RGE. <u>15W</u> NMPM | | 11. County | |
| 6. Date Spudded | | 18. Date T.D. Reached | | 17. Date Compl. (Ready to Prod.) | |
| 7/31/85 | | 8/7/85 | | 9-23-85** | |
| 18. Elevations (DF, RKB, RT, GR, etc.) | | 19. Elev. Casinghead | | 20. Elev. Completion | |
| 5365' GL; 5380' KB | | 5365' GL | | 5365' GL | |
| 21. Total Depth | | 22. Plug Back T.D. | | 23. If Multiple Compl., How Many DK is TA. | |
| 5634' | | 5330' | | Only GA completed. | |
| 24. Producing Interval(s), of this completion - Top, Bottom, Name | | 4524-4968, Gallup | | 25. Was Directional Survey Made | |
| 26. Type Electric and Other Logs Run | | FDC. DIL. GR-CCL | | 27. Was Well Cased | |
| 28. CASING RECORD (Report all strings set in well) | | | | 29. Was Well Cased | |
| CASING SIZE | | WEIGHT LB./FT. | | DEPTH SET | |
| 9-5/8" | | 36# | | 272' KB | |
| 4-1/2" | | 10.5# | | 5631' KB | |
| w/ 2% gel, 6#/sk gilsonite & 1#/sk flocele); 2nd stg 1255 cf (480 sx 65/35 poz w/ 12% gel & 1#/sk flocele & 75 sx class B). TOTAL SLURRY 1784 CF | | | | | |
| 30. LINER RECORD | | 31. TUBING RECORD | | 32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC. | |
| SIZE | | TOP | | BOTTOM | |
| None | | | | | |
| 33. PRODUCTION | | 34. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC. | | 35. PRODUCTION | |
| Date First Production | | Production Method (Flowing, gas lift, pumping - Size and type pump) | | Well Status (Prod. or Shut-in, SI W.O. gas PL | |
| 9-23-85** | | flowing | | SI W.O. gas PL | |
| Date of Test | | Hours Tested | | Choke Size | |
| 1-16-86 | | 12 | | 16/64" | |
| Flow Testing Press. | | Casing Pressure | | Calculated 24-Hour Rate | |
| 65 psi | | 630 psi SI | | 66 BOPD | |
| 34. Disposition of Gas (Sold, used for fuel, vented, etc.) | | Test Witnessed By | | Hazen | |
| Vented during test; to be sold. | | | | | |
| 35. List of Attachments | | ** 1st new oil swabbed to tank during completion operations. | | | |

I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief.

SIGNED James S. HazenTITLE Field Supt.DATE 1/24/86

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, items 30 through 34 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico

Northwestern New Mexico

| | | | |
|--------------------------|------------------------|-------------------------------|-------------------------|
| T. Anhy _____ | T. Canyon _____ | T. Ojo Alamo _____ 455 | T. Penn. "B" _____ |
| T. Salt _____ | T. Strawn _____ | T. Kirtland-Fruitland 595/645 | T. Penn. "C" _____ |
| B. Salt _____ | T. Atoka _____ | T. Pictured Cliffs * 735 | T. Penn. "D" _____ |
| T. Yates _____ | T. Miss _____ | T. Cliff House _____ 2427 | T. Leadville _____ |
| T. 7 Rivers _____ | T. Devonian _____ | T. Menefee _____ 2650 | T. Madison _____ |
| T. Queen _____ | T. Silurian _____ | T. Point Lookout _____ 3400 | T. Elbert _____ |
| T. Grayburg _____ | T. Montoya _____ | T. Mancos _____ 3600 | T. McCracken _____ |
| T. San Andres _____ | T. Simpson _____ | T. Gallup _____ 4400 | T. Ignacio Qtzite _____ |
| T. Glorieta _____ | T. McKee _____ | Base Greenhorn ** 5363 | T. Granite _____ |
| T. Paddock _____ | T. Ellenburger _____ | T. Dakota _____ 5420 | T. _____ |
| T. Elinebry _____ | T. Gr. Wash _____ | T. Morrison _____ | T. * Lewis 850 |
| T. Tubb _____ | T. Granite _____ | T. Todilto _____ | T. **Sanoste 4950 |
| T. Drinkard _____ | T. Delaware Sand _____ | T. Entrada _____ | T. Carlile 5060 |
| T. Abo _____ | T. Bone Springs _____ | T. Wingate _____ | T. T of Greenhorn 5290 |
| T. Wolfcamp _____ | T. _____ | T. Chinle _____ | T. _____ |
| T. Penn. _____ | T. _____ | T. Permian _____ | T. _____ |
| T. Cisco (Bough C) _____ | T. _____ | T. Penn. "A" _____ | T. _____ |

