STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

HOBBS DISTRICT OFFICE

12/27/96

GOVERNOR

POST OFFICE BOX 1980
HOBBS, NEW MEXICO 88241-1980
(505) 393-6161

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

SWD-652
1/22/97

RE: Proposed:
MC_____
DHC_____
NSL_____
NSP_____
SWD X
WFX_____
PMX_____

Gentlemen:

I have examined the application for the:

Maralo Inc — Barnes 20 — #1-C — 20-9-35
Operator — Lease & Well No. Unit — S-T-R

and my recommendations are as follows:

OK

Yours very truly,

Jerry Sexton
Supervisor, District 1

/ed

December 20, 1996

Engineering Department
New Mexico Energy & Minerals Department
Oil Conservation Division
2040 South Pacheco
Santa Fe, NM 87505

RE: Form C-108 Application of Maralo, Inc. for Salt Water Disposal, Lea County, New Mexico

Attention: David Catanach

Under the provisions of Rule 701 (B), enclosed please find Form C-108 application with attachments for authorization to inject into the **Barnes "20", Well #1, API #30-025-31601,** located 766 feet from the North line and 2201 feet from the West line (Unit C) of Section 20, Township 9 South, Range 35 East, NMPM, Lea County, New Mexico.

Sincerely,

Dorothea Logan

Dorothea Logan
Regulatory Analyst

Enclosures/Attachments

cc: OCD/Hobbs w/attachments

Maralo Inc. / P.O. Box 832 / Midland, Texas 79702-0832 / (915) 684-7441
Fax / (915) 684-9836

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: MARALO, INC.

Address: P. O. BOX 832, MIDLAND, TX 79702

Contact party: RICHARD GILL, PETROLEUM ENGINEER Phone: (915) 684-7441

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: DOROTHEA LOGAN Title REGULATORY ANALYST

Signature: Dorothea Logan Date: DECEMBER 20, 1996

* 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.

C-108

Application For Authorization To Inject
Maralo, Inc
Barnes "20", Well #1
UL C, Section 20-T9S-R35E
Lea County, New Mexico

I. The purpose of completing this well is to make a disposal well for produced Devonian water into the Bough "C" formation.

Maralo, Inc. plans to convert this well to a water injection well in the Bough "C" formation.

II. Operator: Maralo, Inc.
P. O. Box 832
Midland, TX 79702
Richard A. Gill (915) 684-7441
Petroleum Engineer

III. Well Data : See Exhibits "A" (2)

IV. This is not an expansion of an existing project.

V. See attached map, Exhibit "B"

VI. There are 4 plugged wells within the area of review which penetrate the proposed injection zone.
See Exhibit "C" for tabular data of all wells.
See Exhibits "D" for schematics of plugged wells. (4)

VII. 1. Estimated average rate is 1000 bbls/day.
Estimated maximum rate is 2000 bbls/day.

2. This will be a closed system.

3. Average injection pressure---unknown
Maximum injection pressure--2000 psi.

4. Sources of injected water would be produced water from the Devonian. See Exhibit "E" water analysis.

5. Water injection will be into a zone not productive of oil and gas. The Bough "C" formation disposal zone is dry.

VIII. 1. The proposed injection interval is a portion of the Bough "C" formation consisting of porous dolomite at a depth of 9740 - 9754'.

VIII. continued

2. The Rustler fresh water zone overlies the proposed injection formations at a depth of approximately 250'. There are no fresh water zones underlying the formation.

IX. The proposed disposal interval may be acidized with 15% HCL acid and a small frac treatment.

X. Well Logs are filed at the Hobbs OCD office.

XI. The location of three fresh water wells/windmills existing within a one mile radius of the subject location are noted on the map see Exhibit "F". Water Analysis is Exhibit "F1".

XII. Maralo, Inc. has examined geologic and engineering data and has found that there is no evidence of faulting or other hydrologic communication between potential fresh water aquifers and the desired injection zone.

XIII. Proof of Notice

A copy of Form C-108 with the Statement of Compliance and associated exhibits has been sent by certified mail as follows:

A. Surface Owner: Tip Barnes
P. O. Box 216
Tatum, New Mexico 88267

B. There are no offset operators.

See Exhibit "G" for Proof of Publication in the Hobbs Daily News Sun.

MARALO, INC.
BARNES "20" #1
C-20-T9S-R35E
LEA COUNTY, NEW MEXICO

Exhibit "A"

III. Well Data

A. 1. Lease Name/Location:
Barnes "20", Well #1
C 20-T9S-R35E
766' FNL & 2201' FWL

2. Casing Strings:
Present Well Condition:
13-3/8" @ 450' w/450 sx Cl. "C" (circ)
8-5/8" @ 4200' w/2600 sx Howco Lt. + 200 sx "C"
5-1/2" @ 12,635' w/850 sxs Poz + 425 sxs Howco Lt. and tailed w/925 sxs 50/50 Poz.
TOC @ 5740' per temperature survey.

