

REC'D 9-10-92
DRC

APPLICATION FOR AUTHORIZATION TO INJECT

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

RELEASE 9.24.92

II. Operator: Phillips Petroleum Company
Address: 5525 Hwy 64 NBU 3004, Farmington, New Mexico 87401
Contact party: Louis Robinson Phone: (505) 599-3412

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. Drlg. & Prod. Engr.

Signature: L.E. Robinson Date: September 9, 1992

* 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.

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 on administrative applications within 15 days from the date this application was mailed to them.

ATTACHMENT
SALTWATER DISPOSAL APPLICATION
SAN JUAN 32-8
WELL NO. 303

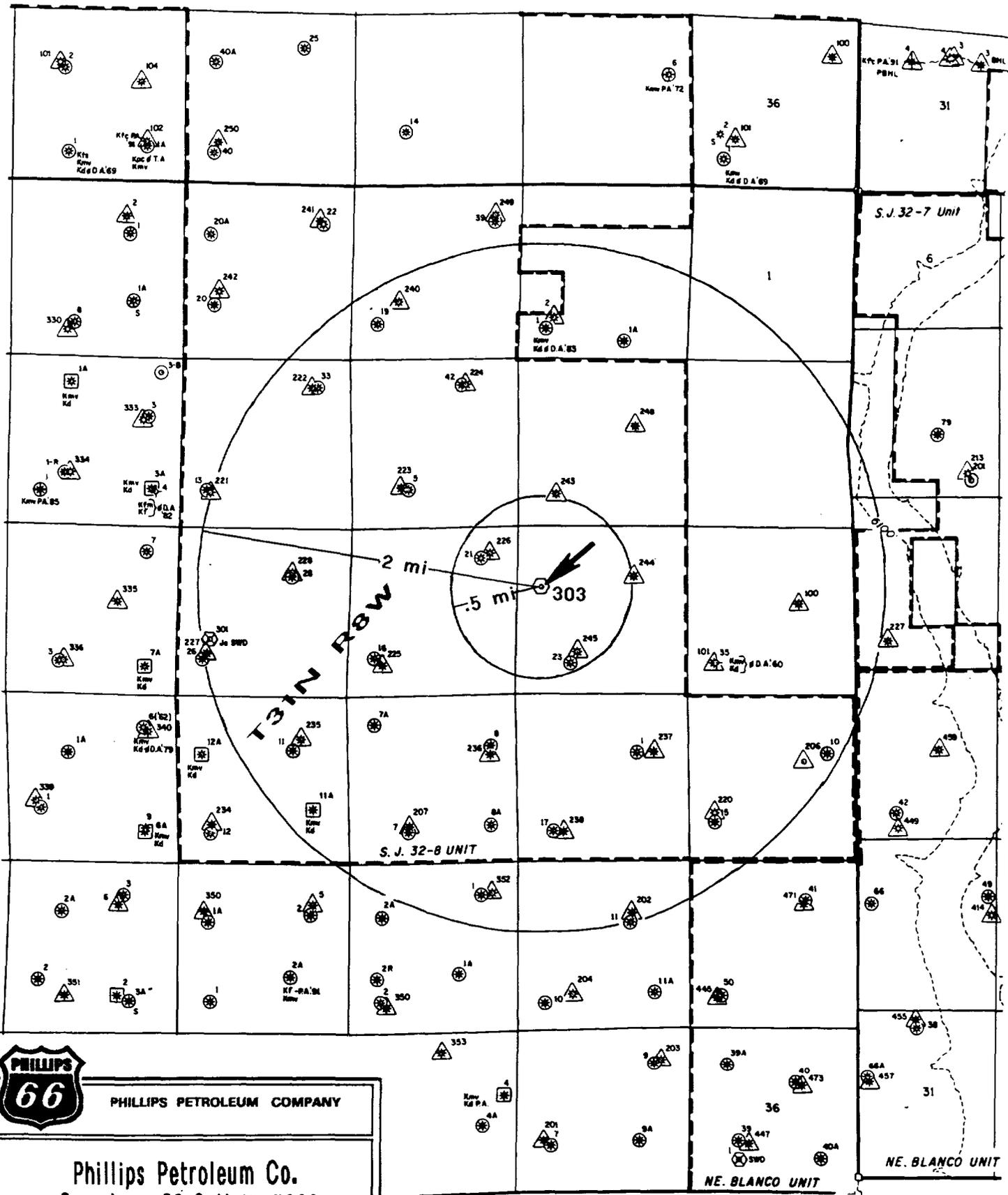
III. Well Data

- A. (1) San Juan 32-8 Unit SWD No. 303, Section 14, T-31N, R-8-W, 1762' FNL & 708' FWL, San Juan Co., New Mexico.
- (2) See Saltwater Disposal Well Casing Design - Attachment No. 1.
- (3) 2-7/8", 6.50 #/ft, 8rd, N-80, Baker Plastic Coat 571, internal coated tubing, set at 8350'.
- (4) Baker Model D permanent packer with seal assembly and anchor latch set at 8350'.
- B. (1) Injection Formations:
- | | | | | |
|--------------|-----|---------|--------|---------|
| (a) Morrison | Top | - 8341' | Bottom | - 8826' |
| (b) Bluff | Top | - 8826' | Bottom | - 8964' |
| (c) Entrada | Top | - 9070' | Bottom | - 9314' |
- Field: Undesignated
- (2) The perforated interval:
- | | | |
|-------|---|-------|
| 8510' | - | 8782' |
| 8860' | - | 8930' |
| 9074' | - | 9210' |
- (3) Drilled for saltwater disposal purposes only.
- (4) None
- (5) Next higher zone, Dakota Sandstone (8043' - 8268)
Next lower zone - None

V. Map attached.

VI. There are no wells within the 0.5 mile area of review that penetrate the proposed injection zones. The only two wells in this portion of San Juan Basin that penetrate the proposed injection zones are the Blackwood & Nichols Northeast Blanco Unit #1 Pump Mesa SWD (SW 36-31N-8W) and the Phillips Petroleum San Juan 32-8 Unit #301 SWD (SW 16-31N-8W).

VII (1) Average daily rate 3,000 barrels of water per day.
Maximum daily rate 6,000 barrels of water per day.



PHILLIPS PETROLEUM COMPANY

Phillips Petroleum Co.
 San Juan 32-8 Unit #303
 Proposed Injection Well

INTERPRETATION: T R Moore	DATE: 8/92	DRAFTING: trm	FILE NO.:
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- (2) Closed system.
- (3) Average injection pressure 1800 psi.
