CHECKLIST for ADMINISTRATIVE INJECTION APPLICATIONS

Operator: Marbob Energy Corp. Well: Duke State No. 1

Contact: Mike Ueman Title: Geologist Phone: 505-623-5070

DATE IN 9-2-97 RELEASE DATE 9-17-97 DATE OUT 9-17-97

Proposed Injection Application is for: ___ **WATERFLOOD** ___ Expansion ___ Initial

Original Order: R-_____ ___ Secondary Recovery ___ Pressure Maintenance

SENSITIVE AREAS X **SALT WATER DISPOSAL** ___ Commercial Well

___ WIPP ___ Capitan Reef

Data is complete for proposed well(s)? Yes Additional Data Req'd _____

AREA of REVIEW WELLS

3 Total # of AOR 1 # of Plugged Wells

Yes Tabulation Complete Yes Schematics of P & A's

Yes Cement Tops Adequate NO AOR Repair Required

INJECTION FORMATION

Injection Formation(s) Fusselman + Montoya Compatible Analysis Yes

Source of Water or Injectate Area Production

PROOF of NOTICE

___ Copy of Legal Notice ___ Information Printed Correctly

___ Correct Operators ___ Copies of Certified Mail Receipts

___ Objection Received ___ Set to Hearing _____ Date

NOTES: _____

APPLICATION QUALIFIES FOR ADMINISTRATIVE APPROVAL? Yes

COMMUNICATION WITH CONTACT PERSON:

1st Contact: ___ Telephoned ___ Letter _____ Date Nature of Discussion _____

2nd Contact: ___ Telephoned ___ Letter _____ Date Nature of Discussion _____

3rd Contact: ___ Telephoned ___ Letter _____ Date Nature of Discussion _____

9/2/97	9/17/97	BS	KV	SWD

ABOVE THIS LINE FOR DIVISION USE ONLY

675

NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -

ADMINISTRATIVE APPLICATION COVERSHEET

THIS COVERSHEET IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS

Application Acronyms:

[NSP-Non-Standard Proration Unit] [NSL-Non-Standard Location]
[DD-Directional Drilling] [SD-Simultaneous Dedication]
[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

[1] **TYPE OF APPLICATION** - Check Those Which Apply for [A]

SEP - 2

[A] Location - Spacing Unit - Directional Drilling

☐ NSL ☐ NSP ☐ DD ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement

☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery

☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR

[2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or ☐ Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] ☒ Offset Operators, Leaseholders or Surface Owner

[C] ☒ Application is One Which Requires Published Legal Notice

[D] ☐ Notification and/or Concurrent Approval by BLM or SLO

U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☐ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ☐ Waivers are Attached

[3] **INFORMATION / DATA SUBMITTED IS COMPLETE** - Statement of Understanding

I hereby certify that I, or personnel under my supervision, have read and complied with all applicable Rules and Regulations of the Oil Conservation Division. Further, I assert that the attached application for administrative approval is accurate and complete to the best of my knowledge and where applicable, verify that all interest (WI, RI, ORRI) is common. I further verify that all applicable API Numbers are included. I understand that any omission of data, information or notification is cause to have the application package returned with no action taken.

Note: Statement must be completed by an individual with supervisory capacity.

Michael G. Hanagan		Geologist	12/16/96
Print or Type Name	Signature	Title	Date

marbob
energy corporation

August 21, 1997

Oil Conservation Division
New Mexico Energy and Minerals Department
2040 South Pacheco Street
Santa Fe, New Mexico 87501

Attention: Mr. Ben Stone

RE: WATER DISPOSAL WELL APPLICATION
Marbob Energy Corporation
Duke State No. 1
Section 16-11S-28E
2603' FNL and 1080' FWL
Chaves County, New Mexico

Dear Mr. Stone:

Please find herewith, in triplicate, the application of Marbob Energy Corporation for authority to convert the above referenced well to a water disposal well.

Application is made pursuant to NMOCD Rule 701-D for Administrative Approval for disposal into the Siluro-Devonian formation.

Publication of Marbob's intent to utilize the above referenced well for water disposal has been made in the Roswell Daily Record, and copies of this application have been furnished to both the surface and mineral owners and the offset operators, within 1/2 mile of the well.

Your prompt approval of this application will be greatly appreciated. Should you have any questions or comments, please give me a call at 623-5053 or Raye Miller a call at 748-3303.

Sincerely,

MARBOB ENERGY CORPORATION

Mike Hanagan

MH/mm

BEFORE THE NEW MEXICO OIL CONSERVATION DIVISION
APPLICATION FOR ADMINISTRATIVE APPROVAL
MARBOB ENERGY CORPORATION
FOR CONVERSION TO WATER DISPOSAL
THE
DUKE STATE WELL #1
LOCATED 2603' FNL AND 1080' FWL, SECTION 16-T11S-R28E
CHAVES COUNTY, NEW MEXICO

TABLE OF CONTENTS

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: Marbob Energy Corporation

Address: Post Office Box 227, Artesia, New Mexico 88211-0227

Contact party: Mike Hanagan Phone: 505/623-5053

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: Mike Hanagan Title Geologist

Signature: Mike Hanagan Date: 8/29/97

* 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.

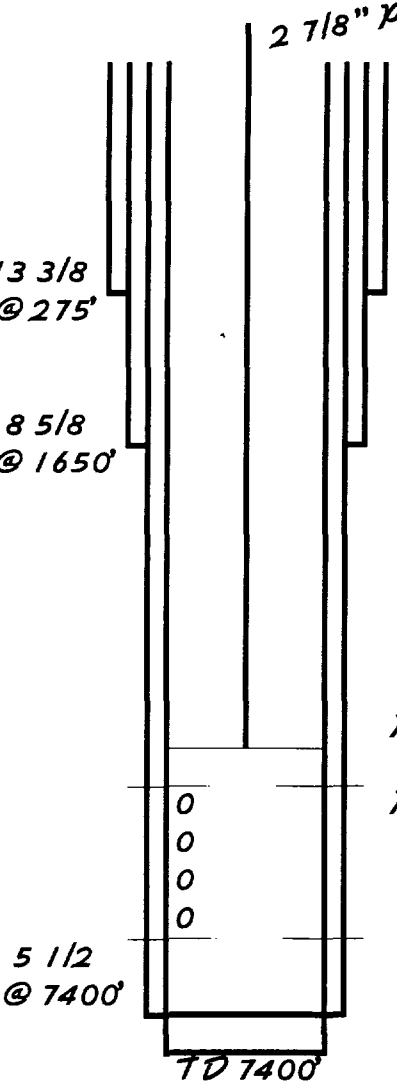
NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

Marbob Energy Corporation — Duke State

OPERATOR — LEASE

1	2603' FNL and 1080' FWL	16	11S	28E
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE

Schematic



Tabular Data

Surface Casing

Size 13 3/8 " Cemented with 300 sx.

