STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

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

FORM C-108
Revised 7-1-81

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: ☐ Secondary Recovery ☐ Pressure Maintenance ☒ Disposal ☐ Storage
Application qualifies for administrative approval? ☒ yes ☐ no

II. Operator: Phillips Petroleum Company

Address: 300 W. Arrington, Suite 200, Farmington, NM 87401

Contact party: Louis Robinson Phone: (505) 599-3415

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 ☒ 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: L. E. Robinson Title Sr. Drilling & Production Engr.

Signature: L. E. Robinson Date: 1-11-91

* 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

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.

ATTACHMENT
SALTWATER DISPOSAL APPLICATION
SAN JUAN 32-8 UNIT
WELL NO. 301

III. Well Data

A. (1) San Juan 32-8 Unit Well No. 301, Sec 16, T31N, R8W, 1643' FSL and 1006' FWL, San Juan County, New Mexico.

(2) See Saltwater Disposal Well Casing Design - Attachment No. 1

(3) 3-1/2", 9.30 #/ft, 8rd, N-80, Baker Plastic Coat 571, internal coated tubing, set at 8693'.

(4) Baker Model "FB" permanent packer with seal assembly and anchor latch set at 8660'.

B. (1) Injection Formations:

(a) Morrison (Lower)	Top - 8372'	Bottom - 8776'
(b) Bluff	Top - 8776'	Bottom - 8920'
(c) Entrada	Top - 9031'	Bottom - 9275'

Field: Undesignated

(2) The perforated interval:

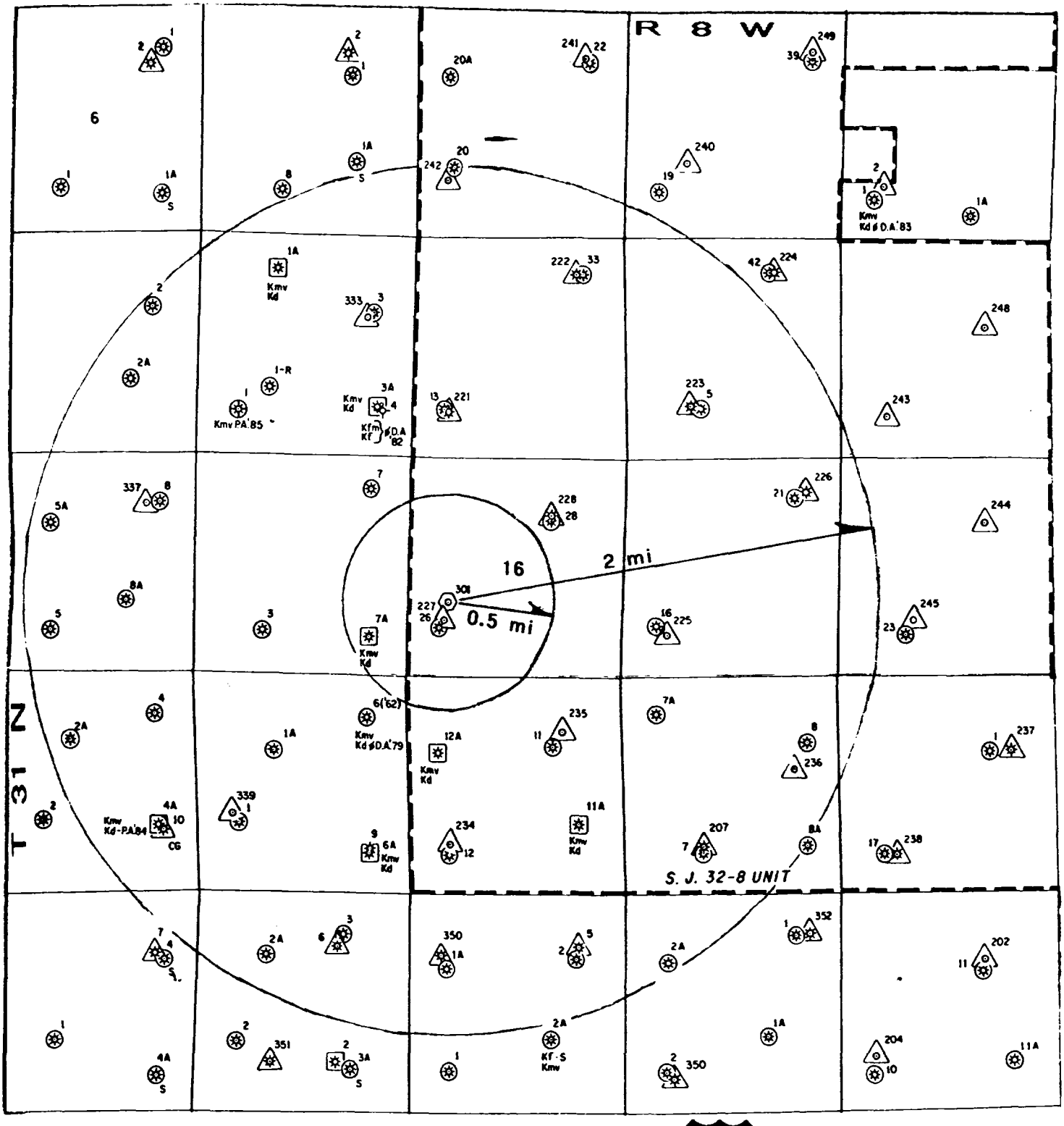
8751' - 8754'	8805' - 8808'
8757' - 8761'	8811' - 8825'
8764' - 8773'	8828' - 8920'
8776' - 8802'	9030' - 9148'

