BEFORE THE NEW MEXICO OIL CONSERVATION DIVISION

APPLICATION OF READ & STEVENS, INC.
FOR AUTHORITY TO INSTITUTE A WATER
FLOOD PROJECT, EDDY COUNTY, NEW MEXICO

No. 9607

APPLICATION

Read & Stevens, Inc., P.O. Box 1518, Roswell, NM 88202, hereby applies to the New Mexico Oil Conservation Division for an order approving institution of a water flood project for secondary recovery of hydrocarbons in the proposed Bunker Hill Unit, Eddy County, New Mexico, and in support thereof, states:

1. Said water flood project and Unit is located in the most northeast township of Eddy County, New Mexico, 3/4 mile west of the Lea County Line, 2½ miles south of the Chaves County Line, and approximately 5 miles north of U.S. Highway #82.

2. Attached hereto as Exhibits "B", "C", "D", "E", made a part hereof in compliance with Division Rule 701.B.1., are Division forms C-108 for each of the four (4) oil wells Applicant proposes to convert to water injection wells, as more specifically identified below.

3. Read & Stevens, Inc., in an accompanying Application, has requested Division approval of Statutory Unitization and a unit for the proposed Bunker Hill Unit in Eddy County, New Mexico. The Unit Area, Unitized Formation, Unit Agreement, and Unit Operating Agreement are described in said Application.

4. Read & Stevens, Inc. proposes to institute a water flood project for the secondary recovery of oil and gas from the Unitized Formation (Penrose Sand) within the Unit Area.

5. Following approval of the Bunker Hill Unit by the Oil Conservation Division, the Commissioner of Public Lands and the Bureau of Land Management, Read & Stevens, Inc. proposes to institute a "Pilot Project" within the Unit Area by converting the following four (4) wells into injection wells, to wit: (All lands are within T-16-S, R-31-E, NMPM)

(1.) Read & Stevens, Inc., Bogle Farms #1, located in Unit "L", Sec.13; (Exhibit "B")

(2.) Read & Stevens, Inc., Dartmouth #1, located in Unit "P", Sec. 14; (Exhibit "C")

(3.) Read & Stevens, Inc., Gulf West Mesa #2, located in Unit "D", Sec. 24; (Exhibit "D")

(4.) Read & Stevens, Inc., Gulf West Mesa #3, located in Unit "N", Sec. 13: (Exhibit "E")

The Read & Stevens, Inc. Gulf West Mesa #1, located in Unit "M", Sec. 13, is to be the producing well for this pilot project.

Attached hereto as Exhibit "A" is a plat of the Unit Area, showing the four (4) wells to be converted into injection wells.

6. The Read & Stevens, Inc., Gulf West Mesa #3 well (Unit "N", Sec. 13) will be converted to an injection well as the first step in institution of this pilot project. Said well will be monitered for a short period of time to determine formation reaction to water injection before converting the remaining three (3) pilot wells to injection.

7. The initial injection rate will be approximately 140 barrels of water per well per day; total of 560 barrels per day for the pilot project.

8. Water is to be injected at a surface pressure not to exceed 0.2 psi per foot of depth to top of injection zone, provided, however, that surface pressure in excess of 0.2 psi per foot of depth to injection zone may be applied upon administrative approval as provided by Oil Conservation Division rules and regulations.

9. The water to be injected and used in this water flood has been purchased from the City of Carlsbad out of their Double Eagle Water System. Said water system, and pipelines in connection therewith, cross, and are located upon, the Unit Area. No additional water supply lines are contemplated on lands outside the Unit Area. Attached hereto is Exhibit "F", Plat, showing the Double Eagle Water System and this Bunker Hill Unit Area.

10. It is expected that approximately one (1) year will be needed to study the pilot project and determine the feasibility of converting the remaining injection wells within the Unit Area and proceeding to full unit-wide water flooding. Applicant proposes, and so requests, that conversion of additional wells for injection purposes, and the injection of water therein, be approved by the Division by Administrative Approval as provided for in the rules and regulations of the Division.

11. Approval of this water flood project, and initial pilot project in connection therewith, will substantially increase recoverable reserves of oil to be produced, waste will be prevented and correlative rights of all parties will be protected..