TOC Surface feet determined by circulate to surface

Hole size 17 1/2

Intermediate Casing

Size 8 5/8 " Cemented with 950 sx.

TOC Surface feet determined by circulate to surface

Hole size 17 1/2

Long string

Size 5 1/2 " Cemented with 750 sx.

TOC 5050 feet determined by temp survey

Hole size 7 7/8 -

Total depth 7400'

Injection interval

7051 feet to 7364 feet

(perforated or open-hole, indicate which)

Packer @ 7030'

Perforations 7051-66, 7089-7112, 7130-7160, 7328-7364

Tubing size 2 7/8 lined with Plastic Coating (material) set in a

Guiberson Uni VI (brand and model) packer at 7030 feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation Fusselman / Montoya

2. Name of Field or Pool (if applicable) Chisum

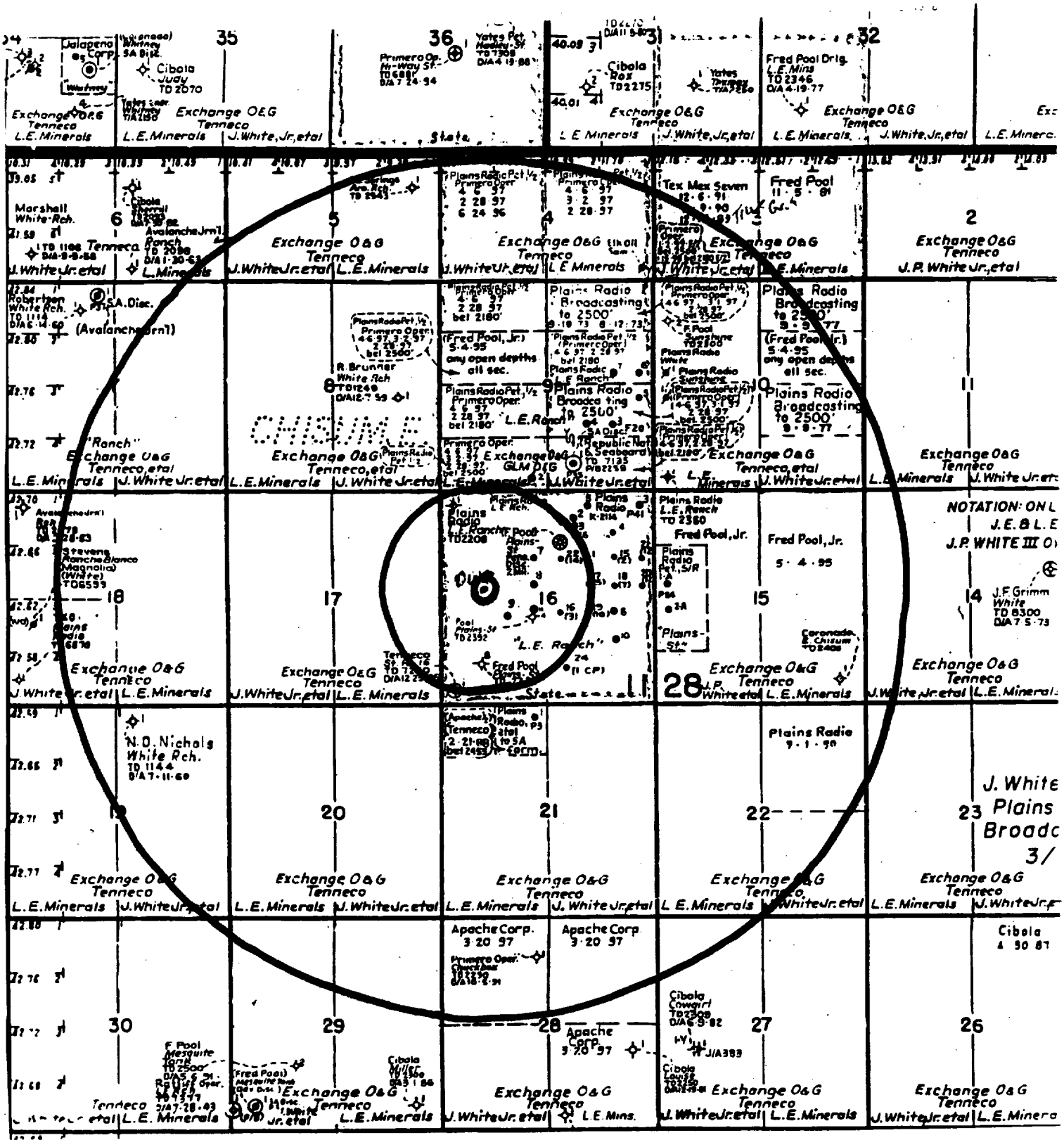
3. Is this a new well drilled for injection? ☐ Yes ☒ No

If no, for what purpose was the well originally drilled? Oil Well completed in the Siluro-Devonian

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used) No

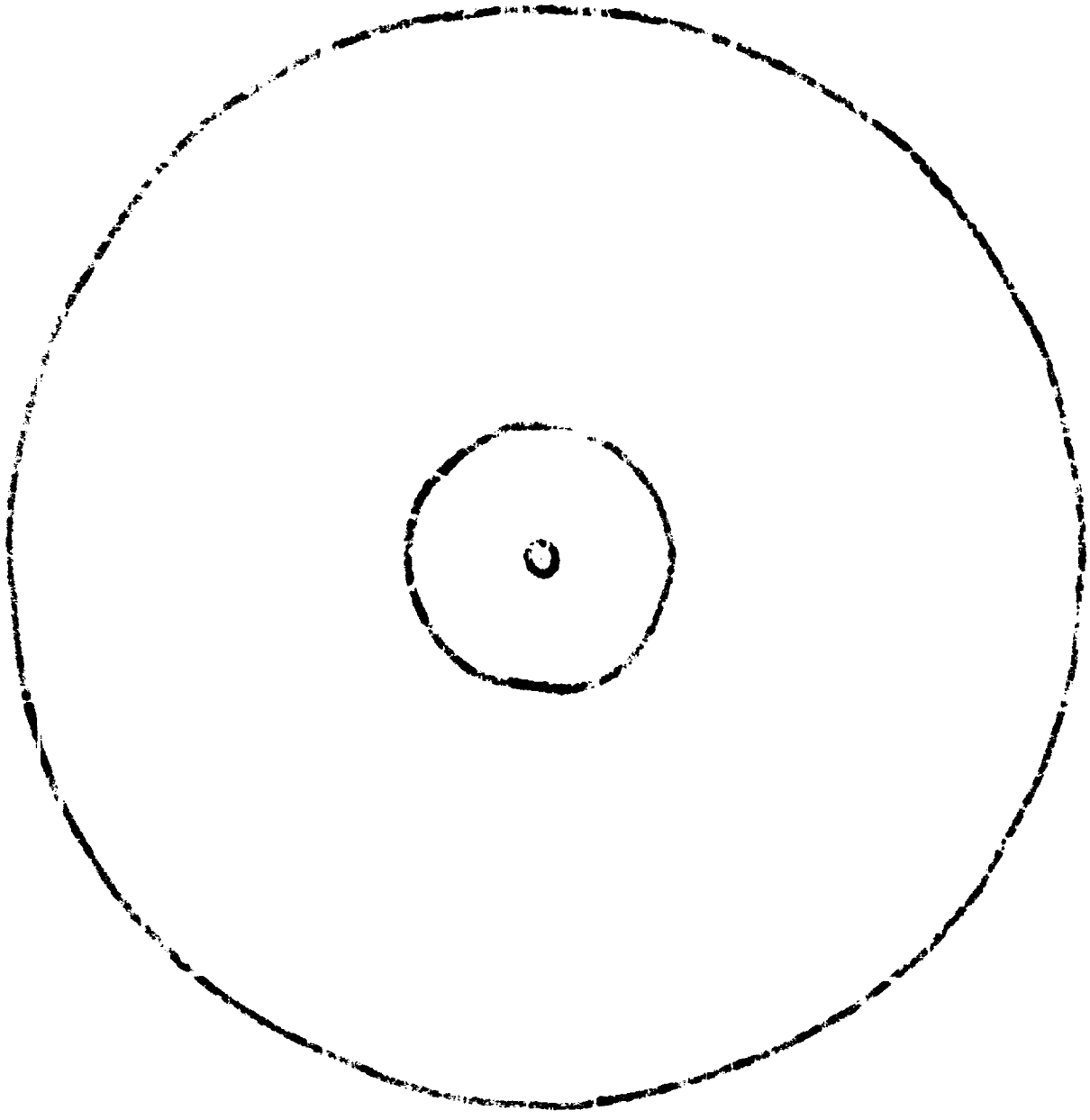
5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. Underlying pools - None

