STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

APPLICATION FOR AUTHORIZATION TO INJECT

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

II. Operator: Hixon Development Company

Address: P.O. Box 2810, Farmington, New Mexico 87499

Contact party: Aldrich L. Kuchera Phone: (505) 325-6984

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? [xx] yes [ ] no
If yes, give the Division order number authorizing the project R-1636-A.

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 water 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.

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DIST. 3

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: Aldrich L. Kuchera Title Executive Vice President

Signature: Aldrich L. Kuchera Date: December 20, 1982

* 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. Please find attached supplimental information

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.

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

HIXON DEVELOPMENT COMPANY
APPLICATION FOR AUTHORIZATION TO INJECT
FORM C-108 SUPPLIMENTAL INFORMATION

CENTRAL BISTI UNIT WELL NO. 5
NW/4 NW/4, SECTION 6, T25N, R12W
SAN JUAN COUNTY, NEW MEXICO, NMPM

I. Shown on application.

II. Shown on application.

III. Tabular and schematic Wellbore data are attached.

IV. This well is located in a Federal and State approved water flood project operational since 1959.

V. Area of review is shown on attached map.

VI. Information for well's located in the area of review are attached as follows:

Central Bisti Unit Well No. 1
Central Bisti Unit Water Injection Well No. 2
Central Bisti Unit Well No. 4
West Bisti Well No. A-1
West Bisti Well No. 1 (161)

VII. 1. Proposed average injection rate is 600 BWPD expected maximum injection rate 1200 BWPD.

2. The injection system will be closed.

3. Average injection pressures are expected to be in the 1000-1200 psi range. Maximum injection pressure will be 1500 psi.

4. Refer to the attached water analysis report. Since the formation water to be encountered is primarily previously injected water no problems are expected in mixing the two waters.

5. This well is part of an extensive waterflood project active in the Central Bisti Unit since 1959. All produced water is re-injected into the oil productive Lower Gallup sand to maintain pressure. Injection into the Lower Gallup Sand is for water flooding not disposal.

VIII. The injection zone is the upper bench of the Lower Gallup sandstone. This zone is shown to be 32' in thickness with a top of 4830' KBE as shown on SP log previously submitted. No known sources of underground drinking water exist in this

area. Water well drilling in the area has shown the Ojo Alamo to be dry.

IX. The well will be acidized as required to maintain injection rate and pressure.

X. Logs were previously submitted.

XI. No known sources of drinking water exist in this area.

XII. This well is part of the existing approved waterflood operation for the Central Bisti Lower Gallup Sand Unit, it is not a disposal well.

XIII. Proof of Notification attached.

XIV. Certification shown on Application.

San Juan Testing Laboratory, Inc.

907 WEST APACHE • P.O BOX 2079 • FARMINGTON, NEW MEXICO

PHONE
327-4966

Date June 10, 1977

Report to Hixon Development Company

Requested by A. Kuchera, Mgr. Sampled by Hixon Personnel

Project CBU #5 Location NW NW Sec. 6, T25N, R12W

Source of Material Lower Gallup Produced Water

Lab No. 24509 Water Analysis for Petroleum Engineering

**TEST RESULTS**

## WATER ANALYSIS FOR PETROLEUM ENGINEERING

| Constituent | |
|---|---|
| Total Solids | 2263 ppm |
| pH | 7.25 |
| Resistivity | 2.94 ohms/meter @70°F |
| Conductivity | 3,400 micromhos/cm @ 70°F |

Comments

Essentially this is a 0.2% sodium sulfate solution.

| Constituents | | |
|---|---|---|
| **Cations** | **Meg/L** | **ppm** |
| Sodium | 29.3 | 674 |
| Calcium | 2.3 | 45 |
| Magnesium | 0.5 | 6 |
| Iron | neg. | 3 |
| Barium | 0 | 0 |
| **Anions** | | |
| Chloride | 4.1 | 145 |
| Bicarbonate | 4.0 | 244 |
| Carbonate | 0 | 0 |
| Hydroxide | 0 | 0 |
| Sulfate | 24.0 | 1150 |

