BW - 3

PERMITS, RENEWALS, & MODS

CLOSED

P. O. Drawer A
Jal, NM 88252
Phone 505-225-2870
Fax 505-225-2871

Brininstool L. L. C.

To: Roger and Wayne **From:** Chris

Re: Discharge Plan BW-003 **Date:** 10/01/99

Hope this helps to close your records on well #1. If you need anything else, please give me a call.

Thanks,

Chris

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

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

GOVERNOR

May 4, 1995

Mailed 8-28-97

William H Brininstool
P O Drawer A
Jal, NM 88252

Gentlemen:

Form C-103, Report of Plugging, for your Langlie Federal Brine Well #1-P 14-25s-37e cannot be approved until a Division representative has made an inspection of the location and found it to be cleared to comply with Division Rules and Regulations. Please check each item in the space provided to indicate that the work has been done.

(✓) 1. All pits have been filled and levelled

(✓) 2. Rat hole and cellar have been filled and levelled.

(✓) 3. A steel marker 4" in diameter and approximately 4' above ground level has been set in concrete. It must show the OPERATOR, LEASE NAME, WELL NUMBER, QUARTER/QUARTER SECTION OR UNIT LETTER DESIGNATION, SECTION, TOWNSHIP, and RANGE which have been permanently stenciled or welded on the marker.

(✓) 4. The location has been levelled as nearly as possible to original top ground contour and has been cleared of all junk and equipment.

(✓) 5. The dead men and tie downs have been cut and removed.

(✓) 6. If a one-well lease or last remaining well on lease, the battery and burn pit locations have been levelled and cleared of all junk and equipment.

The above are minimum requirements and no plugging bond will be released until all locations for plugged and abandoned wells have been inspected and Form C-103 approved. When all of the work outlined above has been done, please notify this office by filling in the blank form below and returning this letter to us so that our representative will not have to make more than one trip to the location.

Very truly yours,

OIL CONSERVATION DIVISION

[signature]

Marker Has 'Salado Brine Sales' No Lse/Well Name or # Lea Co.

8/11/97 [initials]

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

L. W. 'BUDDY' HILL
FIELD REPRESENTATIVE

onservation Division, P.O. Box 1980, Hobbs, NM 88241

been done and the well referenced above is ready for

DATE

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

September 19, 1997

Chris Brininstool
P. O. Drawer A
Jal, New Mexico 88252

Attention: Ms. Chris Brininstool

RE: $5,000 One-Well Plugging Bond
William H. Brininstool dba XL Transportation, Principal
American Employers' Insurance Company, Surety
Sec. 14 T-25-S, R-37-E, Lea County, New Mexico
(description as set out on bond)
Bond No. AR 71407-11

Dear Ms. Brininstool:

The New Mexico Oil Conservation Division hereby approves cancellation of the above-referenced plugging bond and releases American Employers' Insurance Company of any liability.

Sincerely,

William J. LeMay
Director

WJL/mwa

xc: OCD Artesia Office

American Employers' Insurance Company
P.O. Box 937001
El Paso, Texas 79937

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

October 19, 1999

Mr. Client Widner
Quality Oil Service, Inc.
P.O. Box 1060
Jal, New Mexico 88252

Re: Mechanical Integrity Testing of Brine Supply Wells.

This is a reminder that New Mexico Oil Conservation Division (NMOCD) will be witnessing mechanical integrity test for all brine supply wells during the time period between October 25 through November 2, 1999. A schedule was sent to each operator on September 11, 1999.

Please have your well ready for testing on the date and time your are schedule. If there is some emergency which interferes with the scheduled date and time please call and notify NMOCD.

Failure to notify NMOCD may result in your operations being suspended until testing is complete.

If you require any further information or assistance please do not hesitate to write or call me at (505-827-7155) or notify Mr. Roger Anderson at (505-827-7152).

Sincerely Yours,

Wayne Price-Pet. Engr. Spec.
Environmental Bureau

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

September 23, 1999

CERTIFIED MAIL
RETURN RECEIPT NO. Z 274 520 507

Mr. Client Wider
Quality Oil Services, Inc.
P.O. Box 1060
Jal, New Mexico 88252

Re: Discharge Plan BW-003
Salado Brine Sales - Brine Station
SE/4 Section 14-Ts25S-R37E
Lea County, New Mexico

Dear Mr. Wider:

The New Mexico Oil Conservation Division (NMOCD) is in receipt of Quality Oil Services, Inc. letter dated May 27, 1999 (copy enclosed) concerning releasing the bond for the above referenced facility. The NMOCD has reviewed the file for the Salado Brine Well #1 Discharge Plan BW-003 and has not issued an approved closure. There appears to be an outstanding request from NMOCD for closure information, please refer to letter dated February 28, 1995 (copy enclosed). As of this date the NMOCD has not received the information requested. In order for NMOCD to issue Quality Oil Services, Inc. closure and discharge plan termination for this site please provide the information requested in letter dated February 28, 1995.

Please provide this information by November 01, 1999. If you require any further information or assistance please do not hesitate to write or call me at (505-827-7155).

Sincerely Yours,

Wayne Price-Pet. Engr. Spec.
Environmental Bureau

cc: OCD Hobbs Office

attachments-2

Quality Oil Service, Inc.
of New Mexico

May 27, 1999

COPY

Oil Conservation Division
2040 South Pacheco Street
Santa Fe, NM 87505

Attn: Roger Anderson and Wayne Price

Dear Roger and Wayne:

Thanks for your help yesterday.

I am sending you bond B4078 for the active brine station in Jal. This brine station is under discharge plane BW-25, well #2. Bond B4078 has been changed from William H. Brininstool dba Salado Brine Sales to Quality Oil Service, Inc.

The only other active bond you should have is B4382, William H. Brininstool for well #3, discharge plane BW-26. The location for this well is at Bill's ranch. I do not know if Bill will drill well or if he will cancel permit.

Don't forget to send letter releasing the other bond you have for the first brine well that Bill owned. (Well was 4 miles East of Jal and had the plastic lined pit.)

Cordially,

Christine Brininstool

Christine Brininstool
General Manager

PHONE 505-395-2010 • FAX 505-395-2914 • P.O. BOX 1060 • JAL, NEW MEXICO 88252

State of New Mexico
ENERGY, [redacted] RALS and NATURAL RESOURCES [redacted] RTMENT
Santa Fe, New Mexico 87505

February 28, 1995

CERTIFIED MAIL
RETURN RECEIPT NO. Z-765-962-820

Mr. W.H. Brininstool
Salado Brine Sales
P.O. Drawer A
Jal, New Mexico 88252

RE: CLOSURE ACTIVITIES
DISCHARGE PLAN BW-003
SALADO BRINE SALES
JAL, NEW MEXICO

Dear Mr. Brininstool:

The Oil Conservation Division (OCD) has completed a review of the "Closure Activities" dated January 23, 1995 for Salado Brine Sales brine facility (BW-003). The "Closure Activities" are hereby approved under the following conditions.

1. Composite samples will be taken and tested for BTEX and TPH with the results submitted to OCD Santa Fe office by April 28, 1995.

2. The final disposition of any buildings, tanks, vessels, equipment or hardware, and any other fluids or chemicals that may be present at the facility site will be submitted to the OCD Santa Fe office by April 28, 1995.

3. Upon completion of the closure activities as required, the operator shall contact the appropriate district office to arrange for an inspection of the facility.

The OCD will not release any bonds until all necessary conditions are completed and the facility has been inspected and approved by the OCD.

VILLAGRA BUILDING - 408 Galisteo
Forestry and Resources Conservation Division
P.O. Box 1948 87504-1948
827-5830
Park and Recreation Division
P.O. Box 1147 87504-1147
827-7465

2040 South Pacheco
Office of the Secretary
827-5950
Administrative Services
827-5925
Energy Conservation & Management
827-5900
Mining and Minerals
827-5970
Oil Conservation
827-7131

Please be advised that OCD approval does not relieve Salado Brine Sales of liability should it later be found that contamination exists which could pose a threat to surface water, ground water, human health or the environment. In addition, OCD approval does not relieve Salado Brine Sales of responsibility for compliance with any other federal, state or local laws and/or regulations.

If you have any questions regarding this matter please feel free to contact me at (505) 827-7152.

Sincerely,

Roger C. Anderson
Environmental Bureau Chief

RCA/mwa

xc: Jerry Sexton, OCD Hobbs Office
Wayne Price, OCD Hobbs Office

QOS Quality Oil Service, Inc.
of New Mexico

May 27, 1999

COPY

Oil Conservation Division
2040 South Pacheco Street
Santa Fe, NM 87505

Attn: Roger Anderson and Wayne Price

Dear Roger and Wayne:

Thanks for your help yesterday.

I am sending you bond B4078 for the active brine station in Jal. This brine station is under discharge plane BW-25, well #2. Bond B4078 has been changed from William H. Brininstool dba Salado Brine Sales to Quality Oil Service, Inc.

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Don't forget to send letter releasing the other bond you have for the first brine well that Bill owned. (Well was 4 miles East of Jal and had the plastic lined pit.)

Cordially,

Christine Brininstool

Christine Brininstool
General Manager

PHONE 505-395-2010 • FAX 505-395-2914 • P.O. BOX 1060 • JAL, NEW MEXICO 88252

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505

New Mexico DRUG FREE It's a State of Mind!

February 28, 1995

CERTIFIED MAIL
RETURN RECEIPT NO. Z-765-962-820

Mr. W.H. Brininstool
Salado Brine Sales
P.O. Drawer A
Jal, New Mexico 88252

RE: CLOSURE ACTIVITIES
DISCHARGE PLAN BW-003
SALADO BRINE SALES
JAL, NEW MEXICO

Dear Mr. Brininstool:

The Oil Conservation Division (OCD) has completed a review of the "Closure Activities" dated January 23, 1995 for Salado Brine Sales brine facility (BW-003). The "Closure Activities" are hereby approved under the following conditions.

1. Composite samples will be taken and tested for BTEX and TPH with the results submitted to OCD Santa Fe office by April 28, 1995.

2. The final disposition of any buildings, tanks, vessels, equipment or hardware, and any other fluids or chemicals that may be present at the facility site will be submitted to the OCD Santa Fe office by April 28, 1995.

3. Upon completion of the closure activities as required, the operator shall contact the appropriate district office to arrange for an inspection of the facility.

The OCD will not release any bonds until all necessary conditions are completed and the facility has been inspected and approved by the OCD.

Please be advised that OCD approval does not relieve Salado Brine Sales of liability should it later be found that contamination exists which could pose a threat to surface water, ground water, human health or the environment. In addition, OCD approval does not relieve Salado Brine Sales of responsibility for compliance with any other federal, state or local laws and/or regulations.

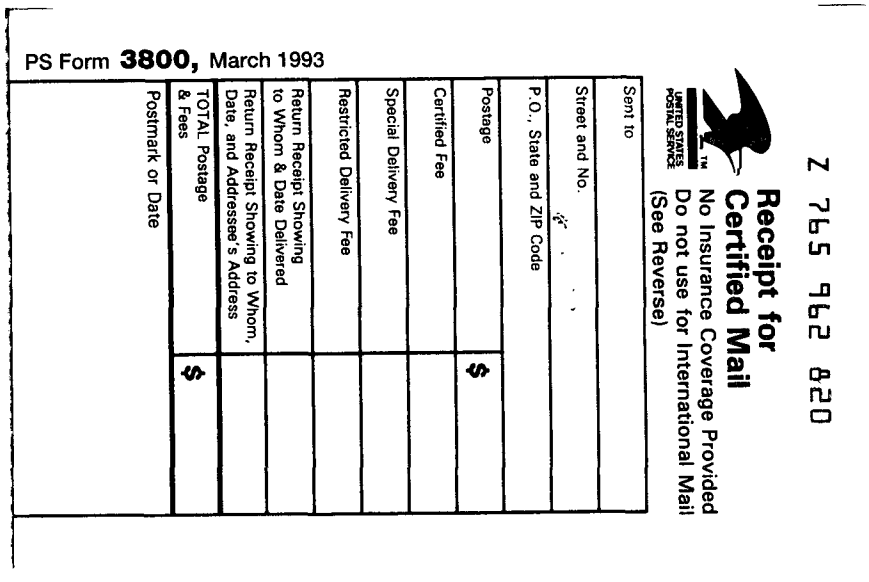
If you have any questions regarding this matter please feel free to contact me at (505) 827-7152.

Sincerely,

Roger C. Anderson
Environmental Bureau Chief

RCA/mwa

xc: Jerry Sexton, OCD Hobbs Office
Wayne Price, OCD Hobbs Office



NMOCD Inter-Correspondence

To: Mark Ashley-Environmental Geologist

From: Wayne Price-Environmental Engineer District I

Date: February 10, 1995

Reference: Salado Brine Station BW-003

Subject: Request by Mark Ashley to visit site.

Comments:

Dear Mark,

I tried calling you earlier, could not get through so I decided I would E-Mail message. After discussing this request with Jerry Sexton, he feels that my visit to the site is not warranted at this time. He has personally inspected the site and basically there is nothing there to prevent them from closing the facility. Also, their letter dated January 23, 1995 answers all the questions that was ask of them in your letter to Mr. Brininstool dated December 7, 1994. The one exception is that the quality of ground water below the site. Jerry has indicated to me this water has been polluted for years that resulted from earlier activities in the draw.

However, if you insist then I can go and visit the site.

Jerry has some basic questions on how and what conditions you are going to place on these type of pit closures. Other words we need to be consistent on all pits.

If you need me to visit the site then please give Jerry a call so we can arrange a site visit.

cc: Jerry Sexton-District I Supervisor

SALADO BRINE SALES
P. O. DRAWER A
JAL, NEW MEXICO
505-395-2010

January 23, 1995

Oil Conservation Division
P. O. Box 2088
Santa Fe, NM 87504-2088

RE: Closure Activities
Discharge Plan BW-003
Salado Brine Sales
Jal, New Mexico

Dear Mr. Ashley:

Salado Brine Well #1 was drilled and built in this area because the existing water was non-potable. The three non-potable water wells that were used are approximately 100 feet deep. The pit was built to OCD specification which included an underground leak detection system. OCD personal inspection every stage of the construction of the pit. The OCD and the BLM both did quarterly inspections of the pit leak detection system and never reported any leaks. The pit liner is clean with no residue and pit is empty and has been empty for several months.

All buildings, storage tanks, pumps, etc. will be removed from location and location left clean.

If you need more information please contact Chris Brininstool at 505-395-2010.

Cordially,

Chris Brininstool
Office Manager

12-7-94

THE LETTER DATE 12-7-94 TO MR. BRUNSTOOL WAS E-MAILED TO JERRY SEXTON ON 11-30-94 AT 11:15 AM. AS OF THIS DATE, NO RESPONSE WAS BEEN RECEIVED. THEREFORE THE LETTER WAS SENT TO MR. BRUNSTOOL AS IS.

MARK ASHLEY

12-8-94

FAXED TO JERRY SEXTON ON 12-8-94.

MARK ASHLEY

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

December 7, 1994

CERTIFIED MAIL
RETURN RECEIPT NO. Z-765-962-845

Mr. W.H. Brininstool
Salado Brine Sales
P.O. Drawer A
Jal, New Mexico 88252

RE: CLOSURE ACTIVITIES
DISCHARGE PLAN BW-003
SALADO BRINE SALES
JAL, NEW MEXICO

Dear Mr. Brininstool:

The Oil Conservation Division (OCD) has received and is in the process of reviewing your request dated September 14, 1994 for closure of the above-referenced facility.

The plugging of the Salado Brine Well #1 needs to reviewed and approved at the district level. Please contact the District I Office in Hobbs for the proper procedure.

The following comments and requests for additional information are based upon the OCD's review of the request for closure of the remainder of the facility.

1. What is the contents of the pit at this time?

2. If the pit is currently occupied with fluids and\or solids, what will be the final disposition of the material?

3. Is there any evidence or documentation of a prior leak?

4. Have composite samples been taken with the results being reported to the OCD?

5. What will be the final disposition of any buildings, tanks, vessels, equipment or hardware, and any other fluids or chemicals that may be present at the facility site?

6. What is the depth and quality of the ground water.

Submission of the above requested information will allow the review process to continue. If you have any questions please call me at (505) 827-7155.

Sincerely,

Mark Ashley
Environmental Geologist

xc: OCD Hobbs Office

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

OIL CONSERVATION DIVISION
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'94 SEP 21 AM 8 50

BRUCE KING
GOVERNOR

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

NMOCD Inter-Correspondence

To: Roger Anderson-Environmental Bureau Chief

From: Jerry Sexton- NMOCD District I Supervisor

Date: September 19, 1994

Reference: Salado Brine Sales Discharge Plan BW-003 old DP# 320

Subject: "Closure Activities"

Comments:

Please find enclosed two letters dated September 14, 1994 from Salado Brine Sales. These letters are requesting that Salado be allowed to close the "old brine pit" located at the old brine station that is now shut down.

Also enclosed is a request that they be allowed to P&A the well as described in the letter.

Please let us know as soon as possible so Mr. Brininstool may complete these operations.

Please don't hesitate to call or write if you need additional information. Our staff will be more than happy to assist your department in witnessing the closure of these activities.

lwp/js

cc: Mr. Bill LaMay-NMOCD Director
Mr. Bill Brininstool-Salado

Attachments-2

SALADO BRINE SALES

P. O. Drawer A
Jal, New Mexico 88252
505-395-2010

September 14, 1994

State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
P. O. Box 1980
Hobbs, NM 88240

Attention: Jerry Sexton

Dear Jerry:

Salado Brine Well #1, Discharge Plan DP-320 is no longer in operation and I am requesting permission to plug and abandon.

Salado Brine Well #1 is located in the SE/4 of Section 14, Township 25 South, Range 37 East, NMPM, Lea County, New Mexico. I propose placing a cast iron bridge plug at the bottom of the casing at approximately 970 feet and filling the casing with cement. I will pressure up on hole to determine if cement filled casing with no leaks. I will place a dry hole marker on hole and clean location.

Cordially,

W. H. Brininstool
Owner

SALADO BRINE SALES

P. O. Drawer A
Jal, New Mexico 88252
505-395-2010

September 14, 1994

RECEIVED
SEP 19 1994
[illegible] OFFICE

State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
P. O. Box 1980
Hobbs, NM 88240

Attention: Jerry Sexton

Dear Jerry:

Salado Brine Well #1, Discharge Plan DP-320 is no longer in operation and I am requesting permission to decommission pit.

Salado Brine Well #1 is located in the SE/4 of Section 14, Township 25 South, Range 37 East, NMPM, Lea County, New Mexico. I propose cutting and folding clean plastic and placing in bottom of pit, then covering with at least two feet of clean dirt. Location will be leveled and left clean.

Cordially,

W H Brininstool

W. H. Brininstool
Owner

1) WHAT'S IN PIT? DISPOSAL OF SOLIDS [illegible]
2) HAS IT LEAKED, [illegible] SAMPLES
3) [illegible]
4) [illegible] I. NEED WRITTEN REQUIREMENTS FROM [illegible], TO INCORPORATE IN DIRECTOR'S APPROVAL

STATE OF NEW MEXICO

OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal	Time	Date
	10:00 AM	March 15, 1993

Originating Party	Other Parties
Chris Brinkstool -XL Transportation	Kathy Brown -NMOCD

Subject Salado Brine Station
-Lost Well; Where will new facility be located?

Discussion BLM owns the mineral rights in the area of the old facility and would let Brinkstool (XL Transport?) drill ¼ mile north. Arco owns the surface rights and does not want the brine well drilled. BLM had the mineral rights @ the old facility & since it is no longer operating they are losing royalties. Chris B. would rather drill ¼ mile north so that they could use the existing facility. If the well is protested by Arco then it would go to an OCD hearing/ versus a WQCC hearing.

Conclusions or Agreements

Chris will keep me posted on BLM's decision

Distribution

Signed Kathy Brown

Submit ~~3 Copies~~ to Appropriate District Office

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-103
Revised 1-1-89

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

OIL CONSERVATION DIVISION
RECEIVED
'93 MAR 4 AM 10 08

WELL API NO.

5. Indicate Type of Lease STATE ☐ FEE ☐

6. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name: Langlie Federal Brine Well

1. Type of Well: OIL WELL ☐ GAS WELL ☐ OTHER Brine Well

2. Name of Operator: William H. Brininstool dba Salado Brine Sales

8. Well No.: 1

3. Address of Operator: P. O. Drawer A, Jal, NM 88252

9. Pool name or Wildcat

4. Well Location
Unit Letter P : 115.3 Feet From The South Line and 728.3 Feet From The East Line

Section 14 Township 25S Range 37E NMPM Lea County

10. Elevation (*Show whether DF, RKB, RT, GR, etc.*)

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	X
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	PLUG AND ABANDONMENT	☐
PULL OR ALTER CASING	☐			CASING TEST AND CEMENT JOB	☐		
OTHER:	☐			OTHER:			☐

12. Describe Proposed or Completed Operations *(Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work)* SEE RULE 1103.

See Attached

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

SIGNATURE Christine Brininstool TITLE Office Manager DATE 1-26-93

TYPE OR PRINT NAME Christine Brininstool TELEPHONE NO. 505-395-2010

(This space for State Use)

ORIGINAL SIGNED BY JERRY SEXTON
DISTRICT I SUPV.