12. Applicant has furnished, by Certified Mail, a copy of this Application, with Exhibits, to each Leasehold Operator within one-half mile of each proposed injection well and to the owner or grazing lessee of the surface upon which each injection well is located. Proof of same to be furnished at the time this case is heard.

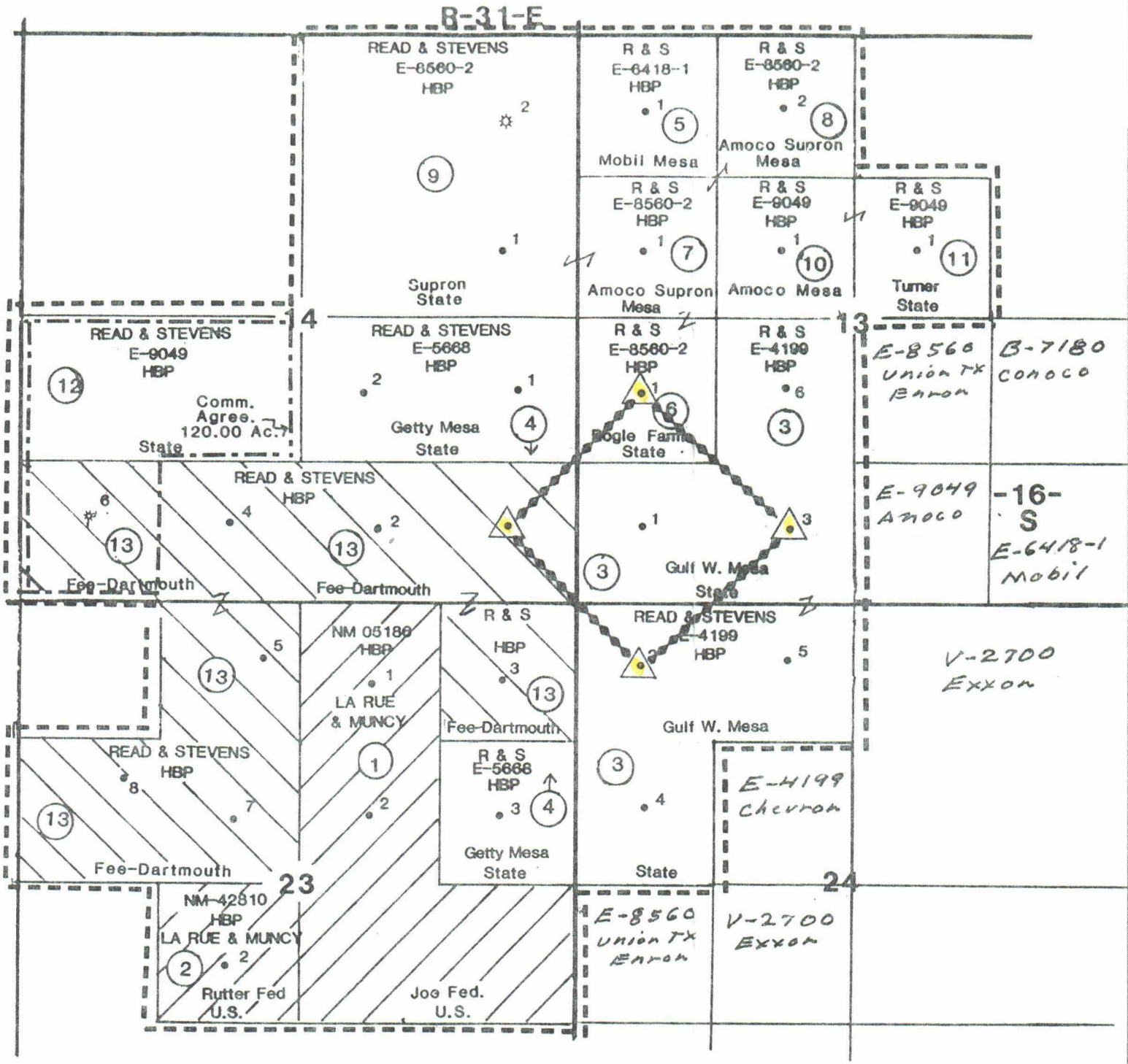
NOW THEREFORE, applicant, Read & Stevens, Inc., respectfully requests that this Application be set for hearing on February 15, 1989, and that the Division enter its order approving this water flood project and the injection of water into the Penrose Sand through the four (4) above identified pilot injection wells.