Copies to Hixon Development Co. (3)
P.O. Box 2810
Farmington, New Mexico 87401

TEST NO. 22096

Certified by:

LAWRENCE A. BREWER
REGISTERED
PROFESSIONAL ENGINEER AND LAND SURVEYOR
3122
STATE OF NEW MEXICO

Form 360-7

WELL NAME CBU WELL NO. 4

LOCATION 660' FNL, 1980' FWL SECTION 6 T 25N R 12W

CURRENT STATUS: Pumping

GLE 6164'

RBM 6175'

DF

KB 11'

## SURFACE CASING

Hole size: 12-1/4"

Casing: 8-5/8" 24# J-55 ST&C

Casing set @ 311' w/ 200 sx

## FORMATION TOPS

| | |
|---|---|
| Fruitland | |
| Pictured Cliffs | |
| Lewis | |
| Cliffhouse | |
| Menefee | |
| Point Lookout | |
| Mancos | 3806' |
| Upper Gallup | 4552' |
| Lower Gallup | 4814' |

## CEMENT TOP

3500' (temp. survey)

## PERFORATIONS

4818'-20, 4827'-44, 4852'-56, 4861'-68, 4882'-92, 4896'-4908', 4916'-24' (4 SPF)

PBD 4968'

## PRODUCTION CASING

Hole size: 7-7/8"

Casing: 4-1/2" 9.5# J-55

Casing set @ 5000' w/ 300 sx TD 5000'

## WELL HISTORY

Spud date: 7-28-59

Original owner: Sunray Mid-Continent

IP 216 BOPD BWPD

GOR

Completion treatment: 8/17/59 - Fraced with 20,000# sand and oil. BD-3000#.

## CURRENT DATA

Pumping Unit American 228

Tubing 2-3/8"

Pump size 2 x 1-1/2 x 16

Rod string 139 of 3/4" & 54 of 7/8"

Remarks 6-30-71 Tagged fill at 4800'- bailed out to 4820'.

**WELL NAME** CBU Well No. 1

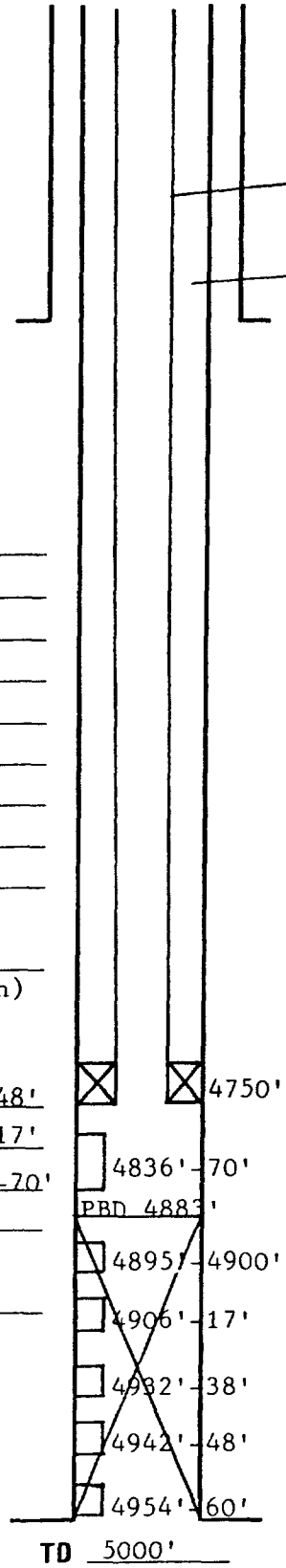
**LOCATION** 660' FSL, 660' FWL **SECTION** 31 **T** 26N **R** 12W

**CURRENT STATUS:**

**GLE** 6159'

**RBM** 6171'

KB 12'




## SURFACE CASING

Hole size: 13-3/4"