MAR 04 1993

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

William H. Brininstool dba
Salado Brine Sales
P. O. Drawer A
Jal, NM 88252
Well #1

1-25-93 Performed Mechanical Integrity Test, determined a hole in casing. 1-27-93 Ran 7" cast iron bridge plug, set @ 923'. Ran 7" packer to 450', pressured up on plug to 1000#, packer held. Came out of hole with packer. Ran 923 ' of 51/2", 22.5# casing. pulled up to 919'. Circulate cement down 5 1/2" casing back up 7" casing to surface. Lowered casing to 923', set on top of bridge plug. Let cement set until February 1, 1993. 2-1-93 Drilled cement out to top of bridge plug. Pressured up to 500 # for 30 minutes, held pressure. 2-2-93 Started drilling on bridge plug drilled through plug 2-3-93. 2-4-93 Ran tubing and put well on production. No return. 2-10-93 Ran bradenhead tracer found lost circulation between bottom of casing and top of salt formation. 2-17-93 Halliburton Services performed cement squeeze. Used 20 bbls of 10% Calcium Chloride H2O, 5 bbls of fresh water spacer, 500 gallons Super Flush 100, 5 bbls of fresh water spacer, 50 sacks 50/50 Cal-Seal cement, 100 sacks PT 2% C.C. cement and displace with fresh water. No pressure. Did second cement job, same procedure as first, still no pressure.

2-4-93

Memo:

OIL CONSERVATION DIVISION
RECEIVED
'93 FEB 8 AM 9 38

From
EVELYN DOWNS
Oil Conservation Staff Specialist

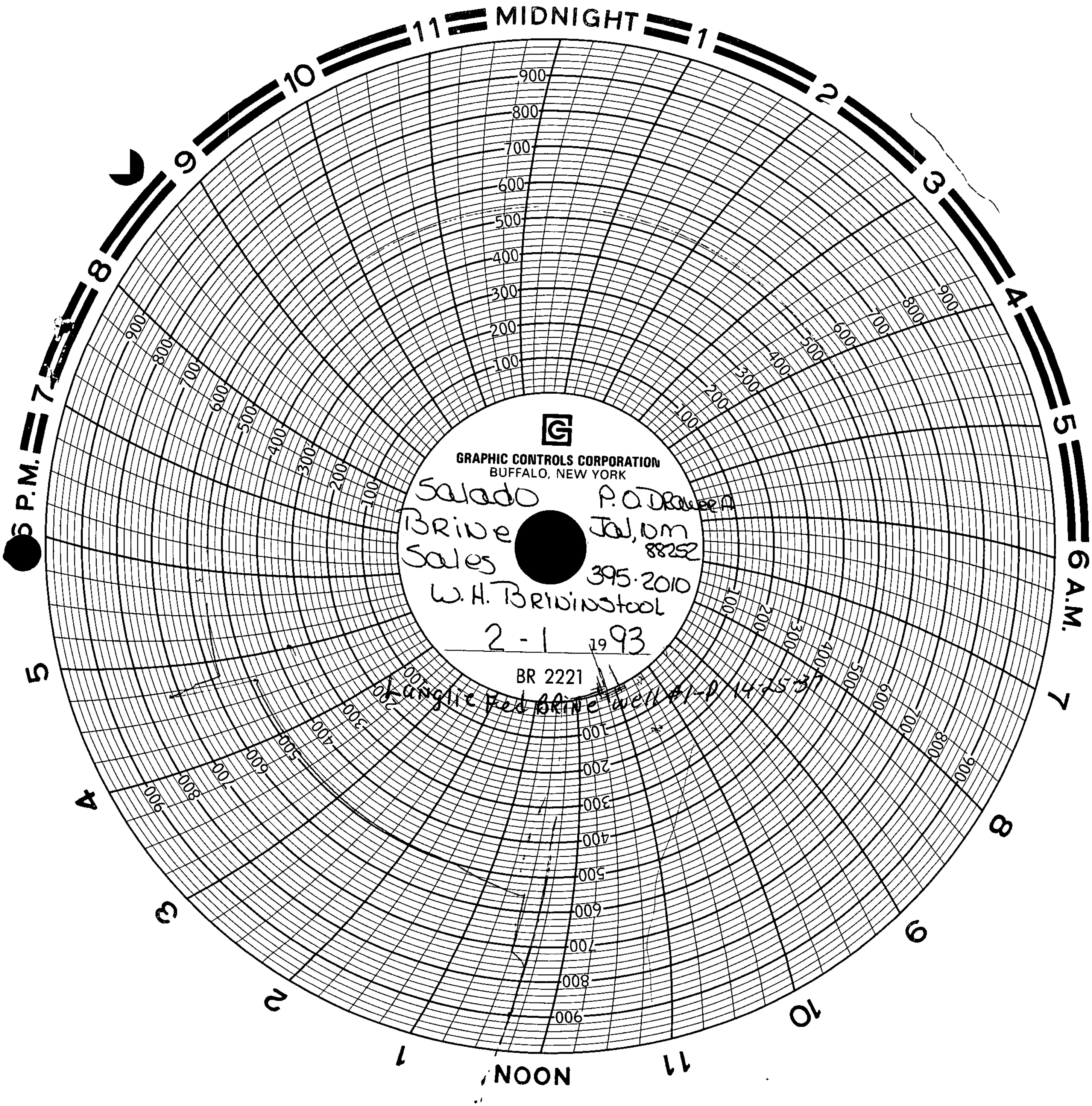
To Kathy Brown

Attached is the Chart on the Casing integrity test on the Brinintool Brine well.

Evelyn

~~Need~~ MIT for the liner run prior to drilling out the cement.

Oil Conservation Division
PO Box 1980, Hobbs, New Mexico 88241-1980


MIDNIGHT
6 A.M.
NOON
6 P.M.
GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
Salado Brine Sales
P.O. Drawer A
Jal, NM 88252
395-2010
W. H. Brininstool
2-1 1993
BR 2221
Langlie Fed Brine well #1-D 14-25-37

STATE OF NEW MEXICO

OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

[X] Telephone [ ] Personal	Time	Date
	10:00 A.M	3/1/93

Originating Party	Other Parties
Chris Brinkstool	Kathy Brown OCD

Subject: Salado Brine Facility
Failure to obtain MIT on Well.

Discussion: Can not get a MIT to pass on the new liner in the well which was run in 2/93 because couldn't get the existing well to test. Got integrity prior to drilling out cement on the liner, but couldn't get test after drilling out. Tried 2 squeeze jobs. Evedently have a zone of loss circulation. Arco across the street had recently tried to drill a well and hit this same zone of loss circulation and couldn't squeeze it. Will close the existing facility and file to drill a new well. Probably it'll be on the land they own closer to Jal. Will plug the well by placing a ~~bridge~~ rbm plug at base of casing & cement to surface.

Conclusions or Agreements

Need to send the information on a discharge plan for a new facility. ~~and~~ Will need all of the well data (ie workover, plugging) on the old well for the file

Distribution

Signed Kathy Brown

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
HOBBS DISTRICT OFFICE

BRUCE KING
GOVERNOR

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

MEMORANDUM

TO: Kathy Brown

FROM: Jerry Sexton JS

SUBJECT: TESTING OF BRINE WELLS
XL TRANSPORTATION AND ROWLAND TRUCKING

DATE: January 4, 1993

XL Transportation and Rowland Trucking will test their brine wells while you are down here.

They will start pressuring the cavity on January 9, 1993 and the test will start the 11th and will continue until the well is stabilized to your satisfaction.

A meeting is set up with Dale Gandy at their treating plant on the 12th at 10:00 a.m.

JS/sad

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
HOBBS DISTRICT OFFICE

BRUCE KING
GOVERNOR

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

January 4, 1993

XL Transportation Inc.
Drawer A
Jal, NM 88252

Attn: Chris

RE: TESTING OF BRINE WELLS

Gentlemen:

This is to confirm the test on the brine well starting January 11, 1993.

If you will pressure up on the cavity on the 9th to 50% over operating pressure and keep this pressure on it, the Oil Conservation Division (OCD) will start witnessing the test on the 11th.

Please have a 24 hour dual recorder set up on the well with one pin on the tubing side and one pin on the casing side.

Very truly yours,

JERRY SEXTON

JS/sad

xc: Kathy Brown - OCD Santa Fe

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

June 19, 1991

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

CERTIFIED MAIL
RETURN RECEIPT NO. P-327-278-200

Mr. W. H. Brininstool
Salado Brine Sales
P. O. Drawer A
Jal, New Mexico 88252

RE: Approval of Discharge Plan BW-3 (formerly DP-320)
Salado Brine Sales Brine Station

Dear Mr. Brininstool:

The **discharge plan renewal (BW-3) for the Salado Brine Sales Brine Station** located in the SE/4 of Section 14, Township 25 South, Range 37 East, NMPM, Lea County, New Mexico, **is hereby approved.** The renewal application consists of the original discharge plan as approved December 18, 1982, the renewal application dated May 7, 1991, and the materials dated May 14, 1991 submitted as supplements to the application. Please note the new discharge plan number (BW-3), formerly DP-320, which will be the permanent designation used in all future correspondence.

The discharge plan renewal was submitted pursuant to Section 5-101.B.3 of the New Mexico Water Quality Control Commission Regulations. It is approved pursuant to Sections 5-101.A and 3-109.C. Please note Sections 3-109.E and 3-109.F which provide for possible future amendments or modifications of the plan. Please be advised that the approval of this plan does not relieve you of liability should your operation result in actual pollution of surface water, ground water, or the environment which may be actionable under other laws and/or regulations.

The monitoring and reporting shall be as specified in the above referenced materials. Please note that Section 3-104 of the regulations requires that "When a plan has been approved, discharges must be consistent with the terms and conditions of the plan." Pursuant to Section 3-107.C. you are required to notify the Director of any facility expansion, production increase, or process modification that would result in any charge in the discharge of water quality or volume.

Before performing remedial work, altering or pulling casing, plugging or abandonment, or any other workover, approval of the OCD must be obtained. Approval should be requested on the OCD Form C-103 "Sundry Notices and Reports on Wells" (OCD Rule 1103-A). Submit the original form to the appropriate district office and a copy of the form to the Environmental Bureau in the Santa Fe Office.

Pursuant to Section 3-109.G.4., this plan is for a period of five (5) years. This approval will expire June 19, 1996 and you should submit an application for renewal in ample time before this date. Note that under Section 5-101.G. of the regulations, if a discharger submits a discharge plan renewal application at least 180 days before the discharge plan expires and is in compliance with the approved plan, then the existing discharge plan will not expire until the application for renewal has been approved or disapproved.

On behalf of the staff of the Oil Conservation Division, I wish to thank you and your staff for your cooperation during this discharge plan review,

Sincerely,

for William J. LeMay

William J. LeMay
Director

WJL/KMB/sl

cc: OCD Hobbs Office

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Ecological Services
Suite D, 3530 Pan American Highway, NE
Albuquerque, New Mexico 87107

June 6, 1991

Mr. William J. Lemay, Director
New Mexico Energy, Minerals and
Natural Resources Department
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Dear Mr. Lemay:

The U.S. Fish and Wildlife Service (Service) has reviewed the Public Notice dated May 10, 1991, regarding the effects of granting State of New Mexico groundwater discharge permits on fish, shellfish, and wildlife resources in New Mexico.

The Service has determined that there are no wetlands or other environmentally sensitive habitats that will be adversely affected by the following activities.

(BW-3) - Salado Brine Sales, Jal, New Mexico

(BW-6) - B&E Incorporated, Carlsbad, New Mexico

If you have any questions, please call Richard Roy at (505) 883-7877.

Sincerely,

Jennifer Fowler-Propst
Field Supervisor

cc:
Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico
Director, New Mexico Energy, Minerals and Natural Resources Department,
Forestry and Resources Conservation Division, Santa Fe, New Mexico
Regional Administrator, U.S. Environmental Protection Agency, Dallas, Texas
Regional Director, U.S. Fish and Wildlife Service, Fish and Wildlife
Enhancement, Albuquerque, New Mexico

SALADO BRINE SALES

Drawer A
Jal, New Mexico 88252

(505) 395-2010

May 14, 1991

Energy, Minerals and Natural Resources Department
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87504

Attn: Kathy

Re: Discharge Plan DP-320

Dear Kathy:

The leak that you noted in your letter has been eliminated. We were in the process of repairing the pump. The brine station is inspected daily by Mr. Brininstool or one of his employees to detect leaks, spills, electrical trouble, etc. The sump is emptied when full and water disposed at a commercial disposal.

Mr. Brininstool will start checking monitor manhole bi-monthly and a record of date, time and results of inspection will be recorded and submitted annually to OCD at the same time the annual pressure test results are submitted.

Within the next 1½ years a pressure test isolating the casing from the formation using either a bridge plug or packer will be preformed.

The injection pressure at site is 250 PSI, the ~~maximum~~ estimated fracture injection pressure is approximately 1,000 to 1,200 PSI. A kill switch is set at 600 PSI to shut off the motor.

A quarterly report listing month, volume of fluids injected and volumes of fluids sold will be submitted to the OCD office in Santa Fe.

If you have any questions please call Chris Brininstool at 505-395-2010

Cordially,

Chris Brininstool

Chris Brininstool

STATE OF NEW MEXICO

OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal	Time	Date
	9:00 A.M.	May 14,

Originating Party	Other Parties
K.M. Brown	Christine Brininstool

Subject: Salado Brine Facility - Submittal of D.P. Renewal
DP-320 ⇒ now BW-3.

Discussion: Told Brininstool she had not addressed several of the questions ~~from~~ from our Feb 25, 1991 letter. Specifically 1) Well head leak. Response - had the pump completely worked over since then. Was waiting on new pump packing. Didn't think question needed addressed cause thought we would check up with inspection.
2) Brine Storage Pit Response - didn't realize we wanted the actual monitor well checked. Had stated the site was inspected daily & EID use to inspect monitor well ~~monthly~~ annually. Told her to commit to keeping a log of bimonthly inspections and annual OCD reports. She agreed to do so. 3) MIT Response - had included a test (open formation) done 5-3-91, held 500psi for 5 hours.

Conclusions or Agreements: Committed to pull tubing and test casing within 1½ years. Will commit in writing. 4) Max. injection pressure Response - tried to find out how to calculate frac pressure but couldn't find out how. Stated normal injection pressure is 250psi and have high-pressure kill switch set at ⇒

Distribution

Signed

600 psi. Will include this information in letter.

5) Volumes Reported Response - Will include volumes in quarterly reports to OCD from now on. Sept in April 89 thru March 91'. 6) Closure Plan Response - Paragraph 3 on page 2 of letter (May 7, 1991) commits to closure as recommended by Eddy Seay of Hobbs District. OK.

Bannistool stated that they placed brine facility at this location cause no good groundwater. Rancher has well near by, but only useful for livestock water supply. Unfit for human consumption.

Will send a letter this week with the necessary committments.

NOTICE OF PUBLICATION

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following discharge plan renewal applications have been submitted to the Director of the Oil Conservation Division, State Land Office Building, P. O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

(BW-3) - Salado Brine Sales, W. H. Brininstool, Owner, Drawer A, Jal, New Mexico, 88252, has submitted a renewal application for the previously approved discharge plan for their insitu extraction brine well facility. The Salado Brine Station is located in the SE/4, Section 14, Township 25 South, Range 37 East, NMPM, Lea County, New Mexico. Fresh water is injected to an approximate depth of 1000 feet and brine is extracted with an average total dissolved solids content in excess of 350,000 mg/l. Groundwater most likely to be affected by any accidental discharge is at a depth of approximately 80 feet and has a total dissolved solids content of about 800 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

(BW-6) - B&E Incorporated, Phil Withrow, Owner, P. O. Box 756, Carlsbad, New Mexico, 88220, has submitted a renewal application for the previously approved discharge plan for their isitu extraction brine well facility. The Eugenie Brine Station is located at the South Y, Carlsbad in the SW/4, SW/4, Section 17, Township 22 South, Range 27 East, NMPM, Eddy County, New Mexico. Fresh water is injected down the No. 2 well to an approximate depth of 550 feet and brine is produced through the tubing of the No. 1 Well. The brine has an average total dissolved solids content of 300,000 mg/l. Groundwater most likely to be affected by any accidental discharge is at a depth of 50 feet with a total dissolved solids concentration of about 1000 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan application may be viewed at the above address between 8:00 a.m. and 5:00 p.m., Monday through Friday. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Requests for public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan based on information in the plan and information submitted at the hearing.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 10th day of May, 1991. To be published on or before May 17, 1991.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY, Director

S E A L

Affidavit of Publication

STATE OF NEW MEXICO)
) ss.
COUNTY OF LEA)

Joyce Clemens being first duly sworn on oath deposes and says that he is **Adv. Director** of THE LOVINGTON DAILY LEADER, a daily newspaper of general paid circulation published in the English language at Lovington, Lea County, New Mexico; that said newspaper has been so published in such county continuously and uninterruptedly for a period in excess of Twenty-six (26) consecutive weeks next prior to the first publication of the notice hereto attached as hereinafter shown; and that said newspaper is in all things duly qualified to publish legal notices within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico.

That the notice which is hereto attached, entitled

Notice Of Publication

and numbered ..... in the

..... Court of Lea County, New Mexico, was published in a regular and entire issue of THE LOVINGTON DAILY LEADER and not in any supplement thereof, once each week on the same day of the week, for **one (1)** consecutive weeks, beginning with the issue of **May 14**, 19**91** and ending with the issue of **May 14**, 19**91**

And that the cost of publishing said notice is the sum of $**35.49** which sum has been (Paid) (~~Assessed~~) as Court Costs

Joyce Clemens

Subscribed and sworn to before me this **15th** day of **May**, 19**91**

Mrs. Jean Clemens

Notary Public, Lea County, New Mexico

My Commission Expires: **Sept. 28**, 19**94**

LEGAL NOTICE
NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES
DEPARTMENT OIL CONSERVATION DIVISION.

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GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico on this 10th day of May, 1991. To be published on or before May 17, 1991.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
WILLIAM J. LEMAY, Director

SEAL

Published in the Lovington Daily Leader May 14, 1991.

Affidavit of Publication

No. 13534

STATE OF NEW MEXICO,

County of Eddy:

Gary D. Scott being duly sworn, says: That he is the Publisher of The Artesia Daily Press, a daily newspaper of general circulation, published in English at Artesia, said county and state, and that the hereto attached Legal Notice

was published in a regular and entire issue of the said Artesia Daily Press, a daily newspaper duly qualified for that purpose within the meaning of Chapter 167 of the 1937 Session Laws of the state of New Mexico for 1 consecutive days weeks on the same day as follows:

First Publication May 16, 1991

Second Publication

Third Publication

Fourth Publication

Gary D. Scott

Subscribed and sworn to before me this 16th day of May 19 91

Barbara Ann Boans
Notary Public, Eddy County, New Mexico

My Commission expires September 23, 1991

LEGAL NOTICE

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

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GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 10th day of May, 1991. To be published on or before May 17, 1991.

STATE OF NEW MEXICO
OIL CONSERVATION
DIVISION
s-William J. LeMay
WILLIAM J. LEMAY,
Director

SEAL

Published in the Artesia Daily Press, Artesia, N.M. May 16, 1991.

Legal 13534

SALADO BRINE SALES

Drawer A

Jal, New Mexico 88252

(505) 395-2010

May 7, 1991

Energy, Minerals and Natural Resources Department
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504

Attn: David G. Boyer
Hydrogeologist

Re: Discharge Plan DP-320

Dear Mr. Boyer:

The topographic map shows the location of our facility, the location of the fresh water supply pipelines and all water wells within a two mile radius.

The drilling information contained on the enclosed injection well data sheet was furnished by Baber Well Service of Hobbs, New Mexico, drillers of the well. Also enclosed is a legible copy of brine water analysis and a summary of brine production.

The following information is taken from the report of the U. S. Geological Survey following their investigation of data taken from three petroleum well logs near the site area: Halite beds in the area are found principally in the Salado formation and in some instances in the overlying Rustler formation, of Permian Age. The Halite beds are from 1,150' to 1,250' thick, and occur at depths between 860' and 1060' below the surface. Potable water sources in the area are located at depths of about 200' in the Tertiary Ogallala formation. No abnormal pressure zones or lost return zones were found on the drilling logs. Geologically, the land in the site area lie on the shelf East of the Delaware Basin, just East of the buried Capitan Reef front. Surface rocks consist of Quaternary Alluvium and Bolson deposits. There are no nearby arroyos or draws and the facility is situated on a basically level portion of the South Plain.

The injection pressure is approximately 250 psi. Please refer to Petroleum Transaction Vol. 210, 1957 page 153, title Machanics of Hydraulic Fracturing and Applyed Salt Water Mechanics 1977, chapter 3, Physical Properties and Mechanical Behavior of Evaporities as a reference for comparison of fracture pressure for salt at the injection interval of approximately 2100 feet.

Salado Brine Sales is visually monitored daily by Mr. Brininstool or one of his management employees and inspected on a monthly basis by the Bureau of Land Management. I report monthly to the Bureau of Land Management volumes of produced fluid sold.

Salado Brine Sales will notify the Oil Conservation Division prior to commencement of drilling, cementing and casing, well loggings, mechanical integrity tests and any well work-over to allow opportunity for on site inspection by the director or his representative. Also if any well work-over occurs in the next 5 years we will conduct a cement bond log or equivalent procedure.

If we encounter a leak, spill or other unanticipated discharge on the surface or underground, we will notify the Oil Conservation Division in Santa Fe or the district office in Hobbs, Lea County within 48 hours.

Upon abandonment, drill holes will be properly sealed to protect water bearing aquifers in a manner approved by the Mining Supervisor of the United States Department of the Interior, Bureau of Land Management. Plugging procedure I propose using is placing a cast iron bridge plug at bottom of casing with 20 sacks of cement on top of plug. A cement plug at the bottom of the fresh water zone which is approximately 400 feet. The last plug will be a cement plug at the surface. Between all plugs we will fill with 10# salt gel. Decommissioning of surface facilities would consist of selling surface equipment. Storage pit will be dirt filled and made level with the surrounding land.