Dated this 17th day of January, 1989.

READ & STEVENS, INC.

by _____

Randolph M. Richardson, III
Attorney-at-law
P.O. Box 2423
Roswell, NM 88202-2423



LEGEND

- UNIT OUTLINE
- TRACT NUMBER
- STATE OF NEW MEXICO LANDS 840 ACRES
- FEE (PATENTED) LANDS 320 ACRES
- FEDERAL (U.S.) LANDS 200 ACRES

TOTAL UNIT AREA, 1,360 ACRES

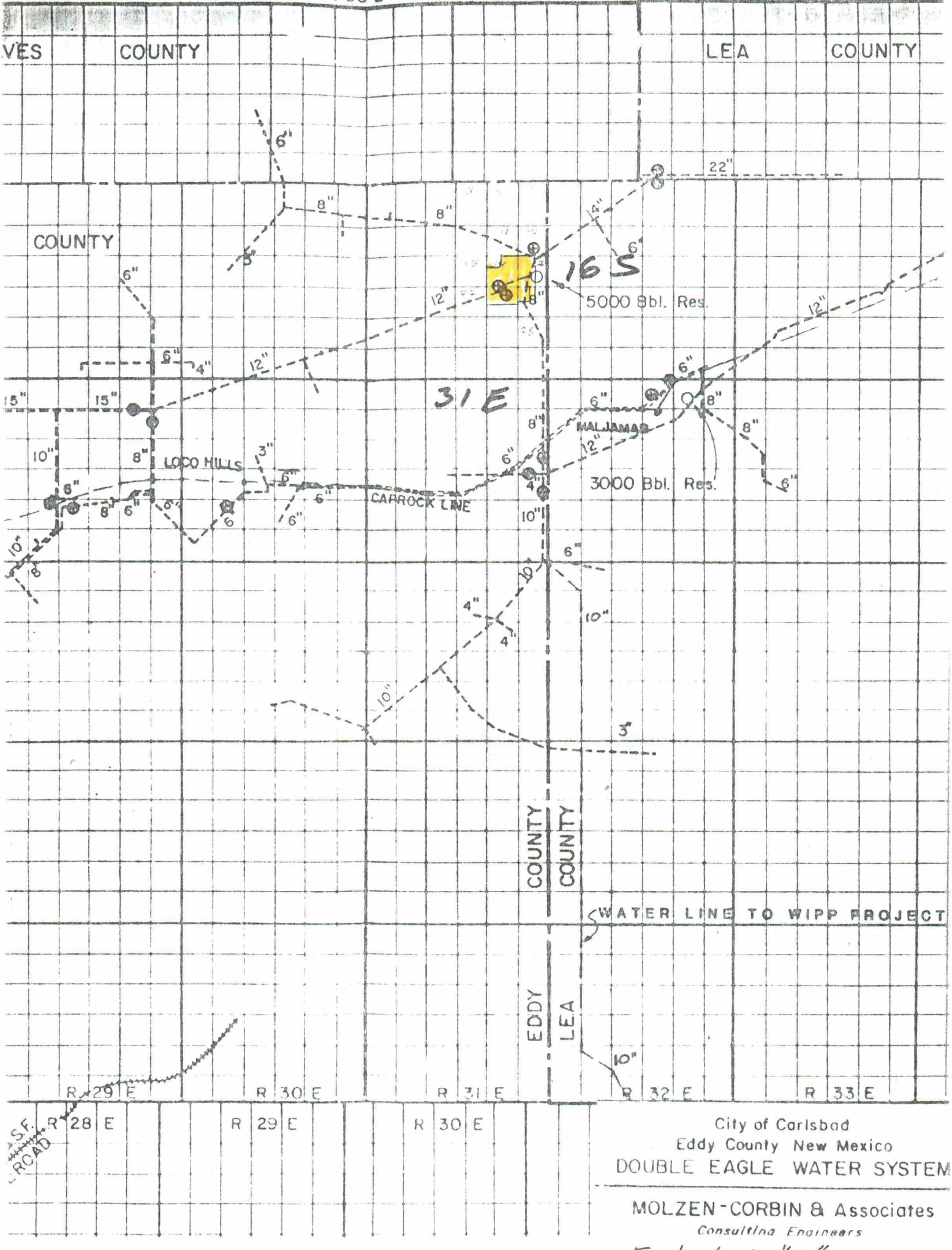
Injection Well

Pilot Project

EXHIBIT "A"

