FORM 470 2-57

SWD

PAN AMERICAN PETROLEUM CORPORATION

Post Office Box 68
Hobbs, New Mexico

July 15, 1968

File: VES-282-986.510

Subject: Application for Salt Water Disposal
Cato San Andres Field
Chaves County, New Mexico

Mr. A. L. Porter
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

68 JUL 17 AM

Gentlemen:

Pan American Petroleum Corporation respectfully requests administrative approval to dispose of produced water from the Cato Field into the Rustler zone, which is non-productive of oil and gas, in the Sellers Well No. 1, located in Unit M, Section 3, Township 8-S, Range 30-E, Chaves County, New Mexico. In accordance with Rule 701 C, we are attaching in triplicate hereto our "Application to Dispose of Salt Water By Injection Into Porous Formation":

(1) A plat showing the location of proposed injection well and the location of all other wells within a radius of two miles from the proposed injection well with the wells coded showing the completion zone in each well.

(2) A log of the proposed injection well.

(3) A diagramatic sketch of the proposed injection well.

The Sellers Well No. 1, the proposed injection well, was originally drilled as a producing well in the Cato San Andres Field. Presently the well is temporarily abandoned with the interval from 3252' - 3363' selectively perforated. Prior to conversion as a disposal well, a cement plug will be placed over the perforations and at other necessary intervals in the casing. On the initial cementing of the 4-1/2" casing at 3402', 500 sacks of Incor with 12% gel and 300 sacks of Incor Neat were used. This is over 200% of theoretical fill. Based upon a caliper survey on a nearby well, the Baskett No. 1 in Unit L, Section 11, it is estimated that the top of the cement of the 4-1/2" casing is near 1440' which is the base of the salt. Therefore, it is planned to perforate the pipe at 1300', and attempt

to establish circulation. The 4-1/2" casing will then be cemented to bring the cement back to 900'. If circulation cannot be established, it is planned to perforate above and below the Rustler and separately block squeeze. A bridge plug will be set at 1135' after cementing operations.

The Rustler formation (1003'-1050') will be perforated from 1005'-1035' or immediately above the top of the salt section. This zone, though anhydritic in nature has been a lost circulation zone in this portion of the field and should readily handle the anticipated daily injection volume of 1000 barrels. Though no water analysis is available from the Rustler, due to its proximity immediately above the salt and its anhydritic nature, the water would be mineralized to such a degree as to be unfit for domestic use, stock, and irrigation.

Yours very truly,

V. E. Staley
Area Superintendent

EJS/jt

Attachments

cc: NMOCC - Hobbs
Mrs Bob Crosby, P. O. Box 341, Roswell, New Mexico 88201, Attn Mr. Schauer
Union Texas Petroleum, P. O. Box 1859, Midland, Texas 79701
Mr. R. H. Fulton, 2323 Erskine Road, Lubbock, Texas 79400

Form C-108
Revised 1-1-65

NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR	ADDRESS
Pan American Petroleum Corporation	P. O. Box 68, Hobbs, New Mexico 88240

LEASE NAME	WELL NO.	FIELD	COUNTY
Sellers	1	Cato	Chaves

LOCATION

UNIT LETTER M ; WELL IS LOCATED 660 FEET FROM THE South LINE AND 660 FEET FROM THE West LINE, SECTION 3 TOWNSHIP 8-S RANGE 30-E NMPM.

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	8-5/8"	450'	300	Circulated	
INTERMEDIATE None					
LONG STRING	4-1/2"	3402'	800	1440' Base of Salt - Estimated	
TUBING	2-3/8"	980'	NAME, MODEL AND DEPTH OF TUBING PACKER: Baker Model "AK" or equal at 950'		

NAME OF PROPOSED INJECTION FORMATION	TOP OF FORMATION	BOTTOM OF FORMATION
Rustler	1003'	1050'

IS INJECTION THROUGH TUBING, CASING, OR ANNULUS?	PERFORATIONS OR OPEN HOLE?	PROPOSED INTERVAL(S) OF INJECTION
Tubing	Perforations	1005' to 1035'

IS THIS A NEW WELL DRILLED FOR DISPOSAL?	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED?	HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE?
No	As a producing well in Cato Field	Yes

LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH

3252'-53', 65'-69',72-74',75-80',3320'-37',45'-49',55'-63' with 2 JSPF. Cement plug to be placed from 3200 to TD.

DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA	DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA	DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA
240'	None	2540'

ANTICIPATED DAILY INJECTION VOLUME (BBLS.)	MINIMUM	MAXIMUM	OPEN OR CLOSED TYPE SYSTEM	IS INJECTION TO BE BY GRAVITY OR PRESSURE?	APPROX. PRESSURE (PSI)
1000'	800	2300	Closed	Pressure	100

ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE —	WATER TO BE DISPOSED OF	NATURAL WATER IN DISPOSAL ZONE	ARE WATER ANALYSES ATTACHED?
	Yes	Yes	Yes - San Andres No - Rustler Not Available

NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND)

Mrs. Bob Crosby, Attn: Mr. W. C. Schauer, Box 341, Roswell, New Mexico 88201

LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (½) MILE OF THIS INJECTION WELL

Pan American Petroleum Corporation, P. O. Box 68, Hobbs, New Mexico 88240

Union Texas Petroleum, P. O. Box 1859, Midland, Texas 79701

R. H. Fulton 2323 Erskine Road, Lubbock, Texas 79400

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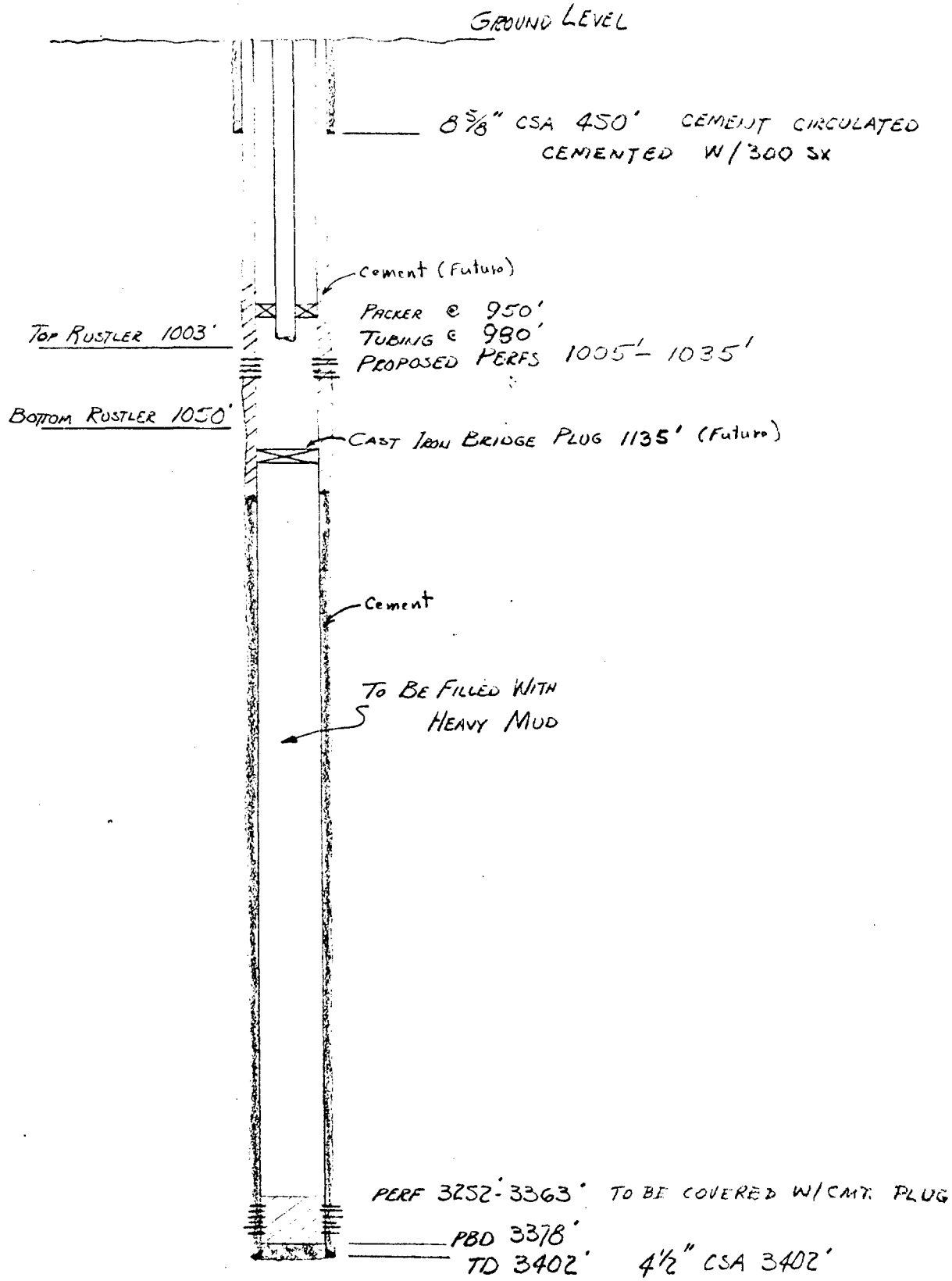
HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING?	SURFACE OWNER	EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL	THE NEW MEXICO STATE ENGINEER
	Yes	Yes	XXXXXXXXXXXXXXXXXXXXXX
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)	PLAT OF AREA	ELECTRICAL LOG	DIAGRAMMATIC SKETCH OF WELL
	Yes	Yes	Yes

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

(Signature)	Area Superintendent (Title)	June 16, 1968 (Date)

NOTE: Should waivers from the State Engineer, the surface owner, and all operators within one-half mile of the proposed injection well. not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 701.