Overlying pools - Chisum N.E. San Andres 2000-2400



Application for Administrative Approval
Map of area showing well & lease ownership
Marbob Energy Corporation
Duke State No. 1 Disposal Well
Section 16, Township 11 South, Range 28 East
Chaves County, New Mexico
Exhibit II

Attachment C-108 V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WELL DATA

A review of the records indicates that there are three wells within the area of review which have been drilled to the depth of the proposed disposal zone. One well (State RL 16 #1) was plugged in December, 1986. The second well (Plains 16 State #1) has been plugged back to the Mississipian formation and is temporarily shut-in awaiting a gas pipeline. The third well (L.E. Ranch 16-9) was drilled to the Devonian formation at 7,115 and then plugged back to 2,250 and was completed in the Chisum San Andres pool.

DUKE STATE
DISPOSAL WELL SUMMARY

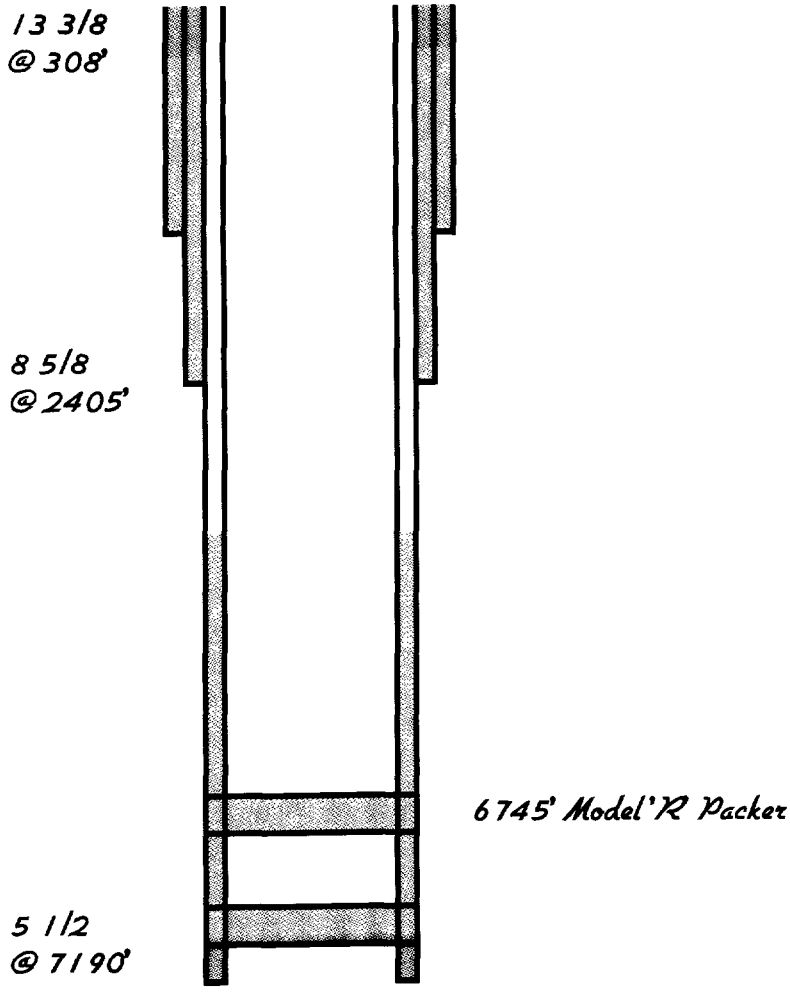
Deep Wells Within Two Mile Radius of Proposed Disposal Well

WELL NAME	UNIT	SEC- TSP - RNG	TD	PAY ZONE
*State RL 16 #1	M	16 - 11S - 28E	7250'	D & A
*Plains Radio 16 #1	B	16 - 11S - 28E	7151'	Mississippian PB 6816-6844
*Plains Radio 16 #9	K	16 - 11S - 28E	7115'	San Andres PB 2250
L E Ranch 9 #1	O	9 - 11S - 28E	7135'	Devonian PB to S.A. 2300
True Grit Fee #1	L	3 - 11S - 28E	7092'	Devonian 6989-7092
Rooster Cogburn Fee #1	G	9 - 11S - 28E	7103'	Devonian 7045-7103

* indicates those wells within 1/2 mile of proposed disposal well.