OIL OR GAS SANDS OR ZONES

| | |
|----------------------------|----------------------------|
| No. 1, from _____ to _____ | No. 4, from _____ to _____ |
| No. 2, from _____ to _____ | No. 5, from _____ to _____ |
| No. 3, from _____ to _____ | No. 6, from _____ to _____ |

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

| | |
|---------------------------------|-------|
| No. 1, from _____ to _____ feet | _____ |
| No. 2, from _____ to _____ feet | _____ |
| No. 3, from _____ to _____ feet | _____ |
| No. 4, from _____ to _____ feet | _____ |

FORMATION RECORD (Attach additional sheets if necessary)

| From | To | Thickness in Feet | Formation | From | To | Thickness in Feet | Formation |
|------|----|----------------------|---|------|----|----------------------|-----------|
| | | | ITEM #24 and ITEM #31 - Perforations | | | | Dakota |
| | | | 5434, 36, 38, 48, 62, 70, 78, 80, 82, 97, 98; | | | | |
| | | | 5500, 01, 11, 14, 15, 16, 17, 18, 22, 30, 35, 49, 52, 55. Total of 25 holes. | | | | |
| | | | Temporarily Abandoned Dakota perfs 5434-5555' by setting Baker Model "S" drillable bridge plug at 5330' KB. Tested to 4000 psi. Test good. | | | | |

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, items 30 through 34 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico

Northwestern New Mexico

| | | | |
|--------------------------|------------------------|-------------------------------|-------------------------|
| T. Anhy _____ | T. Canyon _____ | T. Ojo Alamo _____ 455 | T. Penn. "B" _____ |
| T. Salt _____ | T. Strawn _____ | T. Kirtland-Fruitland 595/645 | T. Penn. "C" _____ |
| T. Salt _____ | T. Atoka _____ | T. Pictured Cliffs _____ 735 | T. Penn. "D" _____ |
| T. Yates _____ | T. Miss _____ | T. Cliff House _____ 2427 | T. Leadville _____ |
| T. 7 Rivers _____ | T. Devonian _____ | T. Menefee _____ 2650 | T. Madison _____ |
| T. Queen _____ | T. Silurian _____ | T. Point Lookout _____ 3400 | T. Elbert _____ |
| T. Grayburg _____ | T. Montoya _____ | T. Mancos _____ 3600 | T. McCracken _____ |
| T. San Andres _____ | T. Simpson _____ | T. Gallup _____ 4400 | T. Ignacio Qtzite _____ |
| T. Glorieta _____ | T. McKee _____ | Base Greenhorn _____ 5363 | T. Granite _____ |
| T. Paddock _____ | T. Ellenburger _____ | T. Dakota _____ 5420 | T. * Lewis 850 |
| T. Elinebry _____ | T. Gr. Wash _____ | T. Morrison _____ | T. **Sanoste 4950 |
| T. Tubb _____ | T. Granite _____ | T. Todilto _____ | T. Carlile 5060 |
| T. Drinkard _____ | T. Delaware Sand _____ | T. Entrada _____ | T. T of Greenhorn 5290 |
| T. Abo _____ | T. Bone Springs _____ | T. Wingate _____ | T. _____ |
| T. Wolfcamp _____ | T. _____ | T. Chinle _____ | T. _____ |
| T. Penn. _____ | T. _____ | T. Permian _____ | T. _____ |
| T. Cisco (Bough C) _____ | T. _____ | T. Penn. "A" _____ | T. _____ |

OIL OR GAS SANDS OR ZONES

| | |
|----------------------------|----------------------------|
| No. 1, from _____ to _____ | No. 4, from _____ to _____ |
| No. 2, from _____ to _____ | No. 5, from _____ to _____ |
| No. 3, from _____ to _____ | No. 6, from _____ to _____ |

