Phil

MIDLAND PARTNERS
CARLTON BEAL
CARLTON BEAL, JR.
BARRY BEAL
SPENCER BEAL
KELLY BEAL

DENVER PARTNER
BARRY BEAL, JR.

BTA OIL PRODUCERS
104 SOUTH PECOS
MIDLAND, TEXAS 79701
AC 915-682-3753

ROCKY MOUNTAIN DIVISION
555-17TH STREET
SUITE 835
DENVER, CO 80202
AC 303-292-9299

February 21, 1991

RE: Application for Salt Water Disposal
BTA - Pardue -C-, 8808 JV-P, Well No. 1-D
Unit N, 176' FSL & 1550' FWL
Sec. 11, T23S, R28E
Eddy County, New Mexico

STATE OF NEW MEXICO
Energy & Minerals Department
Oil Conservation Commission
P. O. Box 2088
Santa Fe, NM 87504-2088

FEDERAL EXPRESS

Attn: Mr. David Catanach

Dear Mr. Catanach:

BTA hereby submits the enclosed application for Salt Water Disposal. Please set for hearing on March 21, 1991.

The surface owner and all offset operators have been mailed a complete copy of our application by certified mail.

Please advise if further information is required prior to the hearing.

Sincerely,

Dorothy Houghton

DOROTHY HOUGHTON
For BTA Oil Producers

DH/pdi

Enclosures

xc: Artesia District Office

BEFORE EXAMINER STOGNER
OIL CONSERVATION DIVISION
BTA EXHIBIT NO. 1
CASE NO. 10268

1.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

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: BTA Oil Producers

Address: 104 S. Pecos, Midland, TX 79701

Contact party: Dorothy Houghton Phone: 915-682-3753

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: Dorothy Houghton Title Regulatory Administrator

Signature: Dorothy Houghton Date: 2-19-91

* 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 district office.

2.

BTA OIL PRODUCERS

Pardue -C-, 8808 JV-P
No. 1-SWD
176' FSL & 1550' FWL
N, Sec. 11, T23S, R28E
Eddy County, NM