The maps showing cross-section, vertical and horizontal limits of all ground water having less than 10,000/lTDS and generalized and specifice maps and cross-sections depicting both regional and site-specific geology please refer to the following report: Ground Water Report #6, Geology and Ground Water Conditions in Southern Lea County, New Mexico, Resources, New Mexico Institute of Mining & Technology.

If loss of mechanical integrity in the injection well we will shut well down, pull tubing and correct problem. If a leak in pit, pit would be drained and liner repaired.

Should you have any more questions please contact me at 395-2010.

Cordially,

Chris Brininstool

Christine Brininstool
Office Manager

SALADO BRINE SALES

Drawer A

Jal, New Mexico 88252

(505) 395-2010

May 7, 1991

Energy, Minerals and Natural Resources Department
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87504

Attn: David G. Boyer
Hydrogeologist

Re: Discharge Plan DP-320

Dear Mr. Boyer:

Attached is a list of all known wells, drill holes, and other conduits within the area of review which may penetrate injection zone. All well files and logs are on file at the Oil Conservation Division, 1000 West Broadway, Hobbs, New Mexico.

With the help of Mr. Eddie Seay of the Oil Conservation Division office, Hobbs, New Mexico, I find all wells, drill holes and other conduits within area of review have no violation on file, are properly sealed, completed or abandoned, therefore, wells, drill holes and other conduits are in compliance.

Cordially,

Christine Brininstool
Office Manager

Enclosures

Attached are all know wells within area of review which may penetrate the injection zone. All well files and logs on file at Oil Conservation Division Office in Hobbs, 1000 West Broadway.

Texaco Producing Inc.
Lease Name: A. B. Coates C
Well No. 25
Unit letter A, 990 feet from the North line and 940 feet from the East line of Section 24 Township 25S Range 37E, NMPM Lea County.

Texaco Producing Inc.
Lease Name: A. B. Coates C
Well No. 20
Unit letter A, 990 feet from the North line and 990 feet from the East line of Section 24 Township 25S Range 37E, NMPM Lea County.

Texaco Producing Inc.
Lease Name: A. B. Coates C
Well No. 2
Unit letter A, 660 feet from the North line and 660 from the East line of Section 24 Township 25S Range 37E, NMPM Lea County.

Mobil Producing Texas & New Mexico Inc.
Lease Name: Langlie Mattix Queen Unit
Well No. 31
Unit letter D, 660 feet from the North line and 660 feet from the West line of Section 23 Township 25S Range 37E, NMPM Lea County.

Chevron U.S.A., Inc.
Lease Name: Learcy McBuffington
Well No. 13
Unit letter M, 330 feet from the South line and 330 feet from the West line of Section 13 Township 25S Range 37E, NMPM Lea County.

Chevron U.S.A., Inc.
Lease Name: Learcy McBuffington
Well No. 10
Unit letter L, 1650 feet from the South line and 990 feet from the West line of Section 13 Township 25S Range 37E, NMPM Lea County.

Chevron U.S.A., Inc.
Lease Name: Learcy McBuffington
Well No. 7
Unit letter M, 660 feet from the South line and 990 feet from the West line of Section 13 Township 25S Range 37E, NMPM Lea County.

Chevron U.S.A., Inc.
Lease Name: Learcy McBuffington
Well No. 1
Unit letter L, 1980 feet from the South line and 660 feet from the West line of Section 13 Township 25S Range 37E, NMPM Lea County.

Union Texas Petroleum Corporation
Lease: Langlie "B"
Well No. 1
Unit letter P, 330 feet from the East line and 330 feet from the South line of Section 14 Township 25S Range 37E, NMPM Lea County.

Union Texas Petroleum Corporation
Lease: Langlie "B"
Well No. 2
Unit letter O, 330 feet from the South line and 1650 feet from the East line of Section 14 Township 25S Range 37E, NMPM Lea County.

Meridian Oil Inc.
Lease Name: Langlie Federal
Well No. 1
Unit letter J, 1980 feet from the South line and 1980 feet from the East line of Section 14 Township 25S Range 37E, NMPM Lea County.

Arco Oil and Gas Company
Lease Name: Langlie Federal
Well No. 1
Unit letter I, 1650 feet from the South line and 330 feet from the East line of Section 14 Township 25S Range 37E, NMPM Lea County.

Arco Oil and Gas Company
Lease Name: Langlie Federal
Well No. 2
Unit letter J, 1650 feet from the South line and 1650 feet from the East line of Section 14 Township 25S Range 37E, NMPM Lea County.

El Paso Exploration Company
Lease Name: Langlie Federal
Well No. 1
Unit letter I, 2310 feet from the South line and 660 feet from the East line of Section 14 Township 25S Range 37E, NMPM Lea County.

NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

8 : 53

WELL RECORD

Mail to District Office, Oil Conservation Commission, to which Form C-101 was sent not later than twenty days after completion of well. Follow instructions in Rules and Regulations of the Commission. Submit in QUINTUPLICATE If State Land submit 6 Copies

AREA 640 ACRES
LOCATE WELL CORRECTLY

Gulf Oil Corporation (Company or Operator) Learcy McBuffington (Lease)

Well No. 13, in SW ¼ of SW ¼, of Sec. 13, T. 25 S, R. 37 E, NMPM.

Justis Blinebry Pool, Lea County.

Well is 330 feet from South line and 330 feet from West line of Section 13. If State Land the Oil and Gas Lease No. is

Drilling Commenced 12-14, 19 62 Drilling was Completed 1-7, 19 63

Name of Drilling Contractor Moran Oil Producing & Drilling Company

Address P. O. Box 1718, Hobbs, New Mexico

Elevation above sea level at ~~Top of Tubing Heads~~ ground level 3089.71 The information given is to be kept confidential until -, 19

OIL SANDS OR ZONES

No. 1, from to No. 4, from to

No. 2, from to No. 5, from to

No. 3, from to No. 6, from to

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from to feet.

No. 2, from to feet.

No. 3, from to feet.

No. 4, from to feet.

CASING RECORD

SIZE	WEIGHT PER FOOT	NEW OR USED	AMOUNT	KIND OF SHOE	CUT AND PULLED FROM	PERFORATIONS	PURPOSE
9-5/8	40	Used	902	Rector	-	-	
4-1/2	9.5	New	5546	Larkin	-	5443 - 5515	Blinebry

MUDDING AND CEMENTING RECORD

SIZE OF HOLE	SIZE OF CASING	WHERE SET	NO. SACKS OF CEMENT	METHOD USED	MUD GRAVITY	AMOUNT OF MUD USED
12-1/4	9-5/8	907	310	P&P		
8-3/4	4-1/2	5559	640	P&P		

RECORD OF PRODUCTION AND STIMULATION

(Record the Process used, No. of Qts. or Gals. used, interval treated or shot.)

Spotted 1000 gal 15% NE acid, perforated 4½" casing 5443-47, 5473-77, 5511-15', frac in 3 stages, each stage 1000 gal gelled lease oil w/1/10# SFPG and 4000 gal gelled lease oil w/1/10# SFPG & 1½# (20-40) SPG w/NCR ball sealers between stages.

Result of Production Stimulation After recovery of load oil, well flowed 97 BO, 2 BW in 9 hrs, thru 2-3/8" tbg, 14/64" choke.

Depth Cleaned Out

RECORD OF DRILL-STEM AND SPECIAL TESTS

If drill-stem or other special tests or deviation surveys were made, submit report on separate sheet and attach hereto

TOOLS USED

Rotary tools were used from 0 feet to 5559 feet, and from ..... feet to ..... feet.

Cable tools were used from ..... feet to ..... feet, and from ..... feet to ..... feet.

PRODUCTION

Put to Producing 1-23, 19 63

OIL WELL: The production during the first 24 hours was 89 barrels of liquid of which 98 % was was oil; ..... % was emulsion; 2 % water; and ..... % was sediment. A.P.I. Gravity 39.5

GAS WELL: The production during the first 24 hours was ..... M.C.F. plus ..... barrels of liquid Hydrocarbon. Shut in Pressure ..... lbs.

Length of Time Shut in .....

PLEASE INDICATE BELOW FORMATION TOPS (IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE):

Southeastern New Mexico		Northwestern New Mexico
T. Anhy 818	T. Devonian	T. Ojo Alamo
T. Salt 1105	T. Silurian	T. Kirtland-Fruitland
B. Salt 2176	T. Montoya	T. Farmington
T. Yates 2326	T. Simpson	T. Pictured Cliffs
T. 7 Rivers 2555	T. McKee	T. Menefee
T. Queen Penrose 3120	T. Ellenburger	T. Point Lookout
T. Grayburg Glorita 4630	T. Gr. Wash	T. Mancos
T. San Andres Blinebry 5010	T. Granite	T. Dakota
T. Glorieta	T.	T. Morrison
T. Drinkard	T.	T. Penn
T. Tubbs	T.	T.
T. Abo	T.	T.
T. Penn	T.	T.
T. Miss	T.	T.

FORMATION RECORD

From	To	Thickness in Feet	Formation	From	To	Thickness in Feet	Formation
Ground	KDB	10					
	510	500	Sand				
	818	308	Red Beds				
	1105	287	Anhydrite				
	2176	1071	Salt				
	2326	150	Anhydrite & Dolomite				
	3283	957	Sand & Dolomite				
	5559	2276	Dolomite				

ATTACH SEPARATE SHEET IF ADDITIONAL SPACE IS NEEDED

I hereby swear or affirm that the information given herewith is a complete and correct record of the well and all work done on it so far as can be determined from available records.

January 24, 1963
(Date)

Company or Operator: Gulf Oil Corporation

Address: P. O. Box 980, Hermit, Texas

Name: M. W. Whitaker

Position or Title: Area Engineer

Form 9-330

COPY TO O. C. C. HOBBS

Budget Bu... 42-R358.4.
Approval ex... 31-60.

U. S. LAND OFFICE Las Cruses
SERIAL NUMBER 056968
LEASE OR PERMIT TO PROSPECT Langlie B

1960 FEB 16 AM 10:40

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LOCATE WELL CORRECTLY

LOG OF OIL OR GAS WELL

Company Anderson-Prichard Oil Corporation Address Box 196, Midland, Texas

Lessor or Tract Langlie "B" Field Justis Blinebry State New Mexico

Well No. 1 Sec. 14 T. 25S R. 37E Meridian NMPM County Lea

Location 300 ft. {N./S.} of S. Line and 330 ft. {E./W.} of E. Line of Sec. 14 Elevation 3109
(Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed [signature]

Date February 8, 1960 Title District Clerk

The summary on this page is for the condition of the well at above date.

Commenced drilling November 17, 19 59 Finished drilling December 28, 19 59

OIL OR GAS SANDS OR ZONES

(Denote gas by G)

No. 1, from 5375 to 5502 No. 4, from ... to ...

No. 2, from ... to ... No. 5, from ... to ...

No. 3, from ... to ... No. 6, from ... to ...

IMPORTANT WATER SANDS

No. 1, from ... to ... No. 3, from ... to ...

No. 2, from ... to ... No. 4, from ... to ...

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated From—	Perforated To—	Purpose
13-3/8	48	8	Rep.	839	Guide				Surface
7	20 & 23	8	J-55	5980	Guide		5375	5502	Production

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
13-3/8	839	700	Pump & Plug		
7	5980	1170	Pump & Plug		

PLUGS AND ADAPTERS

Heaving plug—Material ... Length ... Depth set ...

Adapters—Material ... Size ...

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

TOOLS USED

Rotary tools were used from 0 feet to 5980 feet, and from ... feet to ... feet

Cable tools were used from ... feet to ... feet, and from ... feet to ... feet

DATES

February 8, 19 60 Put to producing February 4, 19 60

The production for the first 24 hours was 392.70 barrels of fluid of which 97 % was oil; ... % emulsion; ... % water; and ... % sediment.

Gravity, °Bé. 30.2

If gas well, cu. ft. per 24 hours 3 Gallons gasoline per 1,000 cu. ft. of gas ...

Rock pressure, lbs. per sq. in. ...

EMPLOYEES

C.W. WATSON, Driller R. F. DANVERS, Driller

W.A. SMITH, Driller ..., Driller

FOLD | MARK

Heaving plug—Material .... Length .... Depth set ....

Adapters—Material .... Size ....

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

TOOLS USED

Rotary tools were used from 0 feet to 5980 feet, and from .... feet to .... feet

Cable tools were used from .... feet to .... feet, and from .... feet to .... feet

DATES

February 8, 19 60 Put to producing February 4, 19 60

The production for the first 24 hours was 392.70 barrels of fluid of which 97 % was oil; ...... % emulsion; 3 % water; and ...... % sediment. Gravity, °Bé. 38.2

If gas well, cu. ft. per 24 hours .... Gallons gasoline per 1,000 cu. ft. of gas ....

Rock pressure, lbs. per sq. in. ....

EMPLOYEES

C.W. WATSON, Driller R. F. DANVERS, Driller

W.A. SMITH, Driller ...., Driller

FORMATION RECORD

FROM—	TO—	TOTAL FEET	FORMATION
0	40	40	Sand & Caliche
40	822	782	Redbed
822	3184	2362	Anhy, Gyp & Lime
3184	5980	2796	Lime
			ELECTRIC LOG TOPS
			Glorietta 4660
			Tubb 5660
			Drinkard 5920

(OVER)

16—43094-4

Form 9-330

Budget Bureau [illegible]R355.4.
Approval expir[illegible]60.

U. S. Land Office New Mexico
Serial Number 056968
Lease or Permit to Prospect Langlie B

1960 AUG 9 AM 9 55

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LOCATE WELL CORRECTLY

LOG OF OIL OR GAS WELL

Company Anderson-Prichard Oil Corporation Address Box 196, Midland, Texas

Lessor or Tract Langlie "B" Field Justis State New Mexico

Well No. 2 Sec. 14 T. 25S R. 37E Meridian NMPM County Lea

Location 330 ft. S of S Line and 1650 ft. E of E Line of Section 14 Elevation 3120 (Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed [signature]

Date August 3, 1960 Title District Engineer

The summary on this page is for the condition of the well at above date.

Commenced drilling 5-24, 1960 Finished drilling 6-19, 1960

OIL OR GAS SANDS OR ZONES

(*Denote gas by G*)

No. 1, from Tubb 5824' to 5860' No. 4, from .... to ....

No. 2, from Blinebry 5338' to 5460' No. 5, from .... to ....

No. 3, from .... to .... No. 6, from .... to ....

IMPORTANT WATER SANDS

No. 1, from .... to .... No. 3, from .... to ....

No. 2, from .... to .... No. 4, from .... to ....

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated From—	Perforated To—	Purpose
9-5/8"	32.3	8	H-40	975	Guide				Surface
	36		J-55						
	40								
7"	20	8	H-80	5909	Guide		5333	5460	Production
	23		J-55				5824	5860	

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
9-5/8"	975	450 Sacks	Pump & Plug		
7"	5909	710 "	Pump & Plug		

PLUGS AND ADAPTERS

Heaving plug—Material .... Length .... Depth set ....

Adapters—Material .... Size ....

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

TOOLS USED

Rotary tools were used from 0 feet to 6000 feet, and from .... feet to .... feet

Cable tools were used from .... feet to .... feet, and from .... feet to .... feet

DATES

August 3, 1960 Put to producing 7-26, 1960

The production for the first 24 hours was 92.8 barrels of fluid of which 100 % was oil; .... % emulsion; .... % water; and .... % sediment. Gravity, °Bé. 37°

If gas well, cu. ft. per 24 hours .... Gallons gasoline per 1,000 cu. ft. of gas ....

Rock pressure, lbs. per sq. in. ....

See reverse side for Tubb zone

EMPLOYEES

D. G. Ray, Driller W. L. Carter, Driller

[illegible], Driller ...., Driller

FORMATION RECORD

FOLD | MARK

7"	5999	710		Pump & Plug		

FOLD | MAR

PLUGS AND ADAPTERS

Heaving plug—Material ..... Length ..... Depth set .....

Adapters—Material ..... Size .....

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

TOOLS USED

Rotary tools were used from 0 feet to 6000 feet, and from ..... feet to ..... feet

Cable tools were used from ..... feet to ..... feet, and from ..... feet to ..... feet

DATES

August 3, 19 60 — Put to producing 7-26, 19 60

The production for the first 24 hours was 93.8 barrels of fluid of which 100 % was oil; ..... % emulsion; ..... % water; and ..... % sediment.

Gravity, °Bé. 37°

If gas well, cu. ft. per 24 hours ..... Gallons gasoline per 1,000 cu. ft. of gas .....

Rock pressure, lbs. per sq. in. .....

EMPLOYEES

See reverse side for Tubb zone

D. G. Ray, Driller — W. L. Carter, Driller

* * *, Driller — ....., Driller

FORMATION RECORD

FROM—	TO—	TOTAL FEET	FORMATION
0	40	40	Sand Caliche
40	975	935	Red & Anhy
975	2375	1400	Anhy, Gyp & Salt
2375	2974	599	Anhy & Lime
2974	5755	2781	Lime
5755	5829	74	Lime & Sand
5829	6000	171	Dolo & Lime TD

FROM—	TO—	TOTAL FEET	FORMATION

(over)

FORMATION RECORD (continued)

16—43004-4

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

Form C-105
Revised 10-1-78

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LAND OFFICE		
OPERATOR		

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5a. Indicate Type of Lease: State [ ] Fee [X]
5. State Oil & Gas Lease No.:

1a. TYPE OF WELL
b. TYPE OF COMPLETION: OIL WELL [X] GAS WELL [ ] DRY [ ] OTHER ____
NEW WELL [ ] WORK OVER [ ] DEEPEN [X] PLUG BACK [ ] DIFF. RESVR. [ ] OTHER DHC-658

7. Unit Agreement Name:
8. Farm or Lease Name: Wimberly WN
9. Well No.: 7
10. Field and Pool, or Wildcat: Justis Blinebry / Justis Tubb-Drinkard

2. Name of Operator: ARCO Oil & Gas Company
3. Address of Operator: Box 1610, Midland, TX 79702
4. Location of Well: UNIT LETTER B LOCATED 660 FEET FROM THE North LINE AND 1650 FEET FROM THE East LINE OF SEC. 23 TWP. 25S RGE. 37E NMPM
12. County: Lea

15. Date Spudded	16. Date T.D. Reached	17. Date Compl. (Ready to Prod.)	18. Elevations (DF, RKB, RT, GR, etc.)	19. Elev. Cashinghead
8-9-87	8-20-87	9-1-87	3094 GR	

20. Total Depth	21. Plug Back T.D.	22. If Multiple Compl., How Many	23. Intervals Drilled By	Rotary Tools	Cable Tools
6042	NA		→	5910-6042	

24. Producing Interval(s), of this completion — Top, Bottom, Name
5111-5719 Blinebry
5776-5880 Tubbs
5917-6042 Drinkard

25. Was Directional Survey Made: No

26. Type Electric and Other Logs Run: CNL

27. Was Well Cored: No

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
10-3/4		904		610 sx - TOC Surf	
7-5/8		5917		1760 sx - TOC Unknown	

29. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN

30. TUBING RECORD

SIZE	DEPTH SET	PACKER SET
2-3/8	5721	

31. Perforation Record (Interval, size and number)
5111-5719
5776-5880
5917-6042 (Open Hole)

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
5917-6042	A w/2500 gals
5776-5880	A w/5000 gals
5194-5719	A w/10,000 gals

33. PRODUCTION

Date First Production	Production Method (Flowing, gas lift, pumping - Size and type pump)	Well Status (Prod. or Shut-in)
9-1-87	Pumping	Producing

Date of Test	Hours Tested	Choke Size	Prod'n. For Test Period →	Oil - Bbl.	Gas - MCF	Water - Bbl.	Gas - Oil Ratio
9-18-87	24			9	22	60	2444

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate →	Oil - Bbl.	Gas - MCF	Water - Bbl.	Oil Gravity - API (Corr.)
			9	22	60	

34. Disposition of Gas (Sold, used for fuel, vented, etc.): Sold
Test Witnessed By:

35. List of Attachments: CNL Log

36. I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief.

SIGNED Ken W Gosnell TITLE Engr. Tech. 915/688-5672 DATE 9-24-87

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radioactivity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, Items 30 through 34 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico				Northwestern New Mexico			
T. Anhy		T. Canyon		T. Ojo Alamo		T. Penn. "B"	
T. Salt		T. Strawn		T. Kirtland-Fruitland		T. Penn. "C"	
B. Salt		T. Atoka		T. Pictured Cliffs		T. Penn. "D"	
T. Yates	2378	T. Miss		T. Cliff House		T. Leadville	
T. 7 Rivers	2606	T. Devonian		T. Menefee		T. Madison	
T. Queen	3028	T. Silurian		T. Point Lookout		T. Elbert	
T. Grayburg	3302	T. Montoya		T. Mancos		T. McCracken	
T. San Andres	3702	T. Simpson		T. Gallup		T. Ignacio Qtzte	
T. Glorieta	4703	T. McKee		Base Greenhorn		T. Granite	
T. Paddock	4941	T. Ellenburger		T. Dakota		T.	
T. Blinebry	5093	T. Gr. Wash		T. Morrison		T.	
T. Tubb	5766	T. Granite		T. Todilto		T.	
T. Drinkard	5946	T. Delaware Sand		T. Entrada		T.	
T. Abo		T. Bone Springs		T. Wingate		T.	
T. Wolfcamp		T.		T. Chinle		T.	
T. Penn.		T.		T. Permian		T.	
T Cisco (Bough C)		T.		T. Penn. "A"		T.	