Maximum injection pressure 2700 psi.
- (4) Reinjection of Fruitland Coalseam produced water. Produced water from the San Juan 32-8 Unit. Produced water may also come from the Blanco lease wells (#201, #202, #203, and #204) adjoining the San Juan 32-8 Unit southern border.
- (5) The Morrison, Bluff and Entrada Sandstones are not productive of hydrocarbons within the prescribed one-mile radius. Produced water samples of these formation waters are not available in the immediate vicinity. All available information from data on the deep, central portion of the San Juan Basin suggests that the natural 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 injection zones are saline.

VIII. Please refer to enclosed wireline logs and tabulation of the formation tops from the proposed injection well.

The proposed saltwater receiving formations in the San Juan 32-8 Unit #303 well are the sandstones and sandy siltstones suitable for injection in the Morrison Formation, the Bluff Sandstone, and the Entrada Sandstone. All three of these units are of Late Jurassic age.

The Morrison Formation was encountered in the 32-8 #303 borehole from 8268-8826 ft. The sandstones and sandy siltstones suitable for saltwater injection occur below 8500 ft. 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/or calcareous in part, and firm to hard but occasionally somewhat friable. The associated siltstones are reddish brown to tan, slightly sandy, normally slightly calcareous, firm to hard, and commonly produced platy drill-cuttings. As indicated by wireline logs, the porosity of the proposed receiving zones in the Morrison ranges from 2 to 10%. Formation permeability and transmissivity are enhanced by natural fracturing.

The Bluff Sandstone is comprised of white to pale red, 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 #303 borehole from 8826-8964 ft. The porosity of the

proposed receiving horizons in the Bluff range from 2-8%. Naturally occurring fractures augment the permeability and transmissivity of the Bluff.

The third proposed water-receiving zone, the Entrada Sandstone, was cut in the subject well from 9070-9374 ft. 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. Intercalated with the sandstones are reddish brown, sandy, argillaceous, slightly calcareous siltstones. Wireline log porosity of the Entrada is less than 6%, but the permeability and transmissivity of the formation is enhanced by natural fracturing.