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

| | |
|----------------------------|-------------|
| No. 1, from _____ to _____ | feet. _____ |
| No. 2, from _____ to _____ | feet. _____ |
| No. 3, from _____ to _____ | feet. _____ |
| No. 4, from _____ to _____ | feet. _____ |

FORMATION RECORD (Attach additional sheets if necessary)

| From | To | Thickness in Feet | Formation | From | To | Thickness in Feet | Formation |
|------|----|-------------------|---|------|----|-------------------|-----------|
| | | | ITEM #30 - Abandoned Dakota perfs by setting Baker Model "S" drillable bridge plug at 5330' KB. | | | | |
| | | | ITEM #31 - Perforations | | | | Gallup |
| | | | 4524, 30, 34, 56, 60, 66, 90, 98; | | | | |
| | | | 4600; 02, 04, 06, 26, 34; | | | | |
| | | | 4786, 87, 92, 93, 99; | | | | |
| | | | 4800, 08, 11, 22, 24, 34, 36, 38, 45, 58, | | | | |
| | | | 67, 73, 76; | | | | |
| | | | 4948, 50, 68. Total of 35 holes. | | | | |

RICHARDSON OPERATING COMPANY
SALTY DOG NO. 5

APPLICATION FOR AUTHORIZATION TO INJECT

LIST OF APPENDIXES

| | |
|--|-------------------|
| INJECTION WELL DATA | APPENDIX A |
| OFFSET WELLS, LEASES & AREA OF REVIEW | APPENDIX B |
| PRODUCED WATER ANALYSIS | APPENDIX C |
| PROOF OF NOTIFICATION | APPENDIX D |

APPENDIX A

INJECTION WELL DATA

The following section contains the NMOCD Injection Well Data Sheets

WELL LOCATION: 1825' FSL & 990' FWL
FOOTAGE LOCATION

WELLBORE SCHEMATIC

Surface Casing

Intermediate Casing – N/A

Production Casing

(Perforated or Open Hole; indicate which)

INJECTION WELL DATA SHEETTubing Size: 2 7/8"Lining Material: Plastic, if anyType of Packer: Lockset typePacker Setting Depth: approx 2400'

Other Type of Tubing/Casing Seal (if applicable): _____

Additional Data

1. Is this a new well drilled for injection? _____ Yes X No

If no, for what purpose was the well originally drilled? This well was originally drilled as a Gallup & Basin Dakota Test. Completed in the Gallup/Dakota, the well was approved P&A, Oct 1995