Form C-108 Attachment

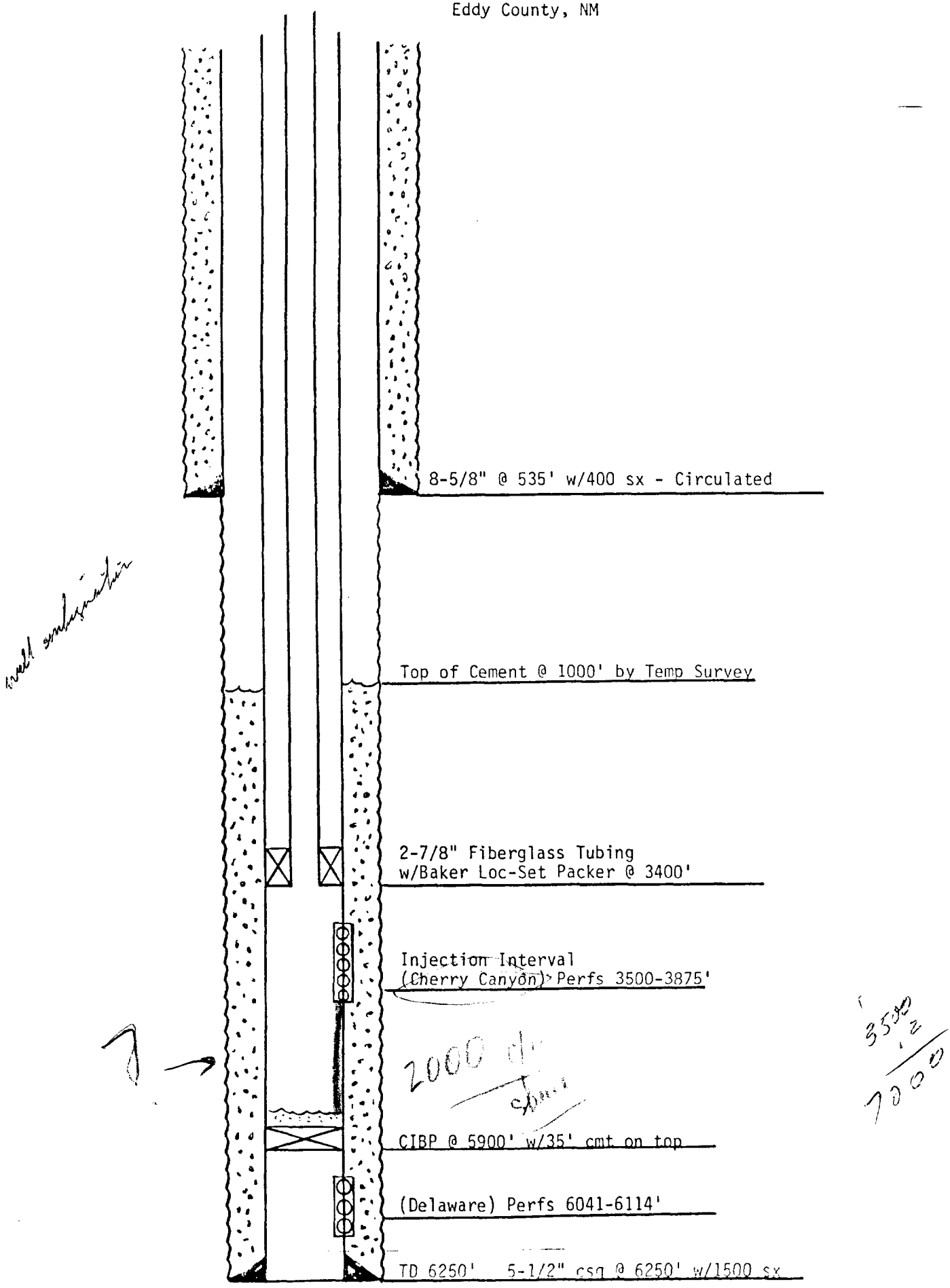
III. Injection Well Data Sheet

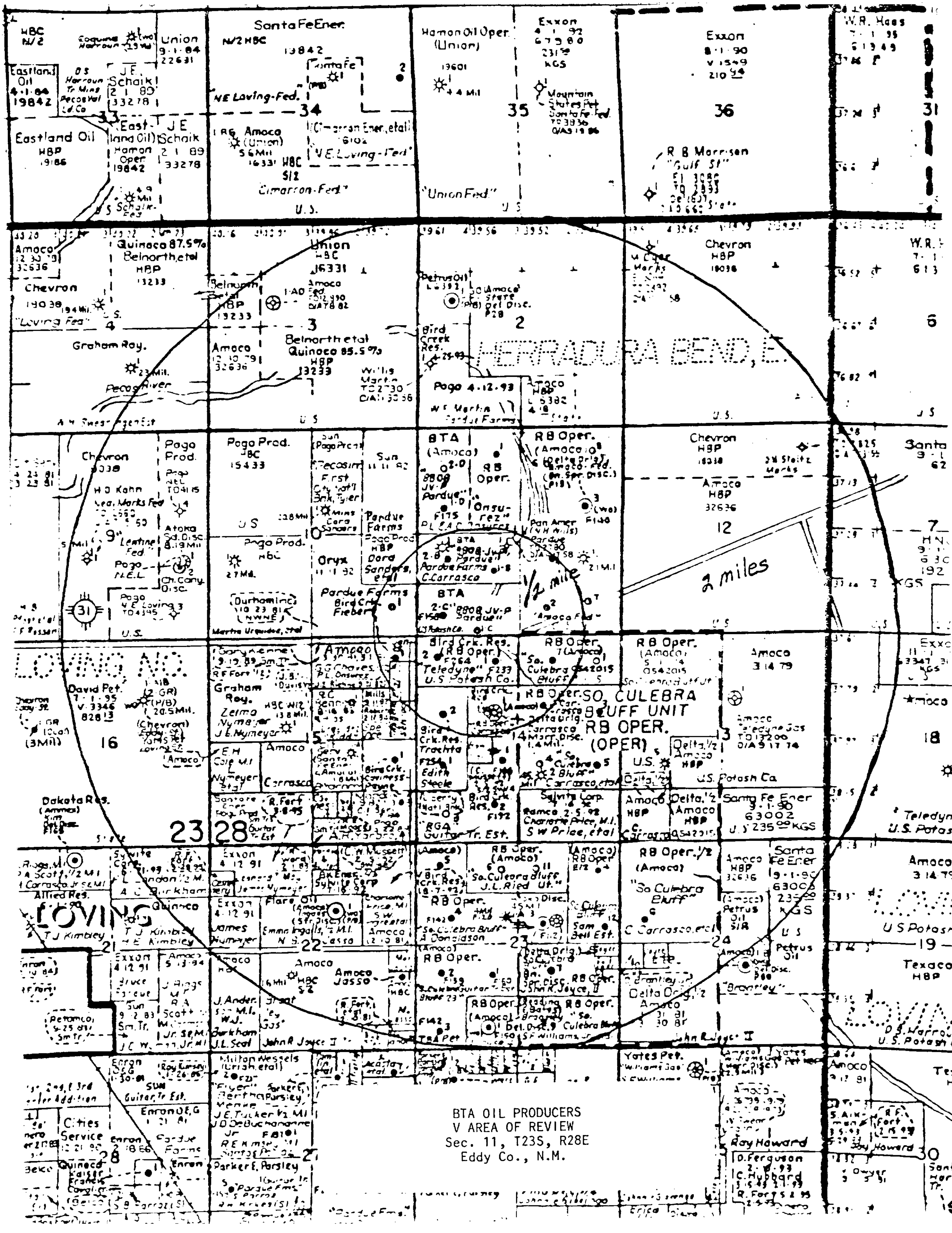
		Hole Size
Surface Casing:	8-5/8" @ 535' w/ 400 sx circ	12-1/4"
Intermediate Casing:	5-1/2" @ 6,250' w/1500 sx TOC @ 1,000' by Temp Survey	7-7/8"
Total Depth:	6,250'	
Tubing:	2-7/8" fiberglass tubing @ 3400'	
Packer:	Baker Loc-set Packer @ 3400'	
Name of Injection Formation:	Cherry Canyon	
Injection Interval:	3,500 - 3,875'	
Field:	Undesignated Cherry Canyon	
Purpose:	This well was drilled by BTA at an unorthodox location and completed 5/17/90. The well produced at a reduced allowable from the Loving East, Delaware Pool. As a result of Order R-9147-B, the well was shut in 2/15/91.	
Perforated Intervals:	6,041 - 6,114'	

Depth and name of overlying and/or underlying oil and gas zones in this area:

Depth to next higher oil zone, 2,600 feet, producing about three and one-half miles northwest. Next lower oil zone, 6,050 feet, producing in Loving East field.

BTA OIL PRODUCERS
Pardue -C-, 8808 JV-P
Proposed SWD - Well No. 1
176' FSL & 1550' FWL
N, Sec. 11, T23S, R28E
Eddy County, NM





BTA OIL PRODUCERS
V AREA OF REVIEW
Sec. 11, T23S, R28E
Eddy Co., N.M.

Attachment to C-108

B T A OIL PRODUCERS

VI. Tabulation of Data on all Wells in Review Area

Well: BTA - Pardue -C-, 8808 JV-P, Well No. 2

Location: 560' FSL & 660' FWL
-M-, Sec. 11, T23S, R28E
Eddy County, N.M.

Type: Oil Producer

Construction: 8-5/8" @ 527' w/ 400 sx - Circ
5-1/2" @ 6250' w/1317 sx - Circ

Date Drilled: 2-22-90

Record of Completion: Perfs: 6031 - 6140'
IPF: 158 BO
Comp: 3-08-90

Well: BTA - Pardue -B-, 8808 JV-P, Well No. 2

Location: 1980' FSL & 765' FWL
-L-, Sec. 11, T23S, R28E
Eddy County, N.M.