(3) Drilled for saltwater disposal purposes only.

(4) None

(5) Dakota Sandstone - 8002'-8212' - higher
None - lower

a:\328III.SWD



Jay Kizee
599-3410

PHILLIPS 66

PHILLIPS PETROLEUM COMPANY

Area of Review

San Juan 32-8 #301

Proposed Saltwater Disposal Well

INTERPRETATION:	DATE:	DRAFTING:	FILE NO.:
T R Moore	12/90		

VI. Wells Within the Area of Review
32-8 #301 SWD

The subject well is the only well within the area of review to penetrate the proposed receiving formations. The closest well to penetrate the proposed receiving formations is the Blackwood and Nichols Northeast Blanco Unit #1 Pump Mesa SWD (formerly NEBU #503), 990' FSL X 1600' FWL, Section 36 T31N-R8W, which was drilled to a total depth of 9130' in the Entrada Sandstone and is scheduled to be completed as a saltwater disposal well in the Entrada, Bluff and Morrison Formations.

The following is a list of all of the wells in the 0.5 mile-radius area of review of the subject well. None of the listed wells penetrate the proposed injection-receiving formations.

Pacific Northwest Pipeline 32-8 Unit #28, 1460' FNL X 1800' FEL Sec. 16-31N-8W, TD 5975' in Point Lookout Sandstone, 8/7/58, completed 5424'-5938' in Mesaverde Group.

Phillips Petroleum 32-8 Unit #228, 1343' FNL X 1781' FEL Sec. 16-31N-8W, at last report waiting on completion tools at 3247', proposed TD 3654' in Fruitland Formation.

Pacific Northwest Pipeline 32-8 Unit #26, 1150' FSL X 845' FWL Sec. 16-31N-8W, TD 5960' in Point Lookout Sandstone, 8/3/57, completed 5384'-5878' in Mesaverde Group.

Phillips Petroleum 32-8 Unit #227, 1318' FSL X 954' FWL Sec. 16-31N-8W, at last report waiting on completion tools at 3225', proposed TD 3490' in Fruitland Formation.

Supron #7A Quinn, 905' FSL X 905' FEL Sec. 17-31N-8W, TD 8100' in Dakota Sandstone, 11/14/80, completed 7946'-8035' in Dakota Sandstone and 5379'-5851' in Mesaverde Group.

VII. (1) Average daily rate 5,000 barrels of water per day. Maximum daily rate 10,000 barrels of water per day.

(2) Closed system.

(3) Average injection pressure 1800 psi. Maximum injection pressure 2700 psi.

(4) Reinjection of Fruitland Coalseam produced water. Produced water may come from the San Juan 32-7 Unit and the Non-Unit Wells. All produced water from the San Juan 32-8 Unit will come to the proposed well.