2. Name of the Injection Formation: Mesa Verde

3. Name of Field or Pool (if applicable): N/A

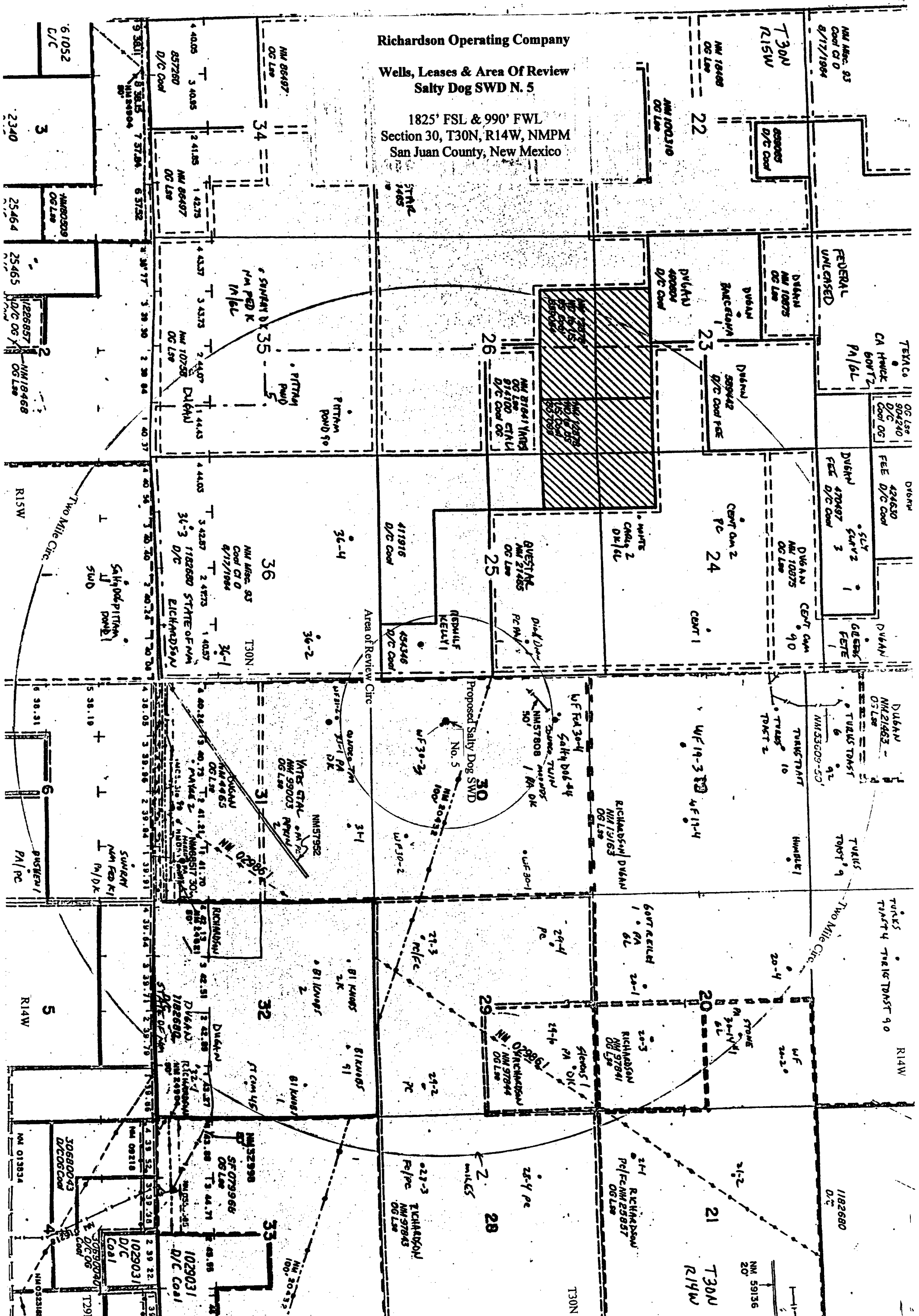
4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. The Dakota was perforated with 23 holes, 5504' – 5597' the Gallup perforated with 34 holes, 4850' – 5044' and 39 holes, 4607' – 4772'. A 138 sx cement inside plug was set from 5635' (PBD) to 4298' over Gallup perforations. A 17 sx cement inside plug was set from 3365' to 3215' to cover Pt Lookout top, a 17sx cement inside plug was set from 1882' to 1732' to cover Mesa Verde top, a 17sx cement inside plug was set from 892 to 742' to cover Pictured Cliffs top, a 17sx cement inside plug was set from 561' to 411' to cover Fruitland top and a 41 sx cement inside plug was set from 297' to surface.

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: Overlying tops: Pictured Cliffs 825', Fruitland 530'. Underlying tops: Gallup 4605' and Dakota 5500'.

APPENDIX B

MAP – OFFSET WELLS, LEASES & AREA OF REVIEW

1825' FSL & 990' FWL
Section 30, T30N, R14W, NMPM
San Juan County, New Mexico



APPENDIX C

PRODUCED WATER ANALYSIS

The following water analysis are intended to be representative samples of the Basin Fruitland Coal and Pictured Cliffs formation waters that will be disposed.

Also, enclosed is an analysis of water swabbed from the Mesa Verde Formation out of the STELLA NEEDS A COM #1E well, located NE/SW, Sec 36, T30N, R14W, NMPM, San Juan County, New Mexico.

API WATER ANALYSIS

Company: DUGAN PROD.

Field:

Well: STELLA NEEDS A COM #1E

Depth:

Location: POINT LOOKOUT/MESA VERDE

State: N.M.