Type: Oil Producer

Construction: 8-5/8" @ 515' w/ 400 sx - Circ
5-1/2" @ 6250' w/1300 sx - TOC @ 1100' Temp. Survey

Date Drilled: 5-14-90

Record of Completion: Perfs: 6055 - 6127'
IPF: 161 BO
Comp: 6-05-90

Well: BTA - Pardue, 8808 JV-P, [redacted]

Location: 2310' FSL & 660' FWL
-L-, Sec. 11, T23S, R28E
Eddy County, N.M.

Type: Gas Producer

Construction:
16" @ 433' w/ 600 sx - Circ
10-3/4" @ 2614' w/2000 sx - Circ
7-7/8" @ 10700' W/2400 sx - TOC @ 450' Temp.
Liner 5" @ 10295 - 12868' w/460 sx

Date Drilled: 8-27-88

Record of Completion:
Perfs: 11604 - 11718'
IPF: 205 MCFD
Comp: 11-24-88

Well: BTA - Pardue -B-, 8808 JV-P, Well No. 1

Location: 1711' FSL & 1957' FWL
-K-, Sec. 11, T23S, R28E
Eddy County, N.M.

Type: Oil Producer

Construction:
8-5/8" @ 514' w/ 400 sx - Circ
5-1/2" @ 6300' w/1200 sx - TOC @ 800' Temp.

Date Drilled: 2-06-90

Record of Completion:
Perfs: 6035 - 6120'
IPF: 151 BO
Comp: 2-27-90

Well: RB Operating Company
Amoco "11" Fed, Well No. 4

Location: 1980' FSL & 1651' FEL (Surface)
-J-, Sec. 11, T23S, R28E
Eddy County, N.M.

Type: Oil Producer

Construction: 8-5/8" @ 580' w/ 350 sx - Surface
5-1/2" @ 6310' w/1550 sx — TOC ? 1540' ✓

Date Drilled: 11-19-90

Record of Completion: Perfs: 6108 - 6155'
IPF: 175 BO
Comp: 11-06-90

Well: RB Operating Company
Amoco "11" Fed, Well No. 2

Location: 990' FSL & 1330' FEL (Surface)
-O-, Sec. 11, T23S, R28E
Eddy County, N.M.

Type: Oil Producer

Construction: 8-5/8" @ 587' w/ 350 sx
5-1/2" @ 6350' w/1700 sx — TOC ? surface

Date Drilled: 11-19-90

Record of Completion: Perfs: 6192 - 6212'
IPF: 1137 BO
Comp: 12-14-90

Well: RB Operating Company
S. Culebra Bluff, Well No. 7

Location: 660' FNL & 1740' FEL
-B-, Sec. 14, T23S, R28E
Eddy County, N.M.

Type: Oil Producer

Construction: 8-5/8" @ 500' w/ 220 sx - Circ
5-1/2" @ 7478' w/1320 sx — TOC ? circ.

Date Drilled: 8-27-81

Record of Completion: Perfs: 6282 - 7404 (Bone Spring)
IPF: 59 BO
Comp: 11-18-81

Date Re-Entry: 6-13-90

Record of Completion: Perfs: 6079 - 6155
IPF: 198 BO
Comp: 6-24-90

Well: RB Operating Company
Carrasco "14", Well No. 2

Location: 1806' FNL & 2013' FEL
-G-, Sec. 14, T23S, R28E
Eddy County, N.M.

Type: Oil Producer

Construction: 8-5/8" @ 562' w/ 350 sx - Circ
5-1/2" @ 6300' w/1650 sx — surface ? TOC

Date Drilled: 4-10-90

Record of Completion: Perfs: 6070 - 6163'
IPF: 39.6 BO
Comp: 5-02-90

Well:	Bird Creek Resources, Inc. Carrasco, Well No. 1
Location:	1980' FNL & 1880' FWL -F-, Sec. 14, T23S, R28E Eddy County, N.M.
Type:	SI Gas Well
Construction:	8-5/8" @ 520' w/ 550 sx 5-1/2" @ 6420' w/1245 sx
Date Drilled:	5-15-89
Record of Completion:	Perfs: 6086 - 6190' IPF: Comp: 7-15-89

Well:	Bird Creek Resources, Inc. Trachta, Well No. 2
Location:	1980' FNL & 660' FWL -E-, Sec. 14, T23S, R28E Eddy County, N.M.
Type:	Oil Producer
Construction:	8-5/8" @ 514' w/ 310 sx 5-1/2" @ 6221' w/1490 sx
Date Drilled:	8-24-90
Record of Completion:	Perfs: 6072 - 6133' IPF: 240 BO Comp: 9-14-90

Well:	Bird Creek Resources, Inc. Teledyne, Well No. 1
Location:	660' FNL & 1980' FWL -C-, Sec. 14, T23S, R28E Eddy County, N.M.
Type:	Oil Producer
Construction:	8-5/8" @ 518' w/ 350 sx 5-1/2" @ 6205' w/2350 sx
Date Drilled:	12-28-89
Record of Completion:	Perfs: 6062 - 6143' IPF: 233 BO Comp: 1-13-90

Well:	Bird Creek Resources, Inc. Teledyne, Well No. 2
Location:	660' FNL & 660' FWL -D-, Sec. 14, T23S, R28E Eddy County, N.M.
Type:	Oil Producer
Construction:	8-5/8" @ 500' w/ 350 sx 5-1/2" @ 6187' w/1720 sx
Date Drilled:	5-06-90
Record of Completion:	Perfs: 6014 - 6096' IPF: 264 BO Comp: 5-25-90

Well:	Bird Creek Resources, Inc. Siebert, Well No. 1
Location:	535' FNL & 535' FEL -A-, Sec. 15, T23S, R28E Eddy County, N.M.
Type:	Oil Producer
Construction:	8-5/8" @ 510' w/ 350 sx 5-1/2" @ 6219' w/2050 sx
Date Drilled:	5-20-90
Record of Completion:	Perfs: 6059 - 6131' IPF: 295 BO Comp: 6-16-90

Well:	Oryx Energy Pardue Farms, Well No. 1
Location:	780' FSL & 660' FEL -P-, Sec. 10, T23S, R28E Eddy County, N.M.
Type:	Oil Producer
Construction:	8-5/8" @ 503' w/ 400 sx 5-1/2" @ 6200' w/1795 sx
Date Drilled:	7-25-90
Record of Completion:	Perfs: 6052 - 6128' IPF: 205 BO Comp: 8-19-90

VII. Proposed Operation

1. The average injection rate is estimated at 500 BWPD.

   The proposed maximum injection rate is 1000 BWPD.