OIL OR GAS SANDS OR ZONES

No. 1, from ..... to ..... No. 4, from ..... to .....

No. 2, from ..... to ..... No. 5, from ..... to .....

No. 3, from ..... to ..... No. 6, from ..... to .....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from ..... to ..... feet. .....

No. 2, from ..... to ..... feet. .....

No. 3, from ..... to ..... feet. .....

No. 4, from ..... to ..... feet. .....

FORMATION RECORD (Attach additional sheets if necessary)

From	To	Thickness in Feet	Formation	From	To	Thickness in Feet	Formation

RECEIVED
OCT 1 1987
OCD
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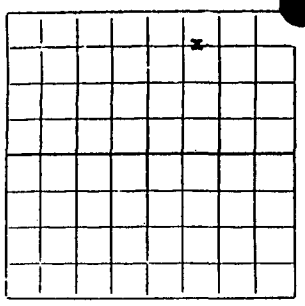
(Revised 7/1/58)
(Form C-105)



AREA 640 ACRES
LOCATE WELL CORRECTLY

NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

HOBBS OFFICE OCC
1962 JUN 28 AM 10:32

WELL RECORD

Mail to District Office, Oil Conservation Commission, to which Form C-101 was sent not later than twenty days after completion of well. Follow instructions in Rules and Regulations of the Commission. Submit in QUINTUPLICATE. If State Land submit 6 Copies

Western Natural Gas Company (Company or Operator) Wimberley (Lease)

Well No. 7, in NW ¼ of NE ¼, of Sec. 23, T. 25-S, R. 37-E, NMPM.

Justis Blinebry - Justis Tubb Drinkard Pool, Lea County.

Well is 1650 feet from East line and 660 feet from North line of Section 23. If State Land the Oil and Gas Lease No. is Patented

Drilling Commenced 5-15-62, 19.... Drilling was Completed 6-8-62, 19....

Name of Drilling Contractor Great Western Drilling Company

Address Midland, Texas

Elevation above sea level at Top of Tubing Head 3094 The information given is to be kept confidential until Not confidential, 19....

OIL SANDS OR ZONES

No. 1, from 5324 to 5418 No. 4, from ..... to .....

No. 2, from 5826 to 5862 No. 5, from ..... to .....

No. 3, from ..... to ..... No. 6, from ..... to .....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from ..... to ..... feet. .....

No. 2, from ..... to ..... feet. .....

No. 3, from ..... to ..... feet. .....

No. 4, from ..... to ..... feet. .....

CASING RECORD

SIZE	WEIGHT PER FOOT	NEW OR USED	AMOUNT	KIND OF SHOE	CUT AND PULLED FROM	PERFORATIONS	PURPOSE
10 3/4"	32.75	New	904	Float	None	None	Surface
7 5/8"	39, 33.7, 26.4	New	5903	Float	None	5324-5418	Production
						5826-5862	

MUDDING AND CEMENTING RECORD

SIZE OF HOLE	SIZE OF CASING	WHERE SET	NO. SACKS OF CEMENT	METHOD USED	MUD GRAVITY	AMOUNT OF MUD USED
15	10 3/4	905	510 sx 6% gel	Pump and		
			100 sx neat	Plug &	9.6#/gal	-
9 7/8	7 5/8	5917	360 sx neat	Pump and		
			1400 sx poz.	Plug	9.9#/gal	-

RECORD OF PRODUCTION AND STIMULATION

(Record the Process used, No. of Qts. or Gals. used, interval treated or shot.)

Perforated interval 5826-5862 w/2 JSPF and intervals of 5324, 5328, 5338, w/1 JS; 5346,5354,5380 and 5418 w/2 JSPF. Fraced interval 5324-5418 feet w/1500 gals reg. acid, 15,000 gals refined oil, 17,000 lbs 10-20 mesh sand at 22.1 BPM at 3000 psi. Acidized interval 5826-5862' with 2000 gals Dowell XM-38 acid at 4½ BPM at 2200 psi.

Result of Production Stimulation Flowed 412 bbls oil and no water in 24 hrs thru 18/64" choke.

.....

Depth Cleaned Out 5910 feet.

RECORD OF DRILL-STEM AND SPECIA TESTS

If drill-stem or other t tests or deviation surveys were made, submit report on separate nd attach hereto

TOOLS USED

Rotary tools were used from **Surface** feet to **5917** feet, and from .... feet to .... feet.

Cable tools were used from **None** feet to .... feet, and from .... feet to .... feet.

PRODUCTION

Put to Producing **June 23**, 19**62**

OIL WELL: The production during the first 24 hours was **412** barrels of liquid of which **100** % was was oil; .... % was emulsion; .... % water; and .... % was sediment. A.P.I. Gravity **37.5**

GAS WELL: The production during the first 24 hours was .... M.C.F. plus .... barrels of liquid Hydrocarbon. Shut in Pressure .... lbs.

Length of Time Shut in ....

PLEASE INDICATE BELOW FORMATION TOPS (IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE):

Southeastern New Mexico				Northwestern New Mexico
T. Anhy	888	T. Devonian		T. Ojo Alamo
T. Salt	992	T. Silurian		T. Kirtland-Fruitland
B. Salt	2208	T. Montoya		T. Farmington
T. Yates	2378	T. Simpson		T. Pictured Cliffs
T. 7 Rivers	2606	T. McKee		T. Menefee
T. Queen	3028	T. Ellenburger		T. Point Lookout
T. Grayburg	3332	T. Gr. Wash		T. Mancos
T. San Andres	3702	T. Granite		T. Dakota
T. Glorieta	4703	T.		T. Morrison
T. Drinkard	5093	T.		T. Penn
T. Tubbs	5766	T.		T.
T. Abo		T.		T.
T. Penn		T.		T.
T. Miss		T.		T.

FORMATION RECORD

From	To	Thickness in Feet	Formation	From	To	Thickness in Feet	Formation
0	888	888'	Red beds				
* 888	992	104'	Anhydrite				
2208	3108	900'	Anhy, sh & dolo				
3108	3702	594'	Sd, dolo, anhy				
3702	4703	1001'	Dolo, sh				
4703	5093	390'	Sd, dolo				
5093	5766	673'	Dolo				
5766	5917	151'	Dolo, sd				
* 992	2208	1216'	Salt & anhydrite				

ATTACH SEPARATE SHEET IF ADDITIONAL SPACE IS NEEDED

I hereby swear or affirm that the information given herewith is a complete and correct record of the well and all work done on it so far as can be determined from available records.

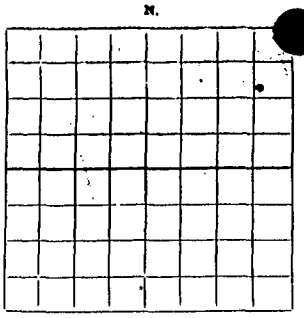
June 27, 1962
(Date)

Company or Operator **WESTERN NATURAL GAS COMPANY** Address **823 Midland Tower, Midland, Texas**

Name Paul Nordward Position Title **Office Manager**

(Revised 7/1/52)
(Form C-106)

N.



AREA 640 ACRES
LOCATE WELL CORRECTLY

NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

HOBBS OFFICE OCC

APR 25 AM 9:47

WELL RECORD

Mail to District Office, Oil Conservation Commission, to which Form C-101 was sent not later than twenty days after completion of well. Follow instructions in Rules and Regulations of the Commission. Submit in QUINTUPLICATE.

Olsen Oil & Inv. (Company or Operator) Wimberly

Well No. 2, in SE NE ¼ of NE ¼, of Sec. 23, T. 25S, R. 37E, NMPM.

Undesignated Pool, Lea County.

Well is 990 feet from North line and 330 feet from East line of Section 23. If State Land the Oil and Gas Lease No. is

Drilling Commenced 2-12-60, 19 Drilling was Completed 3-18-60, 19

Name of Drilling Contractor R. Olsen

Address 2811 Liberty Bank Building, Oklahoma City Oklahoma

Elevation above sea level at Top of Tubing Head 3084.2 3086.2 GL The information given is to be kept confidential until , 19

OIL SANDS OR ZONES

No. 1, from 2980 to 3162 G
No. 2, from 4648 to 4800 G
No. 3, from 5300 to 5510 O
No. 4, from 5660 to 5919 O
No. 5, from 5919 to 5962 O
No. 6, from to

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from to feet.
No. 2, from to feet.
No. 3, from to feet.
No. 4, from to feet.

CASING RECORD

SIZE	WEIGHT PER FOOT	NEW OR USED	AMOUNT	KIND OF SHOE	CUT AND PULLED FROM	PERFORATIONS	PURPOSE
9 5/8"	36#	Used	832'	Howco			Surface
7"	23#	New	5896.9	Howco			Oilstring
7 7/8"	26.40#	New	89				

MUDDING AND CEMENTING RECORD

SIZE OF HOLE	SIZE OF CASING	WHERE SET	NO. SACKS OF CEMENT	METHOD USED	MUD GRAVITY	AMOUNT OF MUD USED
12¼"	9 5/8"	848	350	Howco		
8 3/4	7"	5986'	660	Howco		160 sx. @ shoe, 500 sx. @ DV Tool @ 5002
8 3/4	7 5/8"	104				

TOP CEMENT 2,000'

RECORD OF PRODUCTION AND STIMULATION

(Record the Process used, No. of Qts. or Gals. used, interval treated or shot.)

NOTE: 7 5/8" Casing on top of 7" for 2½" and 2" Tubing strings.

BLINEBRY ZONE: 500 gal. M.A. + 20,000 gal. Lease Oil + 38,000# sd. + 1,000 gal. M.A.

DRINKARD ZONE: 500 gal. M.A. + 1,000 gal Penetrol acid.

Result of Production Stimulation
Blinebry Zone 384 BOPD
Drinkard Zone 497 BOPD + 43 BWPD

Depth Cleaned Out 5863

RECORD OF DRILL-STEM AND SPECIAL TESTS

If drill-stem or other [illegible] tests or deviation surveys were made, submit report on separate sheet and attach hereto

TOOLS USED

Rotary tools were used from Surface feet to 5988 feet, and from ..... feet to ..... feet.

Cable tools were used from ..... feet to ..... feet, and from ..... feet to ..... feet.

PRODUCTION

Blinebry 4-7-60

Put to Producing Drinkard 3-22-60, 19.....

OIL WELL: The production during the first 24 hours was 540 barrels of liquid of which 87.5 % was was oil; ..... % was emulsion; 12.5 % water; and ..... % was sediment. A.P.I. Gravity 41 degrees Blinebry 384 BOPD, 100% oil, Gravity 38.6 degrees.

GAS WELL: The production during the first 24 hours was ..... M.C.F. plus ..... barrels of liquid Hydrocarbon. Shut in Pressure ..... lbs.

Length of Time Shut in .....

PLEASE INDICATE BELOW FORMATION TOPS (IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE):

Southeastern New Mexico		Northwestern New Mexico		Northwestern New Mexico	
T. Anhy 830		T. Devonian		T. Ojo Alamo	
T. Salt 1015		T. Silurian		T. Kirtland-Fruitland	
B. Salt 2170		T. Montoya		T. Farmington	
T. Yates 2293'		T. Simpson		T. Pictured Cliffs	
T. 7 Rivers 2515'		T. McKee		T. Menefee	
T. Queen 2950'		T. Ellenburger		T. Point Lookout	
T. Grayburg		T. Gr. Wash		T. Mancos	
T. San Andres		T. Granite		T. Dakota	
T. Glorieta 4648'		T.		T. Morrison	
T. Drinkard 5919'		T.		T. Penn	
T. Tubbs 5660'		T.		T.	
T. Abo		T.		T.	
T. Penn		T.		T.	
T. Miss		T.		T.	

FORMATION RECORD

From	To	Thickness in Feet	Formation	From	To	Thickness in Feet	Formation
0	830	830	Caliche Red beds.				
830	1015	185	Anhy and Red beds				
1015	2170	1155	Salt, Anhy, Red beds, Potash stringers				
2170	2293	120	Br. Dolomite and anhydrite				
2293	2515	222	Dolomite and Shale and Sand				
2515	2950	435	Dolomite and Sand Stringers				
2950	3250	300	Sand and Dolomite stringers				
3250	4648	1388	Dolomite & few Sand Stringers				
4648	4870	222	Dolomite and Sand				
4870	5075	205	Dolomite and Limestone				
5075	5660	585	Dolomite				
5660	5919	259	Sand and Dolomite				
5919	5988	69	Dolomite				
	T.D.						

ATTACH SEPARATE SHEET IF ADDITIONAL SPACE IS NEEDED

I hereby swear or affirm that the information given herewith is a complete and correct record of the well and all work done on it so far as can be determined from available records.

4-25-60 (Date)

Company or Operator Olsen Oils, Inc. Address Box 691 Jal, New Mexico

Name [signature] Position or Title Engineer

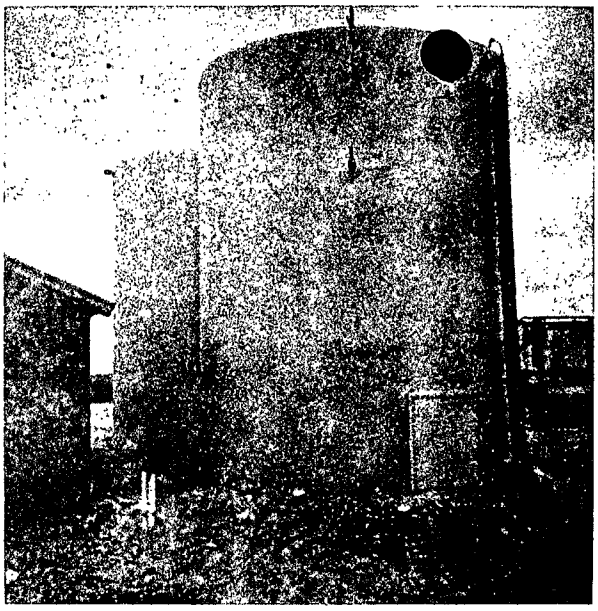
Fresh water for brine production is stored in the two 300 bbl fiberglass tanks on the facility location (photo 1). When the tanks' level drops, the Blocker water well pumps are automatically turned on.

The three Blocker Ranch water wells shown on the map (wells CP258, CP261 both .8 miles East, and CP260, one mile Southeast, are 100 feet deep) are our source for the fresh water used in our injection well. Blocker Ranch owns the three wells and are our commercial suppliers. Blocker Ranch pumps the water to our facility via a 3" SDR 17 polyethylene pipeline from their CP258 and CP261 wells constructed December, 1980, and a 4" SDR 17 polyethylene pipeline from their CP260 well constructed July, 1981. Both pipelines are positioned 18 inches below ground level and all three have metering devices at the well pumps.

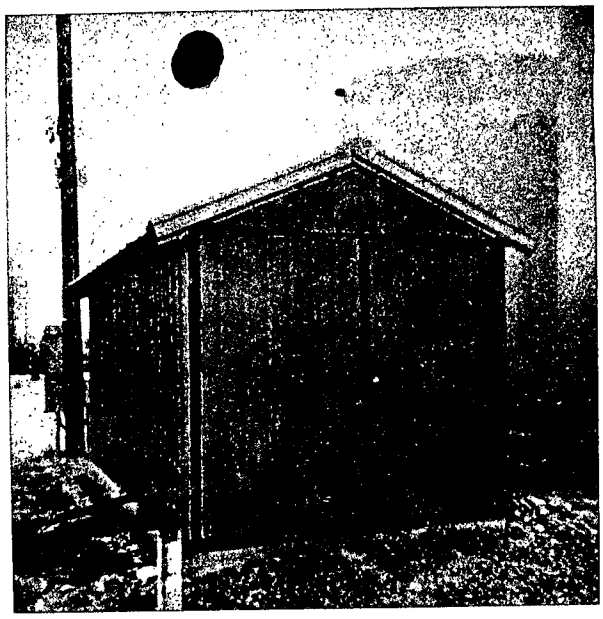
The brine storage pit is equipped with an underwater probe divice that automatically activates the injection well pump when the pit level reaches a certain level. Fresh water is pumped from the 300 bbl storage tanks down the casing to a depth of 2101', dissolves in the Halite fromation and is pumped to the surface in the 2 7/8" tubing, enters a 3" polyethylene pipeline buried 1' below ground level and travels via this pipeline to the storage pit 258' from the well head (photo 2). The well head is equipped with 4 valves for backflushing. Brine is produced at 120 gallons per minute. The process is instantanious: When a gallon of fresh water is pumped into the injection well, a gallon of brine enters the the storage pit. Other than signs of water on the ground surface above the pipeline, you would know immediately of leakage if no return occurred in the storage pit. The same holds true on the water supply pipeline. Our brine station is checked several times a day by our pushers on duty and all of our drivers are also checking as they come in for brine.

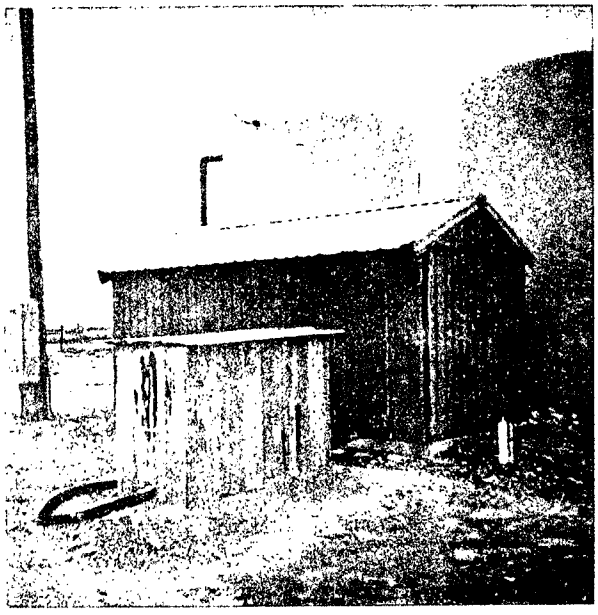
The loading area (photo 3 & 4) is concrete with a drainage system connected to a concrete sump pit covered by a metal grill. If overflow occurs during loading, the brine goes into the sump pit. The pit is pumped out periodically by our trucks and transported to our disposal well East of Jal. The brine metering device (photo 5) is a key system: When the driver inserts a key into the device, it activates the pump at the storage pit which pumps 150 bbls in 8.6 minutes.

The storage pit is fenced and a sign displayed according to regulations (photo 6). As all of the photographs of our facility indicate, there would be no way that liquids on the ground would go unnoticed or that we could lose a vloumn of water or brine on the site and not be aware instantly of the problem. The storage pit is 110' x 110' at the top and 90' x 90' at the bottom and 10' deep, and is constructed according to the exact specifications as outlined by the Energy and Minerals Department, Oil Conservation Division-inspected and approved by same office before and after the liner was applied.



1

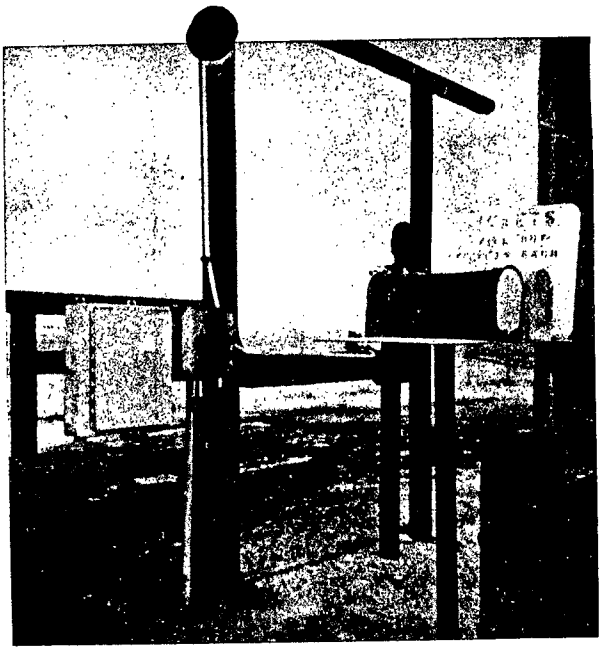




2.