Casing: 10-3/4" 32.75#

Casing set @ 173' with 200 sacks

## FORMATION TOPS

Fruitland

Pictured Cliffs 1153'

Lewis

Cliffhouse

Menefee

Point Lookout 3637'

Mancos

Upper Gallup 4720'

Lower Gallup

## CEMENT TOP

3800'
(by calculation)

## PERFORATIONS

4954'-60', 4942'-48'
4932'-38', 4906'-17'
4895'-4900', 4836'-70'

PBD 4969'

## PRODUCTION CASING

Hole size: 7-7/8"

Casing: 5-1/2" 14# J-55 8rd

Casing set @ 4998'

TD 5000'

## WELL HISTORY

Spud date: 4-27-56

Original owner: Sun ray Mid-Continent

IP 192 BOPD BWPD

GOR

Completion treatment:

## CURRENT DATA

Pumping Unit

Tubing

Pump size

Rod string

Remarks

**WELL NAME** CBU WELL NO. 5

**LOCATION** 660' FNL, 660' FWL **SECTION** 6 **T** 25N **R** 12W

**CURRENT STATUS:**

**GLE** 6184'

**RBM** 6196'

**DF**

## SURFACE CASING

**Hole size:** 12-3/4"

**Casing:** 10-3/4" 32.75# H-40

**Casing set @** 209' w/ 175 sacks

## FORMATION TOPS

| | |
|---|---|
| Fruitland | |
| Pictured Cliffs | 1200' |
| Lewis | |
| Cliffhouse | |
| Menefee | |
| Point Lookout | 3645' |
| Mancos | |
| Upper Gallup | 4718' |
| Lower Gallup | 4830' |

**CEMENT TOP** 3700' (temp survey)

**PERFORATIONS** 4828'-56' (4 SPF)
4874'-78', 4896'-4900'
4912'-16', 4934'-38'

**PBD** 4943' (1977)

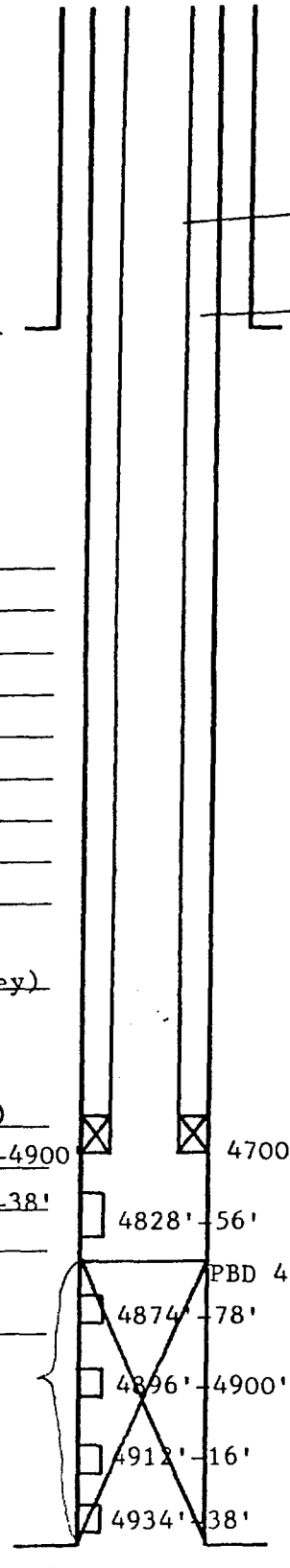
Squeezed with 150 sacks cement

## PRODUCTION CASING

**Hole size:** 8-3/4"

**Casing:** 7" 20# & 23#

**Casing set @** 5001' with 200 sacks **TD** 5002'




## WELL HISTORY

**Spud date:** 4-2-56

**Original owner:** Sunray

**IP** 288 **BOPD** 0 **BWPD**

**GOR** 396

**Completion treatment:** Originally completed for production

## CURRENT DATA

**Pumping Unit**

**Tubing**

**Pump size**

**Rod string**

**Remarks** Baker Model AD-1 tension packer to be set about 4700'.

Injection interval 4828'-56' will be reperforated with 56 0.41" holes.

