

ENERGY AND MINERALS DEPARTMENT DIL CONSERVATION DIVISION

JUL2 7 1984

TONEY ANAYA

OIL CON. DIV.

POST OFFICE BOX 2088 STATE LAND OFFICE BUILDING SANTA FE, NEW MEXICO 87501 (505) 827-5800

APPLICATION OF HIXON DEVELOPMENT COMPANY TO EXPAND ITS WATERFLOOD PROJECT IN THE LOWER GALLUP OIL POOL IN SAN JUAN COUNTY, NEW MEXICO.

ORDER No. WFX-528

ADMINISTRATIVE ORDER OF THE OIL CONSERVATION DIVISION

Under the provisions of Order No. R-1636-A, Hixon Development Company has made application to the Division on April 27, 1984, for permission to expand its Central Bisti Unit Waterflood Project in the Lower Gallup Oil Pool in San Juan County, New Mexico.

NOW, on this 23rd day of July, 1984, the Division Director finds:

- 1. That application has been filed in due form.
- 2. That satisfactory information has been provided that all offset operators have been duly notified of the application.
- 3. That no objection has been received within the waiting period as prescribed by Rule 701B.
- 4. That the proposed injection well is eligible for conversion to water injection under the terms of Rule 701.
- 5. That the proposed expansion of the above referenced Waterflood project will not cause waste nor impair correlative rights.
 - 6. That the application should be approved.

IT IS THEREFORE ORDERED:

That the applicant, Hixon Development Company, be and the same is hereby authorized to inject water into the Lower Gallup Sand formation through plastic-lined tubing set in a packer at a maximum of 100 feet from the highest injection interval in the following described wells for purposes of waterflood to wit:

CBU Well No. 21, Unit E, Sec. 7, T-25-N, R-12-W San Juan County
Maximum Surface Injection Pressure: 975 psig.

CBU Well No. 52, Unit O, Sec. 31, T-26-N, R-12-W, San Juan County
Maximum Surface Injection Pressure: 964 psig.

CBU Well No. 53, Unit G, Sec. 5, T-25-N, R-12-W, San Juan County
Maximum Surface Injection Pressure: 956 psig.

CBU Well No. 56, Unit M, Sec. 5, T-25-N, R-12-W, San Juan County
Maximum Surface Injection Pressure: 925 psig.

CBU Well No. 57, Unit O, Sec. 5, T-25-N, R-12-W, San Juan County
Maximum Surface Injection Pressure: 954 psig.

CBU Well No. 63, Unit E, Sec. 8, T-25-N, R-12-W, San Juan County
Maximum Surface Injection Pressure: 958 psig.

CBU Well No. 64, Unit G, Sec. 7, T-25-N, R-12-W, San Juan County
Maximum Surface Injection Pressure: 965 psig.

CBU Well No. 66, Unit M, Sec. 32, T-26-N, R-12-W, San Juan County
Maximum Surface Injection Pressure: 961 psig.

CBU Well No. 73, Unit O, Sec. 8, T-25-N, R-12-W, San Juan County
Maximum Surface Injection Pressure: 950 psig.

IT IS FURTHER ORDERED:

That the operator shall take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

That the casing-tubing annulus (in each well) shall be loaded with an inert fluid and equipped with a pressure gauge at the surface or left open to the atmosphere to facilitate detection of leakage in the casing, tubing, or packer.

That the injection wells or system shall be equipped with a pressure limiting device which will limit the wellhead pressure on the injection wells to no more than 0.2 psi per foot of depth to the uppermost injection interval on each well. (note well list for individual well pressure limits.

That the Director of the Division may authorize an increase in injection pressure upon a proper showing by the operator of said wells that such higher pressure will not result in migration of the injected fluid from the Gallup formation. That such proper showing shall consist of a valid step-rate test run in accordance with and acceptable to this office.

That the operator shall notify the supervisor of the Division's Aztec District Office before injection is commenced through said wells.

That the operator shall immediately notify the Supervisor of the Division's Aztec District Office of the failure of the tubing, casing, or packer in said wells or the leakage of water from or around said wells and shall take such steps as may be timely or necessary to correct such failure or leakage.