WELL DATA (continued)

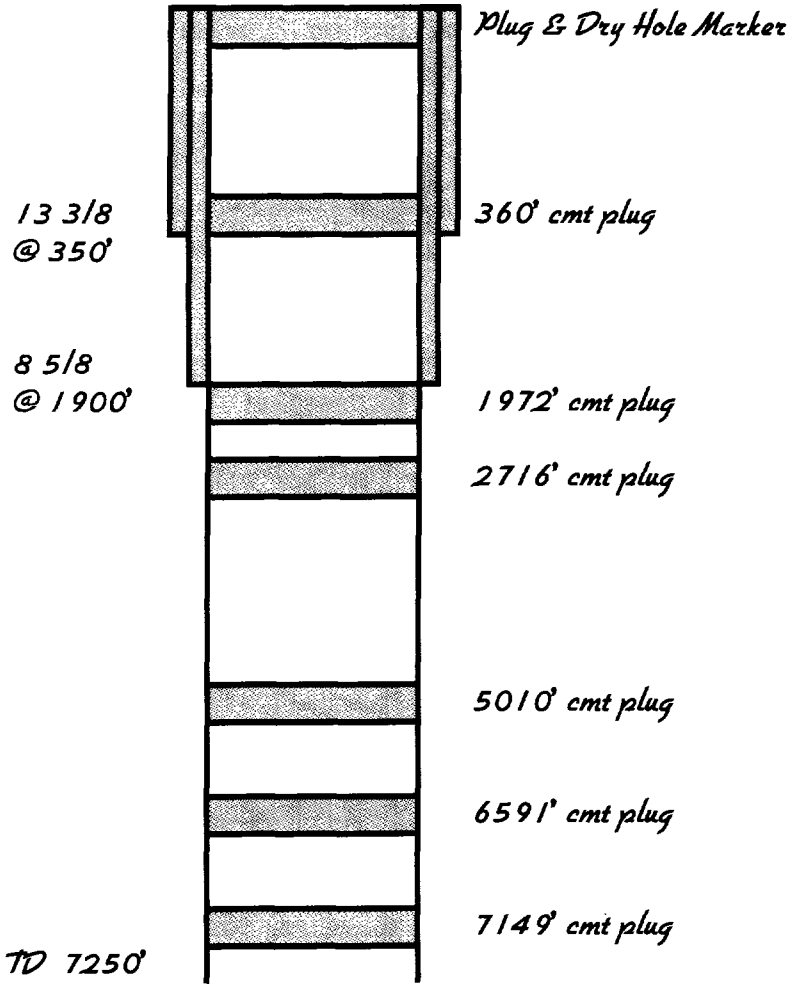
Operator:	Plains Petroleum
Well Name:	Plains State 16 #1
Legal:	1250' FNL and 2310' FEL B-16-11S-28E
Type Of Well:	Oil and Gas
Date TD:	January 29, 1989
Total Depth:	7151'
Perfs:	6816' - 6844'
Completion:	3000 gal 15% HCL; 40,000 gal Pure Gel; 58,000 # 20/40 sand, and 40 tons CO2
Casing:	13 3/8 48# set to 308' 300 sx cement w/ 50 sx to surface
	8 5/8 24# set to 2405' 1300 sx cement w/ 40 sx to surface
	5 1/2 17# set to 7190' 475 sx



Attachment C-108 VI b

WELL DATA (CONTINUED)

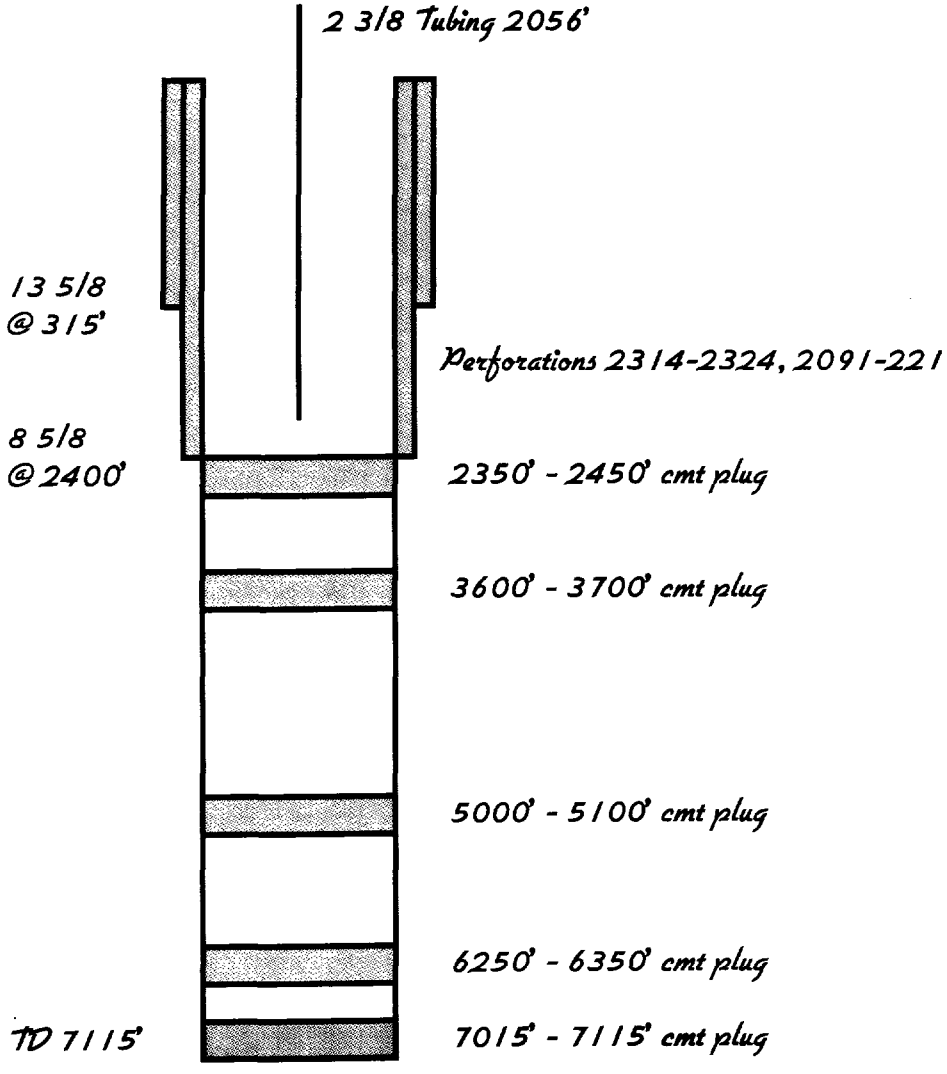
OPERATOR:	TENNECO OIL COMPANY	
WELL NAME:	STATE RL 16 #1	
LEGAL:	330' FSL AND 330' FWL	M-16-11S-28E
TYPE OF WELL:	OIL	
DATE TD:	DECEMBER 19, 1985	
TOTAL DEPTH:	7,250'	
PERFS:	NONE	
COMPLETION:	NONE TIGHT HOLE	
CASING:	13 3/8 54.5# K55 STC	SET AT 350' 370 SX CMT CIRC TO SURFACE
	8 5/8 24# K55	SET AT 1900' 550 SX CMT CIRC TO SURFACE



ATTACHMENT C-108 VI c

WELL DATA (CONTINUED)

OPERATOR:	PLAINS RADIO BROADCASTING COMPANY
WELL NAME:	L. E. RANCH 16 #9
LEGAL:	2200' FSL AND 1650' FWL K-16-11S-28E
TYPE OF WELL:	Oil
DATE TD:	MARCH 1, 1979
TOTAL DEPTH:	7115'
PERFS:	2314' - 2324' AND 2091' - 2218'
COMPLETION:	NONE IN THE DEVONIAN, TIGHT HOLE. RECOMPLETED IN SAN ANDRES
CASING:	13 5/8 40# H40 SET AT 315' 500 SX CMT CIRC TO SURFACE
	8 5/8 24# K55 SET AT 2400' 325 SX CMT TOC 1200'
TUBING:	2 3/8 SET AT 2056'



ATTACHMENT C-108 VI d

DATA SHEET

1. Proposed Rate of Injection
   - A. Average Daily Injection: 5,000 bbls.
   - B. Maximum Daily Rate of Injection: 10,000 bbls.