**WELL NAME** West Bisti Unit No. A-1

**LOCATION** SE/4 SE/4 **SECTION** 36 **T** 26N **R** 13W

**CURRENT STATUS:**

**GLE** 6161'

**RBM**

**DF**

## SURFACE CASING

Hole size:

Casing: 10-3/4"

Casing set @ 212' w/200 sx

## FORMATION TOPS

| | |
|---|---|
| Fruitland | |
| Pictured Cliffs | 1194' |
| Chacra | 1515' |
| LaVentura | 1925' |
| Menefee | |
| Point Lookout | 3658' |
| Mancos | 3798' |
| Haspah | 4657' |
| Lower Gallup | |

## CEMENT TOP

## PERFORATIONS

4831'-4945'

PBD 4978'

## PRODUCTION CASING

Hole size:

Casing: 7

Casing set @ 5018' w/200 sx **TD** 5042

## WELL HISTORY

Spud date: 3/30/56

Original owner:

IP BOPD 209 BWPD

GOR 377

Completion treatment: SOF

## CURRENT DATA

Pumping Unit

Tubing

Pump size

Rod string

Remarks

WELL NAME CBU WELL NO. WIW-2

LOCATION 1980' FNL, 660' FWL SECTION 6 T 25N R 12W

CURRENT STATUS: Injection

GLE 6186'

RBM 6199'

DF

## SURFACE CASING

Hole size: 15"

Casing: 10-3/4" 32.75# 8rd

Casing set @ 177' w/ 200 sx

## FORMATION TOPS

| | |
|---|---|
| Fruitland | |
| Pictured Cliffs | 1180' |
| Lewis | |
| Cliffhouse | |
| Menefee | |
| Point Lookout | 3630' |
| Mancos | 3740' |
| Upper Gallup | 4820' |
| Lower Gallup | |

## CEMENT TOP

## PERFORATIONS

4869'-62'
4850'-34'
(4 SPF)

PBD 4854'

## PRODUCTION CASING

Hole size: 8-3/4"

Casing: 5-1/2" 14# 8rd

Casing set @ 5025' w/ 175 sx

TD 5026'

## WELL HISTORY

Spud date: 4-27-56

Original owner: Sunray Mid Continent

IP 676 BOPD BWPD

GOR

Completion treatment:

## CURRENT DATA

Pumping Unit

Tubing 2-7/8" at 4930'

Pump size

Rod string

Remarks Ran Baker Model D packer at 4800'. Plugged well back to 4854' - only perfs 4834'-50' open (sand capped with cement)

san juan repro Form 100-13

Tracer surveys - logs

WELL NAME CBU WELL NO. WIW-2

LOCATION 1980' FNL, 660' FWL SECTION 6 T 25N R 12W

CURRENT STATUS: Injection

GLE 6186'

RBM 6199'

DF

## SURFACE CASING

Hole size: 15"

Casing: 10-3/4" 32.75# 8rd

Casing set @ 177' w/ 200 sx

## FORMATION TOPS

Fruitland

Pictured Cliffs 1180'

Lewis

Cliffhouse

Menefee

Point Lookout 3630'

Mancos 3740'

Upper Gallup 4820'

Lower Gallup

## CEMENT TOP

## PERFORATIONS

4869'-62'
4850'-34'
(4 SPF)

PBD 4854'

## PRODUCTION CASING

Hole size: 8-3/4"

Casing: 5-1/2" 14# 8rd

Casing set @ 5025' w/ 175 sx

TD 5026'

## WELL HISTORY

Spud date: 4-27-56

Original owner: Sunray Mid Continent

IP 676 BOPD BWPD

GOR

Completion treatment:

## CURRENT DATA

Pumping Unit

Tubing 2-7/8" at 4930'