(5) The Morrison, Bluff and Entrada Sandstones are not productive of hydrocarbons within the prescribed one-mile radius. Water samples of these formation waters are not available in the immediate vicinity. All available information from data in the deep, central portion of the San Juan Basin would suggest that the waters of these formations are certainly in excess of 10,000 ppm total dissolved solids and are likely to be in excess of 20,000 ppm total dissolved solids. Data presented by Stone, et al (1983) would also support that the waters in the proposed receiving formations are saline. Wireline log data from the subject well confirms that the interstitial waters of the proposed receiving formations are saline, although a precise estimate of the amount of total dissolved solids is not possible by this indirect method.

VIII.

The proposed saltwater receiving formations in the San Juan 32-8 #301 SWD well are the sandstones and sandy siltstones of the Morrison Formation, the sandstones of the Bluff Sandstone, and the sandstones and sandy siltstones of the Entrada Sandstone. All three of these formations are of Late Jurassic age.

The Morrison Formation was encountered in the 32-8 #301 borehole from 8212' to 8776'. The sandstones and sandy siltstones suitable for saltwater injection occur below 8372'. The sandstones may be generally described as being light brown to reddish brown to white, medium to very fine grained, moderately well to poorly sorted, silty and calcareous in part, firm to hard, and occasionally friable. The associated siltstones are generally reddish brown to tan, slightly sandy, slightly calcareous , firm to hard, and commonly producing platy fragments upon drilling. As indicated by wireline logs, the porosity of the proposed receiving zones ranges from 2% to 14%. Formation porosity, permeability and transmissivity are enhanced by natural fracturing.

The Bluff Sandstone is comprised of white to pink, medium to very fine grained, moderately well sorted calcareous, sporadically cherty, locally silty sandstones with some interbedded siltstones and silty shales. It was encountered in the 32-8 #301 borehole between 8776' and 8920'. The porosity of the proposed receiving zones in the Bluff range from 4% to 10%, as indicated by wireline logs. Naturally occurring fractures augment the formation porosity, permeability and transmissivity of this unit.

The third proposed water-receiving zone, the Entrada Sandstone, was cut in the subject well from 9031' through 9275'. It is comprised, predominantly, of white to pink, fine to very fine grained sandstones which are moderately well to poorly sorted, silty, slightly calcareous quartzose and hard. Interbedded within the Entrada Formation are reddish brown, sandy, argillaceous, slightly calcareous siltstones. Wireline log porosity of the Entrada sandstones and siltstones range from 1 to 5%. Permeability and transmissivity of this unit are enhanced by natural fracturing of the formation.

Potential freshwater aquifers overlying the proposed injection zones at this location are at depths less than 2561'. These include porous and permeable sandstones occurring in the San Jose, Nacimento/Animas and Ojo Alamo Formations. The waters of these formations in this portion of the San Juan Basin, as indicated by data cited by Stone, et al (1983), may be characterized as follows:

San Jose Formation (0 - 886'), estimated total dissolved solids content (TDS) 550 to 2800 ppm, with dramatic variations in water quality locally;

Nacimento/Animas Formation (886'-2392'), estimated TDS 1225 to 9100 ppm, limited quantities and highly variable quality, and;

Ojo Alamo Sandstone (2392'-2561'), estimated TDS 1325 to 6550 ppm, variable quality and slightly saline overall.

Note: The total dissolved solids contents cited above have been calculated from specific conductance values cited by Stone, et al (1983), using the general formula: TDS (ppm) = 0.7 specific conductance (micromhos). No water samples are available from within one mile of the proposed disposal well.

Reference

Stone, W. J., F. P. Lyford, P. F. Frenzel, N. H. Mizell, and E. T. Padgett (1983) Hydrogeology and Water Resources of San Juan Basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Hydrologic Report No. 6, 70 p.

IX. The Entrada and Bluff were stimulated with 900,000 lbs of 20/40 sand at 100 BPM with instantaneous shut in pressure of 1900 psi and a maximum sand concentration.