3. Proposed Well Condition:
Casing same as above.
2-7/8" 6.5# K-55 duo-line plastic coated injection tubing @ 9700'.

4. Propose to use Baker nickel-plated Loc-Set packer set at +/- 9700'.

B. 1. Injection Formation: Bough "C"
Field/Pool: Northeast Jenkins-Devonian

2. Injection Interval will be through perforations at a depth of 9740 - 9754'.

3. Well was original drilled as a Devonian oil well. It will be a Bough "C" injection well when work is completed.

4. See attached schematic for additional well data. Exhibit "A-1"

5. Within the area of the well, the next higher oil zone is the San Andres and next lower zone is the Devonian.

LEASE & WELL NAME: Barnes "20" #1

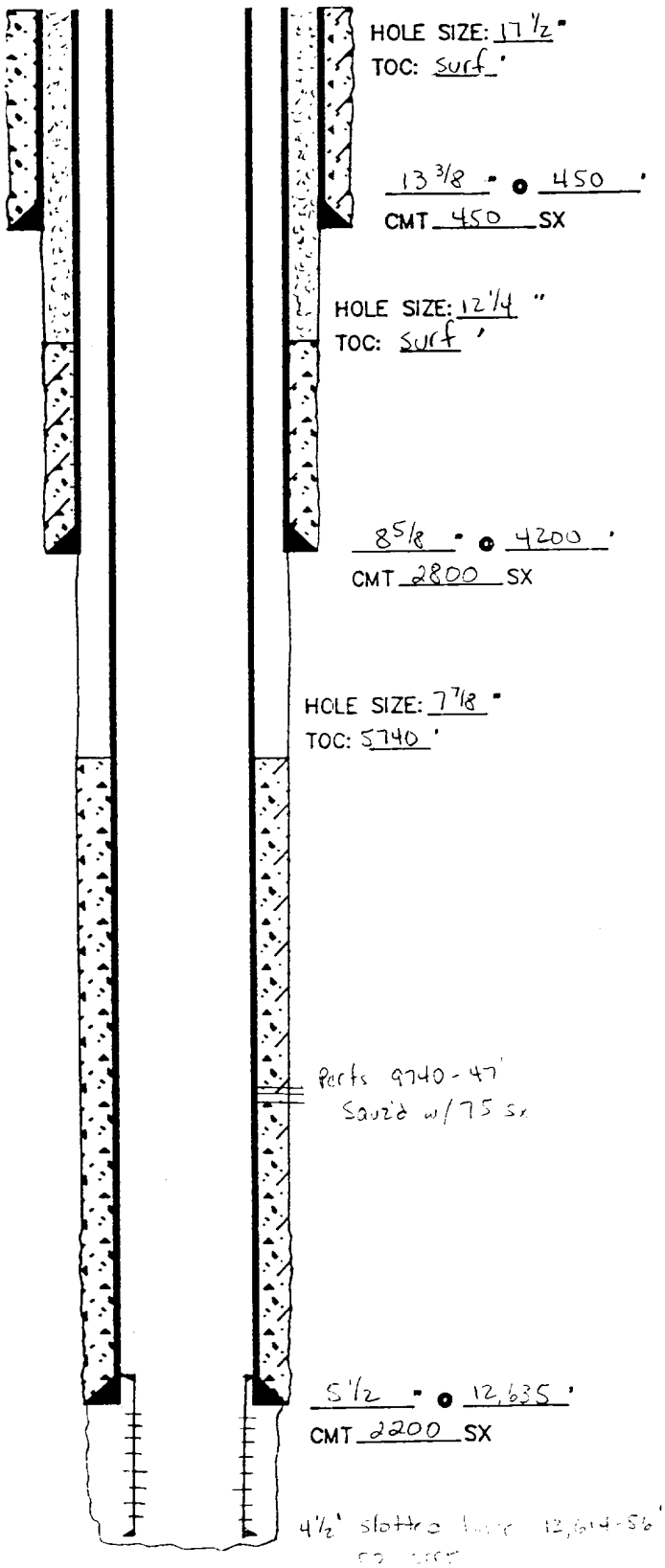
FIELD: Jenkins Dev. NE COUNTY: Lea ST.: 1

LOCATION: 766' FNL & 2201' FWL Sec 20
T-9-S R-35-E

DATE: 12/5/96 BY: RAG REV.: _____ BY: _____

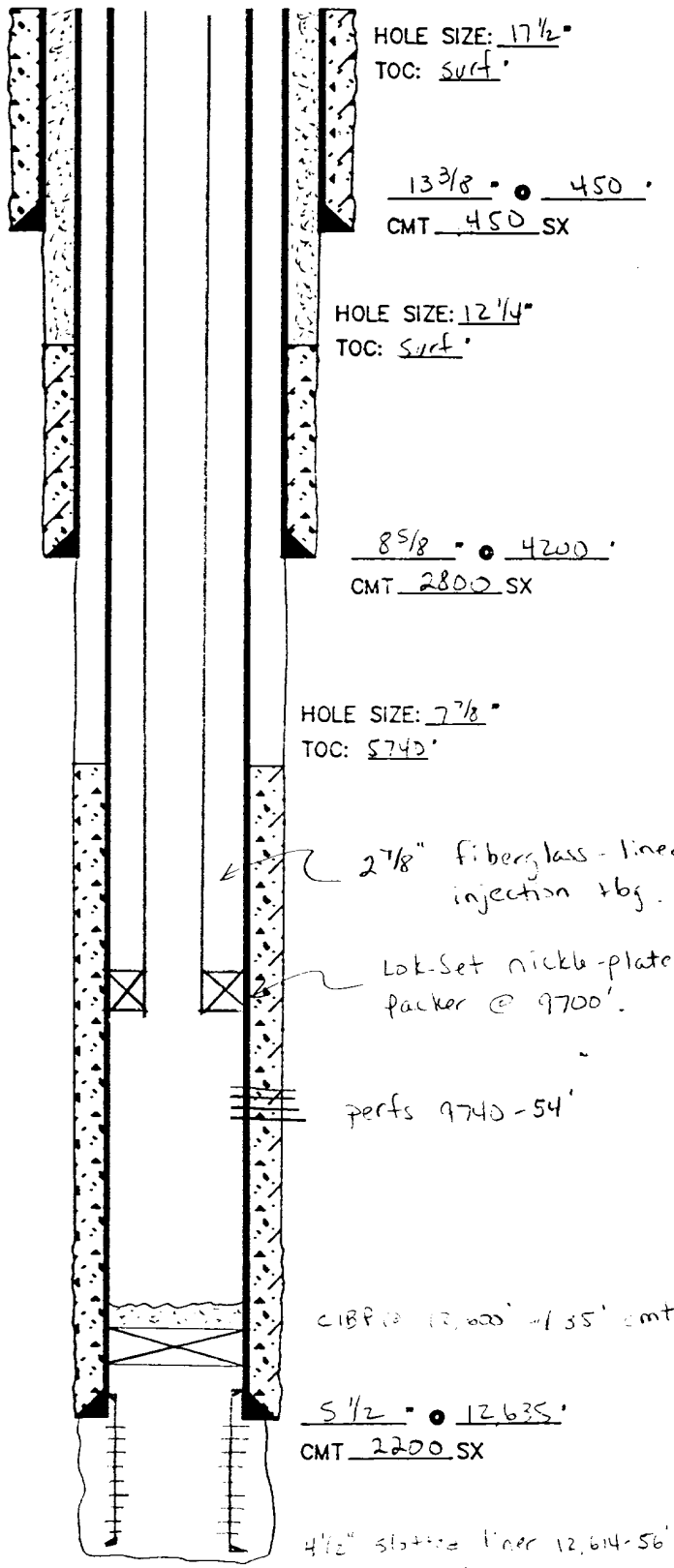
EXHIBIT "A1"