Potential usable-water aquifers overlying the proposed injection zones at this location are at depths less than 2446 ft. These include porous and permeable sandstones in the San Jose, Nacimiento, 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 - ca. 1800 ft.) - total dissolved solids (TDS) content estimated to be 500 to 2800 ppm, with dramatic variations in water quality locally;

Nacimiento Formation (ca. 1800 - 2344 ft.) - TDS content estimated to be 1225 to 9100 ppm, limited quantities and highly variable water quality, and;

Ojo Alamo Sandstone (2344 - 2466 ft.) - TDS content estimated to be 1325 to 6550 ppm, variable quality but slightly saline overall.

The total dissolved solids content figures cited above have been converted from specific conductance values cited by Stone, et al, (1983), using the general formula

$$\text{TDS (ppm)} = 0.7 \times \text{specific conductance (micromhos)}.$$

No water samples are available from within one mile of the proposed injection well.

IX. Proposed Stimulation Program

Entrada- 152,000 gals. crosslinked gel with 300,000 lbs
20/40 Ottawa sand.

Bluff - 108,000 gals. crosslinked gel with 210,000 lbs
20/40 Ottawa sand.

Morrison- 164,000 gals. crosslinked gel with 342,000 lbs
20/40 Ottawa sand.

X. Logging and Test Data

Well logs will be filed with Division.

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

XII. Phillips Petroleum Company geologists and engineers have examined available geologic and engineering data and can find no evidence of nor reason to believe of any hydrologic connection between the proposed saltwater injection zones and any underground source of potable water.

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 Bur. Mines and Min. Resources, Hydrologic Report No. 6, 70 pp.

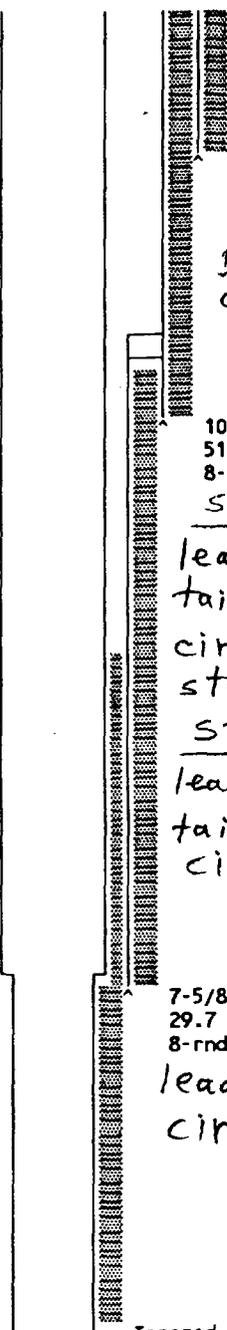
Attachment No. 1

PROPOSED MELLBORE SCHEMATIC
PHILLIPS PETROLEUM COMPANY-FARMINGTON AREA REGION

RKB @ _____
CHF @ _____
GL @ 6637

Date July 11, 1992
Lease Type: Federal
Lease & Well No. San Juan 32-8 Unit No. 303 STD Well
Legal Description 1762' FNL & 708' FNL, Sec 14, T31N-R8W
San Juan County State: New Mexico
Field Entrada, Morrison & Bluff
Tbg. _____
Other _____
Date Drilled: _____
Hole/Casing Condition: _____
Last Stimulation: _____
Workover Proposal: _____

Wellhead Description: (Include connection that BOP will bolt to)



16" @ 450'
65 lb/ft, H-40
8-rnd, ST&C

525 sx class G
circulate to surface

10-3/4" @ 3950'
51 lb/ft, J-55
8-rnd, ST&C

stage 1

lead - 450 sx 65/35 poz/class G

tail - 500 sx class G

circulated to top of
stage tool @ 2500'

stage 2

lead - 650 sx 65/35 poz/class G

tail - 150 sx class G

circulate to surface

7-5/8" Liner: 3750'-8000'
29.7 lb/ft, N-80
8-rnd, LT&C

lead - 540 sx 65/35 poz/class G ; tail - 200 sx class G
circulate cement to top of liner @ 3750'.

Tapered Production Casing
5-1/2": Surface to 8000'
17 lb/ft, N-80
8-rnd, LT&C
4-1/2": 8000' to 9450' (TD)
11.6 lb/ft, N-80
8-rnd, LT&C

600 sx class G
circulate to 7000'.