BUNKER HILL UNIT AREA

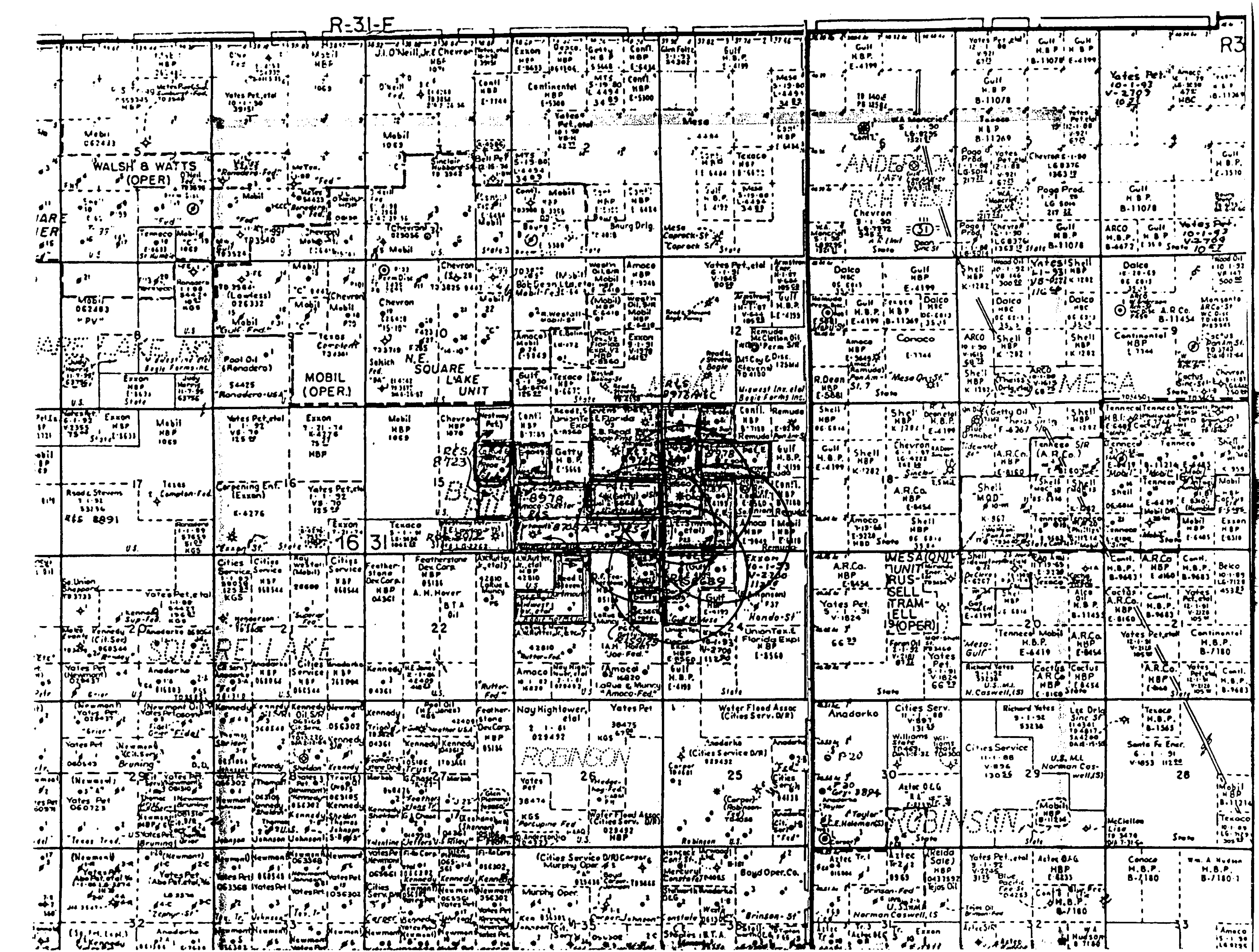
Parts Sections 13, 14, 23, 24,
T-16-S, R-31-E, NMPM
EDDY COUNTY, NEW MEXICO