2. Type of System:
   System will be closed.

3. Anticipated Injection Pressure:
   .20# per foot (1410 psi)

4. Source of Injection Water:
   Source of injection water will be from the Siluro-Devonian Formation from wells located in Unit Letter K, Section 3-11S-28E (True Grit #1), Unit letter G, Section 9-11S-28E (Rooster Cogburn #1), and SE/4 Section 13-11S-27E (State CF Lease). All wells are more than one mile from the proposed disposal well.

5. Disposal Zone Water Analysis:
   Disposal will be into a zone which is not productive within one-half mile of the proposed disposal well. Attached are Halliburton Water Analysis Lab reports on the water to be injected into the Devonian formation from the two wells mentioned in part 4. Also, attached is exhibit C-108 VII c which is a comparison of the disposal waters. There is very little difference in the waters to be disposed into the proposed well.

HALLIBURTON ENERGY SERVICES
Artesia Service Center

Laboratory Report

Company Name: MARBOB ENERGY CORP Date: 12/12/96

Artesia, N.M.

Submitted By: Owen Puckett Date Rec.: 12/12/96

Lease: Rooster Cogburn Depth: _____ Formation: Devonian

Well # 1 County: Chaves Field: _____

Sample Markings:			
Resistivity	0.18 @ 74°F		
Specific Gravity	1.03 @ 60°F		
pH	6.7		
Chlorides	25,000 mpl	mpl	mpl
Calcium	1500 mpl	mpl	mpl
Magnesium	340 mpl	mpl	mpl
Sulfates	1600 mpl	mpl	mpl
Bicarbonates	750 mpl	mpl	mpl
Soulble Iron	3 mpl	mpl	mpl
	mpl	mpl	mpl

Remarks: _____

mpl = milligrams per liter

David McKenzie
Respecfully submitted by

Analyst: same Halliburton Energy Services

HALLIBURTON ENERGY SERVICES
Artesia Service Center

Laboratory Report

Company Name: MARBOB ENERGY CORP
Artesia, N.M.

Date: 9/17/96

Submitted By: Doug Chandler

Date Rec.: 9/17/96

Lease: True Grit | Depth: | Formation: Devonian

Well # 1 | County: Chaves | Field:

Sample Markings:			
Resistivity	0.2 @ 73°F		
Specific Gravity	1.02 @ 60°F		
pH	6.55		
Chlorides	22,000 mpl	mpl	mpl
Calcium	1300 mpl	mpl	mpl
Magnesium	380 mpl	mpl	mpl
Sulfates	2300 mpl	mpl	mpl
Bicarbonates	730 mpl	mpl	mpl
Soulble Iron	10 mpl	mpl	mpl
	mpl	mpl	mpl

Remarks:

mpl = milligrams per liter

David McKenzie
Respecfully submitted by

Analyst: same

Halliburton Energy Services

NOTICE: This report is for information only and the content is limited to the sample described. Halliburton Energy Services makes no warranties, expressed or implied, as to the accuracy of the contents or results. Any user of this report agrees Halliburton Energy Services shall not be liable for any loss or damage, regardless of cause, including any act or omission of Halliburton Energy services, resulting from the use hereof.

HALLIBURTON ENERGY SERVICES

WATER ANALYSIS

Artesia, NM LAB	ANALYSIS #: ATO10042

GENERAL INFORMATION

OPERATOR:	Marbob Energy	DEPTH:	
WELL:	State CF-4	DATE SAMPLED:	7/15/97
FIELD:		DATE RECEIVED:	7/15/97
FORMATION:		SUBMITTED BY:	
COUNTY:	Eddy	WORKED BY:	Mike Hill
STATE:	NM	PHONE #:	(505) 746-2757

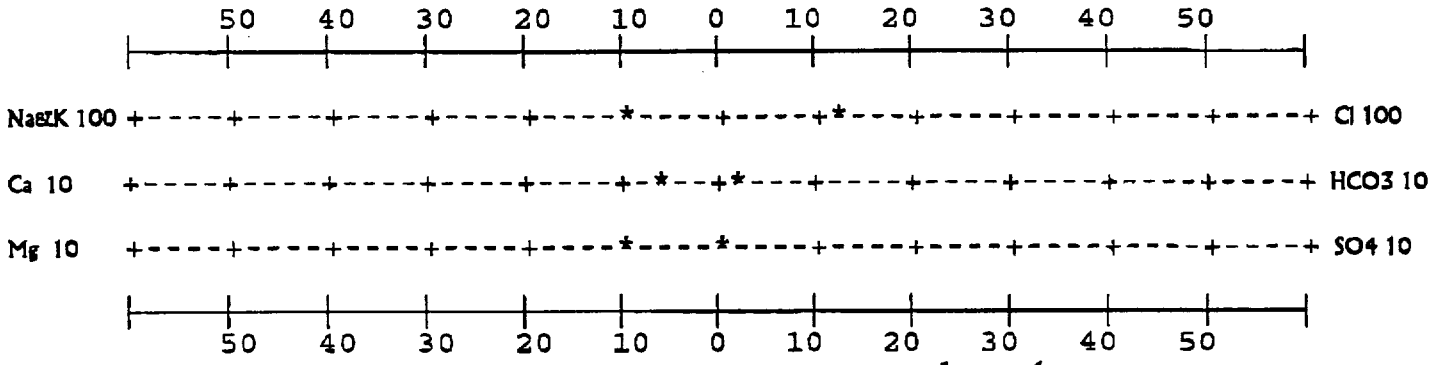
SAMPLE DESCRIPTION: Production Water

PHYSICAL AND CHEMICAL DETERMINATIONS

SPECIFIC GRAVITY:	1.030 @ 75 °F	PH:	7.63
RESISTIVITY (CALC.):	.095 OHMS @ 75 °F		
IRON (FE++):	0 PPM	SULFATE:	233 PPM
CALCIUM:	1165 PPM	TOTAL HARDNESS:	7767 PPM
MAGNESIUM:	1180 PPM	BICARBONATE:	1658 PPM
CHLORIDE:	41738 PPM	SODIUM CHLORIDE (CALC)	68659 PPM
SODIUM+POTASS:	24241 PPM	TOT. DISSOLVED SOLIDS:	75637 PPM