SALADO BRINE SALES
N M N 40527
SE ¼ of SE ¼
SECTION 14 - T-25S - R-31E
OPERATOR ... W.H BRINKSTOCK

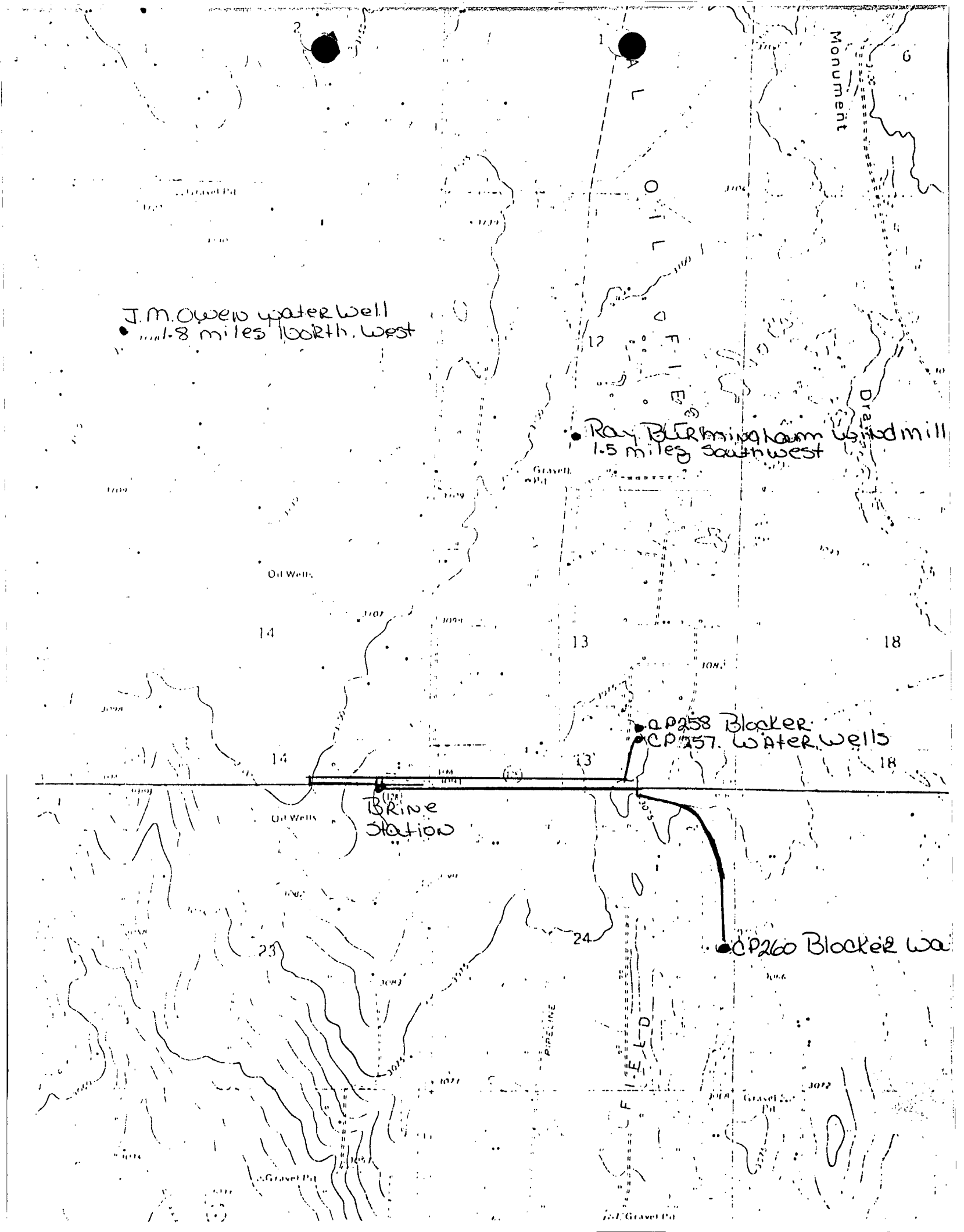
6.

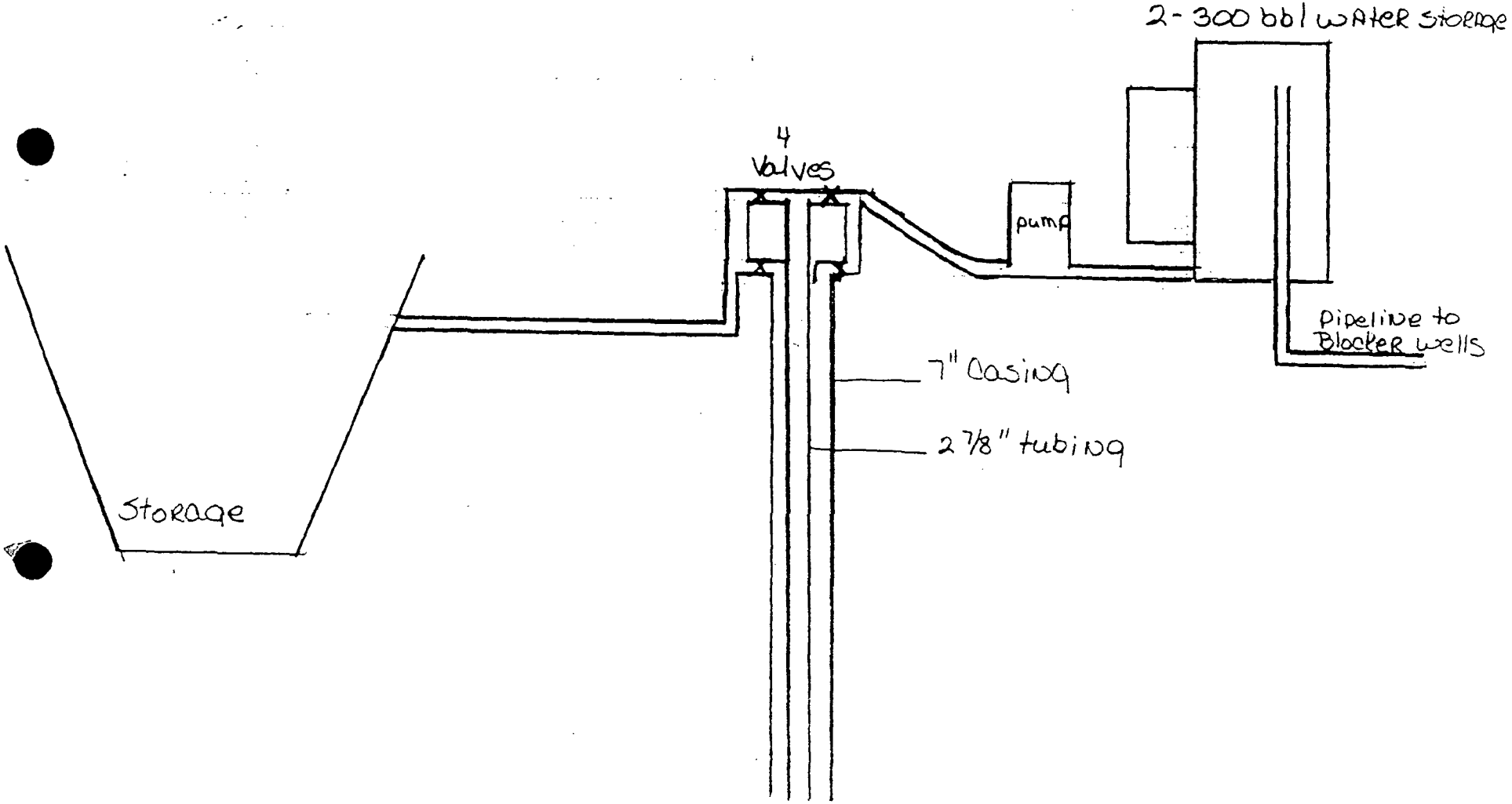


5.

3.

4.


J.M. Owen water well
1.8 miles North, West
Ray Birmingham Windmill
1.5 miles Southwest
CP258 Blocker
CP257. Water Wells
Brine
Station
CP260 Blocker Wa
Monument
Oil Wells
Gravel Pit
PIPELINE
FIELD
14
13
18
23
24


2 - 300 bbl water storage
4
Valves
pump
Pipeline to
Blocker wells
7" Casing
2 7/8" tubing
Storage

Storage pit is approximately 110' x 110' at the top and 90' x 90' at the bottom with a total depth of 10'.

Pit was constructed according to the exact specifications as outlined by the Energy and Minerals Department, Oil Conservation Division-inspected and approved by same office before during and after liner was applied.

Pit is located on level ground and constructed square. A drainage-and-sump method of leakage detection system was used. A network of slotted drainage pipes were installed. The network is of sufficient density that no point in the evaporation pit-bed is more than 20 feet from a drainage pipe or a lateral thereof. Slope for all drainage lines and laterals are at least six inches per 50 feet. All drainage is to the outer perimeter of the pit and shall gather into a concrete sump.

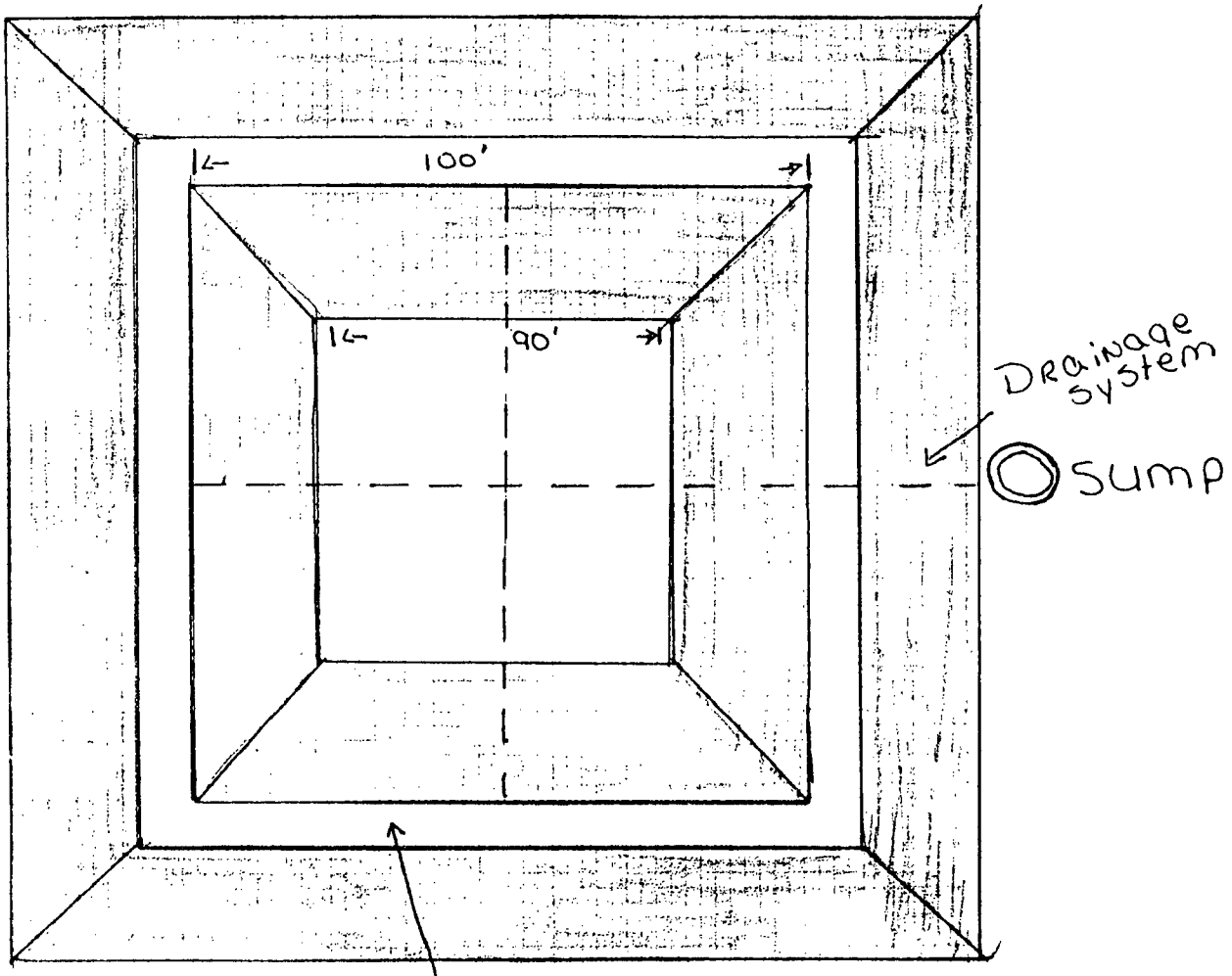
The bed of the pit and the inside grades of the levee is smooth and compacted and is free of holes, rocks, stumps, clods, or any other debris which might rupture the liner. A trench was dug on the top of the levee the entire perimeter of the pit for the purpose of anchoring flexible liner. This trench was located nine inches out from the slope break and was approximately 6 inches deep.

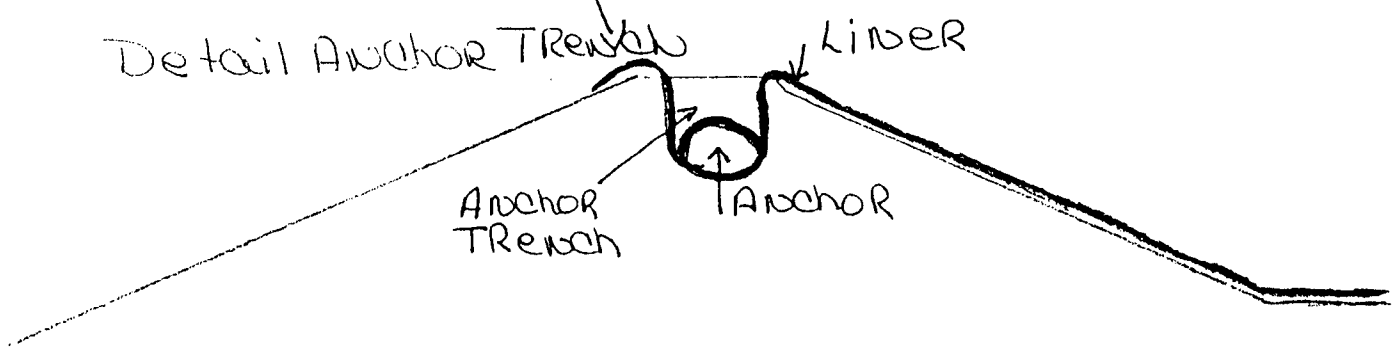
The pit liner was installed and joints sealed according to manufacturer's specifications and with approval of the commission representative. The flexible liner material is of 30 mil thickness and has good resistance to tears and punctures.

The liner was laid as evenly and wrinkle-free as possible and rest smoothly on the pit-bed and the inner face of the levees, and was of sufficient size to extend down to the bottom of the anchor trench and to come back out approximately 1 foot.

An anchor of used pipe was placed over the liner in the anchor trench and said trench backfilled. The anchor was extended to entire perimeter of the evaporation pit.

Storage Pit


100'
90'
Drainage system
Sump


Detail Anchor Trench
Liner
Anchor Trench
Anchor

SALADO BRINE SALES

Drawer A

(505) 395-2010

Jal, New Mexico 88252

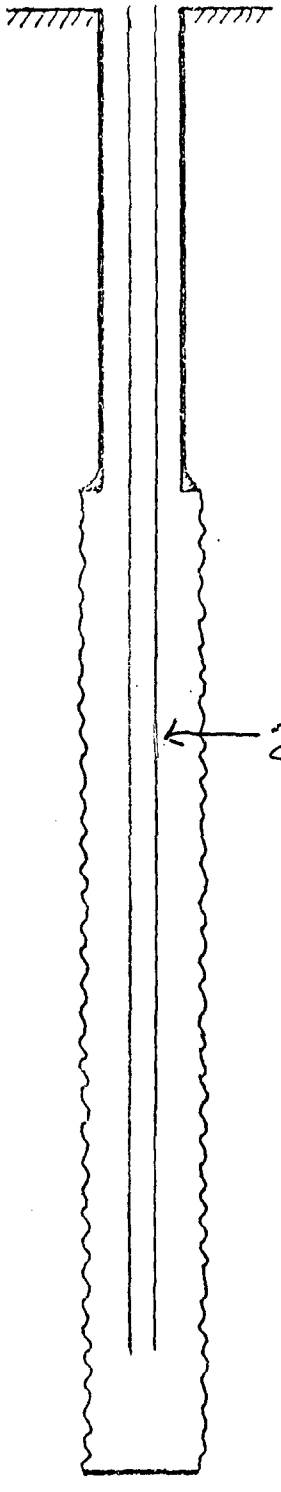
1989	Fluids Injected	Fluids Sold
April	28,026	39,432
May	40,983	30,090
June	41,653	55,613
July	43,132	27,470
August	22,305	29,644
September	22,646	26,194
October	17,666	26,935
November	17,521	30,850
December	26,814	23,374
1990		
January	12,979	16,656
February	15,358	25,940
March	27,282	20,782
April	14,940	16,470
May	17,790	21,440
June	15,660	6,860
July	9,023	7,040
August	9,333	5,614
September	11,940	10,421
October	5,580	7,976
November	7,885	8,551
December	7,024	5,433
1991		
January	12,546	18,444
February	19,560	20,300
March	18,026	14,880

SEND TO: BILL BRINNINSTOOL
LAB NO.
DATE REC. 8-21-90
RR
COMPANY XL TRANSPORTATION
AS LISTED
FIELD
COUNTY LEA, NM
SEC BLK SURV
No.1 BRINE WATER - TAKEN @ SALADO BRINE SALES. 8-21-90
No.2
No.3
No.4
REMARKS:

SPECIFIC GRAVITY	1.2107
pH WHEN REC	7.60
BICARBONATE as HCO3	205
TOTAL HARD. as CaCO3	7400
CALCIUM as Ca	700
MAGNESIUM as Mg	1373
SODIUM &/or POTASSIUM	123920
SULFATE as SO4	6013
CHLORIDE as Cl	191751
IRON as Fe	1.6
BARIUM as Ba	
TOTAL SOLIDS, CALC.	323962
HYDROGEN SULFIDE	0.0
RESISTIVITY	0.044
FILTRABLE SOLIDS	
VOLUME FILTERED	
NITRATE, as N	--

MIDNIGHT
6 AM
NOON
6 PM
GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
BR 5340
5-3
1991

OPERATOR			DATE
W. H. Brinkstool, SALADO Brine Sales			
LEASE	WELL No.	LOCATION	
Langlie Fed. Brine Well		Sec. 14 T25 R37	



7 " casing set at 970 ' with Sufficient to circulate to surface sx of _____ cement

Hole size _____ "

← 2 1/2 " Tubing

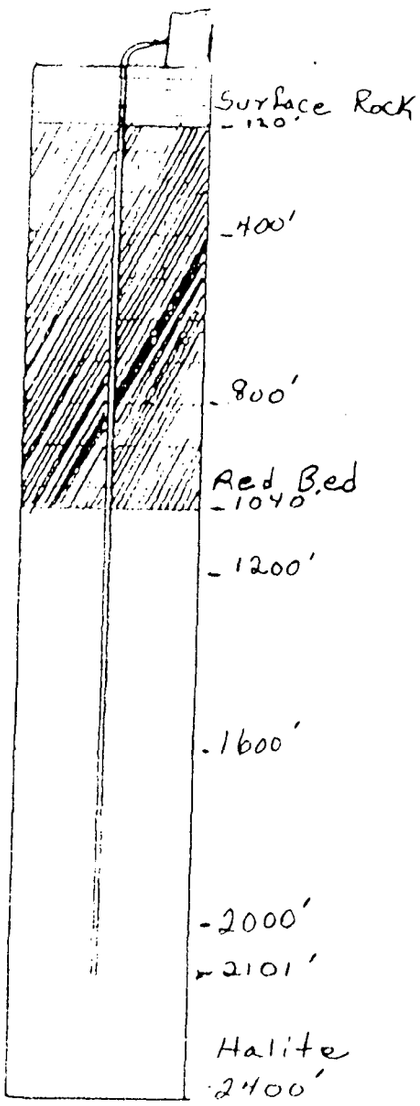
Open hole from 970 ' to 2105 ' Run ~~Hole size~~ 2 1/2 " production tubing

Total depth 2105 '

INJECTION WELL DATA SHEET

OPERATOR	LEASE			
W. H. BRININSTOOL	SALADO			
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE
1		14 SE 1/4	25S	37E.

Schematic



Tabular Data

Surface Casing

Size 7" " Cemented with 124 sx.

TOC SURFACE feet determined by _____

Hole size 8 3/4"

Intermediate Casing

Size -0- " Cemented with _____

TOC _____ feet determined by _____

Hole size _____

Long string

Size 3 1/2" " Cemented with -0- sx.

TOC -0- feet determined by _____

Hole size 6 1/4"

Total depth 2101

Injection interval

-0- feet to -0- feet

(perforated or open-hole, indicate which)

INFORMATION SUPPLIED BY BABER WELL SERVICE

Tubing size 2 7/8" lined with -0- (material) set in a -0- (brand and model) packer at -0- feet.

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation NONE

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

3. Is this a new well drilled for injection? [X] Yes [ ] No

If no, for what purpose was the well originally drilled? _____

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. NO OVERLYING

DONNIE'S WELDING
P.O. Box 1326 Phone 505 395-3392
JAL, NEW MEXICO 88252

XL Transportation
113 N. Third Street
Jal, NM 88252

WORK DESCRIPTION:

Back-fill brine pit to natural grade terrain.

Bid includes equipment, labor, and taxes **$1,100.00**

POOL COMPANY

P.O. Box 9067
8004 W. Hwy. 80 (79703)

Midland, Texas 79708
915/563-2481

A subsidiary of
ENSERCH Corporation

Salado Inc.
P.O. Drawer A
Jal, New Mexico 88252

ATTN: Ms. Christine Brininstool

Re: To turnkey P&A your Brine well in New Mexico.

Dear Ms. Brininstool:

Pool Company is pleased to submit a bid of $4,250.00 to turnkey P&A the above referenced well.

With its experienced personnel and proven equipment, Pool believes it offers the highest quality plugging service in the industry. The fact that Pool is one of the largest and most stable service companies in the market today is added assurance to our customers that the work will be done in a safe and timely manner and Pool will be here to stand behind it.

This bid is good for thirty days from the date of this letter. We appreciate the opportunity to be of service to you. If you should have any questions, please do not hesitate to call me at (915) 563-2481.

Sincerely,

Tim Friesenhahn
Project Engineer
West Texas Operations

TJF/gkh

J L N M Construction Co.

PHONES: 505-395-2523 or 395-2524
NIGHT PHONE 505-395-3089
HIGHWAY 128 P.O. BOX 566
JAL, NEW MEXICO 88252

XL Transportation
PO Box
Jal, NM 88252

RE: SALADO BRINE STATION

Attn: Chris Brinistool

We submit our quote to decommission pit and bring back to surface level. The amount of the quote is: One Thousand Eight Hundred and 00/100 Dollars plus all appropriate taxes, (1,800.00 + Tax).