2. The system will be open. If the wells' disposal capacity is such to handle additional water, other operators' wells in the area may be trucked into the storage tanks. Storage tanks will be located on the well site along with a powered salt water disposal pump. A salt water gathering system will transport from BTA tank batteries.

3. The proposed average injection pressure is 1000 psi.

   The proposed maximum injection pressure is 1250 psi.

4. The sources of injected water will be from the Delaware. At the present time, BTA's six producing wells in the area are producing water at a rate of 165 barrels per day. We are attaching five water analyses of produced water from BTA wells. See Exhibits A-1 through 5. We are attaching a compatibility study between the Delaware and the receiving formation, Cherry Canyon. See Exhibit B.

5. Our proposed injection zone is not productive of oil or gas within one mile of our proposed well.

VIII.

Geological Name:	Cherry Canyon
Lithological Detail:	Fine grained quartz sandstone and siltstone of the Cherry Canyon formation of the Delaware Mountain Group.
Thickness:	1120' in the Pardue C #1
Depth:	3558 - 3875'
Geological Data of Drinking Water Zone:	The underground source of drinking water overlying the zone of disposal is the Ogallala, which occurs from 50 to 250 feet and is approximately 200' thick.

IX. Proposed Stimulation Program

Perforate Zone 3500-3875'
Acidize Zone w/3500 gal 15% HCl

If required, fracture treat zone with amount to be determined later.

X. Logs were previously filed by BTA upon completion 5/24/90. A log section of proposed interval is enclosed.

XI. Analysis of fresh water wells attached:

BTA has obtained seven water samples; six from fresh water wells, all within one mile to one and one-fourth mile of our proposed disposal, and a sample of Pecos River water. See attached Exhibits C 1 & 2, with a map spotting the sample sources.

It should be noted that people living in the area have a municipal water source from "Malaga Water Users" with wells located fifteen miles away. The wells in this area are used for irrigation and livestock.

XII. After examining all available geological and engineering data, we find no evidence of open faults or any other hydrologic connection between the Delaware Mountain Group and any underground source of drinking water.

XIII. A copy of our application has been furnished by certified mail to the surface owner and to each leasehold operator within one-half mile of our proposed injection well. See listing on Exhibit -D-.

EXHIBIT A-1

CHEMLINK

WATER ANALYSIS REPORT

Lab ID No. : 121290D Analysis Date: December 10, 1990

Company	: **BTA Oil Producers**	**Sampled By**	: **Pro-Kem, Inc.**
Field	: Loving, East	**Sample Date:**	*
Lease/Unit	: **Pardue "C" #2**	**Salesperson:**	**Gerald Phillips**
Well ID.	: **Water Tank**	**Formation**	: Delaware
Sample Loc.:	SW/SW, Sec 11, T23S,R38E Eddy County, New Mexico	**Location**	: **Loving , N. M.**

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
Calcium as Ca++	29,062	1,453	Hydroxyl as OH-	0	0
Magnesium as Mg++	3,309	271	Carbonate as CO3=	0	0
Sodium as Na+ (Calc)	77,276	3,360	Bicarbonate as HCO3-	68	1
Barium as Ba++	Not Determined		Sulfate as SO4=	340	7
Oil Content	0		Chloride as Cl-	179,959	5,076

Total Dissolved Solids, Calculated: 290,016 mg/L.

Calculated Resistivity: 0.010 ohm-meters
mg/L. Hydrogen Sulfide: 40
mg/L. Carbon Dioxide: 300
mg/L. Dissolved Oxygen: Not Determined

pH: 6.200
Specific Gravity 60/60 F.: 1.199
Saturation Index @ 80 F.: +2.405
@ 140 F.: +3.105

Total Hardness: 86,093 mg/L. as CaCO3
Total Iron: 100.00 mg/L. as Fe++

Calcium Sulfate Scaling Potential
Not Present

Estimated Temperature of Calcium Carbonate Instability is 49 F.

Analyst 07:05 PM

PROBABLE MINERAL COMPOSITION

COMPOUND	MG/L	MEQ/L
Ca(HCO3)2	91	1.1
CaSO4	482	7.1
CaCl2	80,191	1,444.9
Mg(HCO3)2	0	0.0
MgSO4	0	0.0
MgCl2	12,918	271.3
NaHCO3	0	0.0
Na2SO4	0	0.0
NaCl	196,416	3,359.8

EXHIBIT A-2

CHEMLINK

WATER ANALYSIS REPORT

Lab ID No. : 121290B Analysis Date: December 10, 1990

Company : BTA Oil Producers
Field : Loving, East
Lease/Unit : Pardue "B"
Well ID. : No. 1
Sample Loc.: NE/SW, Sec 11, T23S, R28E Eddy County, New Mexico

Sampled By : Pro-Kem, Inc.
Sample Date: *
Salesperson: Gerald Phillips
Formation : Delaware
Location : Loving , N. M.

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
Calcium as Ca++	30,622	1,531	Hydroxyl as OH-	0	0
Magnesium as Mg++	3,191	262	Carbonate as CO3=	0	0
Sodium as Na+ (Calc)	76,307	3,318	Bicarbonate as HCO3-	73	1
Barium as Ba++	Below 5		Sulfate as SO4=	240	5
Oil Content	0		Chloride as Cl-	180,959	5,104

Total Dissolved Solids, Calculated: 291,393 mg/L.