CURRENT

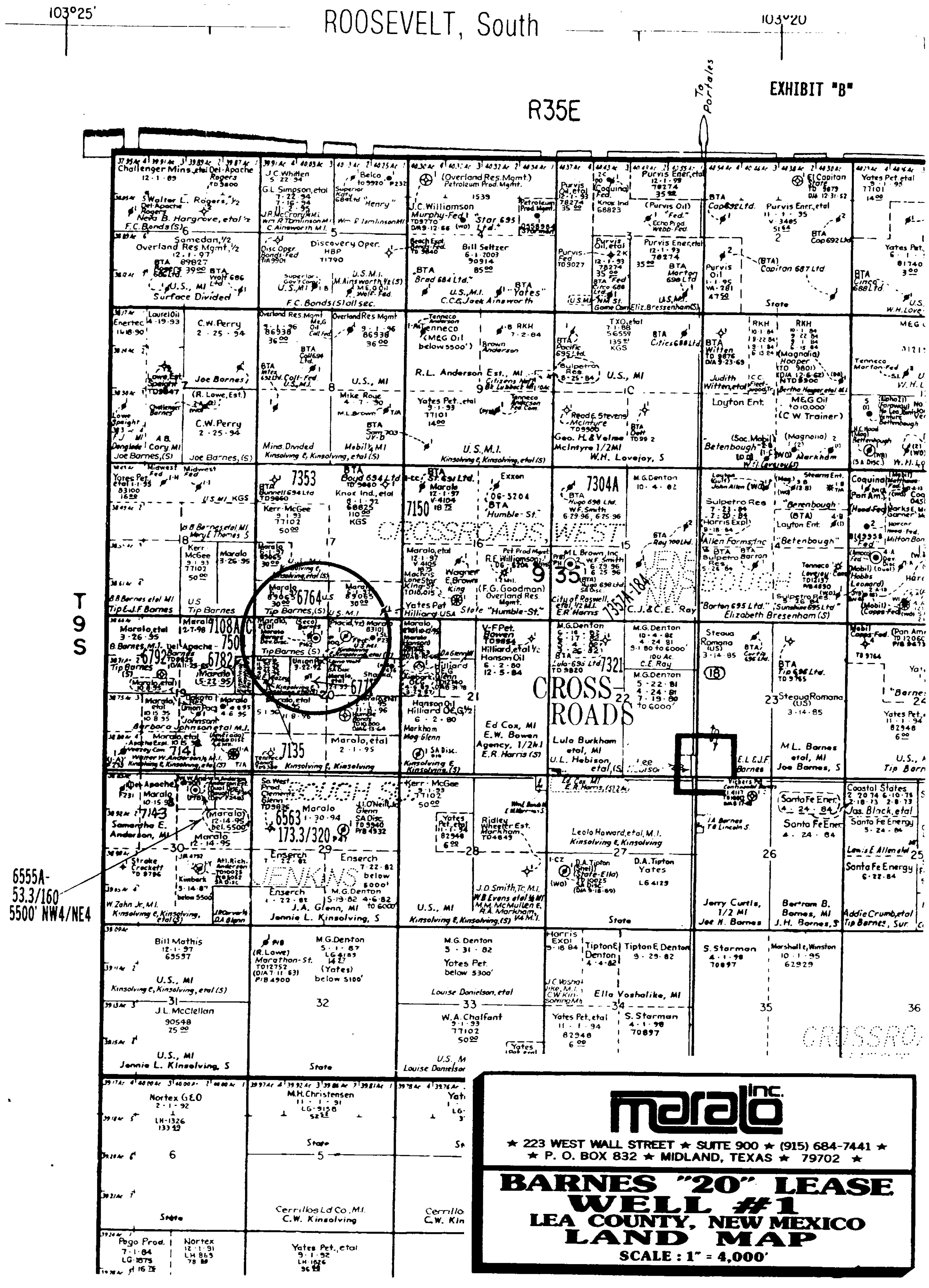


TD: 12,656' PBD: '