Pump size

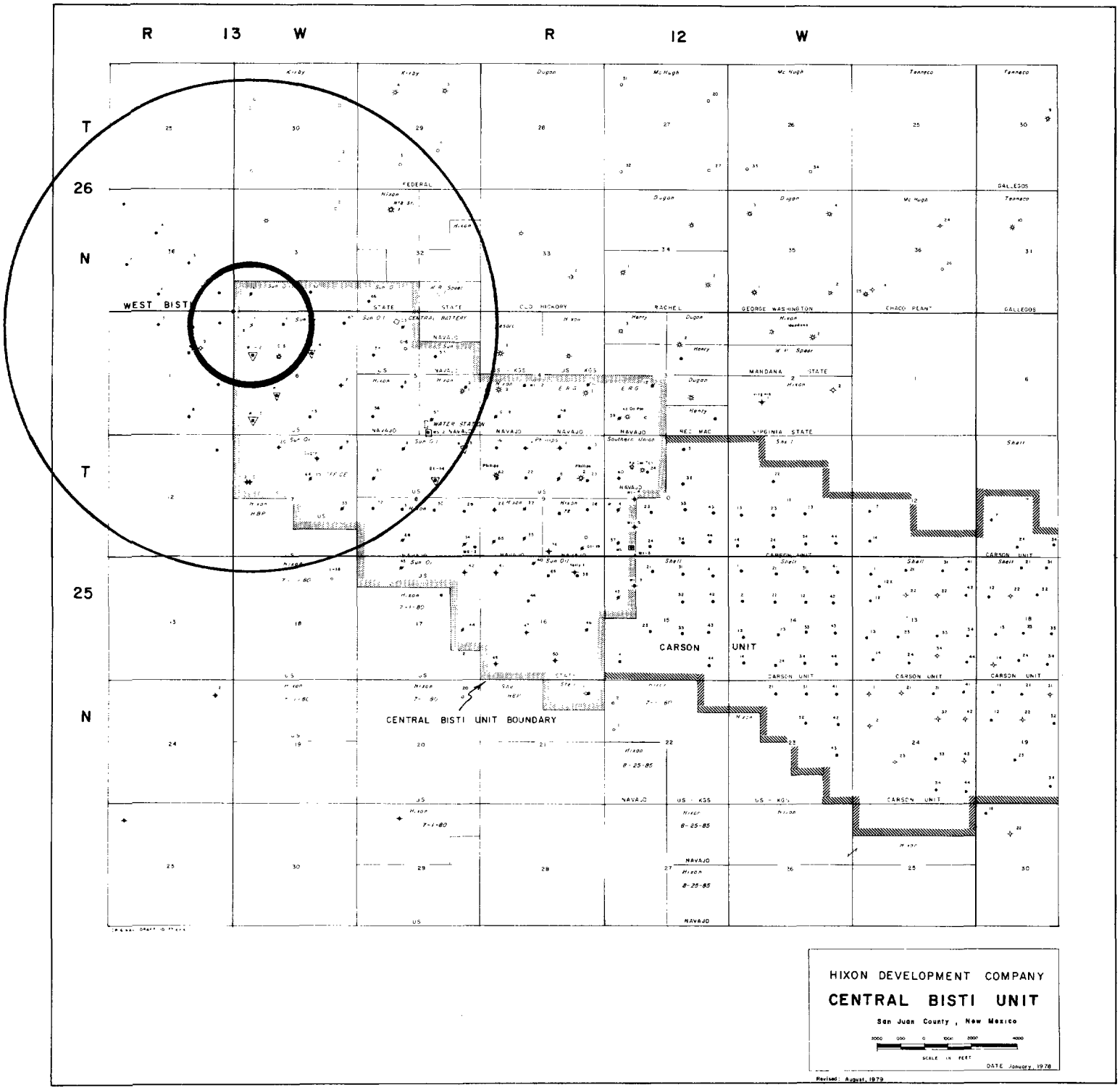
Rod string

Remarks Ran Baker Model D packer at 4800'. Plugged well back to 4854' - only perfs 4834'-50' open (sand capped with cement)