Calculated Resistivity: 0.010 ohm-meters
mg/L. Hydrogen Sulfide: 40
mg/L. Carbon Dioxide: 200
mg/L. Dissolved Oxygen: Not Determined

pH: 6.500
Specific Gravity 60/60 F.: 1.205
Saturation Index @ 80 F.: +2.355
@ 140 F.: +3.455

Total Hardness: 89,498 mg/L. as CaCO3
Total Iron: 100.00 mg/L. as Fe++

Calcium Sulfate Scaling Potential
Not Present

Estimated Temperature of Calcium Carbonate Instability is 51 F.

PROBABLE MINERAL COMPOSITION

COMPOUND	MG/L	MEQ/L
Ca(HCO3)2	97	1.2
CaSO4	340	5.0
CaCl2	84,633	1,524.9
Mg(HCO3)2	0	0.0
MgSO4	0	0.0
MgCl2	12,456	261.6
NaHCO3	0	0.0
Na2SO4	0	0.0
NaCl	193,953	3,317.7

Analyst 07:04 PM

EXHIBIT A-3

CHEMLINK

WATER ANALYSIS REPORT

Lab ID No. : 121290C Analysis Date: December 10, 1990

Company : **BTA Oil Producers**
Field : Loving, East
Lease/Unit : **Pardue "B"**
Well ID. : **No. 2**
Sample Loc.: NW/SW, Sec 11, T23S, R28E Eddy County, New Mexico

Sampled By : **Pro-Kem, Inc.**
Sample Date: *
Salesperson: **Gerald Phillips**
Formation : Delaware
Location : **Loving , N. M.**

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
Calcium as Ca++	28,477	1,424	Hydroxyl as OH-	0	0
Magnesium as Mg++	4,314	354	Carbonate as CO3=	0	0
Sodium as Na+ (Calc)	77,963	3,390	Bicarbonate as HCO3-	68	1
Barium as Ba++	Below 5		Sulfate as SO4=	260	5
Oil Content	0		Chloride as Cl-	182,959	5,161

Total Dissolved Solids, Calculated: 294,041 mg/L.

Calculated Resistivity: 0.010 ohm-meters
mg/L. Hydrogen Sulfide: 40
mg/L. Carbon Dioxide: 250
mg/L. Dissolved Oxygen: Not Determined

pH: 6.400
Specific Gravity 60/60 F.: 1.208
Saturation Index @ 80 F.: +2.856
@ 140 F.: +3.296

Total Hardness: 88,768 mg/L. as CaCO3
Total Iron: 10.00 mg/L. as Fe++

Calcium Sulfate Scaling Potential Not Present

Estimated Temperature of Calcium Carbonate Instability is 47 F.

Analyst 07:04 PM

PROBABLE MINERAL COMPOSITION

COMPOUND	MG/L	MEQ/L
Ca(HCO3)2	91	1.1
CaSO4	369	5.4
CaCl2	78,660	1,417.3
Mg(HCO3)2	0	0.0
MgSO4	0	0.0
MgCl2	16,839	353.6
NaHCO3	0	0.0
Na2SO4	0	0.0
NaCl	198,161	3,389.7

EXHIBIT A-4

CHEMLINK

WATER ANALYSIS REPORT

Lab ID No. : 121290E Analysis Date: December 10, 1990

Company	: **BTA Oil Producers**	**Sampled By**	: **Pro-Kem, Inc.**
Field	: Loving, East	**Sample Date:**	*
Lease/Unit	: **Pardue "D"**	**Salesperson:**	**Gerald Phillips**
Well ID.	: **No. 1**	**Formation**	: Delaware
Sample Loc.:	SW/NW, Sec 11, T23S, R28E Eddy County, New Mexico	**Location**	: **Loving , N. M.**

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
Calcium as Ca++	29,452	1,473	Hydroxyl as OH-	0	0
Magnesium as Mg++	3,309	271	Carbonate as CO3=	0	0
Sodium as Na+ (Calc)	76,797	3,339	Bicarbonate as HCO3-	64	1
Barium as Ba++	Below 5		Sulfate as SO4=	280	6
Oil Content	0		Chloride as Cl-	179,959	5,076

Total Dissolved Solids, Calculated: 289,862 mg/L.

Calculated Resistivity: 0.010 ohm-meters
mg/L. Hydrogen Sulfide: 40
mg/L. Carbon Dioxide: 250
mg/L. Dissolved Oxygen: Not Determined

pH: 6.300
Specific Gravity 60/60 F.: 1.200
Saturation Index @ 80 F.: +2.481
@ 140 F.: +3.181

Total Hardness: 87,066 mg/L. as CaCO3
Total Iron: 50.00 mg/L. as Fe++

Calcium Sulfate Scaling Potential
Not Present

Estimated Temperature of Calcium Carbonate Instability is 49 F.

Analyst 07:05 PM

PROBABLE MINERAL COMPOSITION

COMPOUND	MG/L	MEQ/L
Ca(HCO3)2	85	1.0
CaSO4	397	5.8
CaCl2	81,347	1,465.7
Mg(HCO3)2	0	0.0
MgSO4	0	0.0
MgCl2	12,918	271.3
NaHCO3	0	0.0
Na2SO4	0	0.0
NaCl	195,199	3,339.0

EXHIBIT A-5

CHEMLINK

WATER ANALYSIS REPORT

Lab ID No. : 110990c Analysis Date: November 12, 1990

Company : **BTA Oil Producers**
Field : Loving, East
Lease/Unit :
Well ID. : **Pardue "D" #2**
Sample Loc.: NW/NW, Sec 11, T23S, R28E Eddy County, New Mexico

Sampled By : **Pro-Kem, Inc.**
Sample Date: * 10-23-90
Salesperson: **Gerald Phillips**
Formation : Delaware
Location : **Loving , NM.**

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
Calcium as Ca++	24,966	1,248	Hydroxyl as OH-	0	0
Magnesium as Mg++	4,137	339	Carbonate as CO3=	0	0
Sodium as Na+ (Calc)	76,514	3,327	Bicarbonate as HCO3-	64	1
Barium as Ba++	6	0	Sulfate as SO4=	300	6
Oil Content	0		Chloride as Cl-	173,961	4,907

Total Dissolved Solids, Calculated: 279,948 mg/L.