PROPOSED



TD: 12,656' PBD: 12,565'



103°25'
ROOSEVELT, South
103°20'
EXHIBIT "B"
R35E
To Portales
T 9 S
CROSSROADS WEST
CROSS-ROADS
6555A-
53.3/160
w 5500' NW4/NE4
maralo inc.
★ 223 WEST WALL STREET ★ SUITE 900 ★ (915) 684-7441 ★
★ P. O. BOX 832 ★ MIDLAND, TEXAS ★ 79702 ★
BARNES "20" LEASE
WELL #1
LEA COUNTY, NEW MEXICO
LAND MAP
SCALE : 1" = 4,000'

EXHIBIT "C"

TABULAR SUMMARY
OF WELLS WITHIN A ONE-HALF MILE RADIUS

MARALO, INC.

Barnes "20" No. 1

Section 17, T-9S, R-35E

Yates Petroleum Corporation - Hilliard USA No. 1
UL. P - 330' FSL & 660' FEL
Spud 10-24-80, Completed 05-30-81, Plugged 8-30-82
See Exhibit "D" for schematic

Section 20, T-9S, R35E

Lone Wolf Producing Company - Federal No. 1
UL. B - 660' FNL & 1983' FEL
Spud 12-05-59, Completed 02-24-60, Plugged 06/18/66
See Exhibit "D" for schematic

Seco Production Company - Barnes No. 1
UL. C - 660' FNL & 1980' FWL
Spud 12-13-62, Completed 12-27-62, Plugged 04/65
See Exhibit "D" for schematic

Seco Production Company - Anderson No. 1
UL. F - 1980' FNL & 1980' FWL
Spud 03-10-63, Completed 04-10-63, Plugged 11-03-64
See Exhibit "D" for schematic

EXHIBIT "D1"

WELLBORE SKETCH AND WELL HISTORY

#101-D

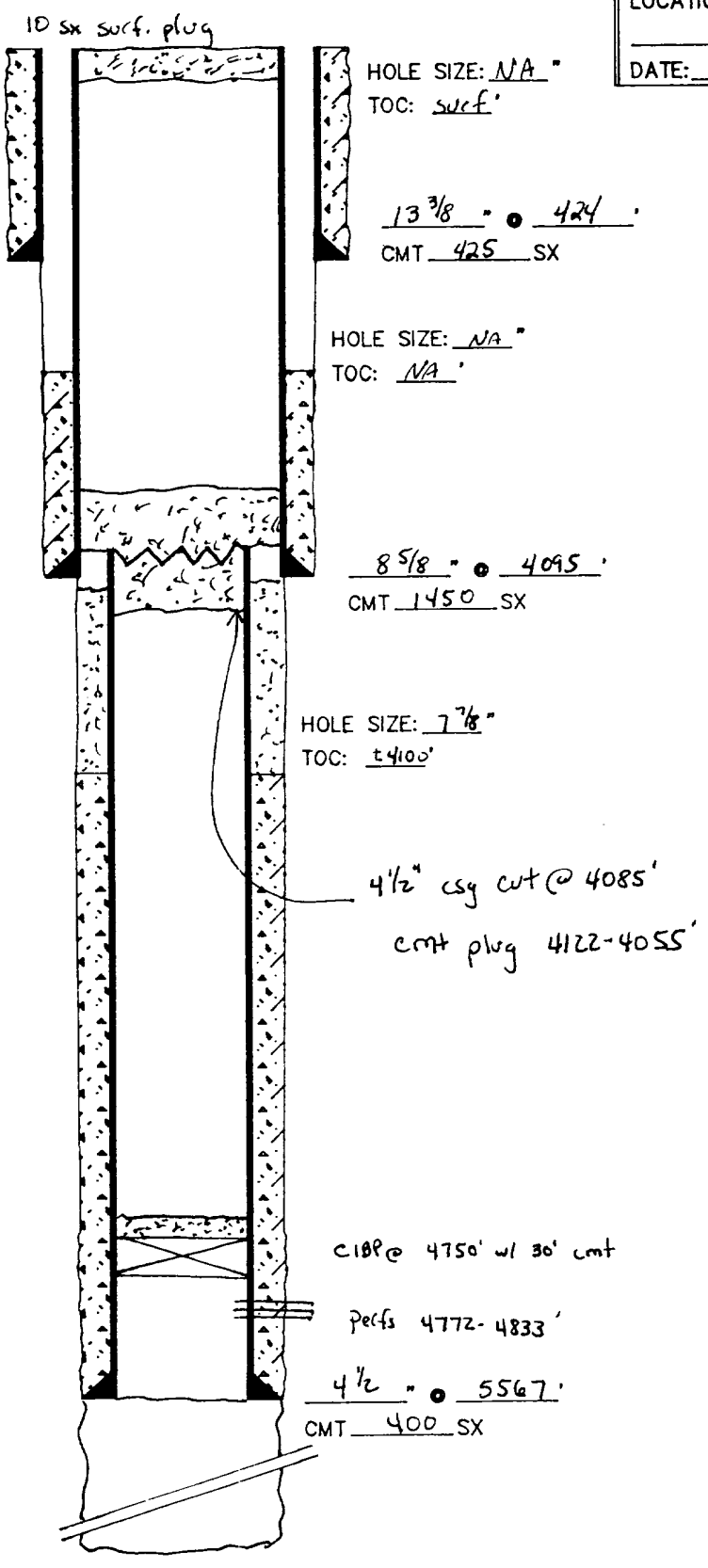
ELEV.: ~~KB~~ GL _____", 4156' ABOVE _____