Tracer surveys - logs

CBU WELL NO. 5


R 13 W
R 12 W
T 26 N
T 25 N
WEST BISTI
CENTRAL BISTI UNIT BOUNDARY
CARSON UNIT
HIXON DEVELOPMENT COMPANY
CENTRAL BISTI UNIT
San Juan County, New Mexico
SCALE IN FEET
DATE January, 1978
Revised: August, 1979

NOTICE

HIXON DEVELOPMENT COMPANY, P.O. Box 2810, Farmington, New Mexico 87499, (505) 325-6984, whoes agent is Aldrich L. Kuchera hereby notifies interested parties that the CBU Well No. 1, 5 and 54 located in the SW/4 SW/4 Section 31, T26N, R12W, NW/4 NW/4 Section 6 and SW/4 NW/4 Section 5, T25N, R12W respectively are to be converted to water injection wells. Maximum rate will be 1200 BWPD at less than 1500 psi. Any request or objection should be filed with Oil Conservation Division, P.O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

LEGAL NOTICE NUMBER 12755 TO BE PUBLISHED 2/16/83

FILE WFX-516

HIXON DEVELOPMENT COMPANY
P. O. BOX 2810
FARMINGTON, NEW MEXICO 87499

May 21, 1984

Mr. Frank Chavez
Oil Conservation Division
1000 Rio Brazos Road
Aztec, New Mexico 87410

Subject: Waterflood Data
Central Bisti Lower Gallup Unit
San Juan County, New Mexico

Dear Frank:

Per our telecon, today, attached are water analyses of the Cliffhouse (water source) and the Lower Gallup (water injection zone).

The Cliffhouse water source zone is approximately from 1780'-2441' in our WSW#2 in Section 5, T25N, R12W.

Water analyses show that the original Bisti Gallup water had TDS in the range of 50,000 ppm. The Cliffhouse water has TDS in the range of 4000-5000 ppm. It is not, however, potable. We are essentially injecting a better quality water into the Gallup.

Very truly yours,

Aldrich L. Kuchera
President

ALK:cb

Attachment

# CHEMICAL & GEOLOGICAL LABORATORIES

Casper Farmington Glendive Sterling



## WATER ANALYSIS REPORT

Field Bisti, New Mexico Well No. 27 Carson Bisti Unit

Operator Sunray Mid-Continent Oil Company Location

Sampled by Date

Formation Gallup Depths 4763 How sampled Production

Other pertinent data Rusty, clear filtrate.

Analyzed by DM Date March 10, 1960 Lab. No. 15169

| CONSTITUENTS | PPM | MEQ. | MEQ.% |
|---|---|---|---|
| Sodium | 17,332 | 753.89 | 47.40 |
| Calcium | 542 | 27.05 | 1.70 |
| Magnesium | 173 | 14.22 | 0.90 |
| Sulfate | Trace | - | - |
| Chloride | 27,800 | 783.96 | 49.30 |
| Carbonate | - | - | - |
| Bicarbonate | 683 | 11.20 | 0.70 |
| Hydroxide | | | |

TOTAL SOLIDS IN PARTS PER MILLION:

| | |
|---|---|
| By evaporation | 47,470 |
| After ignition | 46,970 |
| Calculated | 46,183 |

PROPERTIES OF REACTION IN PERCENT:

| | |
|---|---|
| Primary salinity | 94.80 |
| Secondary salinity | 3.80 |
| Primary alkalinity | 0.00 |
| Secondary alkalinity | 1.40 |
| Chloride salinity | 100.00 |
| Sulfate salinity | 0.00 |