PAN AMERICAN PETROLEUM CORPORATION	SCALE: NONE
SELLERS No. 1 CATO SAN ANDRES FIELD	DRG. NO. 7/8/68

FORM 66 2-64
PRINTED IN U.S.A.

PAN AMERICAN PETROLEUM CORPORATION
RESEARCH CENTER
WATER ANALYSIS

LOCATION SAMPLED: Division Fort Worth District Lubbock Area Hobbs
Operator (Plant) _____ Well No. _____ Lease Cato SS I
State (Province) New Mexico County (Parish) Chaves
Twp. _____ Rng. _____ Sec. _____ Quarter (Lsd.) _____ Other (Meridian) _____
Wildcat ( ) Field Well (x)
Field name Cato San Andres Sample used for detailed analyses _____
Sample collected from Treater Sample collected by T. W. Wilson Date 4-4-68
Interval sampled _____ to _____ Interval name _____
Recovery _____
Form 97 transmitted by V. E. Staley Date transmitted File: VES-147-535.11
Technical Service request authorized by _____ Office _____
Technical Service Number: _____

ORGANIC CONSTITUENTS in mg/l

	BOTTOM	MIDDLE	TOP	MUD	
Benzene					
Toluene					
Phenols					
HC Gases					

DESCRIPTION OF SAMPLE

Condition as received _____
Color _____
Odor _____
Suspended solids _____
Bottom sediment _____
Oil content _____

QUALITY OF SAMPLE

Chloride ion mg/l:	BOTTOM	MIDDLE	TOP

Comments on quality _____

CONVENTIONAL MAJOR ION ANALYSIS

			Major Ions mg/l[1]	% of Total Major Ions	Reaction Value meq/l[2]	% of Total Reaction Value
CATIONS	Sodium	Na^+	59,943	23.36	2,607.52	28.46
	Calcium	Ca^{++}	25,400	9.90	1,267.46	13.83
	Magnesium	Mg^{++}	8,590	3.35	706.10	7.71
	Potassium	K^+				
ANIONS	Chloride	Cl^-	162,000	63.13	4,568.40	49.86
	Bicarbonate	HCO_3^-	266	.10	4.36	.05
	Sulfate	SO_4^{--}	400	.16	8.32	.09
	Carbonate	CO_3^{--}	0	0	0	0
	TOTAL		256,599			

Total solids by evaporation 266,080 mg/l
NaCl resistivity equivalent (Dunlap) 263,525 mg/l
Resistivity .047 ohm-meters at 77 °F
pH 7.3 Specific gravity 1.182 at 72 °F
Ryznar stability index (2pHs–pH) _____ at _____ °F

OTHER IONS AND DISSOLVED SOLIDS

CATIONS	mg/l	ANIONS	mg/l	OTHERS	mg/l
Lithium Li^+		Bromide Br^-		Iron Fe	
		Iodide I^-		Boron B	
				Silica SiO_2	

[1] Data previously reported on Form 66 7-62 under the heading P.P.M. was actually in milligrams per liter. By definition, ppm = mg/l /sp. gr.
[2] meq/l means milligram equivalents per liter.

REMARKS AND CONCLUSIONS: _____

cc: _____ Date received 4-22-68 Field sample no. 3
Lab. no. T-19135
Analyst James J Elliott Date 4-30-68

JJE:sw

(Water charts on back)

FORM 66 2-65
PRINTED IN U.S.A.

PAN AMERICAN PETROLEUM CORPORATION
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Technical Service request authorized by _____ Office _____
Technical Service Number: _____

ORGANIC CONSTITUENTS in mg/1

	BOTTOM	MIDDLE	TOP	MUD	
Benzene					
Toluene					
Phenols					
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DESCRIPTION OF SAMPLE

Condition as received _____
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Oil content _____

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Lab. no. T-19135
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JJE:sw

(Water charts on back)

LARGE FORMAT EXHIBIT HAS BEEN REMOVED AND IS LOCATED IN THE NEXT FILE