That the subject wells shall be governed by all provisions of Division Order No. R-1636-A and Rules 702, 703, 704, 705, and 706 not inconsistent herewith.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OLL CONSERVATION QIVISION

Division Director

SEAL



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

OIL CONSERVATION DIVISION BOX 2088 SANTA FE, NEW MEXICO 87501		
DATE		
RE: Proposed MC		
Gentlemen:	A Transport	
I have examined the applica	ation dated $4-26-84$	
for the Wixon Der. Go	CBU #Z/ Lease and Well No.	E-7-25N-17W Unit, S-T-R
Operator	Lease and Well No.	Unit, S-1-R
and my recommendations are	as follows:	
approve		
Yours truly,		
7,20		

P. O. BOX 2810 FARMINGTON, NEW MEXICO 87499

April 16, 1984

Oil Conservation Division P.O. Box 2088 Santa Fe, New Mexico 87501

Subject: CBU Well No. 21

SW/4 NW/4, Section 7, T25N, R12W

San Juan County, New Mexico

Gentlemen:

Attached for your approval is our Application for Authorization to Inject for the subject well.

Very truly yours,

Hixon Development Company

Aldrich L. Kuchera

Executive Vice President

ALK:cb

Attachments

cc: Mr. Frank Chavez
Oil Conservation Division
1000 Rio Brazos Road

Aztec, New Mexico 87410

APRZE 1384
OIL CON. DIV.
OIL CON. DIV.
OIL COLT. 3

(Bu #20

WBU #166

P.O. BOX 2810 FARMINGTON, NEW MEXICO 87499

April 16, 1984

Bureau of Indian Affairs Navajo Area Office Minerals Department Box 146 Window Rock, Arizona 86515

Subject: CBU Well No. 21

SW/4 NW/4 Section 7, T25N, R12W San Juan County, New Mexico

Gentlemen:

Attached is our Application for Authorization to Inject for the subject well. We are required by the Oil Conservation Division to furnish copies of these applications to the surface owners.

Very truly yours,

Hixon Development Company

Aldrich L. Kuchera

Executive Vice President

ALK:cb

Attachments

Certified Mail No. 933626

P.O.BOX 2810 FARMINGTON, NEW MEXICO 87499

April 16, 1984

Gulf Oil Corporation P.O. Box 1150 Midland, Texas 79701

Subject: CBU Well No. 21

SW/4 NW/4 Section 7, T25N, R12W San Juan County, New Mexico

Gentlemen:

Attached is our Application for Authorization to Inject for the subject well. We are required by the Oil Conservation Division to furnish a copy of the application to each lease hold operator within one half mile of the well location.

Very truly yours,

Hixon Development Company

Aldrich L. Kuchera

Executive Vice President

ALK:cb

Attachments:

Certified Mail No. 933629

APPLICAT	TION FOR AUTHORIZATION TO INJECT
I.	Purpose: Secondary Recovery Pressure Maintenance Disposal Storage Application qualifies for administrative approval? Xyeu no
11.	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? X yes $notation$ no If yes, give the Division order number authorizing the project $R-1636-A$
٧.	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:
	 Proposed average and maximum daily rate and volume of fluids to be injected; Whether the system is open or closed; Proposed average and maximum injection pressure; Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and 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 ⊎ell 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 Signature: Like State Condition Title Petroleum Engineer A/16/84
_	Signature: (Lekundl) (Circle 7/1 Date: 4/16/84
euba	he information required under Sections VI, VIII, X, and XI above has been previously nitted, it need not be duplicated and resubmitted. Please show the date and circumstance he earlier submittal.

Average Unicipal 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 Dil Conservation Division, P. D. 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.

A11.2019.14

Hixon Development Company
Application for Authorization to Inject
Form C-108 Supplemental Information

CBU Well No. 21 SW/4 NW/4, Section 7, T25N, R12W San Juan County, New Mexico

- I. Shown on Application.
- II. Shown on Application.
- III. Well data attached.
- IV. This well is located in a Federal and State approved waterflood 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:

CBU Well No. 20 CBU Well No. WI-3 West Bisti Unit No. 166

- VII. 1. Proposed average injection rate is 600 BWPD, expected maximum injection rate is 1200 BWPD.
 - 2. The injection system will be closed.
 - 3. Average injection pressures are expected to be in the 840-965 psi range. Maximum injection pressure will be 965 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 waterflooding not disposal.
- VIII. The injection zone is the upper bench of the Lower Gallup sandstone. This zone is shown to be 6' in thickness with a top of 4875' KBE as shown on SP log

Application for Authorization to Inject Page 2

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 if required to maintain injection rate and pressure.
- X. Logs were previously submitted.

see attaching

- XI. Wo 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.