X. All available wireline logs on the 32-8 #301 well have previously been submitted to the Oil Conservation Division.

XI. There are no freshwater wells available for sampling within one mile of the subject proposed disposal well.

XII. **Statement**

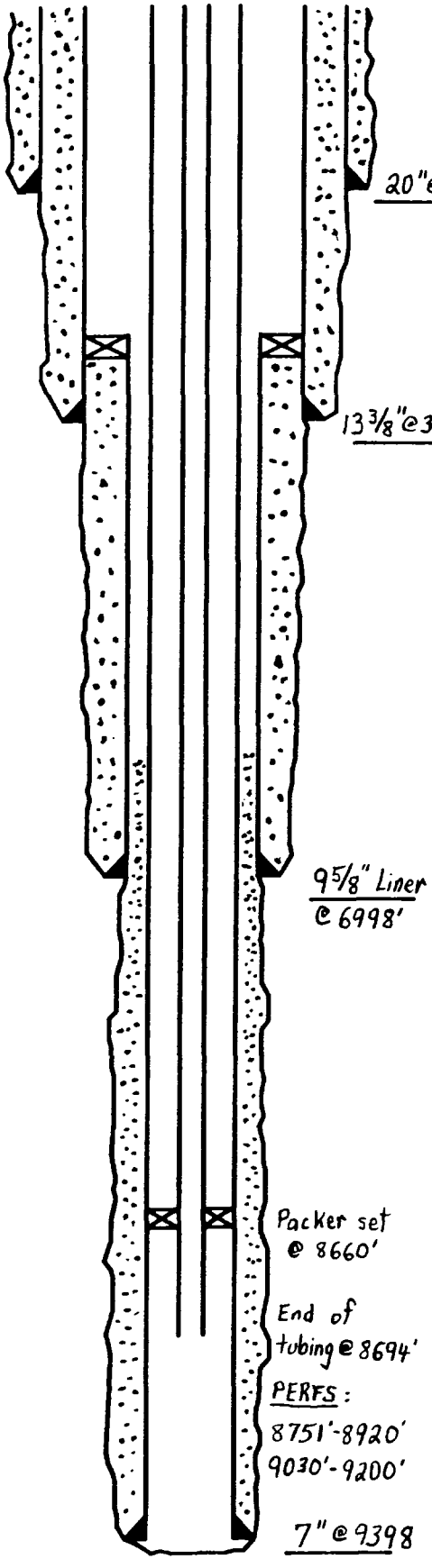
Phillips Petroleum Company geologists and engineers have examined available geologic and engineering data and can find no evidence of or reason to believe of any hydrologic connection between the proposed saltwater injection zones and any underground source of potable water.

Phillips Petroleum Company
Farmington Area

Salt Water Disposal Well
Casing Design

SJ 32-8 # 301 SWD

ATTACHMENT NO. 1



Casing/Tubulars Program

	Size (in)	Grade	Setting Depth (ft)
Conductor	20" 94#/ft	K-55 ST&C	464'
Surface	13 3/8" 68#/ft 13 3/8" 72#/ft	N-80 Butt. N-80 ST&C	3097' 718'
Intermediate Liner	9 5/8" 40#/ft 9 5/8" 40#/ft	1191' L-80 2146' S-95	Top 3641' Bottom 6998'
Production	7" 29#/ft 7" 26#/ft 7" 26#/ft	L-80 N-80 S-95	178' 212' 9008'
Tubing	3 1/2" 9.3#/ft	N-80	8694'

Cement Program

		Lead	Tail	Comments
Conductor		762 sxs. CL "B" @ 15.6 ppg 1.18 ft³/sx	100 sxs CL "B" w/ 3% $CaCl_2$ @ 15.6 ppg 1.18 ft³/sx	Circ. 195 sxs. to surf.
Surface	2nd Stage →	1441 sxs. Light Cmt. w/ 10# Gilsa/sx @ 12.4 ppg 1.86 ft³/sx	200 sxs. CL "B" @ 15.6 ppg 1.18 ft³/sx	Circ. 1225 sxs. cmt. to surf. Stg. tool @ 2703'
Intermediate		1145 sxs. 50:50 Poz w/ 2% gel @ 13.6 ppg 1.26 CF/sx	100 sxs CL "B" w/ .8% Halad 9 @ 15.6 ppg 1.18 CF/sx	Circ. cmt. to top of liner
Production		825 sxs. CL "G" @ 15.5 ppg 1.62 ft³/sx	None	Good circ. during cmt. job.
Surface	1st Stage →	333 sxs. Light Cmt. w/ 10# Gilsa/sx @ 12.4 ppg 1.86 ft³/sx	500 sxs. CL "B" @ 15.6 ppg 1.18 ft³/sx	Circ. 120 sxs. cmt. to surf.