This is submitted under New Mexico Contractor License #22715 with Mr. Jimmy Hill as qualifying party.

Sincerely yours,

Jimmy Hill
President

JRH/klo

cc: file

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

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LAND OFFICE		
OPERATOR		

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-103
Revised 10-1-78

5a. Indicate Type of Lease State ☐ Fee ☐

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

7. Unit Agreement Name

OIL WELL ☐ GAS WELL ☐ OTHER-

1. Name of Operator

8. Farm or Lease Name

2. Address of Operator

9. Well No.

4. Location of Well

UNIT LETTER _____, _____ FEET FROM THE _____ LINE AND _____ FEET FROM THE _____ LINE, SECTION _____ TOWNSHIP _____ RANGE _____ NMPM.

10. Field and Pool, or Wildcat

15. Elevation (Show whether DF, RT, GR, etc.)

12. County

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐			COMMENCE DRILLING OPNS.	☐	PLUG AND ABANDONMENT	☐
PULL OR ALTER CASING	☐	CHANGE PLANS	☐	CASING TEST AND CEMENT JOB	☐		
OTHER	☐			OTHER	☐		

17. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

MIRU-Pull 2 7/8 tubing, GIH w/23/8 work string. Set CIBP @ bottom of casing. Spot 280' cmt plug-spot 400' cmt plug below f/w zone-spot 50' cmt plug @ surface-between cmt plugs spot 10# salt gel. Total cost $4,500.00

Clear Well Service, Inc.
P.O. Box 69090
Odessa, Texas 79769-9090

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

SIGNED _____ TITLE _____ DATE _____

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

THE REPRODUCTION OF

THE

FOLLOWING

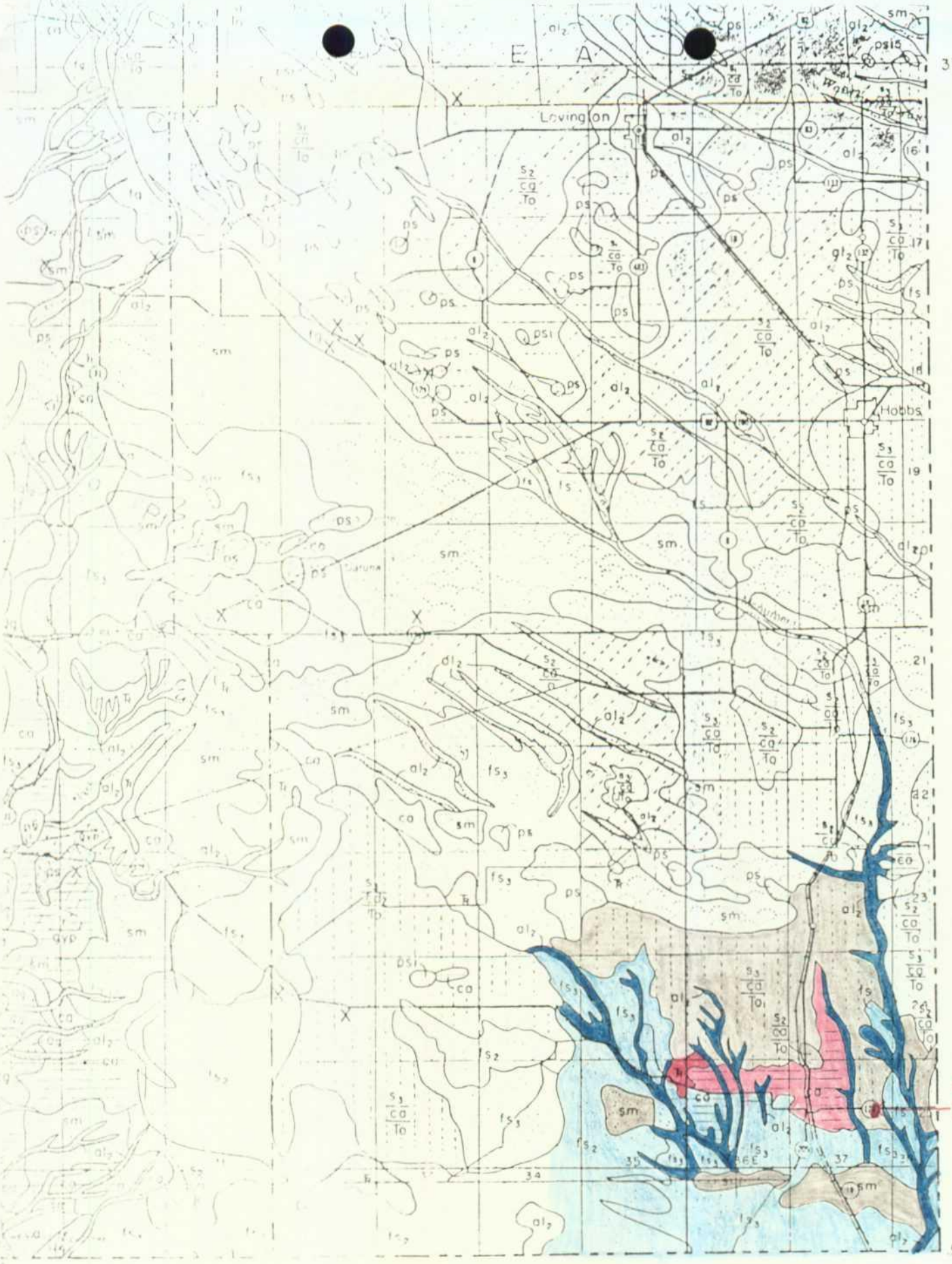
DOCUMENT (S)

CANNOT BE IMPROVED

DUE TO

THE CONDITION OF

THE ORIGINAL



Geology by Charles B. Hunt, 1974 - 1976 Cartography by Nedra M. Pearson, 1976

DESERT PAVEMENT

Not shown on map. [illegible] layer of closely spaced stones, angular or rounded, over a [illegible] and silt. Stones collect at the surface by [illegible] action, apparently [illegible] and/or salt heaving, or swelling and shrinking of clay. Silt [illegible] the pavement may be partly eolian in origin. In general [illegible] thickness of silt increases from about 1 to 12 inches with increasing age of the surface, due to advanced weathering and [illegible]. Some [illegible] of desert pavement also form where wind or water [illegible], leaving behind the coarser [illegible]. While desert pavement [illegible] high runoff, it protects the ground from erosion.

CAVE DEPOSITS

Not shown on map. Commonly have gravels at base, recording an early stage of substantial water flow that eroded the cave. The gravel is overlain by clay or silt deposited as the flow of water diminished, and this in turn is overlain by stalagmites. Stalagmites are overlain by dust. Fossil remains of Pleistocene animals may occur in deposits below the stalagmites; remains of Holocene animals characterize the overlying deposits. Other cave deposits occur in basaltic lava, especially in the area southwest of the Zuni Mountains. These deposits include blocks fallen from the roofs, dust, and some ice.

ORGANIC DEPOSITS

Not shown on map. Accumulation of fibrous peat in sedge marshes [illegible] New Mexico lakes. Both fibrous and woody peat accumulated in small, poorly drained depressions and mountain meadows. Mostly less than 15 ft

DESERT VARNISH

Not shown on map. A black stain of iron and manganese oxides on bare rock surfaces and on pebbles of desert pavement. Predates prehistoric pottery-bearing occupations of the region. Predominantly middle Holocene, partly late Pleistocene. Many of these stained surfaces have petroglyphs carved by prehistoric peoples.

TRANSITIONAL DEPOSITS

Deposits transitional between those formed in situ and those transported; deposits moved downslope chiefly by gravity, particularly slow creep (colluvium). Also includes rock falls. Landslides and avalanches are shown as periglacial features.

Colluvium includes the heterogeneous mantle of soil and rock fragments derived from residuum, bedrock, and/or unconsolidated surficial deposits moved slowly downslope by gravitational force and sheet wash. Slopes generally steeper than 20 percent. Mass wasting, the process causing debris to move downslope, is aided by added weight and lubrication of water-saturated debris, frost heaving, alternate wetting and drying of clays, crystallization of salts, growth of roots, burrowing and trampling by animals, falling of trees, and impact of hail or rain. These, like other erosional processes, may be accelerated by man's activities.

Colluvium is basically a chaotic mixture of angular rock fragments and finer grained materials. In New Mexico colluvium is generally less than 10 ft thick (rarely 25 ft or more) but may grade into thick cones of debris at bases of hill [illegible]. In the northeast and northwest parts of the state where steep shale slopes [illegible] caprock of sandstone or lava, two and locally three, ages of colluvium may be distinguished. These are thought to be mid-Holocene, late Wisconsinan, and early Wisconsinan, respectively. Such occurrences provide an index of retreat of cliffs. Some shale slopes are armored and protected against erosion by blocks of the caprock.

On long dip slopes such as flanks of the Zuni Mountains and east flank of the Sacramento Mountains, the colluvium is generally thin (commonly 1 to 2 ft thick) except near the base of steep hillsides, and is composed of the resistant rock forming the dip slope. Some of this colluvium could as well be mapped as [illegible] over limestone. Hillsides on granitic and volcanic rocks may also be overlain by thin but bouldery sandy colluvium. Colluvium on steep, faulted mountain fronts consists of a mixture of stones representing all the exposed formations upslope.

co	COLLUVIUM — Subscripts indicate the underlying hillside formation (e.g., co_{Tv}, colluvium on Tertiary volcanic rocks)

TRANSPORTED DEPOSITS

Most surficial deposits are rocks and particles weathered from bedrock in one area, transported by water, wind, ice, or gravity to an area of deposition, and are susceptible to further erosion and transportation. These deposits are much younger than — and unrelated to — the underlying bedrock. They are classified according to their mode of transportation to the site of deposition.

ALLUVIUM IN FLOODPLAINS AND STREAM CHANNELS

Well-stratified sandy and silty stream deposits with gravel lenses; gravel [illegible]. [illegible] alluvial deposits record complex response to Quaternary climatic shifts. In New Mexico climates were comparatively wet during the Pleistocene glacial stages. Conversely, during the interglaciations, climates were drier, with conditions similar to Holocene environments. Alluvial deposits locally contain fossils, including bones of mammals and rodents, and shells of freshwater snails and clams. Late Pleistocene deposits contain fossil remains of extinct animals such as elephants, camels, horses (not reintroduced until the arrival of the Spaniards), sloths, and long-horned bison. Archaeological remains are common in and on Holocene deposits and help date them. Three ages of alluvium generally can be distinguished: late Pleistocene, mid-Holocene, and historic. At least three recognized types of alluvial floodplain deposits reflect relative capacity for sediment [illegible] by the main stream and its tributaries. A fourth type, along the Pecos [illegible] in the southeastern part of the state, is characterized by [illegible] adjacent to basalt-capped mesas.

al_1	FLOODPLAIN AND CHANNEL DEPOSITS ALONG MAIN STREAMS — G[illegible] flat but includes terraces to about 10 ft high, shallow curved swales at [illegible] meanders, and local stabilized dunes. Mostly sand, silt, and some layers of gravel. Caliche absent or weakly developed in thin veinlets, fibers, coatings on rocks, and soft nodules. Deposits commonly 25 ft thick. Ground water shallow, subject to pollution. Extensively farmed; subject to flooding
al_2	FLOODPLAIN AND CHANNEL DEPOSITS ALONG GENERALLY DRY ARROYOS AND WASHES — Includes deposits along some perennial or [illegible] streams. Extent exaggerated to emphasize drainage patterns. Sandier than al_1; gradients 5 to 15 percent. Arroyos 10 ft deep common. Surface flat where deposit was formed by stream overflowing its banks; hummocky where [illegible] fans at mouths of tributaries that crowd the main stream [illegible] V-shaped [illegible] alluvium grades laterally into fan sand [illegible] from adjoining hillsides. Ephemeral perched water tables under some deposits. Width of deposits [illegible] been exaggerated but total area probably about right because [illegible] omitted
al_3	COALESCING SILTY AND SANDY ALLUVIAL FANS — Transitional between al_2 and alluvial fan deposits fs and fsi
al_4	SALINE ALLUVIUM — [illegible] Pecos River south of Fort Sumner
al/b	ALLUVIUM OVER BASALT — [illegible] to basalt-capped [illegible] in old valleys, thickness [illegible]

.tg.	GRAVEL TERRACES — Well-rounded stream gravels with cobbles 6 inches or mo[illegible]ameter; some terraces 250 ft higher than the streams. Especially well dev[illegible] along the San Juan River, less so along the Pecos, Gila, and Canadian Ri[illegible]; most represent deposits by Pleistocene melt waters from mountains. Abundant caliche deposits, especially on the higher terraces, which may be Kansan; lowest are Wisconsinan

ALLUVIAL FAN DEPOSITS

In alluvial fans, unlike floodplain alluvium, beds tend to be thick, massive, and highly lenticular rather than well stratified. This is characteristic of all the facies, whether boulder, gravel, sand, or silt. Beds lenticular and elongated down the slope of the fans; slopes 2 to 20 percent. Deposition mostly by flash floods, with poor sorting and mixed textures. Coarse-textured lenses commonly form ridges extending down the fan onto generally finer grained sediment. Boundaries between the textural facies of the deposits roughly parallel the fan contour, but detailed boundaries are irregularly lobate; those shown are approximations. Fan textures and slopes depend partly on composition of the parent rocks and partly on height and steepness of the bordering hill or mountain. Fans extensive in the Basin and Range part of the state where they comprise about half the total area; in other parts of the state, fans are small. On the larger fans, arroyos become shallower towards the toe; many head at low mounds that probably mark old mudflows. Ground subject to sheet flooding

fg	GRAVEL FACIES — Bouldery towards apex of fan, grading downslope to cobble and fine gravel with increasing proportion of sand and finer grained material. Commonly dissected to form 2 to 3 levels of gravel benches up to 50 ft above present washes. A few streams (e.g., Mulligan Wash, Alamosa River, Cuchillo Negro Creek, and Rincon Arroyo are incised 100 ft below fan surfaces. On short, steep fans, depths of valleys generally decrease downslope. On the broad Palomas surface, west of the Rio Grande above Hatch, valleys maintain their depth. Except near the apex, extensive surfaces have smooth desert pavement. On short, steep fans, gravels show minimal weathering and are weakly cemented with caliche; age probably Wisconsinan and Holocene. On broad, more gently sloping fans, gravels are more weathered and commonly cemented by caliche; age probably pre-Wisconsinan. In south half of the state, gravel facies is characterized by creosote bush cover. Thin alluvial gravel covering pediments is denoted by fg over subscript that identifies parent formation
fs	SAND FACIES — Sandy alluvium with subordinate amounts of fine gravel, silt, and clay. Forms at least four kinds of ground: 1) On short, steep fans sloping from the mountains of granitic or gneissic rock (e.g., parts of the Florida Mountains), this facies may form a smooth sandy layer a few feet thick covering gravel below; slopes 5 to 20 percent; washes 1 to 10 ft deep may expose underlying gravel. 2) On other short fans, sand facies may form arcuate belt at toe of fan with slopes averaging 10 percent, commonly reworked into coppice dunes 3 to 7 ft high (sm). 3) Other belts of smooth sandy ground commonly slope 5 percent or less and consist of sand mounds approximately 1 ft high over caliche (fs_2). 4) Gypsiferous sand (fs_3), especially in the Jornada del Muerto, Tularosa Valley and east side of the Pecos Valley. Sand facies absent on the broad Las Palomas surface. Thin fan sand covering pediments is denoted by fs over subscript that identifies underlying formation. Boundary with residual sand, fan gravel, and fan silt is approximate
fsi	SILT FACIES — In Basin and Range parts of the state, toes of fans may be silty and clayey rather than sandy; surface smooth, with slopes less than 5 percent. Slow infiltration rates and low slopes result in sluggish runoff. Forms a belt below the sand facies and grades downward to playa silt (psi) with slopes less than 2 percent. Abundant swelling clays and exchangeable sodium. Surface layers predominantly Holocene, subject to sheet flooding, gradational with al_3. East and west of Sangre de Cristo Mountains, also forms fans of sandy or silty loam with little gravel in upper 3 to 4 ft, but abundant gravel below the loam. Caliche soft. Includes loess on isolated hilltops. Boundary with residual loam (rl), playa silt (psi), and fan sand (fs) approximate

EOLIAN DEPOSITS

Eolian deposits are laid down by wind, mostly as sheets of sand or silt (loess). Rarely, after prolonged drought on shale desert in the San Juan Basin, shale flakes may accumulate in rippled sheets or even small dunes, but with the next rain, these become mud. Sand dune shapes depend on topography, relative strength of the winds, supply of sand, and vegetation. Some dunes are concave towards the windward (parabolic), others are concave towards the leeward (barchans), and others are longitudinal or transverse. Some dune clusters (e.g., Great White Sands) have all four kinds. Dunes may climb a windward slope or fall on a leeward slope. Most of New Mexico's eolian sand sheets have a basal layer of weathered, partly cemented, reddish stabilized sand; some sand surfaces on such layers are smooth. In the Basin and Range and Great Plains parts of the state, these surfaces are generally underlain by caliche; in the San Juan Basin, sand sheets commonly overlie residuum, fan deposits, or bedrock. Where sand is thick, as on sand facies of fans in the Basin and Range and at climbing dunes east of the Pecos River (Mescalero Sands) the sand is in mounds (coppice dunes) with profuse growth of vegetation — mesquite, and saltbush in the Basin and Range, sand sage, shinnery oak, small soapweed yucca, and occasional mesquite on the Mescalero Sands. Sand sheets are predominantly late Pleistocene; mounds and dunes are largely Holocene

s/b	SAND UNDERLAIN BY BASALT — Extensive on basaltic plains south and east of Zuni Mountains and on West Potrillo Mountains. At Kilbourne Hole and Hunt's Hole, the sand is of volcanic origin
s/ca/QTs	SAND UNDERLAIN BY CALICHE ON SANTA FE GROUP — Mostly on La Mesa and south part of the Jornada del Muerto
s_1/ca/To	THIN SAND ON CALICHE ON OGALLALA FORMATION — Thickness about 1 ft. Chips of caliche comprise 30 percent of the sand. Generally too shallow for farming, but good shallow source for aggregates
s_2/ca/To	MODERATELY THICK SAND ON CALICHE ON OGALLALA FORMATION — Sand 1 to 3 ft thick. Surface layers noncalcareous over reddish loam. Local sand mounds. Ground favored for farming. Boundaries approximate
s_3/ca/To	THICK SAND ON CALICHE ON OGALLALA FORMATION — Sand 3 to 5 ft thick. Local mounds. Brownish-red, fine sandy loam over reddish-brown, sandy clay loam, noncalcareous to depths of 3 ft; calcareous subsoil contains filaments of lime carbonate. Where farmed, ground is subject to wind erosion. Boundaries approximate
sm	LOOSE SAND IN MOUNDS — Coppice dunes, commonly 3 to 7 ft high and 25 to 50 ft in diameter, generally elongated north of east but a local exception lies east of Columbus where elongation is south of east. Age is Holocene. Boundaries fairly accurate
es, s	SAND SHEETS — Surfaces smooth except for ripples 2 to 3 inches high and scattered sand mounds 3 to 12 inches high, especially around small shrubs. Thickness of loose sand generally no more than about 12 to 24 inches, but commonly overlies stabilized sand. Underlying material where known identified by subscript
ds	LONGITUDINAL DUNES — Sand commonly 6 ft thick, locally 10 ft. Forms distinct ridges generally oriented north of east. Locations diagrammatic and width exaggerated
ds	OTHER DUNES — ds_1, quartzose sand; ds_2, gypsiferous sand
l/b	LOAM ON OLD BASALTIC LAVA — Probably pre-Wisconsinan loess
si	EOLIAN SILT

EXPLANATION OF SURFICIAL GEOLOGY

by Charles B. Hunt 1977

LAKE AND PLAYA DEPOSITS

New Mexico has five kinds of lake d[illegible] in addition to those forming today on artificial reservoirs. The most extensive deposits were laid down in Pleistocene lakes that flooded closed basins now marked by playas. Many of these deposits in the Basin and Range are alkaline flats. Most numerous are the so-called "buffalo wallows" of the Great Plains on the Ogallala Formation. Some of these wallows are depressed hollows with sand mounds on the lee side; others may be due to solution and subsidence of the surface. Still others may be attributed to warping. The [illegible] sinkholes clearly due to solution, like Bottomless Lakes, yoks at Santa Rosa, and some of the depressions related to karst of the San Andres Formation and co[illegible] covered ground north of the Sacramento Mountains. A fourth type is represented by ephemeral ponds in swales marking cutoff meanders on alluvial floodplains. A fifth type occurs only in the maar volcanoes at Kilbourne Hole, Hunt's Hole, and Zuni Salt Lake. Only the first three types appear on the map. Area of deposits represented has been exaggerated because of map scale, but total area probably about right because smaller deposits are omitted.

psi — SILTY LAKE OR PLAYA DEPOSITS -- *Ground mostly bare, gypsiferous deposits labeled* ps_i

ps — SANDY LAKE OR PLAYA DEPOSITS -- *Gypsiferous deposits labeled* ps_g

be, be_d — BEACH DEPOSITS -- *Sand or gravel; sandy stretches mostly reworked into low dunes. Incompletely shown*

ev — EVAPORITES -- *Saline or alkaline deposits precipitated from brines in playas having high evaporation rates, notably Estancia Valley, Animas Valley, and Zuni Salt Lake. Salts are gradational with playa silt (psi) and occur in orderly concentric zones reflecting relative solubility of the salts. Thicknesses range from 1 to several inches, but salts mixed with sand may be tens of feet deep. Efflorescent crusts subject to wind erosion -- contribute to salinity of ground to leeward*