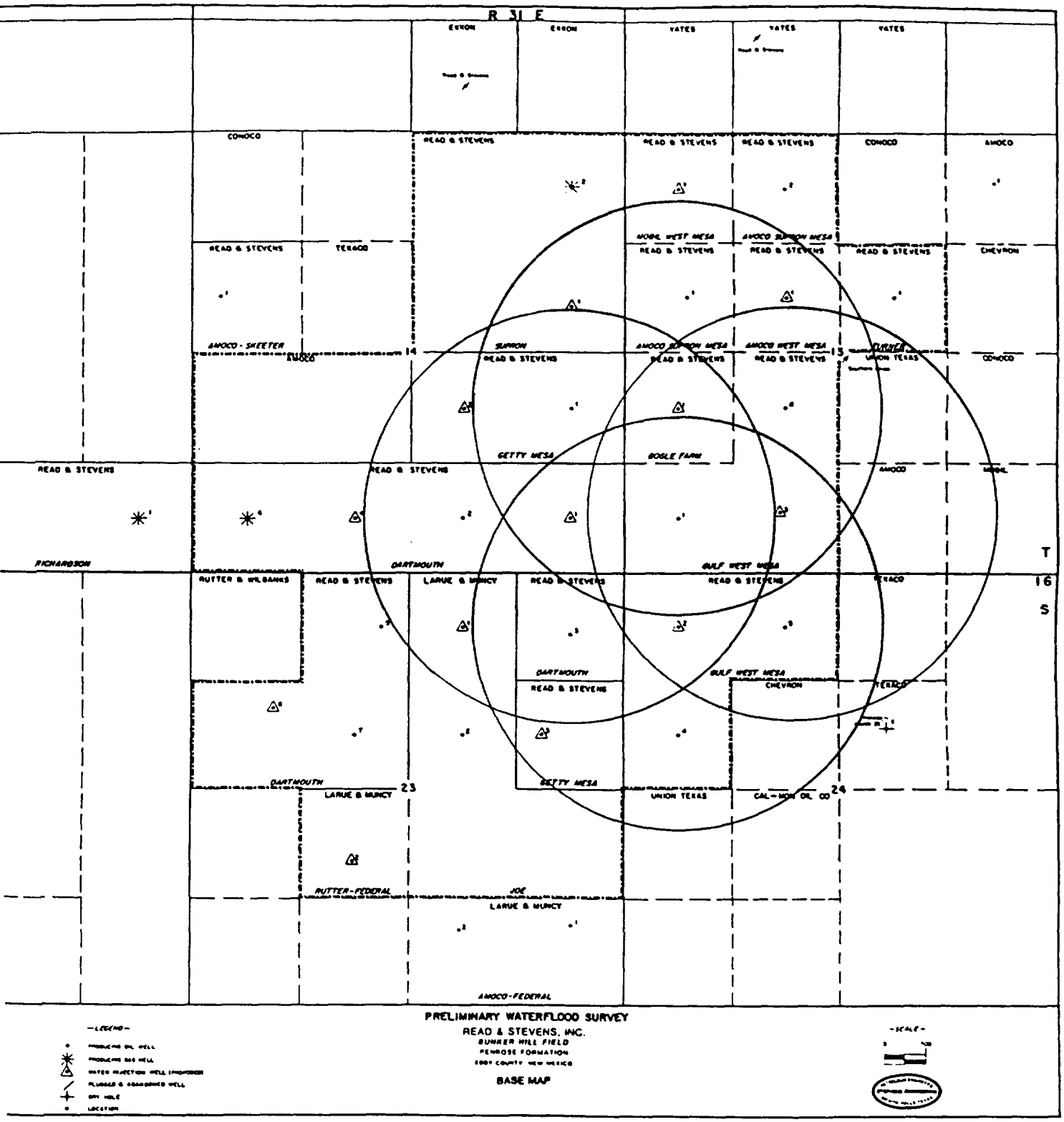


City of Carlsbad
Eddy County New Mexico
DOUBLE EAGLE WATER SYSTEM

MOLZEN-CORBIN & Associates
Consulting Engineers

Exhibit "F"


R-31-E
WALSH & WATTS (OPER)
MOBIL (OPER.)
N.E. SQUARE LAKE UNIT
SQUARE LAKE
ROBINSON
MESA (QN) UNIT RUSSELL TRAMMELL (OPER)
MESA



PRELIMINARY WATERFLOOD SURVEY

READ & STEVENS, INC.