AFFIDAVIT OF PUBLICATION

No. 27071

STATE OF NEW MEXICO,
County of San Juan:

CHRISTINE HILL being duly sworn, says: "That she is the NATIONAL AD MANAGER of The Farmington Daily Times, a daily newspaper of general circulation published in English in Farmington , said county and state, and that the hereto attached LEGAL NOTICE

was published in a regular and entire issue of the said Farmington Daily Times, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for ONE consecutive (days) (/////) on the same day as follows:

First Publication WEDNESDAY, JANUARY 9, 1991

Second Publication

Third Publication

Fourth Publication

and that payment therefore in the amount of $ 13.99 has been made.

Christine Hill

Subscribed and sworn to before me this 9TH day of JANUARY, 1990.

Connie Andrae
Notary Public, San Juan County,
New Mexico

My Comm expires: July 3, 1993

COPY OF PUBLICATI

LEGAL NOTICE

Notice is hereby given of the application of Phillips Petroleum Company. Attention: K. Am, Manager, Permian Basin Region, 4001 Penbrook St., Odessa, Texas 79762, telephone (915) 368-1488., to the Oil Conservation Division, New Mexico Energy and Minerals Department, for approval of the following well for the purpose of salt water disposal.

Well No. 301
Unit Name:
San Juan 32-8 Unit
Location: Section 16, T-31-N, R-8-W, San Juan County, New Mexico

The disposal formation is Morrison, Bluff and Entrada at an approximate depth between 8761-9200 feet below the surface of the ground. Expected maximum disposal rate is 10,000 barrels per day and expected maximum injection pressure is 2000 pounds per square inch.

Interested parties must file objections or request for hearing with the Oil Conservation Division, P.O. Box 2088, Santa Fe, New Mexico 87501, within fifteen days of this publication.

Legal No. 27071 published in the Farmington Daily Times, Farmington, New Mexico on Wednesday, January 9, 1991.

...ISION

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Entrada and Bluff Step Rate Test
San Juan 32-8 #301
1/4/91

Rate BPM	Measured Csg Inj. Press. psi	Hydrostatic Pressure psi	Csg Friction Pressure psi	Bottomhole Injection Press,psi	Tbg. Fric. psi	Calc. 3-1/2 Tubing Inj. Press,psi
0	500	3824	0	4324	0	500
.6	552	3824	<1	4376	8	560
1.0	564	3824	1	4387	22	585
2.0	604	3824	2	4426	79	681
2.9	640	3824	3	4461	158	795
4.0	700	3824	6	4518	258	952
5.0	770	3824	10	4584	431	1191
6.0	840	3824	14	4650	603	1429
7.0	910	3824	19	4715	801	1692
7.9	990	3824	23	4791	1001	1968
8.9	1066	3824	29	4861	1247 - 1861	2284 - 2973
9.9	1142	3824	36	4930	1517	2623
10.9	1216	3824	43	4997	1811	2984
13.2	1308	3824	61	5071	2576	3823
14.9	1402	3824	76	5150	3219	4545
17.4	1492	3824	101	5215	4282	5673
18.4	1546	3824	113	5257	4746	6179

Top Perf. 8751'

70% Entrada
30% Bluff
3100 Pump capacity

David Stonestreet — Production Engineer — 1-11-91
David Stonestreet (Title) (Date)