GLACIAL AND PERIGLACIAL DEPOSITS

During the Pleistocene New Mexico had mountain (alpine) glaciers high on the Sangre de Cristo Range, Tusas Mountains, and Sierra Blanca Peak. The source of such glaciers was in nearly circular, steep-sided basins (cirques) at valley heads. High valleys eroded by the glacial tongues tend to be U-shaped; at lower elevations where eroded by streams, these valleys are V-shaped. Gravels deposited along each side of valley ice represent debris that rolled down the mountainside onto the ice to form lateral moraines. Hummocky ridges of sand and gravel deposited across the lower ends of the glaciers form terminal moraines. Within the cirques generally stand two ramparts of boulders. An inner rampart, forming today, is located at the lower edge of the snowbank that accumulates annually in the cirque; it represents rocks broken by frost from the headwall of the cirque, rolled down the snowbank, and collected at the ridge. These inner ridges are treeless. Farther out in the cirque -- perhaps at the mouth -- is a second ridge, forested, with less unweathered rock darkly stained with iron and manganese oxide. These outer cirque ridges formed during the mid Holocene "little ice age"

mg — DEPOSITS AND GEOMORPHIC FEATURES OF PLEISTOCENE MOUNTAIN GLACIERS -- *Extent exaggerated*

pg_s, pg_t — PERIGLACIAL DEPOSITS ON MOUNTAIN TOPS -- *Primarily represented by boulder fields and patterned ground where frost action was intensive during the glaciations. Extent and boundaries approximate; graded laterally to stony residuum and colluvium*

av — AVALANCHE DEPOSITS -- *Bouldery; some are lag concentrates of boulders where fine grained sediments have been removed by erosion. Deposits narrow and long downslope; commonly 10 to 50 ft thick. Apparently deposited as mudflows during late Pleistocene time when there were numerous perennial mountain snowfields. Frost action at the time was vigorous; sudden thaws could trigger floods or mudflows on the mountainsides. Slow movement downslope may be reactivated in artificial cuts through these deposits if water enters the plane of slippage*

lds — LANDSLIDE DEPOSITS -- *Abundant on slopes of Cretaceous shale. Whereas avalanche deposits are elongate downslope, landslide deposits are short downslope but wide along the contour. Characteristically, they retain a cap of the lava or sandstone sloping into the hillside atop a steep colluvial-covered shale slope. Stabilized landslides may be reactivated if water is allowed to enter the plane of slippage*

MISCELLANEOUS TYPES OF GROUND

BASALT -- *Includes lava flows, lava cones, cones of scoriae, necks, and fields of scoriae. Predominantly Quaternary and late Tertiary; some young enough to have sustained minimal weathering and retained their original structures and shapes are commonly referred to as malpais (Spanish, bad ground). Includes some Tertiary basalt that conspicuously controls the topography. Locally covered by loam (*l/b*, eolian deposits,* al/b*, stream deposits). These older surfaces are more deeply eroded, tilted, and faulted. Individual flows generally less than 50 ft thick; locally, several flows may aggregate a few hundred feet thick. Commonly interbedded with volcanic ash (tuff). Excludes lavas mantled by loess or other sediments; such areas indicated by subscript (e.g.,* l/b *loam over basalt;* fs/b *fan sand over basalt). Boundaries shown are adequate*

OTHER BEDROCK -- *Colluvium or other cover amounts to less than half the area. Only extensive areas are shown; age and rock type keyed by symbol to State geologic map (e.g.,* Kd*, Cretaceous Dakota Sandstone,* Rs *Triassic Santa Rosa Sandstone). Many small areas omitted; indicated boundaries are approximate. Principal formations and subscripts used are:*

Qc – *Galisteo Fm.*
Qbt – *Bandelier Tuff*
Qr – *Rhyolite lava*
QTsf – *Upper Santa Fe Group*
QTs – *Santa Fe Group, undivided, and related formations*
QTg – *Gila Conglomerate*
To – *Ogallala Fm.*
Tsa – *Lower Santa Fe Group*
Tc – *Chuska Sandstone*
Tu – *Alluvial and lacustrine deposits*
Tca – *Carson Conglomerate (generally equivalent to Los Pinos Fm.*
Tpi – *Picuris Tuff*
Tp – *Potosi volcanic series*
Ty – *Tertiary volcanics; largely Datil Fm. in SW, includes some pre-and post Datil volcanic sequences*
Tbb – *Blanco Basin Fm*
Tg – *Galisteo Fm.*
Tsj – *San Jose Fm*
Tn – *Nacimiento Fm*
T – *Tertiary sedimentary formations in Raton district*
TSpc – *Poison Canyon Fm*
TKa – *Animas Fm.*
TKr – *Raton Fm.*
TKoa – *Ojo Alamo Sandstone*
Kv – *Volcanics of Cretaceous age; various composition*
Kkf – *Kirtland Shale and Fruitland Fm.*
Kpc – *Pictured Cliffs Sandstone*
Kl – *Lewis Shale*
Kmv – *Cretaceous sandstone and shale, mostly Mesaverde Fm.*
Kch *Cliffhouse Sandstone*
Kpl *Point Lookout Sandstone*
Ksh *Cretaceous shale*
Kg – *Gallup Sandstone*
Km – *Mancos Shale*
Kd – *Dakota Sandstone*
J *Jurassic, undivided*
Jm *Morrison Fm.*
Jz *Zuni Sandstone*
R, J – *Triassic and Jurassic, undifferentiated*
R – *Triassic, undifferentiated*
Rgc *Glen Canyon Sandstone*
Rc *Chinle Fm.*
Rs *Santa Rosa Sandstone*
Rt *Tecolote Fm.*
Pat – *Artesia Group*
Psa – *San Andres Fm. (limestone)*
Pg *Glorieta Sandstone*
Pc *[illegible] Fm*
P, IP – *Permian, Pennsylvanian*
M, D – *Mississippian, Devonian*
S, O, Ꞓ – *Silurian, Ordovician, Cambrian*
pЄ – *Precambrian*
gr – *Granitic, gneissic, and intrusive rocks of various ages*

Disturbed ground. *Mostly urban areas large enough to show on state base; farmed lands excluded. Includes airports, mined areas, tailings dumps, and feedlots. Incompletely shown*

X — *Open pits for road fill, sand, gravel, caliche, or other aggregates*

Playa-lake depressions. Mostly small closed basins produced by eolian activity and local solution subsidence

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New Mexico State University, Agricultural Experiment Station, Research reports showing soil association and land classification for irrigation for each county

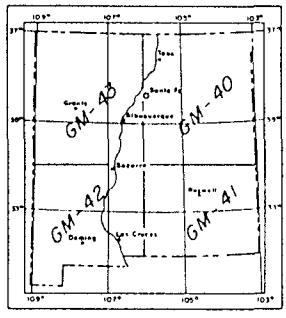
New Mexico State Highway Department supplied data for aggregate resources in New Mexico

Soil Conservation Service, 1/62,500 aerial mosaics of New Mexico Quadrangles

Data from these and other sources were plotted on the 1/250,000 quadrangle maps, field checked with about 40,000 mi of automobile traverses and 20 hours aerial reconnaissance over areas difficult of ground access. Mapping began spring 1974 and was completed June 1976

ACKNOWLEDGMENTS

The author wishes to thank John W. Hawley and Robert H. Weber of the New Mexico Bureau of Mines and Mineral Resources for critically reviewing the maps and explanation; also Neila M. Pearson, for editing the explanation and for handling total cartographic compilation



Index map of New Mexico

YUCCA PLANTS

[illegible] OF NEW MEXICO

EXPLANATION FOR GEOLOGIC MAPS 40, 41, 42 AND 43

INTRODUCTION

Surficial geology concerns the origin, distribution, and significance of deposits and soils at or near the earth's surface. Completely bare bedrock forms probably less than 5 percent of New Mexico's land surface; consequently surficial materials form by far the largest and most-used part of the ground around us. Several aspects of surficial geology that contribute significantly to an understanding of our environment are water yielding properties of the ground; its susceptibility to flooding and erosion; its susceptibility to such hazards as landslides, avalanches, and earthquakes; ease of excavation; suitability for foundations and road building; agricultural potential, including suitability for irrigation or pasturage; and mineral resources potential

Surficial materials commonly are poorly consolidated, consisting partly of bedrock weathered in situ (residuum), but mostly of sediments derived by erosion and transported by water, wind, ice, or gravity (mass wasting) to a site of temporary deposition before being further eroded and transported downslope

Four major categories of surficial materials are distinguished on the map by color: residual materials, transitional deposits, transported deposits, and miscellaneous types of ground

RESIDUAL MATERIALS

Materials generally formed in place, including: residuum, *formed in situ by weathering of a parent formation;* caliche; travertine and related spring deposits; shale or sandstone baked by coal beds burning in situ (clinker); karst and related deposits in sinks; *and the following, which are not distinguished on the map --* organic deposits; desert pavement; cave deposits; and desert varnish

RESIDUUM

In New Mexico, residuum tends to be thin, generally less than 2 ft thick -- rarely as much as 5 ft. Texture depends upon composition of parent rock, and ranges from clay to coarse sand; texture may be bouldery in granitic areas. Areas shown as residuum include small outcrops of parent rocks and some alluvial or eolian deposits either mistaken for residuum or too small to show on the map. These materials are predominantly of late Pleistocene (Wisconsinan) or Holocene age. Ground is hummocky with slopes less than 10 percent; scattered small outcrops of resistant beds form small ledges

rl — LOAMY RESIDUUM — *Texture variable -- mixed clay, silt, and sand. Thickness 1 to 5 ft. Parent formations fine grained, shallow, and identified by subscripts. Where clayey, this residuum generally contains appreciable amounts of swelling clay and is highly susceptible to sodium exchange, especially over the Chinle Formation (subscript* Trc*), Cretaceous shale (subscript* Ksh*), and Tertiary clayey volcanic formations. Slopes locally 10 percent and subject to washing. Although the unit is distinctive, the indicated boundaries are approximate*

rg — STONY RESIDUUM — *Stony residuum, with accompanying sand and silt. Thickness mostly less than 3 ft. Texture variable depending on parent material, indicated by subscript. Boundaries gradational with* co *and* fg

l/b — STONY LOAM OVER BASALT -- *Lithology highly variable; locally abundant clay and silt, probably loessial; stones basaltic, mostly rough scoriae or angular blocks and flakes. Includes alluvium along small washes; numerous basalt mounds and low scarps along some washes and at edges of flows; thickness generally less than 3 ft. Surface smooth; slopes usually less than 5 percent except at sides of washes, bases of volcanic cones (including spatter cones), and edges of flows. Not subject to severe erosion. Boundaries indicated are fairly well defined despite variable lithology; boundaries with alluvium are approximate*

rs — SANDY OR SANDY LOAM RESIDUUM — *The shallow sandy or sandy silt substrates are distinguished by subscripts (e.g.,* rs/Kd*, sandy residuum over Dakota Sandstone). Thickness commonly 1 ft. Subject to wind erosion where vegetation is sparse; minimal washing. A distinctive unit with adequate boundaries, except in the San Juan Basin and along the Canadian River*

r/gyp — GYPSIFEROUS AND SANDY RESIDUUM ALONG PECOS RIVER VALLEY -- *Parent material Artesia* (Pat) *and related formations. Rarely over 2 ft thick. Numerous small outcrops of gypsum thinly mantled by loose sand with or without small pebbles. A distinctive unit; boundaries are approximate*

r/ls — RESIDUUM ON LIMESTONE — *Widespread on east slope of Sacramento Mountains, Chupadera Mesa, and flanks of Zuni Mountains; less extensive on Cretaceous limestone beds south of Raton. Stony and blocky; generally well cemented with calcium carbonate; little subject to erosion. Slopes average steeper than most residuum. Thickness generally less than 2 ft, rarely as much as 5 ft. A distinctive unit; boundaries indicated are adequate*

CALICHE

ca — CALICHE -- *Partly indurated zone of calcium carbonate accumulation formed in upper layers of surficial deposits; 2 to 10 ft thick; commonly overlain by windblown sand. Much caliche shown on the map consists of tough, slabby surface layers underlain by calcium carbonate nodules that grade downward to fibers and veinlets. Especially well developed in Basin and Range and Great Plains parts of the state. Thick caliches (locally >20 ft) associated with undissected High Plains surfaces of the Great Plains commonly comprise an upper sequence of several carbonate-cemented zones interlayered with reddish loamy paleosol horizons over a basal caprock zone developed on Ogallala* (To) *sediments. Forms on various types of parent formations, indicated by subscripts. The extensive caliche along Rio Salado northwest of Socorro is partly a travertine deposit. Where buried by sand, the caliche is identified by subscript* ca. *A distinctive unit; boundaries are well defined where the caliche forms rimrock and approximate where exposed in deflation hollows. Where thick and well indurated, caliche is quarried for road metal and other aggregate, subject to minimal erosion*

SPRING DEPOSITS

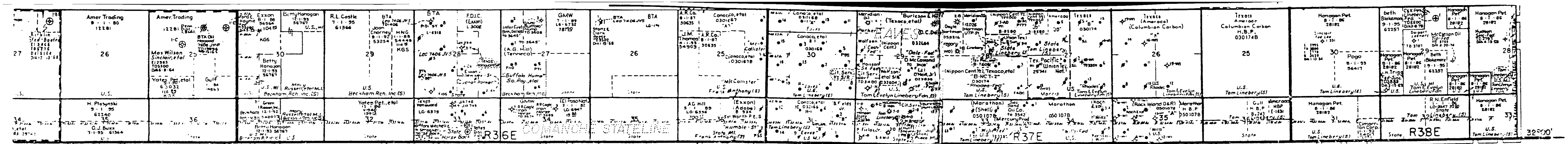
sp — TRAVERTINE AND RELATED DEPOSITS -- *Most deposits shown have been formed at springs discharging water hotter than 100°F (34°C). Travertine mounds and benches to 50 ft high. Deposits at east base of Mesa Lucero may not have been created by hot springs*

CLINKER

cl — SLAGGY COAL ASH AND VITRIFIED SHALE AND SANDSTONE MASSES FUSED BY BURNING COAL BEDS -- *Incompletely shown -- coal may ignite spontaneously, by lightning or ground fire. Depending on oxygen availability, the coal may burn tens of feet back into the ground. Common in coal-bearing formations of San Juan Basin and Raton district. Used for road metal*

KARST DEPRESSION DEPOSITS

ka — KARST-RELATED DEPOSITS — *Underground solution of limestone and gypsum produces caverns or smaller subsurface voids, and causes roof-rock collapse, forming closed karst depressions (sinkholes) at the surface, mantled with blocks of the roof rock. Widespread in San Andres Formation (subscript* Pca*) north of the Sacramento Mountains and on Chupadera Mesa. Sinks commonly 50 ft deep and 500 to 1,000 ft wide. Similar deposits composed of slumped gravel and alluvium along the Pecos River valley are attributed to solution of underlying gypsum or other salts. Slumped beds dip 1 to 5 degrees into the depression; may be overlain by undisturbed gravels. Thickness to 300 ft. Although these are distinctive features, extent and boundaries, largely derived from the 1/250,000 quadrangle maps, are approximate*



LEGEND

- Oil Wells Not Shown
- Wells at Below 5000' or Discovery
- Abandoned Producer
- Completed — Producing Oil
- Completed — Producing Gas
- Dry & Abandoned
- Fee Owner — *Slant Lettering*
- Lease Owner — Vertical Lettering
- State Highway (F.M.)
- State Highway
- U. S. Highway

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Lease and Fee Information
Posted to 2-20-86

Oil Conservation Commission Well Information
Posted to JAN 23 1987
Date Sold JAN 23 1987

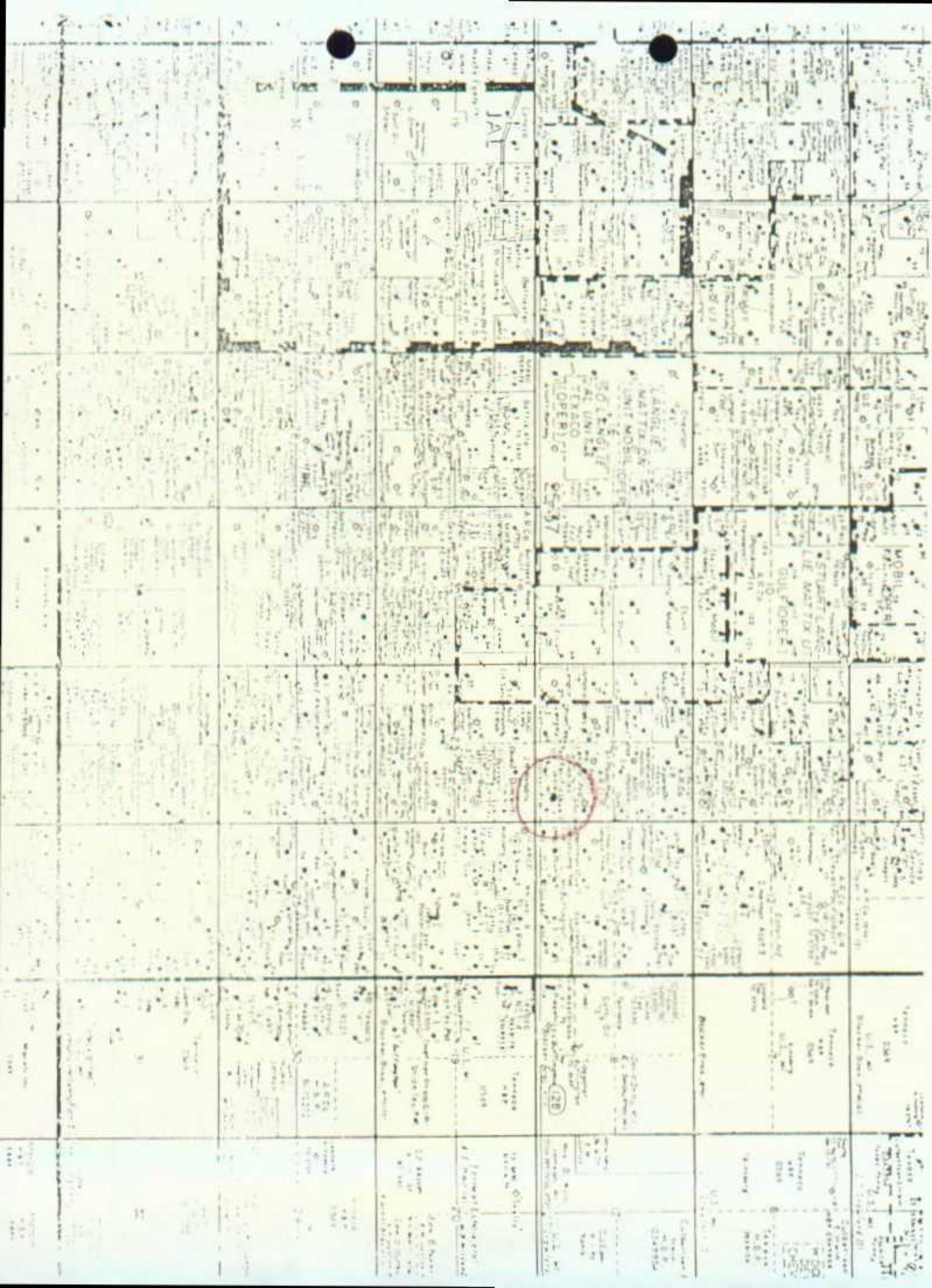
Ownership Map

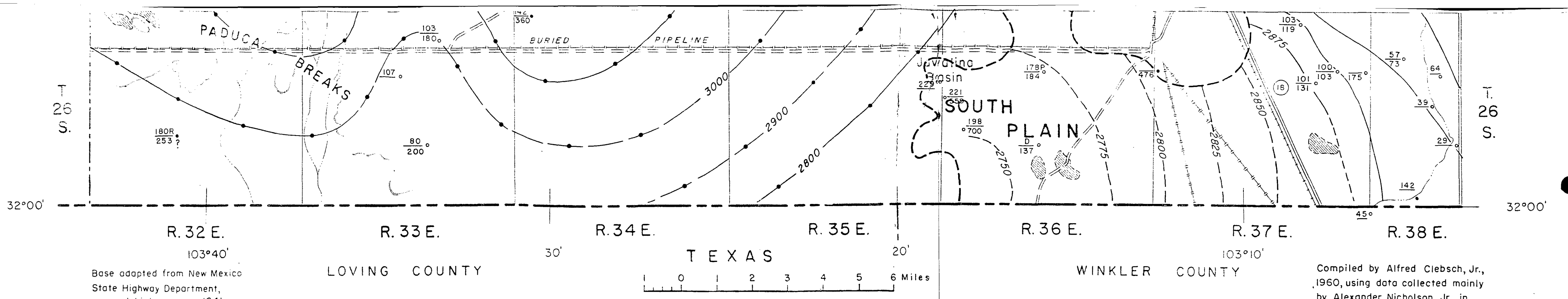
Southeast LEA COUNTY, NEW MEXICO

SCALE: 1" = 4,000 Ft.