LEASE & WELL NAME: Hilliard USA #1

FIELD: Jenkins SA COUNTY: Lea ST.: NM

LOCATION: 330' FSL & 660' FEL, 17 - T9S - R35-E

DATE: _____ BY: _____ REV.: _____ BY: _____



TD: 12,670' PBD: 4852'

CASING RECORD

SURFACE CASING

O.D.	WT/FT	GRADE	SET AT
13 3/8"			424'
8 5/8"			4095

PRODUCTION CASING

4 1/2"			5567'

TUBING

NO. JTS.	O.D.	THD.	TYPE	WT.	GDE.	SET A

WELL HISTORY:

Originally drilled to 12,670'

Re-entered 10/24/80. Completed in San Andres

P&A'd 8/25/82

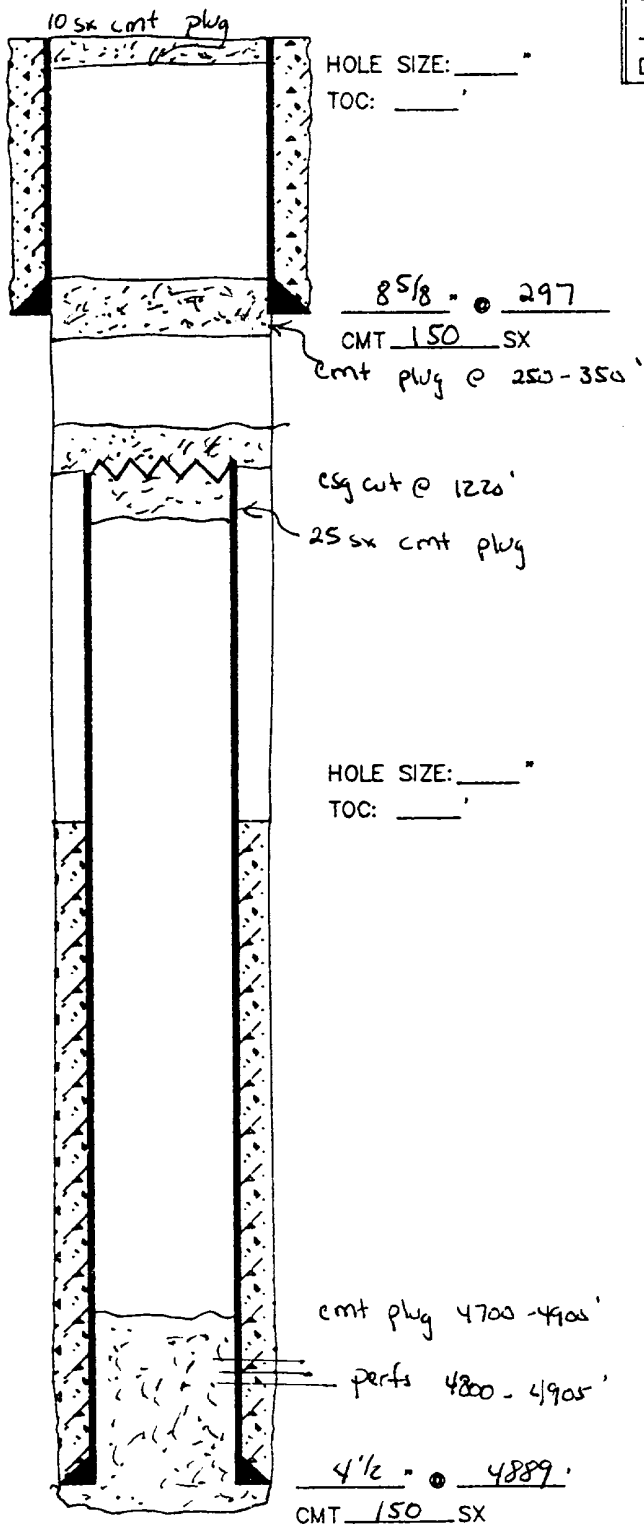
EXHIBIT "D2"
#101-S

WELLBO[illegible] SKETCH AND WELL H[illegible] STORY

ELEV.: GL KB ____", 4166' ABOVE ____

LEASE & WELL NAME: Lone Wolf federal #1
FIELD: Jenkins SA COUNTY: Lea ST.: NM
LOCATION: 1983' FEL & 660' FNL, 20-T9S-R35E

DATE: ____ BY: ____ REV.: ____ BY: ____



TD: 4905' PBD: ____'

CASING RECORD

SURFACE CASING

O.D.	WT/FT	GRADE	SET AT
8 5/8	24		297'

PRODUCTION CASING

4 1/2	9.5		4889'

TUBING

NO. JTS.	O.D.	THD.	TYPE	WT.	GDE.	SET AT

WELL HISTORY:

Well completed 2/24/60

Well P&A'd 6/18/66

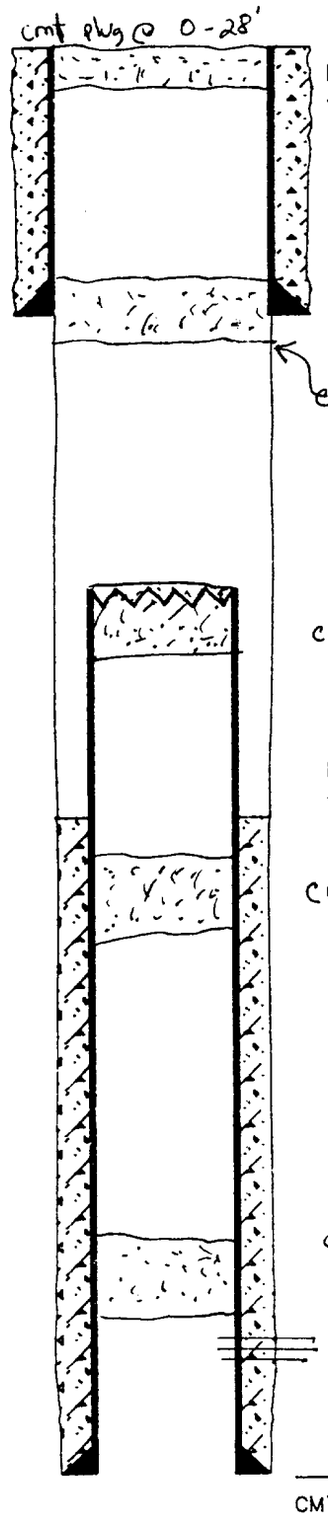
EXHIBIT "D3"
#101-S

WELLBO. SKETCH AND WELL H. STORY

ELEV.: KB NA", _____' ABOVE _____

LEASE & WELL NAME: Seco Barnes # 1
FIELD: Jenkins SA COUNTY: Lea ST.: NM
LOCATION: 660' FNL & 1980' FWL, 20-T9S-R35E

DATE: _____ BY: _____ REV.: _____ BY: _____



TD: 4954' PBD: _____'

CASING RECORD

SURFACE CASING

O.D.	WT/FT	GRADE	SET AT
8 5/8"	24		376'

PRODUCTION CASING

4 1/2	9.5		4954

TUBING

NO. JTS.	O.D.	THD.	TYPE	WT.	GDE.	SET AT

WELL HISTORY:

Well drilled 12/27/62

Well P&A'd 4/8/65

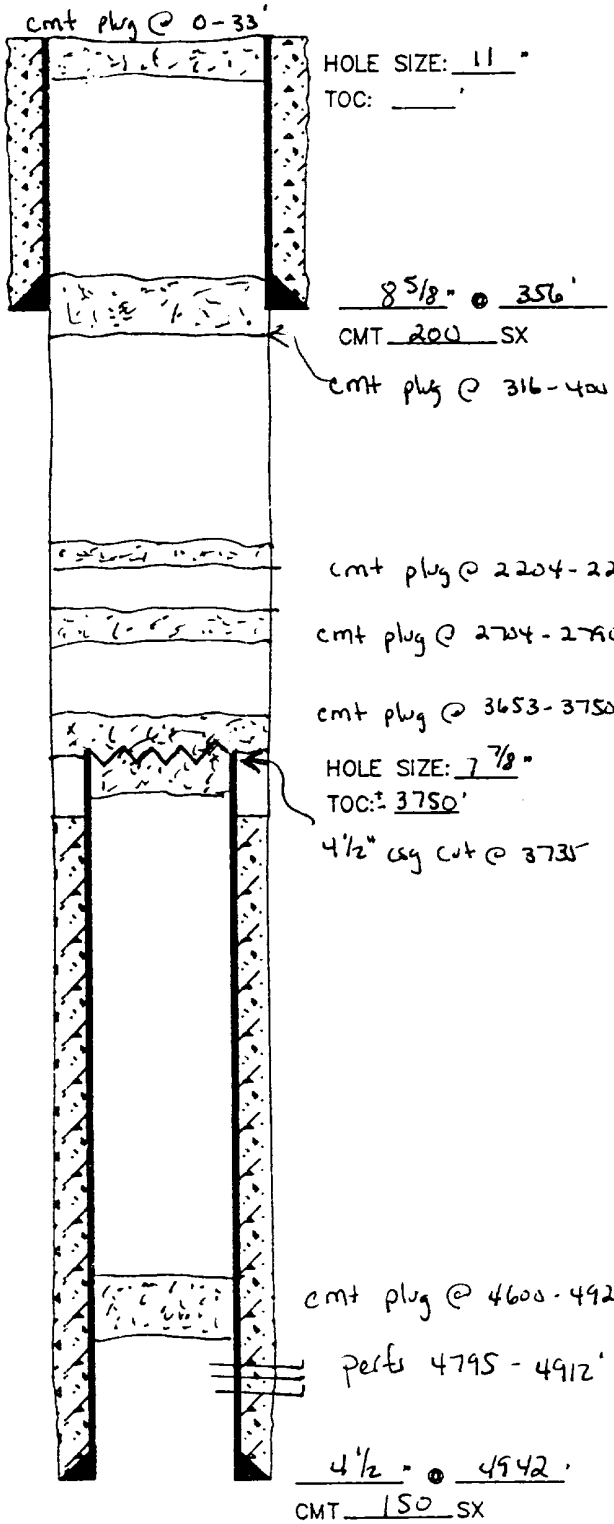
EXHIBIT "D4"
#101-S

WELLBORE SKETCH AND WELL HISTORY

ELEV.: ~~KB~~ GL ____', 4169' ABOVE ____

LEASE & WELL NAME: Secs Anderson #1
FIELD: Jenkins SA COUNTY: Lea ST.: NM
LOCATION: 1980' FNL & 1980' FWL 20 - T9S - R35E

DATE: ____ BY: ____ REV.: ____ BY: ____



TD: 4965' PBD: ____'

CASING RECORD

SURFACE CASING

O.D.	WT/FT	GRADE	SET AT
8 5/8"	24		356'

PRODUCTION CASING

4 1/2"	9.5		4942

TUBING

NO. JTS.	O.D.	THD.	TYPE	WT.	GDE.	SET AT

WELL HISTORY:

Well completed 4/10/63

Well P&A'd 11/3/64

EXHIBIT "E"

P O BOX 1468
MONAHANS, TEXAS 79756
PH 943-3234 OR 563-1040

Martin Water Laboratories, Inc.