County:

W.C.N.A. Sample No.: S106695

Legal Description:

Lease or Unit:

Water.B/D:

Sampling Point: SWAB

Sampled By: J. ALEXANDER

Date Sampled: 04/24/95

Type of Water(Produced, Supply, ect.):

PROPERTIES

pH: 6.30
 Specific Gravity: 1.050
 Resistivity (ohm-meter): .13
 Temperature: 78F

Iron, Fe(total): 250
 Sulfide as H₂S: 0
 Total Hardness:
 (see below)

DISSOLVED SOLIDS

| CATIONS | mg/l | me/l |
|----------------|-------|------|
| Sodium, Na: | 20470 | 890 |
| Calcium, Ca: | 2084 | 104 |
| Magnesium, Mg: | 170 | 14 |
| Barium, Ba: | N/A | N/A |
| Potassium, K: | | |

Sample(ml): 1.0 ml of EDTA: 5.20
 Sample(ml): 1.0 ml of EDTA: .70

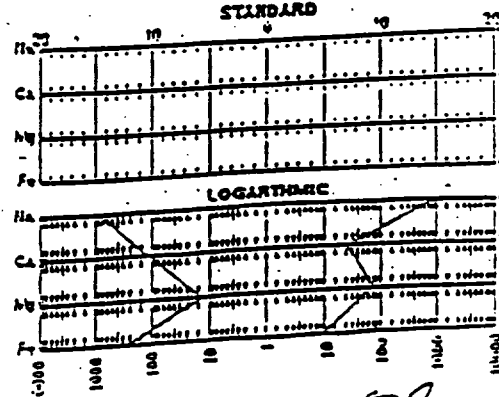
| ANIONS | mg/l | me/l |
|---------------------------------|-------|------|
| Chloride, Cl: | 31905 | 900 |
| Sulfate, SO ₄ : | 3750 | 78 |
| Carbonate, CO ₃ : | | |
| Bicarbonate, HCO ₃ : | 1830 | 30 |

Sample(ml): 1.0 ml of AgNO₃: 1.80
 Sample(ml): 1.0 ml of H₂SO₄:
 Sample(ml): 1.0 ml of H₂SO₄: .30

Total Dissolved
 Solids (calculated): 60209
 Total Hardness: 5900

Sample(ml): 1.0 ml of EDTA:

REMARKS AND RECOMMENDATIONS:

WATER PATTERNS-me/l
STANDARD

Analyst: DC
 Date Analyzed: 4/24/95

BJ SERVICES COMPANY

WATER ANALYSIS #FW01W266

FARMINGTON LAB

GENERAL INFORMATION

| | | | |
|---------------|----------------------|----------------|----------|
| OPERATOR: | RICHARDSON OPERATING | DEPTH: | |
| WELL: | BUSHMAN FEDERAL 6-1 | DATE SAMPLED: | 10/19/98 |
| FIELD: | SEC06/T29N/R14W | DATE RECEIVED: | 10/20/98 |
| SUBMITTED BY: | BRAD SALZMAN | COUNTY: | SAN JUAN |
| WORKED BY: | D. SHEPHERD | FORMATION: | PC/PC |
| PHONE NUMBER: | | STATE: | NM |