Calculated Resistivity: 0.010 ohm-meters
mg/L. Hydrogen Sulfide: 40
mg/L. Carbon Dioxide: 250
mg/L. Dissolved Oxygen: Not Determined

pH: 6.600
Specific Gravity 60/60 F.: 1.183
Saturation Index @ 80 F.: +1.779
@ 140 F.: +3.409

Total Hardness: 79,283 mg/L. as CaCO3
Total Iron: 56.00 mg/L. as Fe++

Calcium Sulfate Scaling Potential
Not Present

Estimated Temperature of Calcium Carbonate Instability is 55 F.

Analyst 04:13 PM

PROBABLE MINERAL COMPOSITION

COMPOUND	MG/L	MEQ/L
Ca(HCO3)2	85	1.0
CaSO4	425	6.3
CaCl2	68,875	1,241.0
Mg(HCO3)2	0	0.0
MgSO4	0	0.0
MgCl2	16,147	339.1
NaHCO3	0	0.0
Na2SO4	0	0.0
NaCl	194,480	3,326.7

EXHIBIT B

Martin Water Laboratories, Inc.
WATER CONSULTANTS SINCE 1953
BACTERIAL AND CHEMICAL ANALYSES

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

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

February 21, 1991

Ms. Dorothy Houghton
BTA Oil Producers
104 South Pecos
Midland, TX 79701

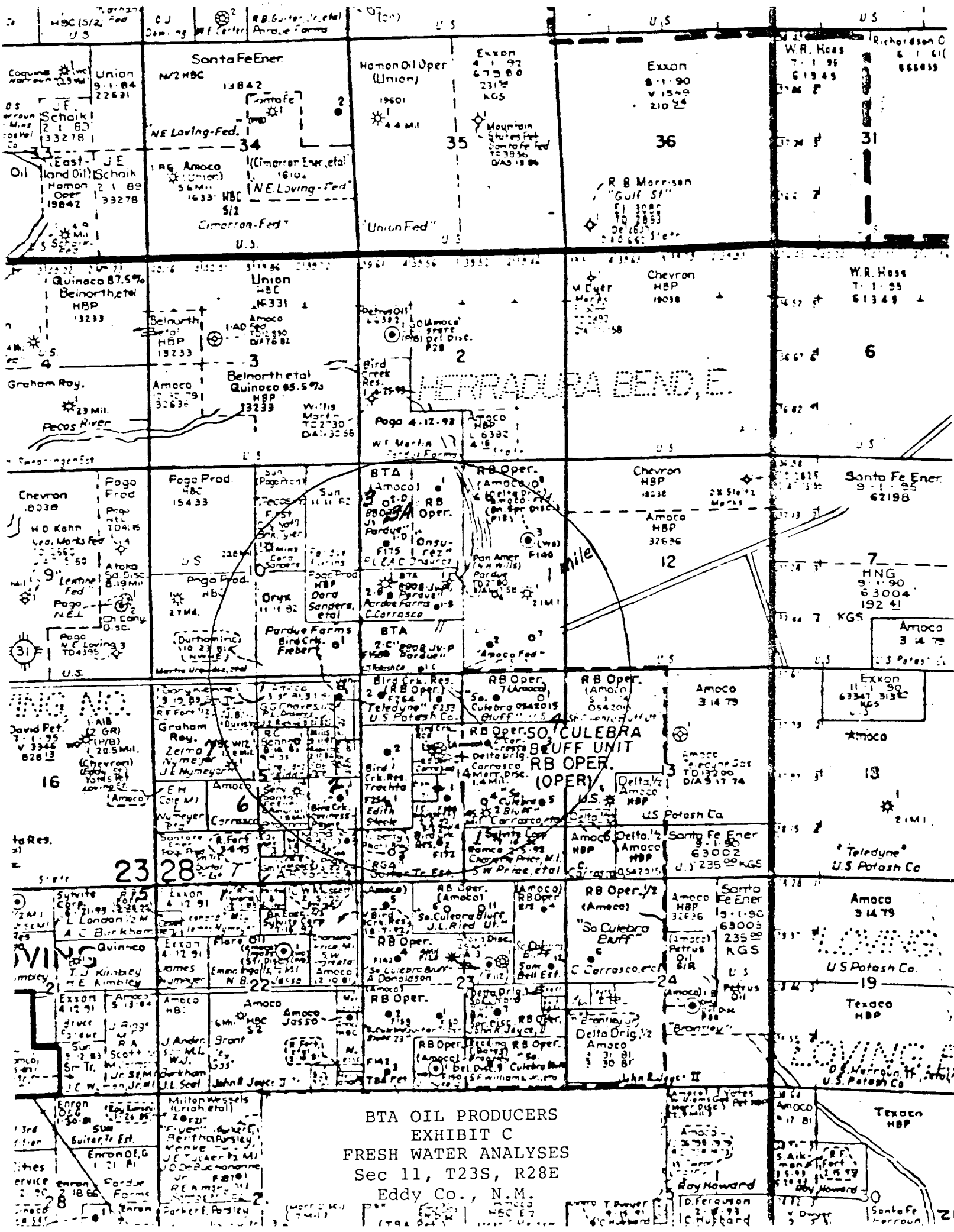
Dear Ms. Houghton:

This letter is in response to your request for an evaluation of the compatibility between the water from Pardue "B" #1 reported on laboratory #390176 (3-23-90) and our records of Cherry Canyon. It should be clarified that we have no records specifically designated as Cherry Canyon in this field but do have records in the Sand Dunes field some 15 miles to the east. We cannot be completely confident, but we would expect similar characteristics in the Cherry Canyon in this field. On the basis of the above qualifications of our Cherry Canyon records, we have found no evidence that any incompatibility would be expected between Cherry Canyon and Delaware from Pardue "B" #1.