DAVID Stonestreet
599-3431

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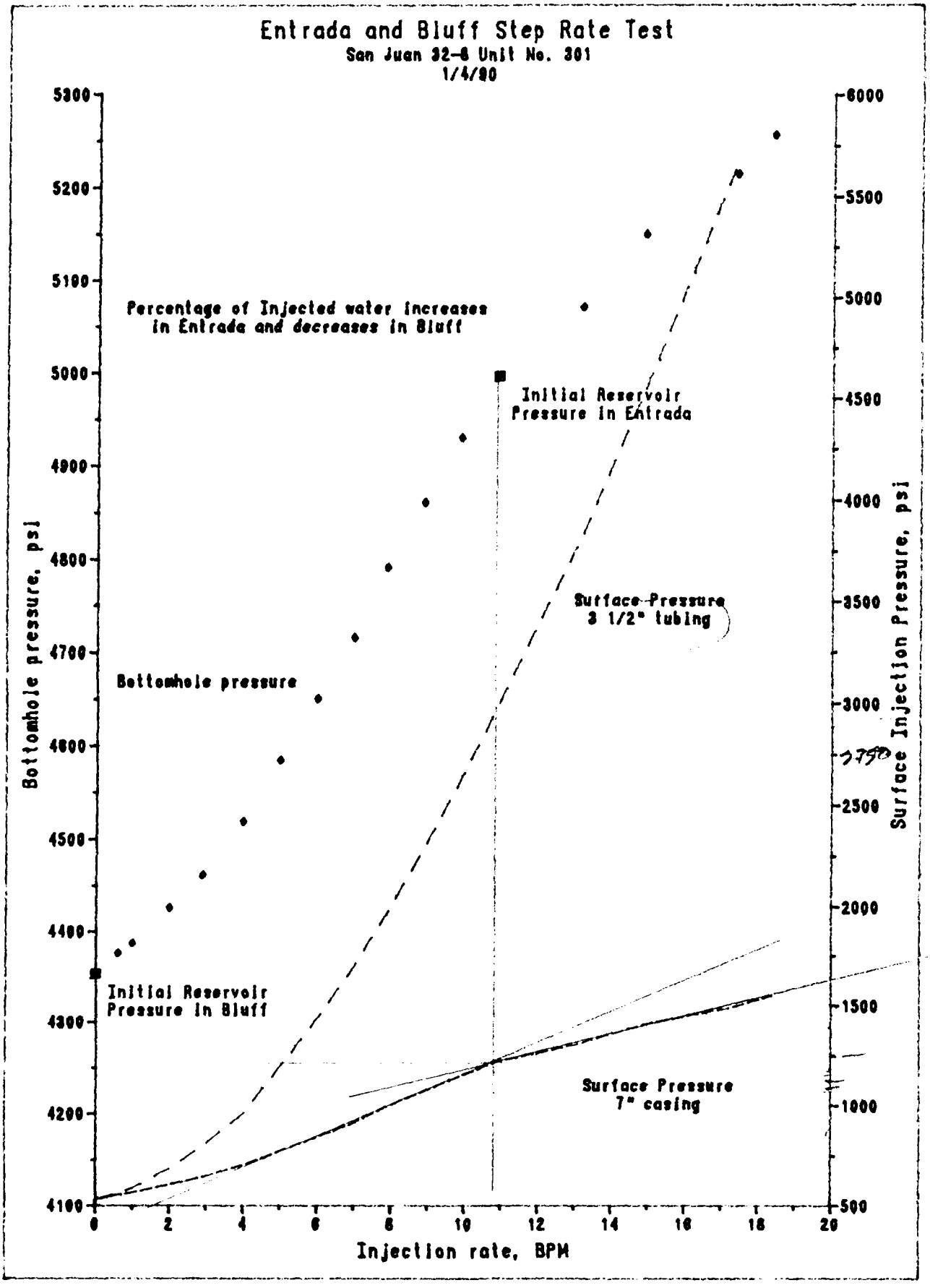
DIST. 3

Can't the 3100 psi


Entrada and Bluff Step Rate Test
San Juan 32-6 Unit No. 301
1/4/80
Percentage of Injected water increases in Entrada and decreases in Bluff
Initial Reservoir Pressure in Entrada
Surface Pressure 3 1/2" tubing
Bottomhole pressure
Initial Reservoir Pressure in Bluff
Surface Pressure 7" casing
Bottomhole pressure, psi
Surface Injection Pressure, psi
Injection rate, BPM
5300
5200
5100
5000
4900
4800
4700
4600
4500
4400
4300
4200
4100
6000
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