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.

terphera

Very truly yours,

Aldrich L. Kuchera

President

ALK:cb

Attachment

MAY 22 1984
OIL CON. DIV.
DIST. 3

100 M. I P. OILG LAPGUATORY

FIELD: PLAT SAUTED: 10-28-60

".... Supray's Dility Well Cliffhonse MV

910 St. 1902		17%	Mec./liter
No Lower Long to China to China Long to Chin		.45 199 2,170	C.2 C.8 5.6 45.4
in lum Drivaum Drivasina um ruitan minu	Fly Ge Ma Mily Me	0 19 2 trace 3,300	0.2 - 57
l til disulvet . 216s Demil - Demily to delige		4,181 3,385	
Letivity (Semeters iE	4. M. E)	0.32 8.0	
Schinity (1 31) I 501 Fe (2.00g)		?28 ∫€	
Ton (5)		C.5	

DIE CON. DIV. OIL OIL OIST. 3

Figuration Division Within 27-5-60

CHEMICAL & GEOLOGICAL LABORATORIES

Casper

Farmington

Glendive

Sterling

Production

OIL CON. DIV.

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

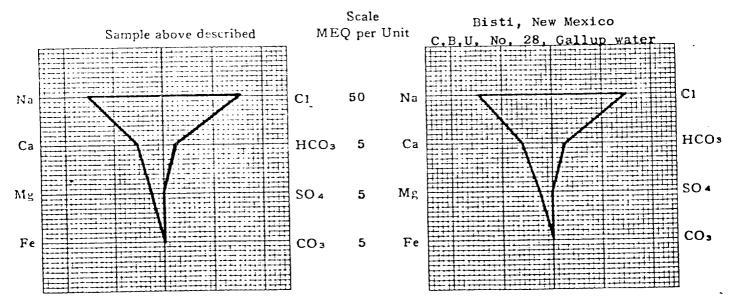
Other pertinent data Rusty, clear filtrate.

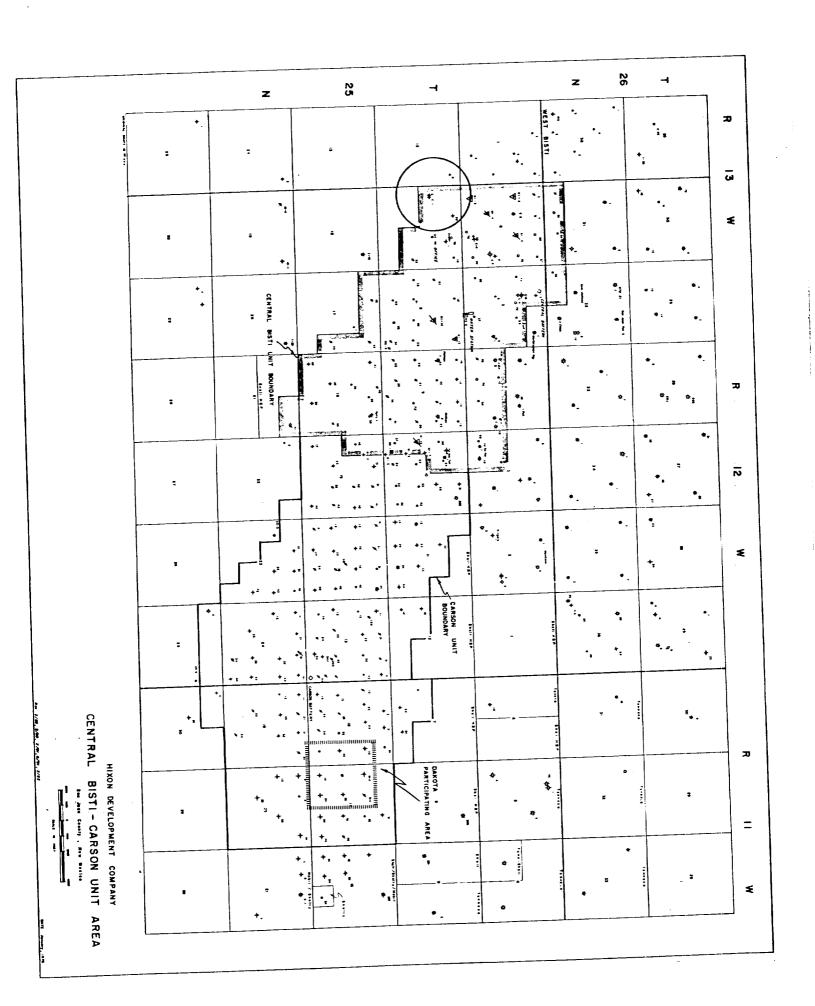
Analyzed by	DM		Date	March 10, 1960	Lab. No. 1516	9
CONSTITUEN	TS PPM	MEQ.	MEQ.%	TOTAL SOLIDS IN P	ARTS PER MIL	LION:
Sodium	17,332	753,89	47,40	By evaporation	47,470	
Calcium		27.05	1.70	After ignition	46,970	
Magnesium		14.22	0,90	Calculated	46,183	
Sulfate				PROPERTIES OF REA	CTION IN PER	CENT:
Chloride				Primary salinity	94,80	
Carbonate		=	<u>-</u> _	Secondary salinity_		
Bicarbonate -	683	11.20	0.70	Primary alkalinity_		
Hydroxide				Secondary alkalinity		
				Chloride salinity		
Observed pH	Resistiv	ity @ 68°F.		Sulfate salinity		