SAMPLE DESCRIPTION

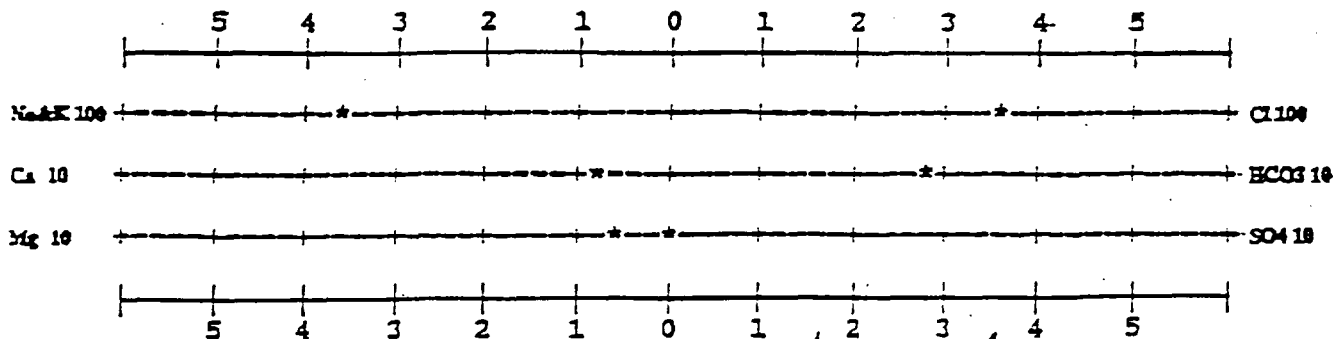
SAMPLE FOR ANALYSIS

PHYSICAL AND CHEMICAL DETERMINATIONS

| | | | | |
|--------------------------|------------|------------------------|-----|------------|
| SPECIFIC GRAVITY: | 1.015 | @ 74°F | PH: | 7.49 |
| RESISTIVITY (MEASURED): | 0.280 | ohms @ 76°F | | |
| IRON (FE++) : | 0 ppm | SULFATE: | | 39 ppm |
| CALCIUM: | 158 ppm | TOTAL HARDNESS | | 710 ppm |
| MAGNESIUM: | 77 ppm | BICARBONATE: | | 1,719 ppm |
| CHLORIDE: | 12,574 ppm | SODIUM CHLORIDE(Calc) | | 20,685 ppm |
| SODIUM+POTASS: | 8,493 ppm | TOT. DISSOLVED SOLIDS: | | 23,536 ppm |
| H2S: NO TRACE | | POTASSIUM (PPM): | | 110 PPM |

REMARKS

SAMPLED FROM SEPRATOR

STIFF TYPE PLOT (IN MEQ/L)

ANALYST

D. SHEPHERD

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

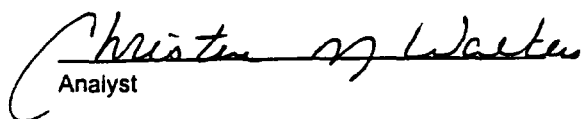
Water Analysis

| | | | |
|--------------------|------------------------|-------------------|-----------|
| Client: | Richardson Operating | Project #: | 98094-001 |
| Sample ID: | Ropco 9-3 <i>FC/PC</i> | Date Reported: | 08-30-02 |
| Laboratory Number: | 23689 | Date Sampled: | 08-29-02 |
| Sample Matrix: | Water | Date Received: | 08-29-02 |
| Preservative: | Cool | Date Analyzed: | 08-30-02 |
| Condition: | Cool & Intact | Chain of Custody: | 10205 |

| Parameter | Analytical Result | Units |
|-------------------------------|-------------------|-------|
| Total Dissolved Solids @ 180C | 34,600 | mg/L |

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: Ropco Wells.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

Water Analysis

| | | | |
|--------------------|----------------------|-------------------|-----------|
| Client: | Richardson Operating | Project #: | 98094-001 |
| Sample ID: | Ropco 8-4 <i>7C</i> | Date Reported: | 08-30-02 |
| Laboratory Number: | 23690 | Date Sampled: | 08-29-02 |
| Sample Matrix: | Water | Date Received: | 08-29-02 |
| Preservative: | Cool | Date Analyzed: | 08-30-02 |
| Condition: | Cool & Intact | Chain of Custody: | 10205 |

| Parameter | Analytical Result | Units |
|-------------------------------|-------------------|-------|
| Total Dissolved Solids @ 180C | 31,500 | mg/L |

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: Ropco Wells.

Christine M. Walters
Analyst

QCG. JDS
Review

APPENDIX D

PROOF OF NOTIFICATION

The following section contains proof of notification of the surface owner - BLM, proof of notifications of the 8 lease owners within the area of review and an affidavit of newspaper publication of legal notice.

AFFIDAVIT OF PUBLICATION

Ad No. 46954

STATE OF NEW MEXICO County of San Juan:

CONNIE PRUITT, being duly sworn says:
That she is the Advertising Manager of THE
DAILY TIMES, a daily newspaper of general
circulation published in English at Farmington,
said county and state, and that the hereto
attached Legal Notice was published in a
regular and entire issue of the said DAILY
TIMES, a daily newspaper duly qualified for
the purpose within the meeting of Chapter 167
of the 1937 Session Laws of the State of New
Mexico for publication on the following day(s):
Thursday, October 24, 2002.
And the cost of the publication is \$32.61.

Connie Pruitt

ON 10-24-02 CONNIE PRUITT appeared
before me, whom I know personally to be the
person who signed the above document.

Genny Beck
My Commission Expires April 2, 2004.

COPY OF PUBLICATION

918 Legals
LEGAL NOTICE

Richardson Operating
Company proposes to reenter
and convert the Mesa Twin
Mounds No. 2 from P&A
status into a produced water
disposal well, Salty Dog SWD
No. 5. The well is located:
1825' FSL & 990' FWL, Sec
30, T30N, R14W, San Juan
County, NM. Pictured Cliffs
and Basin Fruitland Coal
produced water is to be
disposed of into the Mesa
Verde Formation: 1819'-3614'
at a maximum rate of 2000
bwpd and a maximum
pressure of 1200 psi.