Observed pH 7.1 Resistivity @ 68°F. ohms meter³ 0.167

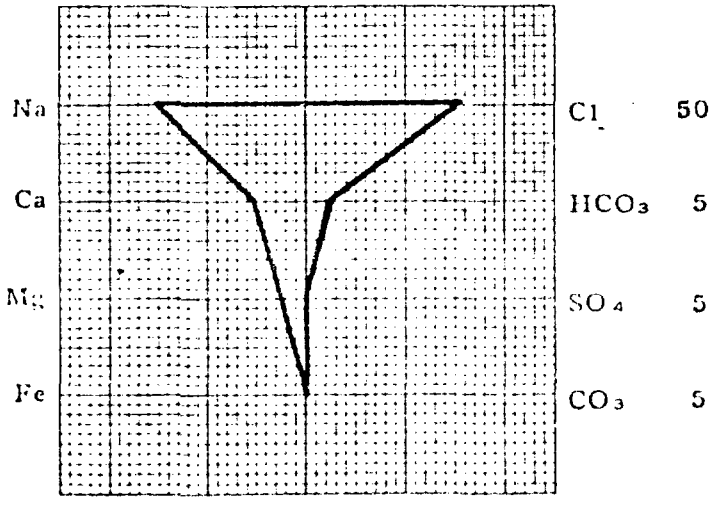
Remarks Correlates with Gallup water in this field.

Note: PPM = Milligrams per liter (1 PPM is equivalent to 0.0001% by weight). MEQ = Milliequivalents per liter. MEQ% = Milliequlivalents per liter in percent.

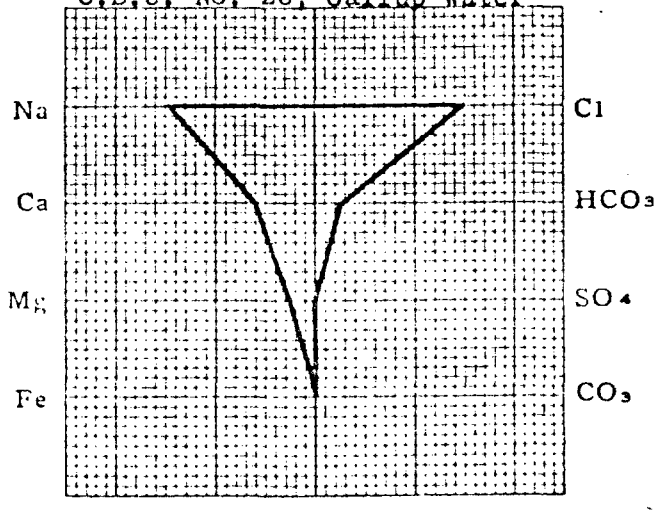
### WATER ANALYSIS PATTERN

Sample above described

Scale MEQ per Unit




Bisti, New Mexico
C.B.U. No. 28, Gallup water



LABORATORY

SAMPLED: 10-25-60

Sunray's Utility Well Cliffhouse MV

| | | Mg./Liter |
|---|---|---|
| | | 0.0 |
| | | 0.8 |
| | | 1.1 |
| | | 45.4 |
| | | 0 |
| | | 1.1 |
| | | 0.2 |
| | | 57 |

| | |
|---|---|
| | 4,151 |
| | 3,389 |
| | 8.22 |
| | 8.2 |
| | 328 |
| | 0.9 |

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DIST. 3

STATE OF NEW MEXICO

# ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

AZTEC DISTRICT OFFICE

1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410
(505) 334-6178

RECEIVED
FEB 22 1993
OIL CONSERVATION DIVISION
SANTA FE

OIL CONSERVATION DIVISION
BOX 2088
SANTA FE, NEW MEXICO 87501

DATE 2-17-93

RE: Proposed MC _____
Proposed DHC _____
Proposed NSL _____
Proposed SWD _____
Proposed WFX ✓
Proposed PMX _____

Gentlemen:

I have examined the application dated 2-16-93

for the Hixon Devel. Co. (Operator) CBU # 5 (Lease and Well No.) D-6-25N-12W (Unit, S-T-R)

and my recommendations are as follows:

Approve, with a pressure limit to 966 psi, unless a step rate test is ran to validate a higher injection pressure.

Yours truly,

Jeff A. Edmister