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

Correlates with Gallup water in this field.

WATER ANALYSIS PATTERN





san juan testing labo itory, inc.

907 WEST APACHE

P.O. BOX 2079 .

FARMINGTON, NEW MEXICO

PHONE 327-4966

	Date June 10, 1977
Report to	A Kuchera Mgr. Sompled by H1xon Personner
Project	Location NW NW Sec. 6, 125N, KIZW
•	24509 Water Analysis for Petroleum Engineering TEST RESULTS

WATER ANALYSIS FOR PETROLEUM ENGINEERING

Constituent Total Solids pH Resistivity Conductivity	2263 ppm 7.25 2.94 ohms/meter @70°F 3,400 micromhos/cm @ 70°F	Constituents Cations Sodium Calcium Magnesium Iron Barium	Meg/L 29.3 2.3 0.5 neg. 0	ppm 674 45 6 3
Comments Essentially th sulfate soluti	is is a 0.2% sodium on.	Anions Chloride Bicarbonate Carbonate Hydroxide Sulfate	4.1 4.0 0 0 24.0	145 244 0 0 1150

Copies to Hixon Development Co. (3)

P.O. Box 2810

Farmington, New Mexico 87401

TEST NO. 22096

Certified by:



WELL DATA

WELL NAME: FEDERAL "C" MG. 2 LOCATION: 1988: FWL, 860 FWL, 7-25N-12W DF: 33027 KB: REM: GLE: 8290/ PRODUCTION CASING HOLE SIZE: 7-7/81 SURFACE CABING HOLE SIZE: 12-1/4" PRODUCTION CASING: 5-1/2" SURFACE CASING: 8-5/8" PRODUCTION CASING SET AT: 58491 SURFACE CASING SET AT: 2941 PERFS: 4880/-86/ FORMATION TOPS : 4919-251,4938-44 FB FRUITLAND: 11974 PICTURED CLIFFS: 12484 LEWIS: WELL HISTORY CLIFFHOUSE: SPUD DATE: 6/11/58 MEREFEE: IP: 172 BOPD GOR: POINT LOCKOUT: COMPLETION: 37588# SAND MANCOS: UPPER GALLUF: LOWER GALLUP: REMARKS: PBD: 5012/

TOTAL DEPTH: 5850/

WELL NAME: CBU WELL NO. 20 LOCATION: 660' FNL, 1980' FWL, SECTION 7, T25N, R12W RBM: GLE: 6244'

KB:

SURFACE CASING HOLE SIZE: 12-1/2" SURFACE CASING: 8-5/8" 24# SURFACE CASING SET AT: 284'

FORMATION TOPS FRUITLAND: PICTURED CLIFFS: 1208' LEWIS: CLIFFHOUSE: MENEFEE:

POINT LOOKOUT: MANCOS: 3833' UPPER GALLUP:

LOWER GALLUP: 4838'

PBD: TOTAL DEPTH: 5004' PRODUCTION CASING HOLE SIZE: 7-7/8" PRODUCTION CASING: 5-1/2" 14# PRODUCTION CASING SET AT: 5004.45'

PERFS: 4847'-58', 4892'-98', : 4913'-17' :

WELL HISTORY SPUD DATE: 12/28/57 GOR: 598 IP: 30.5 BOPD COMPLETION: 30000 GALLONS OIL & : 30000# SAND

REMARKS: P&A 20 SX 4838-4783, 40 : SX 1925-2025, 60 SX 1150-1300, : 40 SX 260-360, 2 SX TO SURFACE



OIL CON. DIV. DIST. 3

WELL DATA

WELL NAME: CBU WELL NO. WI-3

LOCATION: 660/ FSL, 660/ FWL, SECTION 6, T25N, R12W

RBM: GLE: 62301

DF: 6241'

KB:

SURFACE CASING HOLE SIZE: 12-1/4" SURFACE CASING: 8-5/8" 24# 8PD

SURFACE CASING SET AT: 1944

FORMATION TOPS

FRUITLAND:

PICTURED CLIFFS: 1208'

LEWIS:

CLIFFHOUSE:

MENEFEE:

POINT LOOKOUT: 3648/

MANCOS: 3820/

UPPER GALLUP: 47391

LOWER GALLUP:

PBD:

TOTAL DEPTH: 50014

PRODUCTION CASING HOLE SIZE: 7-7/8" PRODUCTION CASING: 5-1/2" 14# 8RD PRODUCTION CASING SET AT: 49991

PERFS: 4958-601, 4936-421, 4916

: -281, 4904-101, 4889-951

: 4848-821, 4842-521

WELL HISTORY

SPUD DATE: 5/10/56

IP: 666 BOPD

COMPLETION: FRAC W/ 25000 GALLON

: OIL & 25000# 20-40 SAND

REMARKS:

WELL DATA

ELL NAME: WEST BISTI UNIT NO. 166 OCATION: 660' FNL, 660' FEL, 12-25N-13W RBM: _____ LE: 6256'

URFACE CASING HOLE SIZE:

SURFACE CASING: 9-5/8"

SURFACE CASING SET AT: 212'

ORMATION TOPS

RUITLAND:

PICTURED CLIFFS: 1228

EWIS:

:LIFFHOUSE:

1ENEFEE:

OINT LOOKOUT: 3666'

1ANCOS: 3823'

JPPER GALLUP: 4762'

_OWER GALLUP:

BD:

rotal DEPTH: 4993′

DF:

PRODUCTION CASING HOLE SIZE:

KB:

GOR:

PRODUCTION CASING: 5-1/2"

PRODUCTION CASING SET AT: 4993'

PERFS: 4858-76', 4889-98', : 4902-16', 4922-64'

WELL HISTORY

SPUD DATE: 3/30/56

IP: 137 BOPD

COMPLETION:

REMARKS: P&A 9/83 (PLUGS @ 3716-

: 3616', 2647-2747', 840-940',

: 272' TO SURFACE WITH 200 SX

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 following list of wells are to be converted to water injection wells. Maximum rate will be 1200 BWPD at less than 965 psi. Any request for information or objections should be filed with the Oil Conservation Divsion, P.O. Box 2088, Santa Fe, New Mexico 87501 within 15 days. CBU Well No. 66, SW/4 SW/4, Section 32, T26N, R12W; CBU Well No. 63, SW/4 NW/4, Section 8, T25N, R12W; CBU Well No. 57, SW/4 SE/4, Section 5, T25N, R12W; CBU Well No. 56, SW/4 SW/4, Section 5, T25N, R12W; CBU Well No. 53, SW/4 NW/4, Section 5, T25N, R12W; CBU Well No. 52, SW/4 SE/4, Section 31, T26N, R12W; CBU Well No. 64, SW/4 NE/4, Section 7, T25N, R12W; CBU Well No. 21, SW/4 NW/4, Section 7, T25N, R12W; CBU Well No. 73, SW/4 SE/4, SEction 8, T25N, R12W

To be published: 4/26/84

Legal No.: 14698