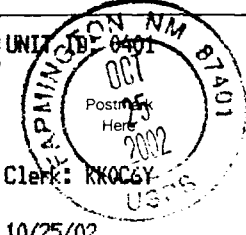
Questions concerning this
proposal can be sent to Drew
Carnes, Richardson Operating
Company, 3100 La Plata
Highway, Farmington, NM
87401 (505) 564-3100.

Interested parties should file
comments or objections and
requests for hearing with the
New Mexico Oil Conservation
Division, 1220 South St.
Francis Dr., Santa Fe, NM
87505, within 15 days.

Legal No. 46954, published in
The Daily Times, Farmington,
New Mexico, Thursday,
October 24, 2002.

Sally De 54312 #5
Land Owner

7002 0510 0002 9439 4907

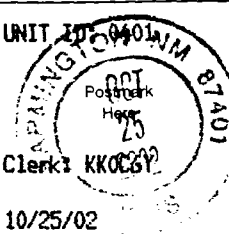
| U.S. Postal Service CERTIFIED MAIL RECEIPT (Domestic Mail Only; No Insurance Coverage Provided) | | | | | | | | |
|--|------------------------------|---|---------|---------------------------|---------------------------|----------------------|-------------|------------------------------|
| FARMINGTON, NM 87401 | | | | | | | | |
| Postage | \$ 1.29 |  | | | | | | |
| Certified Fee | 2.30 | | | | | | | |
| Return Receipt Fee (Endorsement Required) | 1.75 | | | | | | | |
| Restricted Delivery Fee (Endorsement Required) | | | | | | | | |
| Total Postage & Fees | \$ 5.34 | 10/25/02 | | | | | | |
| <table border="1"><tr><td>Sent To</td><td>Bureau of Land Management</td></tr><tr><td>Street, Apt. or PO Box</td><td>1235 LaPlata Highway</td></tr><tr><td>City, State</td><td>Farmington, New Mexico 87401</td></tr></table> | | | Sent To | Bureau of Land Management | Street, Apt. or PO Box | 1235 LaPlata Highway | City, State | Farmington, New Mexico 87401 |
| Sent To | Bureau of Land Management | | | | | | | |
| Street, Apt. or PO Box | 1235 LaPlata Highway | | | | | | | |
| City, State | Farmington, New Mexico 87401 | | | | | | | |

PS Form 3800, June 2002 Edition Instructions

7002 0510 0002 9439 4921

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

ARTESIA, NM 88210

| | | |
|--|----------------|---|
| Postage | \$ 1.29 |  |
| Certified Fee | 2.30 | |
| Return Receipt Fee (Endorsement Required) | 1.75 | |
| Restricted Delivery Fee (Endorsement Required) | | |
| Total Postage & Fees | \$ 5.34 | |

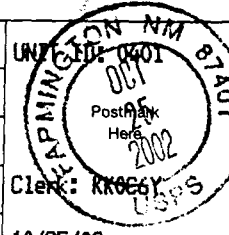
Sent To: **Yates Petroleum Corp**
105 South 4th Street
Artesia, New Mexico 88210

PS Form 3800

7002 0510 0002 9439 4945

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

ARTESIA, NM 88210

| | | |
|--|----------------|---|
| Postage | \$ 1.29 |  |
| Certified Fee | 2.30 | |
| Return Receipt Fee (Endorsement Required) | 1.75 | |
| Restricted Delivery Fee (Endorsement Required) | | |
| Total Postage & Fees | \$ 5.34 | |

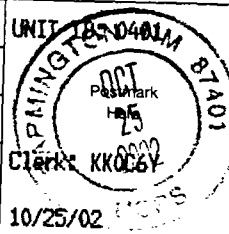
Sent To: **Myco Industries Inc**
105 South 4th Street
Artesia, New Mexico 88210

PS Form 3800

7002 0510 0002 9439 4914

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

FARMINGTON, NM 87499

| | | |
|--|----------------|--|
| Postage | \$ 1.29 |  |
| Certified Fee | 2.30 | |
| Return Receipt Fee (Endorsement Required) | 1.75 | |
| Restricted Delivery Fee (Endorsement Required) | | |
| Total Postage & Fees | \$ 5.34 | |