709 W INDIANA
MIDLAND, TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

LABORATORY NO. 129677
SAMPLE RECEIVED 12-11-96
RESULTS REPORTED 12-13-96

TO: Mr. Phillip Smith
P. O. Box 832, Midland, TX 79702

COMPANY Maralo, Inc. LEASE As listed
FIELD OR POOL Jenkins
SECTION ____ BLOCK ____ SURVEY ____ COUNTY Lea STATE NM
SOURCE OF SAMPLE AND DATE TAKEN:
NO. 1 Produced water - taken from Barnes "20" #1.
NO. 2 Produced water - taken from Bonds #1.
NO. 3 Produced water - taken from S. L. Federal "20" #1.
NO. 4

REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES

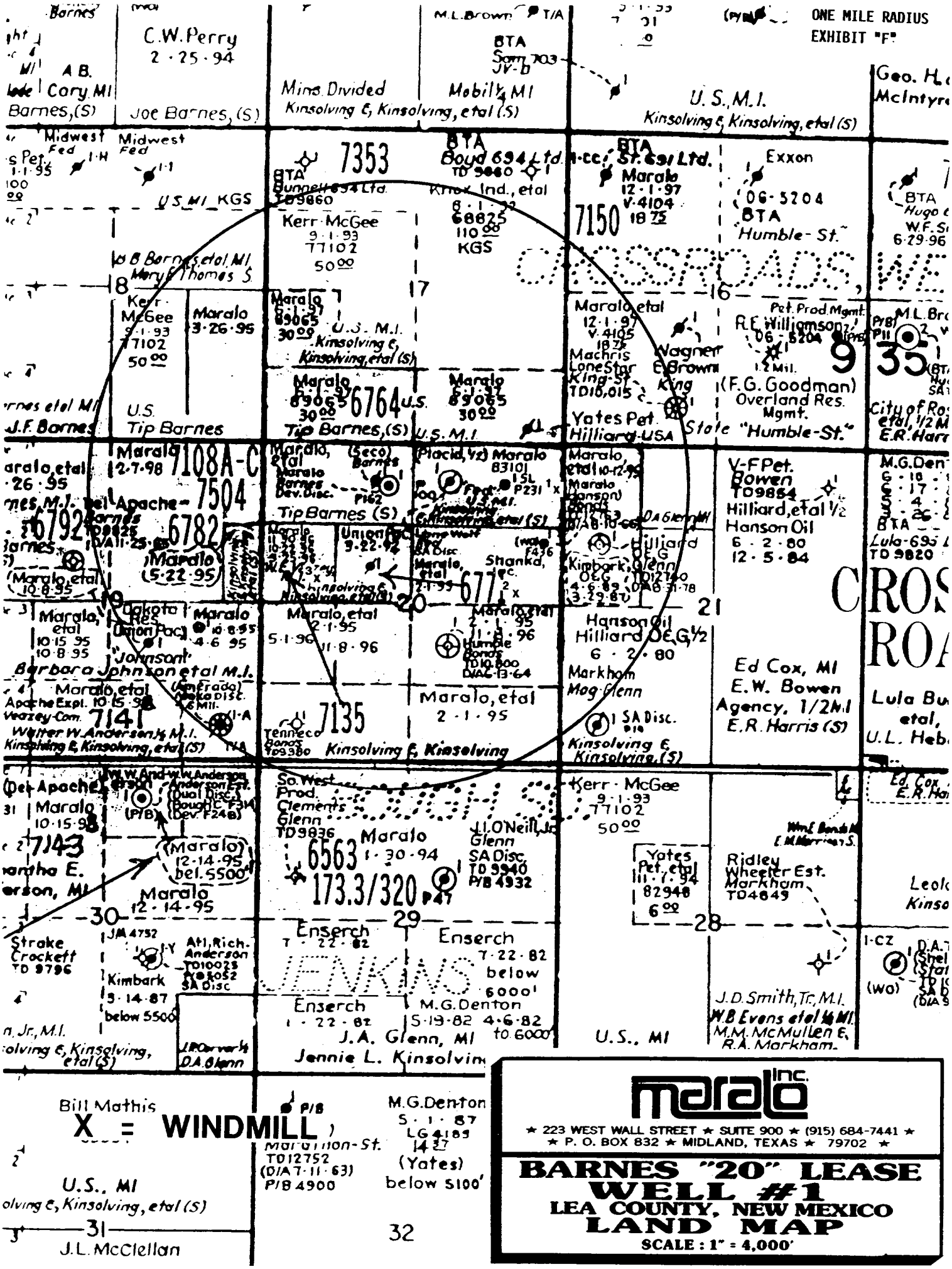
	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F	1.0417	1.0419	1.0422	
pH When Sampled				
pH When Received	6.65	7.16	6.76	
Bicarbonate as HCO_3	93	549	537	
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$	5,400	6,350	6,350	
Calcium as Ca	1,630	2,100	2,120	
Magnesium as Mg	322	267	255	
Sodium and/or Potassium	19,749	19,572	19,059	
Sulfate as SO_4	665	1,329	1,231	
Chloride as Cl	33,734	33,379	32,669	
Iron as Fe	324	5.1	172	
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	56,192	57,196	55,871	
Temperature °F				
Carbon Dioxide, Calculated				
Dissolved Oxygen				
Hydrogen Sulfide	0.0	0.0	0.0	
Resistivity, ohms/m at 77° F	0.146	0.145	0.148	
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks: These results show the waters from Bonds #1 and S. L. Federal "20" #1 are very similar to one another and correlate well with natural Devonian. The water from Barnes "20" #1 shows some slight differences as compared to the other two wells in the form of a lower bicarbonate and sulfate and high iron. However, there is always a possibility for excessive iron to have some indirect influence on the bicarbonate. We do not consider this well to show sufficient difference in the water to indicate the likelihood that it is originating from a zone other than the Devonian. It is likely indicating some variations in Devonian water in the area.