BUNKER HILL FIELD

PENROSE FORMATION

EDDY COUNTY, NEW MEXICO

BASE MAP

-LEGEND-

-SCALE-

ENERGY AND MINERALS DEPARTMENT

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

Revised 7-1-81

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: [X] Secondary Recovery [ ] Pressure Maintenance [ ] Disposal [ ] Storage
Application qualifies for administrative approval? [ ] yes [ ] no

II. Operator: Read & Stevens, Inc.

Address: P.O. Box 1518, Roswell, NM 88202

Contact party: John Maxey Phone: 505/622-3770

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.

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.

* 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.

VII. Attach data on the proposed operation, including:

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 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 source known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

* X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.)

* 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.

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.

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: John C. Maxey, Jr. Title Petroleum Engineer

Signature: John C Maxey Jr. Date: 1-20-88

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Please show the date and circumstance of the earlier submittal.

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division district office.

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 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, P. O. Box 2088, Santa Fe, New Mexico 87501 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.

Information requested by the C-108 State form for the Bunker Hill Water Flood, as listed on the C-108 form.

VII.

Item 1
The proposed average and maximum daily rates are 140 bpd and 230 bpd respectively and the total volume of fluids injected shall be 5,150,000 barrels of water.

Item 2
This is a closed system.

Item 3
The proposed average and maximum injection pressures are 100 psig and 710 psig respectively.

Item 4
See the water analysis attached.

Item 5
Not applicable.

VIII.

The injection zone is a permian age sandstone of the Guadalupe series known as the Penrose Sand. It is found at an average sub-surface depth of approximately 3550 in the project area and is approximately 25 feet thick.

Concerning underground drinking water, the surface casing in all the injection wells was set at an average depth of 1000 feet below ground level and cemented to surface. This will provide adequate protection of all fresh water sources.

IX.

No stimulation planned.

X.

All logs have previously been filed with the Division.

XI.

Attached are chemical analysis of fresh water from our source, Double Eagle Water System.

XII.

Read & Stevens, Inc., has examined available geologic and engineering data and finds no evidence of open faults or any other hydrologic connection between the injection zone and any underground source of drinking water.