CAPACITIES:		BBL/FT
2-7/8"	lb/ft	0.00
2-3/8"	4.7 lb/ft X 4-1/2" 11.6 lb/ft	0.01010
4-1/2"	11.6 lb/ft	0.01550
4-1/2"	11.6 lb/ft X 7" 23 lb/ft	0.01970

Proposed TD @ 9450'

PERFORATING SCHEDULE

San Juan 32-8 Unit #303
Disposal Well Stimulation

D/N Meas (8/18/92)	Feet	Shot Density	# Of Holes
ENTRADA Stage 1			
9074-9090	16	2 SPF	33
9140-9210	70	"	141
	86		174
BLUFF Stage 2			
8860-8930	70	2 SPF	141
MORRISON Stage 3			
8510-50	40	2 SPF	81
8614-40	26	"	53
8658-74	16	"	33
8694-8718	24	"	49
8746-82	36	"	73
	142		289

T. M. Larimer 8/19/92



INTER-OFFICE CORRESPONDENCE SUBJECT: San Juan 32-8 Unit #303
Completion Recommendation
San Juan County, New Mexico

TO: L. E. Robinson
FROM: T. M. Larimer (r) K. L. Czirr *KLC*
DATE: 8/19/92 *fmL*

Please furnish a detailed procedure to perforate and stimulate the Entrada, Bluff, and Morrison formations in the subject well based on the following rough procedure. Stimulation designs will be forwarded upon selection of service company.

1. With 2-7/8" workstring, clean out well to PBSD and displace wellbore fluid with 2% KCl. KCl water should be filtered to 25 micron nominal.
2. Spot 10% acetic acid across Stage 1 interval and COOH.
3. Run GR/CCL/CBL/VDL from TD to top of cement.
4. Perforate the Entrada formation with casing gun 86', 2 shot per foot, 0.35" hole size, 120° phasing, as shown in attached perforating schedule Stage 1.
5. GIH with 2-7/8" work string & selective acidizing packer and breakdown the perfs with 1 bbl 10% acetic acid per 5 foot interval. Record BD pressures and ISIP's on daily completion report. After breaking down all perfs, reverse acid/KCL from annulus until returns show no acid. COOH.
6. Frac well as per stimulation procedure. Maximum surface treating pressure is 6000 psi. Flow well back immediately for forced closure as per the onsite Reservoir Engineer. Flow back well to clean up bottoms up plus 1 hour. Be sure to have an ample supply of 1/8" and 1/4" chokes on location for the flow back. Record flowing pressures and choke sizes on daily completion report.
7. GIH with wireline CIBP and set at +/- 9000'. COOH with wireline.
8. Perforate the Bluff formation with casing gun 70', 2 shot per foot, 0.35" hole size, 120° phasing, as shown in attached perforating schedule Stage 2.
9. GIH with 2-7/8" work string & selective acidizing packer and spot 7.5% HCl across perforated interval and allow to soak. Breakdown the perfs with 1 bbl 7.5% HCl per 5 foot interval. Record BD pressures and ISIP's on daily completion report.

After breaking down all perfs, reverse acid/KCL from annulus until returns show no acid. COOH.

10. Frac well as per stimulation procedure. Maximum surface treating pressure is 6000 psi. Flow well back immediately for forced closure as per the onsite Reservoir Engineer. Flow back well to clean up bottoms up plus 1 hour. Be sure to have an ample supply of 1/8" and 1/4" chokes on location for the flow back. Record flowing pressures and choke sizes on daily completion report.
11. GIH with wireline CIBP and set at +/- 8821'. COOH with wireline.
12. Perforate the Morrison formation with casing gun 142', 2 shot per foot, 0.35" hole size, 120° phasing, as shown in attached perforating schedule Stage 3.
13. GIH with 2-7/8" work string & selective acidizing packer and spot 7.5% HCl across perforated interval and allow to soak. Breakdown the perfs with 1 bbl 7.5% HCl per 5 foot interval. Record BD pressures and ISIP's on daily completion report. After breaking down all perfs, reverse acid/KCL from annulus until returns show no acid. COOH.
14. Frac well as per stimulation procedure. Maximum surface treating pressure is 6000 psi. Flow well back immediately for forced closure as per the onsite Reservoir Engineer. Flow back well to clean up bottoms up plus 1 hour. Be sure to have an ample supply of 1/8" and 1/4" chokes on location for the flow back. Record flowing pressures and choke sizes on daily completion report.
15. GIH with 2-7/8" workstring and bit. Drill out CIBP's at 9000' and 8821'. Clean-out to PBD. COOH with 2-7/8" workstring and bit.
16. GIH with retrievable packer on wireline and set at 8350'. COOH with wireline.
17. GIH with 2-7/8" injection string and sting into packer.
18. RD and release completion rig.
19. GIH with production logging tools on wireline to monitor flow rate and pressures. RU pump truck and begin step-rate test with filtered Fruitland Coal produced water as per onsite Reservoir Engineer. COOH with wireline.