Very truly yours,

Waylan C. Martin

WCM/rr



BTA OIL PRODUCERS
EXHIBIT C
FRESH WATER ANALYSES
Sec 11, T23S, R28E
Eddy Co., N.M.

EXHIBIT C-1

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. 291173
SAMPLE RECEIVED 2-20-91
RESULTS REPORTED 2-21-91

TO: Dorothy Houghton
104 South Pecos, Midland, TX 79701

COMPANY ETA Oil Producers LEASE
FIELD OR POOL Loving, East (Delaware)
SECTION BLOCK SURVEY COUNTY Eddy STATE NM
SOURCE OF SAMPLE AND DATE TAKEN:
NO. 1 Sample #1 - windmill.
NO. 2 Sample #2 - Joe Trachta's house water well.
NO. 3 Sample #3 - irrigation well N. of Tony Onsurez' house. 2-16-91
NO. 4 Sample #3-A - irrigation well N. of Tony Onsurez' house. 2-20-91
REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES

	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0111	1.0023	1.0102	1.0070
pH When Sampled				
pH When Received	7.23	7.65	6.61	6.43
Bicarbonate as HCO_3	327	166	22	137
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$	3,900	945	3,925	3,275
Calcium as Ca	870	242	890	830
Magnesium as Mg	419	83	413	292
Sodium and/or Potassium	2,435	287	2,058	1,398
Sulfate as SO_4	3,093	560	2,667	2,400
Chloride as Cl	4,048	604	3,977	2,628
Iron as Fe	3.2	1.5	78.8	90.4
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	11,192	1,942	10,027	7,684
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen,				
Hydrogen Sulfide	0.0	0.0	0.0	0.0
Resistivity, ohms/m at 77° F.	0.580	3.22	0.630	0.840
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks	Legal Description
Sample #1	SE/SW, Sec 14, T-23S, R-28E
Sample #2	NE/SE, Sec 15, T-23S, R-28E
Sample #3	NW/NW, Sec 11, T-23S, R-38E
Sample #3-A	NW/NW, Sec 11, T-23S, R-38E

Form No. 3

By

EXHIBIT C-2

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. 291173 (Page 2)
SAMPLE RECEIVED 2-20-91
RESULTS REPORTED 2-21-91

TO: Dorothy Houghton
104 South Pecos, Midland, TX 79701

COMPANY BTA Oil Producers LEASE
FIELD OR POOL Loving, East (Delaware)
SECTION BLOCK SURVEY COUNTY Eddy STATE NM

SOURCE OF SAMPLE AND DATE TAKEN:
NO. 1 Sample #4 - Pecos River.
NO. 2 Sample #5 - windmill @ Frank London's house.
NO. 3 Sample #6 - irrigation well @ Lionel Onsurez' leased farm.
NO. 4 Sample #7 - irrigation well on Lawrence Nymeyer's fee surface.
REMARKS: 4. Surface leased & farmed by Reed Kimbley.

CHEMICAL AND PHYSICAL PROPERTIES	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0050	1.0063	1.0052	1.0062
pH When Sampled				
pH When Received	6.78	6.79	6.69	6.83
Bicarbonate as HCO_3	134	234	327	293
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$	1,700	2,650	2,880	3,100
Calcium as Ca	412	768	740	792
Magnesium as Mg	163	177	250	272
Sodium and/or Potassium	554	835	971	905
Sulfate as SO_4	1,387	1,893	2,133	2,187
Chloride as Cl	959	1,633	1,775	1,811
Iron as Fe	0.56	4.1	1.6	0.40
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids Calculated	3,608	5,541	6,197	6,260
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen,				
Hydrogen Sulfide	0.0	0.0	0.0	0.0
Resistivity, ohms/m at 77° F.	1.79	1.19	1.08	1.06
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks	Legal Description
Sample #4	SE/NE, Sec 21, T-23S, R-28E
Sample #5	NE/NE, Sec 21, T-35S, R-28E
Sample #6	NE/SW, Sec 15, T-23S, R-28E
Sample #7	SE/NE, Sec 15, T-23S, R-28E

The undersigned certifies the above to be true and correct to the best of his knowledge and belief.

Form No. 3

By
Waylan C. Martin, M.A.

EXHIBIT -D-

BTA Oil Producers

Pardue -C-, 8808 JV-P
Well No. 1 - Proposed SWD
Sec. 11, T-23-S, R-28-E
Eddy County, New Mexico

Surface Owner:

Mississippi Chemical Corp.
P. O. Box 101
Carlsbad, NM 88220

Offset leasehold Operators within one-half mile of well location:

Bird Creek Resources 1412 S. Boston, Suite 550 Tulsa, Oklahoma 74119	NW4, Sec. 14 NE4, Sec. 15
Oryx Energy Company P. O. Box 2880 Dallas, Texas 75221	SE4, SE4, Sec. 10
Pogo Producing Company P. O. Box 10340 Midland, Texas 79702-7340	NE4, SE4, Sec. 10
RB Operating Company Two Warren Place 6120 South Yale, Suite 1700 Tulsa, Oklahoma 74136	SE4, Sec. 11 NE4, Sec. 14

I hereby certify the above were mailed copies of our application on February 21, 1991, by certified mail.

Dorothy Houghton

Dorothy Houghton

BTA OIL PRODUCERS

HALLIBURTON LOGGING SERVICES, INC.