Form No. 3

By _____
Waylan C. Martin, M.A.



marala inc.

★ 223 WEST WALL STREET ★ SUITE 900 ★ (915) 684-7441 ★
★ P. O. BOX 832 ★ MIDLAND, TEXAS ★ 79702 ★

BARNES "20" LEASE
WELL #1
LEA COUNTY, NEW MEXICO
LAND MAP

SCALE : 1" = 4,000'

EXHIBIT "F1"

P. O. BOX 1468
MCNAHANS, TEXAS 79756
PH. 943-3234 OR 563-1040

Martin Water Laboratories, Inc.

709 W. INDIANA
MIDLAND, TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

TO: Mr. Phillip Smith
P. O. Box 832, Midland, TX 79702

LABORATORY NO. 129678
SAMPLE RECEIVED 12-11-96
RESULTS REPORTED 12-13-96

COMPANY Maralo, Inc. LEASE

FIELD OR POOL

SECTION ____ BLOCK ____ SURVEY ____ COUNTY ____ STATE ____

SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1 Raw water - taken from windmill #1 (0.2 miles north of Bonds #1).

NO. 2 Raw water - taken from windmill #2 (0.2 miles southwest of Bonds #1).

NO. 3 Raw water - taken from windmill #3 (0.4 miles southwest of Barnes 20 #1).

NO. 4

REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0020	1.0020	1.0020	
pH When Sampled				
pH When Received	7.90	7.74	7.80	
Bicarbonate as HCO_3	166	176	159	
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$	416	360	410	
Calcium as Ca	117	101	114	
Magnesium as Mg	30	26	30	
Sodium and/or Potassium	54	64	53	
Sulfate as SO_4	217	214	224	
Chloride as Cl	122	94	115	
Iron as Fe	0.16	0.16	0.16	
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	706	675	695	
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen,				
Hydrogen Sulfide	0.0	0.0	0.0	
Resistivity, ohms/m at 77° F.	9.98	11.20	10.24	
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				
Nitrate, as N	2.3	1.9	2.6	

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks: The undersigned certifies the above to be true and correct to the best of his knowledge and belief.

Form No.

By
Waylan C. Martin, M.A.

EXHIBIT "G"

AFFIDAVIT OF PUBLICATION

State of New Mexico,
County of Lea.

I, KATHI BEARDEN

Publisher

of the Hobbs Daily News-Sun, a daily newspaper published at Hobbs, New Mexico, do solemnly swear that the clipping attached hereto was published once a week in the regular and entire issue of said paper, and not a supplement thereof for a period.

of 1

weeks.

Beginning with the issue dated

December 6, 1996

and ending with the issue dated

December 6, 1996

Kathi Bearden

Publisher

Sworn and subscribed to before

me this 9th day of

December, 1996

Sandra Cattlett

Notary Public.

My Commision expires
August 29, 1999
(Seal)

LEGAL NOTICE
December 6, 1996

Maralo, Inc., P.O. Box 832, Midland, Texas 79702, is filing Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for an injection well. The proposed well, the Barnes "20", Well #1 is located 766' FNL and 2201' FWL, Section 20, Township 9 South, Range 35 East, Lea County, New Mexico, will be used for water injection. Disposal waters from the Devonian formation will be injected into the Bough "C" formation at a depth of 9740 - 9754 feet with a maximum pressure of 2000 psi and a maximum rate of 2000 BWPD.

All interested parties opposing the aforementioned must file objections or requests for a hearing with the Oil Conservation Division, P.O. Box 6429, Santa Fe, New Mexico, 87505-6429, within 15 days. Additional information can be obtained by contacting R.A. Lowery at (915) 684-7441.

#14938

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937, and payment of fees for said publication has been made.

01100552000 01504485

Maralo Inc.
P.O. Box 832
a/c 448450
Midland, TX 79702

December 20, 1996

CERTIFIED MAIL - RETURN RECEIPT

Mr. Tip Barnes
P. O. Box 216
Tatum, New Mexico 88267

Dear Sir:

In accordance with Item XIV (Proof of Notice) Side 2, on the enclosed Revised Form C-108 (New Mexico OCD Application for Authority to Inject), Maralo Inc. hereby furnishes notice to the surface owner of the Barnes "20" Lease, Well #1 located 766 feet from the North line and 2201 feet from the West line (Unit C) of Section 20, Township 9 South, Range 35 East, NMPM, Lea County, New Mexico.

Should you have any questions, please feel free to contact me or Richard Gill, Petroleum Engineer, at (915) 684-7441.

Sincerely,

Dorothea Logan
Regulatory Analyst

Enclosure

cc: Oil Conservation Division
Santa Fe, New Mexico