REMARKS:

STIFF TYPE PLOT (IN MEQ/L)



ANALYST Mike Hill
Mike Hill

HALLIBURTON ENERGY SERVICES

WATER ANALYSIS

Artesia, NM LAB	ANALYSIS #: ATO10043

GENERAL INFORMATION

OPERATOR:	Marbob Energy	DEPTH:	
WELL:	State CF-7	DATE SAMPLED:	7/15/97
FIELD:		DATE RECEIVED:	7/15/97
FORMATION:		SUBMITTED BY:	
COUNTY:	Eddy	WORKED BY:	Mike Hill
STATE:	NM	PHONE #:	(505) 746-2757

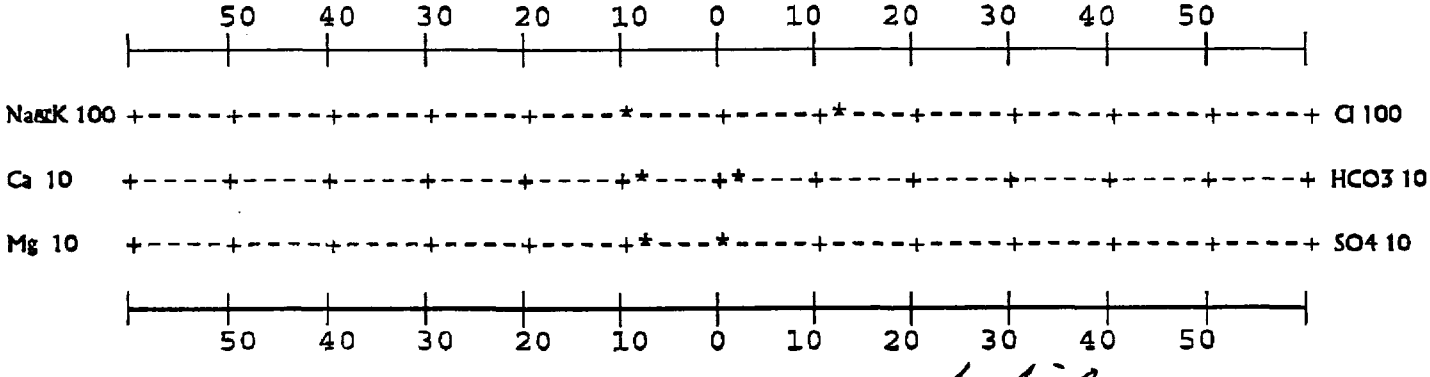
SAMPLE DESCRIPTION: Production Water

PHYSICAL AND CHEMICAL DETERMINATIONS

SPECIFIC GRAVITY:	1.030 @ 75 °F	PH:	7.64
RESISTIVITY (CALC.):	.095 OHMS @ 75 °F		
IRON (FE++):	0 PPM	SULFATE:	233 PPM
CALCIUM:	1709 PPM	TOTAL HARDNESS:	8641 PPM
MAGNESIUM:	1062 PPM	BICARBONATE:	1552 PPM
CHLORIDE:	39797 PPM	SODIUM CHLORIDE (CALC)	65466 PPM
SODIUM+POTASS:	22541 PPM	TOT. DISSOLVED SOLIDS:	72763 PPM

REMARKS:

STIFF TYPE PLOT (IN MEQ/L)



ANALYST Mike Hill
Mike Hill

HALLIBURTON ENERGY SERVICES

WATER ANALYSIS

Artesia, NM LAB ANALYSIS #: ATO10044

GENERAL INFORMATION

OPERATOR:	Marbob Energy	DEPTH:	
WELL:	CF-9	DATE SAMPLED:	7/15/97
FIELD:		DATE RECEIVED:	7/15/97
FORMATION:		SUBMITTED BY:	
COUNTY:	Eddy	WORKED BY:	Mike Hill
STATE:	NM	PHONE #:	(505) 746-2757

SAMPLE DESCRIPTION: Production Water

PHYSICAL AND CHEMICAL DETERMINATIONS

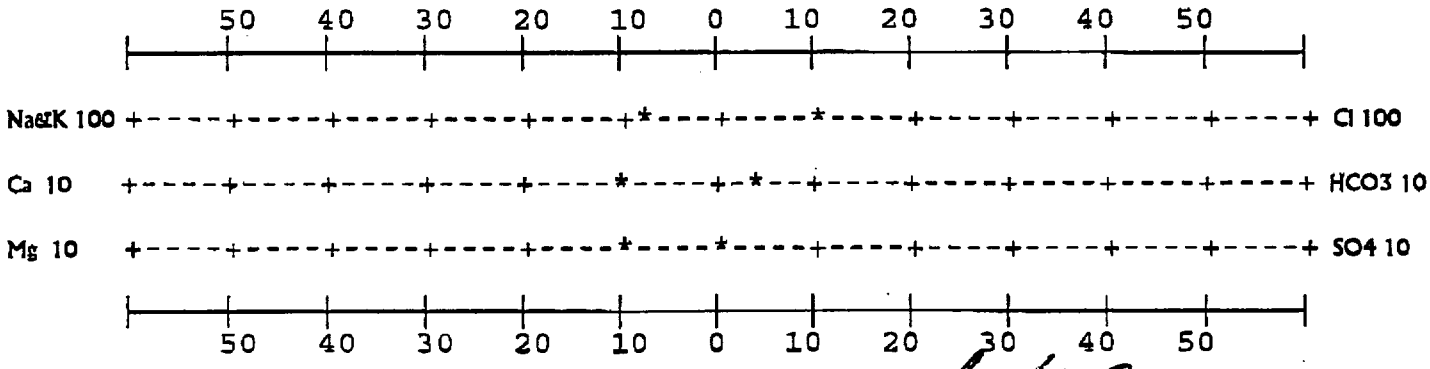
SPECIFIC GRAVITY: 1.030 @ 75 °F PH: 7.68

RESISTIVITY (CALC.): .105 OHMS @ 75 °F

IRON (FE++):	0 PPM	SULFATE:	233 PPM
CALCIUM:	1864 PPM	TOTAL HARDNESS:	10097 PPM
MAGNESIUM:	1321 PPM	BICARBONATE:	1836 PPM
CHLORIDE:	33973 PPM	SODIUM CHLORIDE (CALC)	55885 PPM
SODIUM+POTASS:	18202 PPM	TOT. DISSOLVED SOLIDS:	64341 PPM

REMARKS:

STIFF TYPE PLOT (IN MEQ/L)