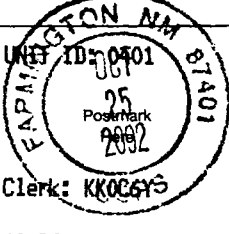
Sent To: **Burlington Resources O&G Co LP**
P.O. Box 4289
Farmington, New Mexico 87499

PS Form 3800

7002 0510 0002 9439 4938

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

ARTESIA, NM 88210

| | | |
|--|----------------|--|
| Postage | \$ 1.29 |  |
| Certified Fee | 2.30 | |
| Return Receipt Fee (Endorsement Required) | 1.75 | |
| Restricted Delivery Fee (Endorsement Required) | | |
| Total Postage & Fees | \$ 5.34 | |

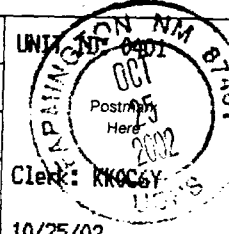
Sent To: **Yates Drilling Co.**
105 South 4th Street
Artesia, New Mexico 88210

PS Form 3800

7002 0510 0002 9439 4986

U.S. Postal Service
CERTIFIED MAIL RECEIPT
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FARMINGTON, NM 87499

| | | |
|--|----------------|---|
| Postage | \$ 1.29 |  |
| Certified Fee | 2.30 | |
| Return Receipt Fee (Endorsement Required) | 1.75 | |
| Restricted Delivery Fee (Endorsement Required) | | |
| Total Postage & Fees | \$ 5.34 | |

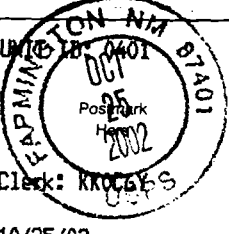
Sent To: **Redwolf Production Inc.**
P.O. Box 5382
Farmington, New Mexico 87499

PS Form 3800

7002 0510 0002 9439 4952

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

ARTESIA, NM 88210

| | | |
|--|----------------|---|
| Postage | \$ 1.29 |  |
| Certified Fee | 2.30 | |
| Return Receipt Fee (Endorsement Required) | 1.75 | |
| Restricted Delivery Fee (Endorsement Required) | | |
| Total Postage & Fees | \$ 5.34 | |

Sent To: **Abo Petroleum Corp**
105 South 4th Street
Artesia, New Mexico 88210

PS Form 3800

Salty Dog 5017 #5

Lease Owners

Page 2

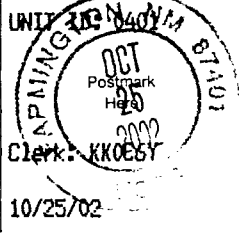
7002 0510 0002 9439 4969

**U.S. Postal Service
CERTIFIED MAIL RECEIPT**

(Domestic Mail Only; No Insurance Coverage Provided)

FARMINGTON, NM 87499

| | |
|---|----------------|
| Postage | \$ 1.29 |
| Certified Fee | 2.30 |
| Return Receipt Fee (Endorsement Required) | 1.75 |
| Restricted Delivery Fee (Endorsement Required) | |
| Total Postage & Fees | \$ 5.34 |



Sent To **Dugan Production Corp**
Street, Apt or PO Box **P.O. Box 420**
City, State **Farmington, New Mexico 87499**

PS Form 38

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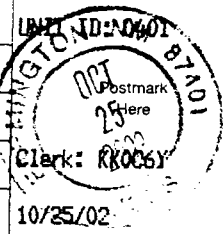
7002 0510 0002 9439 4976

**U.S. Postal Service
CERTIFIED MAIL RECEIPT**

(Domestic Mail Only; No Insurance Coverage Provided)

DENVER, CO 80202

| | |
|---|----------------|
| Postage | \$ 1.29 |
| Certified Fee | 2.30 |
| Return Receipt Fee (Endorsement Required) | 1.75 |
| Restricted Delivery Fee (Endorsement Required) | |
| Total Postage & Fees | \$ 5.34 |



Sent To **Questar Exploration and Prod Co**
Street, Apt or PO Box **1331 17th St, Suite 800**
City, State **Denver, Colorado 80202**

PS Form 38

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