CALCULATIONS AND DESIGN DATA

PREPARED BY

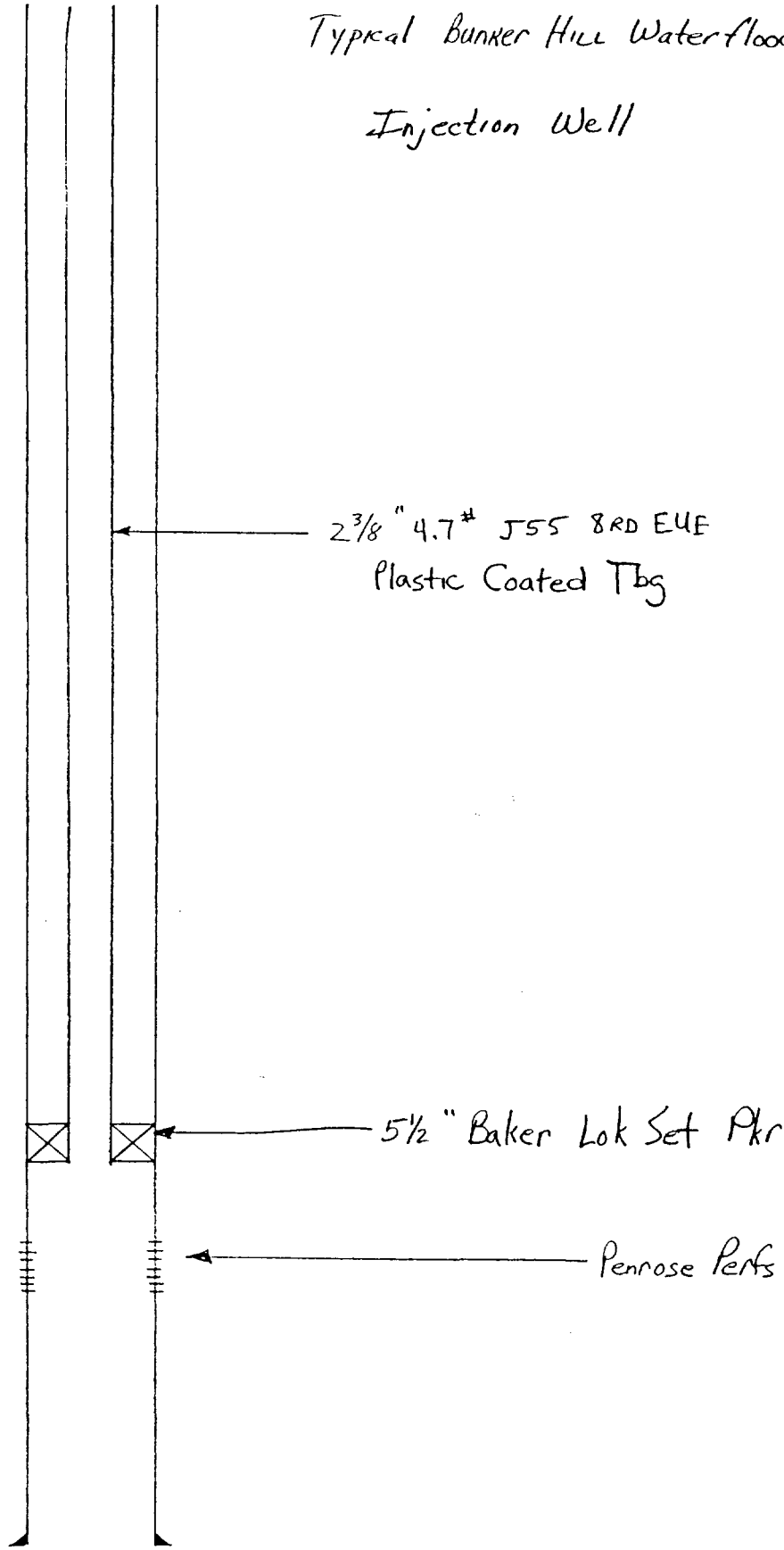
SUBJECT

DATE

SHEET OF

Typical Bunker Hill Waterflood

Injection Well



Information regarding the four proposed pilot injectors in the Read & Stevens Bunker Hill Water Flood program.

WELL & LOCATION	CASING & CMT	PENROSE PERFS	2 3/8" PLASTIC COATED TBG W/BAKER LOK-SET PKR SETTING DEPTH.	OTHER PERFS
Gulf West Mesa #2 660' FNL & 660' FWL 24-16S-31E	8 5/8" @ 1,250' cmt 550 sx to surf 4 1/2" @ 4,242' cmt w/775 sx cmt TOC @ 2,500' calc	3,600'-3,622'	100' above perfs	4,053'-4,059' Penrose will plug w/CIBP & cmt.
Gulf West Mesa #3 730' FSL & 1910' FWL 13-16S-31E	8 5/8" @ 1,272' cmt 500 sx to surf 4 1/2" @ 4,248' cmt w/625 sx cmt TOC @ 3,000' calc	3,623'-3,647'	100' above perfs	
Bogle Farms #1 660' FWL & 1980' FSL 16-16S-31E	12 3/4" @ 340' cmt w/350 sx to surf 4 1/2" @ 3,704' cmt w/200 sx TOC @ 2,910' by temp survey	3,605'-3,629'	100' above perfs	3,332'-3,343' Queen will squeeze cmt.
Dartmouth #1 660' FSL & 660' FEL 14-16S-31E	8 5/8" @ 1,236' cmt 550 sx to surf 4 1/2" @ 4,250' cmt w/600 sx cmt TOC @ 3,000' by log	3,602'-3,622'	100' above perfs	