ANALYST Mike Hill

Mike Hill

HALLIBURTON

WATER ANALYSIS REPORT
HOBBS NEW MEXICO

COMPANY Marabob

REPORT 97-275
DATE 8/18/97
DISTRICT Artesia

SUBMITTED BY

WELL Duke State DEPTH FORMATION
COUNTY FIELD SOURCE Produced Water

SAMPLE			
RESISTIVITY	0.17 @ 72 °F	@ °F	@ °F
SPECIFIC GR.	1.035		
pH	6.48		
CALCIUM	1,600 mpl	mpl	mpl
MAGNESIUM	1,320 mpl	mpl	mpl
CHLORIDE	20,000 mpl	mpl	mpl
SULFATES	5,126 mpl	mpl	mpl
BICARBONATES	793 mpl	mpl	mpl
SOLUBLE IRON	0 mpl	mpl	mpl
SODIUM	11,385 mpl		
TDS	40,225 mpl		
OIL GRAVITY	@ °F	@ °F	@ °F

REMARKS

Attachment C-108 VII f

Resitivity measured in: Ohm/m2/m

ANALYST: John Eubank

WATER COMPARISON TABLE

	Duke State #1	State CF #4	State CF #7	State CF #9	Rooster Cogburn	True Grit #1
Resistivity	.17 @ 72	.095 @ 75	.095 @ 75	.105 @ 75	.18 @ 74	.2 @ 73
Specific Gravity	1.035	1.03 @ 75	1.03 @ 75	1.03 @ 75	1.03 @ 60	1.02 @ 60
PH	6.48	7.63	7.64	7.68	6.7	6.55
Calcium	1600	1165	1709	1864	1500	1300
Magnesium	1320	1180	1062	1321	340	380
Chlorides	20000	41738	39797	33973	25000	22000
Sulfates	5126	233	233	233	1600	2300
Bicarbonates	793	1658	1552	1836	750	730
Iron	0	0	0	0	0	10

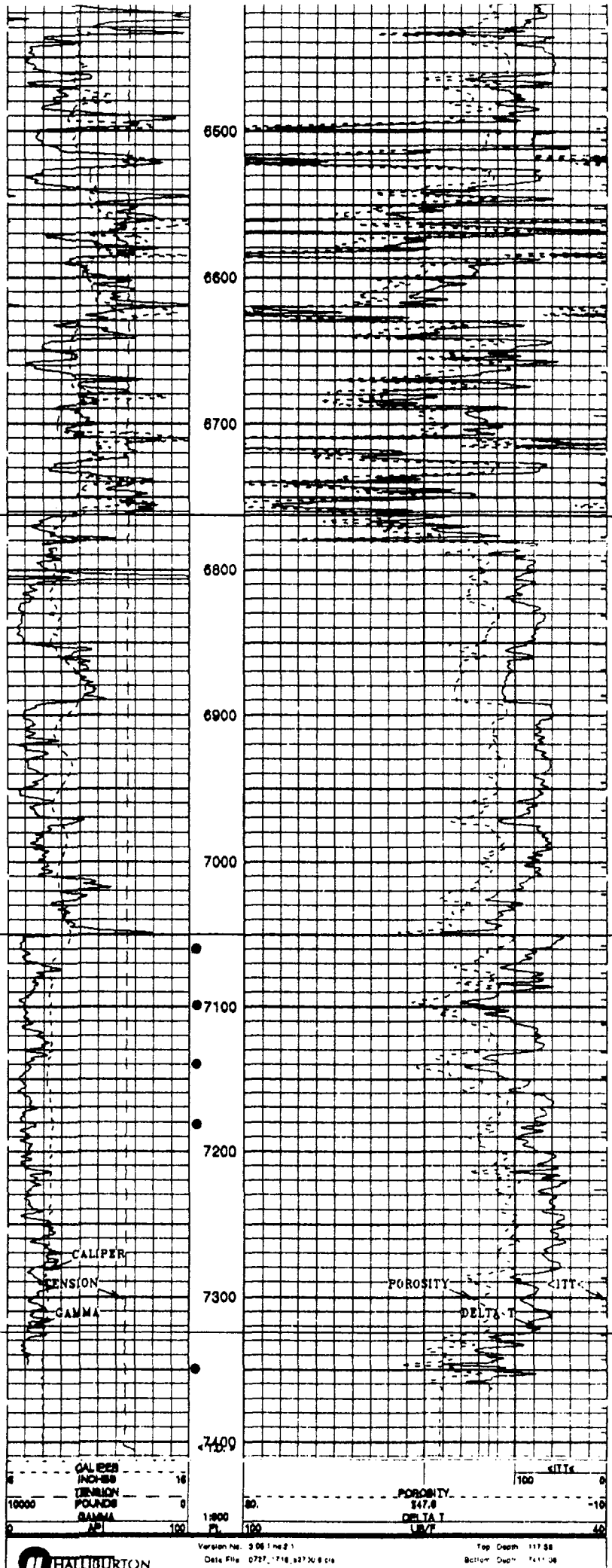
FORM C-108 - ITEM VIII

Geologic Data

Produced waters will be disposed of into the Siluro-Devonian, Fusselman and Montoya formations through perforations from 7051' to 7364' (315' of gross perforated interval & 128' of net perforated interval). It is difficult to differentiate the lower Paleozoic section (Siluro-Devonian through Cambrian) in this area due to a limited number of penetrations, complex stratigraphic relationships associated with formation pinchouts and the fact that the lower Paleozoic section in this area consists entirely of litholigically similar dolomites.

C-108 - Item VIIIa is a gamma ray-sonic log section from the proposed wellbore showing the lower stratigraphic section penetrated by The Duke-State #1. The disposal interval will be within the Siluro-Devonian, Fusselman and Montoya formations. The proposed disposal interval consists entirely of fractured white-tan-brown, microcrystalline dolomite having poor matrix porosity.

C-108-Item VIIIb is a structural contour map on the top of the Siluro-Devonian formation. The most obvious feature on this map is the northeast-southwest trending ridge on which The Duke is situated. The ridge is fault bounded on the west side by a down to the west fault having approximately 150'-200' of throw. The proposed disposal well is located on the upthrown side of the fault but DST information indicated that the well would not be a commercial oil producer. The nearest producer in the proposed disposal interval is the Marbob Energy Rooster Cogburn-Fee #1 which is located almost 1.25 miles to the northwest in section 9-T11S-R27E. This well is structurally located approximately 15' up dip to the proposed disposal well at the top of the disposal interval. As this well is located over 1 mile away from the proposed disposal well we do not anticipate any associated impact from the injection of produced water into the proposed disposal well.



C108 - Item VIIIa

marbob
energy corporation

August 21, 1997

State of New Mexico
Commissioner of Public Lands
Post Office Box 1148
Santa Fe, New Mexico 87504-1148

RE: The Duke State #1
Convert to Disposal Well
Section 16-11S-28E
Chaves County, New Mexico

Gentlemen:

Enclosed is a copy of Marbob Energy Corporation's application for converting the above referenced well into a produced water disposal well. If you have any questions concerning this, please give Mike Hanagan (505/623-5053) or Raye Miller (505/748-3303) a call.