SPECTRAL DENSITY DUAL SPACED NEUTRON LOG

COMPANY BTA OIL PRODUCERS

WELL 8808 JV-P PARDUE -C- NO. 1

FIELD LOVING EAST -DELAWARE-

COUNTY EDDY STATE NM

API NO. NA
LOCATION
176 FSL X 1550 FWL

SEC 11 TWP 23-S RGE 28-E

OTHER SERVICES
DLL-MG

PERMANENT DATUM G.L. ELEV. 2996
LOG MEASURED FROM K B 11 FT ABOVE PERM DATUM
DRILLING MEASURED FROM K B

ELEV.: K B 3007
D F 3006
G L 2996

DATE	5/12/90			
RUN NO	ONE			
DEPTH-DRILLER	8249			
DEPTH-LOGGER	8244			
BTM. LOG INTER	8241			
TOP LOG INTER	SURFACE			
CASING-DRILLER	8 5/8@533	@	@	@
CASING-LOGGER	532			
BIT SIZE	7.875			
TYPE FLUID IN HOLE	SALT MUD			
DENS. : VISC.	10.6 :36	:	:	:
PH : FLUID LOSS	9 :14	:	:	:
SOURCE OF SAMPLE	PIT			
RM @ MEAS. TEMP.	.13 @79	@	@	@
RMF @ MEAS. TEMP	.13 @79	@	@	@
RMC @ MEAS. TEMP	NA @NA	@	@	@
SOURCE RMF : RMC	MEAS :NA	:	:	:
RM @ BHT	.08 @121	@	@	@
TIME SINCE CIRC	8 HOURS			
TIME ON BOTTOM	18:56			
MAX. REC. TEMP.	121 @8.H	@	@	@
EQUIP. : LOCATION	3414 :HOBBS	:	:	:
RECORDED BY	SIEGFRIED	T. MCLELLAN		
WITNESSED BY	K LOGAN			

ILLEGIBLE

Fold Here

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 10268
ORDER NO. R-9147-C

APPLICATION OF BTA OIL PRODUCERS FOR SALT WATER DISPOSAL, EDDY COUNTY, NEW MEXICO

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on March 21, 1991, at Santa Fe, New Mexico, before Examiner Michael E. Stogner.

NOW, on this 2nd day of April, 1991, the Division Director, having considered the testimony, the record and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) By Division Order No. R-9147-B, issued in Case No. 10177 and dated February 11, 1991, BTA Oil Producers was instructed to suspend production from its Pardue "C" 8808 JV-P Well No. 1 located at a previously approved unorthodox oil well location (being the subject of Division Order Nos. R-9147 and R-9147-A) 176 feet from the South line and 1550 feet from the West line (Unit N) of Section 11, Township 23 South, Range 28 East, NMPM, East Loving-Delaware Pool, Eddy County, New Mexico.

(3) Said Order R-9147-B also contained provisions whereby any further authorization to either produce hydrocarbons from or inject water into said well shall be only after proper notice and hearing.

(4) At this time the applicant, BTA Oil Producers, in compliance with said Order No. R-9147-B, seeks authority to dispose of produced salt water into the Cherry Canyon formation of the East Loving-Delaware Pool, in the perforated interval from approximately 3500 feet to 3875 feet in the above-described well.

(5) The injection should be accomplished through 2 7/8-inch fiberglass or 2 7/8-inch internally plastic lined steel tubing installed in a packer set at approximately 3400 feet; the casing-tubing annulus should be filled with an inert fluid; and a pressure gauge or approved leak detection device should be attached to the annulus in order to determine leakage in the casing, tubing or packer.

(6) Prior to commencing injection operations, the casing in the subject well should be pressure-tested throughout the interval from the surface down to the proposed tubing, packer setting depth, to assure the integrity of such casing.

(7) The injection well or system should be equipped with a pressure limiting switch or other acceptable device which will limit the wellhead pressure on the injection well to no more than 700 psi.

(8) The Director of the Division should be authorized to administratively approve an increase in the injection pressure upon a proper showing by the operator that such higher pressure will not result in migration of the injected waters from the Cherry Canyon formation.

(9) The operator should notify the supervisor of the Artesia district office of the Division of the date and time of the installation of disposal equipment and of the mechanical integrity pressure test in order that the same may be witnessed.

(10) The operator should 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.

(11) No offsetting operators or other interested parties appeared at the hearing or objected to the subject application.

(12) Approval of the subject application will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, BTA Oil Producers in compliance with the provisions of Division Order No. R-9147-B, is hereby authorized to utilize its Pardue "C" 8808 JV-P Well No. 1, located 176 feet from the South line and 1550 feet from the West line (Unit N) of Section 11, Township 23 South, Range 28 East, NMPM, Eddy County, New Mexico, to dispose of produced salt water into the Cherry Canyon formation of the East Loving-Delaware Pool, injection to be accomplished through 2 7/8-inch fiberglass tubing or 2 7/8-inch internally plastic lined steel tubing installed in a packer set at approximately 3400 feet, with injection into the perforated interval from approximately 3500 feet to 3875 feet;

PROVIDED HOWEVER THAT, the casing-tubing annulus shall be filled with an inert fluid; and a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak detection device in order to determine leakage in the casing, tubing or packer;

PROVIDED FURTHER THAT, prior to commencing injection operations, the casing in the subject well shall be pressure-tested to assure the integrity of such casing in a manner that is satisfactory to the supervisor of the Division's district office at Artesia.

(2) The injection well or system shall be equipped with a pressure limiting switch or other acceptable device which will limit the wellhead pressure on the injection well to no more than 700 psi.

(3) The Director of the Division may authorize an increase in the injection pressure upon a proper showing by the operator that such higher pressure will not result in migration of the injected waters from the Cherry Canyon formation.

(4) The operator shall notify the supervisor of the Artesia district office of the Division of the date and time of the installation of disposal equipment and of the mechanical integrity pressure test in order that the same may be witnessed.

(5) The operator shall immediately notify the supervisor of the Division's Artesia district office of the failure of the tubing, casing or packer in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(6) The applicant shall conduct disposal operations and submit monthly reports in accordance with Rules 702, 703, 704, 705, 706, 708 and 1120 of the Division Rules and Regulations.

(7) Jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

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

SEAL

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY
Director