cc: R. A. Allred A. J. Kieke T. R. Moore
 J. G. Bearden O. J. Mitchell L. E. Hasely
 R. R. Davis R. L. Hawks J. L. Loudermilk

San Juan 32-8 #303 SWD
 1762' FNL & 708' FWL
 San Juan Co., New Mexico

FORMATION LOG TOPS

The TD was 9370 feet drilled from a surveyed ground elevation of 6637 feet and a KB of 6656 feet on Four Corners Rig #15. The formation tops above the Dakota Ss. are picked off the Neutron log run through casing to the surface. Those formation tops from the Dakota Ss. to TD are from the open hole Dual Induction Log.

FORMATION	DEPTH	ELEVATION(sea level)
San Jose Fm.	Surface	+6637
Ojo Alamo Ss.	2344	+4312
Kirtland Sh.	2446	+4210
Fruitland Fm.	3240	+3416
Fruitland Coal Top	3362	+3294
Fruitland Coal Base	3522	+3134
Pictured Cliffs Ss.	3524	+3132
Lewis Sh.		
Cliff House Ss.	5486	+1170
Menefee Fm.	5532	+1124
Pt. Lookout Ss.	5834	+822
Mancos Sh.	6330	+326
Gallup Ss. Member	6694	-38
Greenhorn Ls. Memb.	7887	-1231
Graneros Sh. Member	7941	-1285
Dakota Ss.	8043	-1387
Morrison Fm.	8268	-1612
Bluff Ss.	8826	-2170
Summerville Fm.	8964	-2308
Todilto Ls.	9061	-2405
Entrada Ss.	9070	-2414
Chinle Fm.	9314	-2658
Total Depth	9370	-2714

The S.J. 32-8 #303 was logged by Halliburton and Schlumberger on August 17 & 18, 1992. Due to computer problems only the open hole Dual Induction log was run by Halliburton. The cased hole Cement Bond Log was run by HLS but engineer error resulted in the failure of the Pulsed Echo Tool (a cement evaluation devise). Halliburton was relieved of further logging responsibilities and Schlumberger completed the open hole logging operations. Richard Allred, drilling supervisor, decided against running the cased hole cement evaluation tool by Schlumberger.

Ralph L. Hawks Jr.
August 24, 1992

AFFIDAVIT OF PUBLICATION

COPY OF PUBLICATI

No. 30024

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 FRIDAY, SEPTEMBER 11, 1992

Second Publication _____

Third Publication _____

Fourth Publication _____

and the cost of publication was \$ 26.41

Christine Hill

Subscribed and sworn to before me this 14th day of SEPTEMBER, 1992.

Connie Andrae
Notary Public, San Juan County,
New Mexico

My Comm expires: July 3, 1993

LEGAL NOTICE

Notice is hereby given of the application of Phillips Petroleum Company.

Attention: R.G. Flesher, Area Manager, 5525 Hwy 64 NBU 3004, Farmington, New Mexico 87401, Telephone (505) 599-3401, to the Oil Conservation Division, New Mexico Energy and Minerals Department, for approval of the following well for the purpose of saltwater disposal.

Well No. 303
Unit Name:
San Juan 32-8 Unit
Location:
Section 14, T-31-N,
R-8-W, San Juan
County, New Mexico

The disposal formation is Morrison, Bluff, Entrada and Chinle at an approximate depth between 8510-9210 feet below the surface of the ground. Expected maximum disposal rate is 6,000 barrels per day and expected maximum injection pressure is 2700 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 30024 published in the Farmington Daily Times, Farmington, New Mexico on Friday, September 11, 1992.



STATE OF NEW MEXICO

ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT DIVISION
OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

RECEIVED
'92 SEP 17 AM 8 48
1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410
(505) 334-6178

Date: 9-11-92

*Attn: David C. Kanach
Ben Stone*

Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87504-2088

RE: Proposed MC _____
Proposed NSL _____
Proposed WFX _____
Proposed NSP _____

Proposed DIIC _____
Proposed SWD X _____
Proposed PMX _____
Proposed DD _____

Gentlemen:

I have examined the application received on 9-11-92
for the Phillips Petroleum Corp. S.T. 32-8 Unit SWD #303
OPERATOR LEASE & WELL NO.

E-14-31N-8W and my recommendations are as follows:
UL-S-T-R

Approve - Stop Rate Required

Yours truly,

Eric Borch