As a requirement of the New Mexico Oil Conservation Division, we are required to notify any offset operators, and surface and minerals owners of our proposal to convert this well into a disposal well. If you have any objections, you must notify the Oil Conservation Division in Santa Fe in writing within fifteen days of this letter.

If you have no objections to the proposed disposal well, please sign below and return one copy to Marbob.

Sincerely,

David Martin
Land Department

DM/mm

Commissioner of Public Lands has no objection for the proposed disposal well.

By:_____ Date: _____
Title: _____

P.O. Box 227 Artesia, New Mexico 88211-0227 (505) 748-3303 Fax (505) 746-2523

STIMULATION PROGRAM

The proposed disposal well was originally drilled as a Devonian test on July 28, 1997. Thirteen and three-eighths inch casing was set at 275' with 448 sacks of cement which was brought back to surface. Eight and five-eighths inch casing was set at 1620' with 794 sacks of cement which was circulated back to the surface. Five and one-half inch casing was set to 7400' with 750 sacks of cement. Top of cement was calculated to be at 5050'. Casing was tested to 1500# for thirty minutes and held okay.

Marbob proposes to (1) perforate 7280' to 7364', and (2) injection test disposal interval to see if stimulation is necessary, and (3a) if stimulation is not necessary, which we feel is the probable case, place the well in a disposal status, or (3b) if stimulation is necessary, acidize the well with 1,000 gl - 2,000 gl of 15%-20% acid as needed to open the disposal interval.

LOGGING AND TESTING DATA

Logs on the subject well (Dual Laterlog, Sonic Log, and Gamma Ray Log) are on file at the Artesia Oil Conservation Division. These logs were run around July 27, 1997.

Attachment C-108 X

UNDERGROUND FRESH WATER SOURCES

The proposed disposal well lies within the extended Roswell Underground Water Basin. A search of the State Engineer's Office in Roswell indicated only one fresh water well within the one mile area of review. This well was located northeast of the proposed disposal well. However, a physical inspection revealed that the well had been plugged by Fred Pool. Randall Jones, the foreman of the ranch, said that the well had produced "bad tasting" water so they had it plugged. The well had been perforated between 155 feet and 220 feet according to State Engineer records. These perfs have been cemented off now.

An inspection of the well records at the Oil Conservation Division office in Artesia of the wells within the area of review indicated that surface casing was set and cement circulated to the surface to isolate this fresh water zone.

There are no known fresh water sources underlying the Siluro-Devonian formation in this area.

FRESH WATER ANALYSIS

There are no fresh water wells within one mile of the proposed disposal well.

AFFIRMATIVE STATEMENT

Applicant hereby affirms that he had examined the available geologic and engineering data and finds no evidence of open faults or other hydrologic connection between the disposal zone and any underground source of drinking water.

PROOF OF NOTICE
(Offset Operators, Surface Owners and Mineral Owners)

Marbob will provide, by way of certified mail, a copy of this complete application to the following parties:

I. OFFSET OPERATORS

Plains Radio Broadcasting Company
305 West Ninth Avenue
Amarillo, Texas 79101

II. MINERAL OWNERS AND SURFACE OWNERS Lease K-2114

State of New Mexico
Commissioner of Public Lands
Post Office Box 1148
Santa Fe, New Mexico 87504-1148

Upon receiving the "returned receipt" stub from the certified mail form, Marbob will forward a copy of same to you for your files.

marbob
energy corporation

August 21, 1997

Plains Radio Broadcasting Company
305 West Ninth Avenue
Amarillo, Texas 79101

RE: The Duke State #1
Convert to Disposal Well
Section 16-11S-28E
Chaves County, New Mexico

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If you have no objections to the proposed disposal well, please sign below and return one copy to Marbob.

Sincerely,

David Martin
Land Department

DM/mm

Plains Radio Broadcasting Company has no objection for the proposed disposal well.

By: _____ Date: _____

Title: _____

P.O. Box 227 Artesia, New Mexico 88211-0227 (505) 748-3303 Fax (505) 746-2523

marbob
energy corporation

August 21, 1997

Roswell Daily Record
2301 North Main Street
Roswell, New Mexico 88201

Attn: Legal Advertising Section

RE: Notice of Disposal
Well Application
Duke State #1

Dear Sir:

Please run the attached notice in your classified advertising legal section for the following three dates: August 24, August 31, and September 7, 1997. Please provide us with an Affidavit of Publication once the notice has been published for the three dates.

Thank you for your help in this matter. If you have any questions, please call Mike Hanagan at 623-5053 or Raye Miller at 748-3303.

Sincerely,

David Martin

David Martin
Land Department

DM/mm
Enclosures

LEGAL NOTICE

Pursuant to State of New Mexico Oil Conservation Division Rule 701-B-3 Marbob Energy Corporation gives public notice that it is the intent of Marbob Energy Corporation to utilize the Duke State #1 well, located 2603' from the north line and 1080' from the west line of Section 16, Township 11 South, Range 28 East, Chaves County, New Mexico, N.M.P.M., for the underground disposal of produced water in the area. Disposal will average 5,000 barrels per day but could go as high as 10,000 barrels per day. Maximum injection pressure will not exceed 1410 pounds per square inch. Produced waters will be disposed of into the Siluro-Devonian formation through perforations at 7051' to 7364' from the surface. Questions regarding this proposal may be directed to Mike Hanagan, P. O. Box 1737, Roswell, New Mexico 88202, Telephone 623-5053. Objections to this proposal or request for Hearing on the matter, together with the reasons therefore, must be filed in writing with the Oil Conservation Division, 2040 Pacheco Street, Santa Fe, New Mexico 87505 within fifteen (15) days of this notice.

PROOF OF NOTICE BY PUBLICATION

The following legal advertisement was delivered to the Roswell Daily Record (Roswell, Chaves County, New Mexico) on August 22, 1997 for publication in the August 24, 31, and September 7, 1997 volumes. An Affadavit of Publication will be submitted by the Roswell Daily Record after the final date of publication.

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Pursuant to State of New Mexico Oil Conservation Division Rule 701-B-3 Marbob Energy Corporation gives public notice that it is the intent of Marbob Energy Corporation to utilize the Duke State #1 well, located 2603' from the north line and 1080' from the west line of Section 16, Township 11 South, Range 28 East, Chaves County, New Mexico, N.M.P.M., for the underground disposal of produced water in the area. Disposal will average 5,000 barrels per day but could go as high as 10,000 barrels per day. Maximum injection pressure will not exceed 1410 pounds per square inch. Produced waters will be disposed of into the Siluro-Devonian formation through perforations at 7051' to 7364' from the surface. Questions regarding this proposal may be directed to Mike Hanagan, P. O. Box 1737, Roswell, New Mexico 88202, Telephone 623-5053. Objections to this proposal or request for Hearing on the matter, together with the reasons therefore, must be filed in writing with the Oil Conservation Division, 2040 Pacheco Street, Santa Fe, New Mexico 87505 within fifteen (15) days of this notice.