REG. NO. F28637

103°20' 103°15' 103°10' 103°05' 32°00'

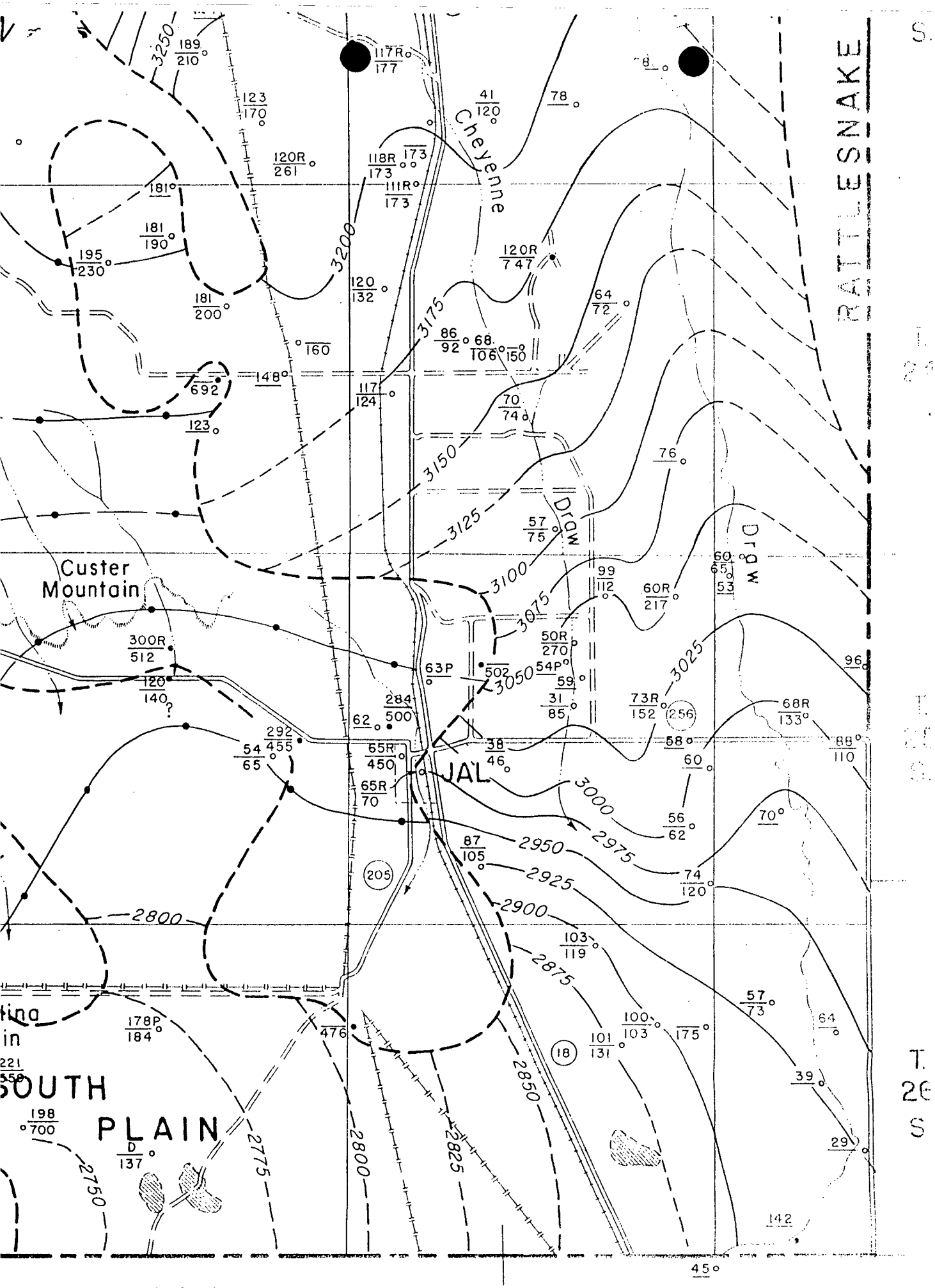

JAL
MOBIL
128



Base adapted from New Mexico State Highway Department, general highway map, 1941.

Compiled by Alfred Ciebsch, Jr., 1960, using data collected mainly by Alexander Nicholson, Jr., in 1953 and 1954.

PLATE 2. GROUND-WATER MAP OF SOUTHERN LEA COUNTY, NEW MEXICO


Custer Mountain
Cheyenne Draw
Draw
RATTLESNAKE
JAL
SOUTH PLAIN
3250
3200
3175
3150
3125
3100
3075
3050
3025
3000
2975
2950
2925
2900
2875
2850
2825
2800
2775
2750
R. 36 E.
R. 37 E.
R. 38 E.
103°10'

EXPLANATION

$\frac{150}{252}$ °

Water well

Upper figure is depth to water; lower figure is depth of well. Open circles are wells finished in Tertiary or Quaternary rocks; solid circles are wells finished in Triassic rocks

F = Flowing
R = Reported
P = Water level measured while pumping
D = Dry
? = Uncertainty as to aquifer
> = More than
< = Less than

(See tables 6 and 7 for detailed well data.)

3925

Water-table contour in Tertiary or Quaternary rocks

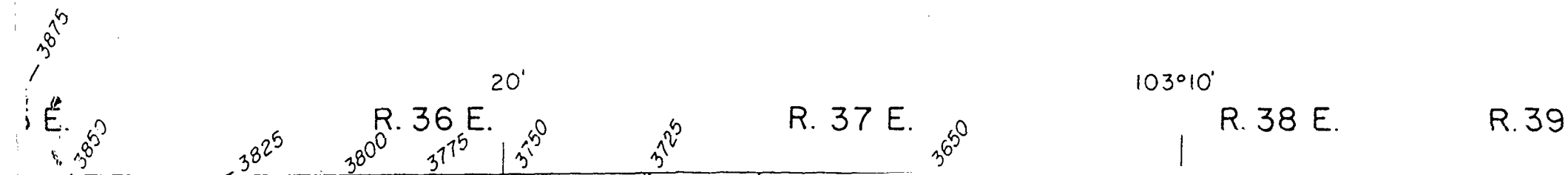
Dashed where inferred or uncertain. Contour interval 25 feet. Datum mean sea level

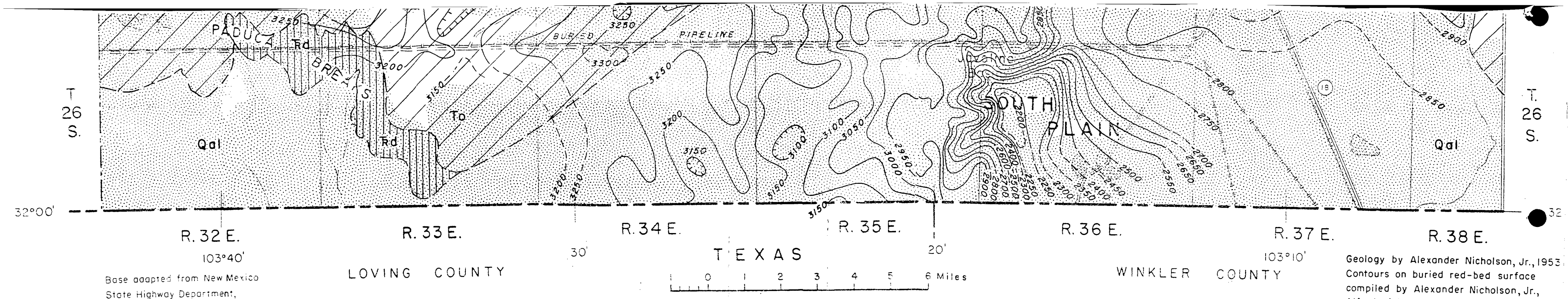
3500

Water-table or piezometric contour on water body in Triassic aquifers

Dashed where inferred or uncertain. Contour interval 100 feet. Datum mean sea level

Approximate position of boundary between Triassic rocks and saturated Tertiary and Quaternary rocks

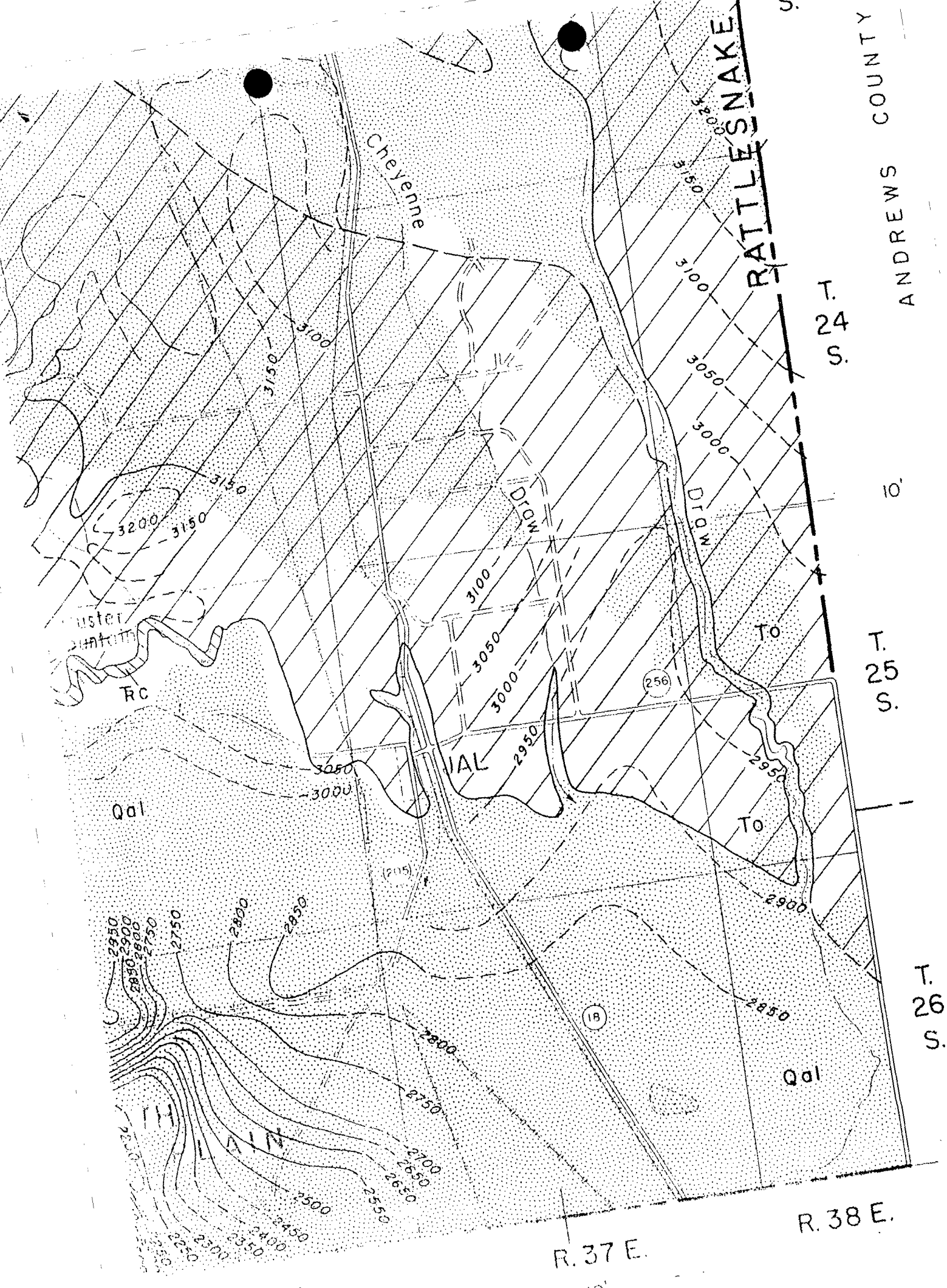




Base adapted from New Mexico State Highway Department, general highway map, 1941.

Geology by Alexander Nicholson, Jr., 1953
Contours on buried red-bed surface compiled by Alexander Nicholson, Jr., Alfred Clebsch, Jr., and S. R. Ash from shothole logs, 1960.

PLATE 1. GEOLOGIC MAP OF SOUTHERN LEA COUNTY, NEW MEXICO


RATTLESNAKE
Cheyenne
Draw
Draw
JAL
ANDREWS COUNTY
T. 24 S.
T. 25 S.
T. 26 S.
R. 37 E.
R. 38 E.
10'
To
To
Qal
Qal
Rc
(256)
(205)
(18)
3200
3150
3100
3050
3000
2950
2900
2850
2800
2750
2700
2650
2600
2550
2500
2450
2400
2350
2300
2250

EXPLANATION

Pleistocene and Recent

Sand

Thin cover of drift sand in most places; locally dunes 20-40 feet high

Qal

Alluvium

Sand and gravel along dry washes; silt and sand in lake beds; includes some wind-deposited sand around depressions

QUATERNARY

Pliocene

To

Ogallala formation

Chiefly sand, poorly to well-cemented with calcium carbonate; contains some clay, silt, and gravel; capped in most places by caliche

TERTIARY

Ku

Cretaceous rocks, undifferentiated

Slumped blocks of buff, tan, or white fossiliferous limestone

CRETACEOUS

Upper Triassic

TRC TRd TRS

Dockum group

TRC-*Chinle formation, red and green claystone, minor siltstone, and fine-grained sandstone;* TRS-*Santa Rosa sandstone, red to white poorly sorted, coarse-grained, crossbedded sandstone;* TRd-*rocks of the Dockum group, undifferentiated*

TRIASSIC

3500

Contours on the red-bed surface

Dashed where approximate or inferred. Contour interval 50 feet. Datum mean sea level

20'

103°10'

R. 36 E. R. 37 E. R. 38 E. R. 39 E

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

February 25, 1991

CERTIFIED MAIL
RETURN RECEIPT NO. P-327-278-331

W. H. Brininstool
Salado Brine Sales
P. O. Drawer A
Jal, New Mexico 88252

RE: Discharge Plan DP-320
Salado Brine Sales Brine Station
Lea County, New Mexico

Dear Mr. Brininstool:

On December 18, 1982, the ground water discharge plan, DP-320 for the Salado Brine Sales Brine Station located in SE/4, Section 14, Township 25, Range 37 East, NMPM, Lea County, New Mexico, was approved by the Director of the Oil Conservation Division (OCD). This discharge plan was required and submitted pursuant to Water Quality Control Commission (WQCC) regulations and was approved for a period of five years. The approval expired on December 18, 1987. Subsequent to approval, administration of the brine program was transferred to the Environmental Improvement Division. Authority to administer the program was returned to OCD in 1989 with staffing approved in 1990.

If your facility continues to have effluent or leachate discharges and you wish to continue discharging, you must renew your discharge plan. Since you discharge plan has expired, please submit your application for renewal of plan approval within sixty days of receipt of this letter. Please indicate whether you have made, or intend to make, any changes in your discharge system, and if so, please include these modifications in your application for renewal. To assist you in preparation of your renewal application, I have enclosed a copy of the OCD's guidelines for preparation of ground water discharge plans at brine extraction facilities, revised February 19, 1991, and a copy of the Water Quality Control Commission Regulations.

395-2010

The OCD visited your unmanned operation on February 6, 1991, as part of an extensive multifacility inspection trip that week. Because of scheduling problems, and the numerous facilities visited, we were unable to notify you of the date and time of arrival in advance. Although not required, our agency generally notifies operators in advance whenever possible giving time of arrival; in this instance it was not possible to do so.

The following comments are based on observations during the OCD site visit on February 6, 1991, and on additional requirements detailed in the guidelines. Please address these comments in your discharge plan renewal application.

1. Leaks and Overflow:

A leak at the wellhead and overflow of fluids in the sump next to the wellhead was observed. The leak at the wellhead needs to be eliminated, the sump needs to be emptied routinely, and the area needs cleaned up. Frequent inspection of the site is necessary for early detection of leaks and spills followed by proper cleanup. Submit a plan for routine inspections of the facility, and a commitment to notify OCD of any leaks or spills.

2. Brine Storage Pit:

Your single-lined brine storage pit meets the old OCD specifications and will not be required to be retrofitted at this time. However, if a leak is detected in the future, the pit will be drained to below the level of the leak, OCD will be notified and the ability of the pond to be adequately repaired will be evaluated by OCD. If replacement of the liner is needed, a double liner shall be installed. To adequately detect leaks at present, OCD requires that the monitor well (sump) be checked bimonthly. Record the date of inspection, results, and inspectors initials in a log. A copy of log entries will be submitted annually to OCD, at the same time the annual pressure test results are submitted.

3. Mechanical Integrity Testing

Pursuant to revised OCD guidelines for discharge plans at brine facilities, all wells must be pressure tested (open-hole) to 500 psi for 4 hours on an annual basis. A pressure test isolating the casing from the formation using either a bridge plug or packer must be conducted at least once every 5 years or during well workovers. Submit a proposal for testing and ensuring the mechanical integrity of the well. The results from a current pressure test will be required prior to the approval of any brine facility discharge plan application or renewal. Note that an OCD representative must be on site to witness all pressure tests.

4. Maximum Injection Pressure

Pursuant to WQCC Regulation Section 5-206, the maximum injection pressure at the wellhead shall not initiate new fractures or propagate existing fractures in the continuing zone. Submit a proposed maximum injection pressure, a measured and/or calculated fracture pressure for the zone being injected into, and a plan to ensure the fracture pressure value will not be exceeded.

5. Volumes of Injection Fluids and Brine

The OCD requires a quarterly report listing, by month, of the volume of fluids injected and produced for comparison to detect underground losses. The last report that OCD has on file for Salado Brine Sales is for the first quarter of 1989. Submit a proposal and schedule for reporting injection fluid and brine production volumes; and submit quarterly volumes for the remainder of 1989 and all of 1990.

6. Closure Plan

The revised OCD guidelines for discharge plans at brine facilities require a general closure plan for actions to be taken when the facility is inactive. Submit a proposal for closure which includes those actions in the guidelines, Section VI.F.5.

Addressing the above items in your application for renewal of your discharge plan will accelerate the review and response time of your application.

If you no longer have such discharges a discharge plan renewal is not needed, please notify this office. If you have any questions, please do not hesitate to contact Kathy Brown at (505) 827-5824.

Sincerely,

David G. Boyer, Hydrogeologist
Environmental Bureau Chief

DGB/KMB/sl

Enclosures

cc: OCD Hobbs Office

2/20/91

SALADO BRINE SALES -

1) $5000 Plugging bond approved 1-22-90.
In the name of William H. Brainstool dba XL, OK because that is the operator (owner) of the well. Salado Brine - sells the brine.

2) Groundwater ⇒ approx 200' deep (200' top, 400' bot) w/ TDS ≈ 1000 mg/l located in tertiary gravels - Ogallala
Nearest freshwater wells > 1 mi

3) Formation mined is Salado (Halite) + overlying Rustler @ 800' - 1060' deep and approx 1000' - 1200' thick

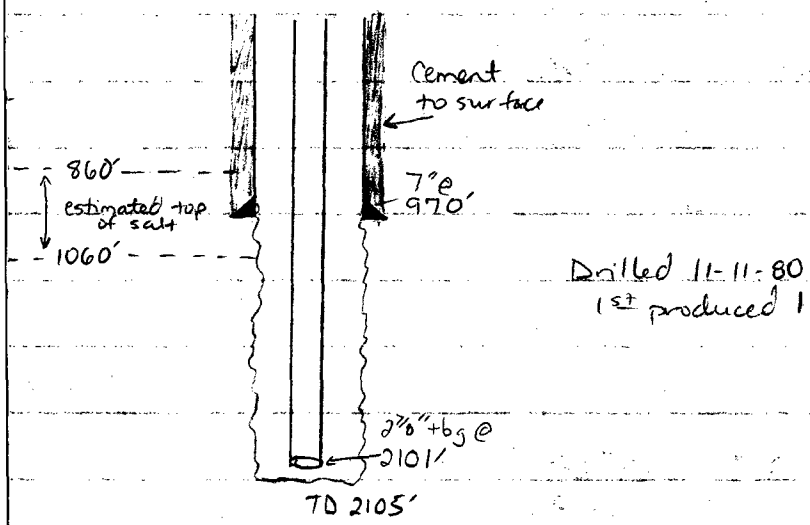
4) Fresh water is provided (via pipeline) from 3 water wells @ Blaker Ranch (not potable for human/animal consumption) located approx ½ mi ℄ east

5) Produced Brine (324,000 ppm) is stored in lined pond via a 1' underground 3" polyethylene pipeline.

6) At loading pad have drain + concrete sump which is periodically vacumned & disposed of in injection well east of Jal.

7) OCD issued discharge plan 12-18-82, expired 12-18-87. Pursued renewal by EID but never approved.

8) Storage pit - 30 mill liner w/ overlap (trench + anchor), Drainage pipes w/in 20' of pit + sloping to concrete sump. →



Drilled 11-11-80
1st produced 1981

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859 WNN

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED 12/01/89	LAB NO. NE 3920	USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235	
Collection DATE 89/11/29	SITE INFORM-ATION	Sample location SALADO BRINE SALES	
Collection TIME 1015		Collection site description BRINE POND	
Collected by — Person/Agency ANDERSON/BOYER /OCD			

OIL CONSERVATION DIVISION RECEIVED '90 JAN 22 AM 9 43

SEND FINAL REPORT TO ►
ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088
Attn: David Boyer
Phone: 827-5812

Station/ well code
Owner

SAMPLING CONDITIONS

☐ Bailed ☒ Dipped ☐ Pump ☐ Tap	Water level	Discharge	Sample type GRAB
pH (00400)	Conductivity (Uncorrected) 500000+ µmho	Water Temp. (00010) °C	Conductivity at 25°C (00094) µmho

Field comments

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted 1

☒ **NF:** Whole sample (Non-filtered) ☐ **F:** Filtered in field with 0.45 µmembrane filter ☐ **A:** 2 ml H_2SO_4/L added

☒ **NA:** No acid added ☐ Other-*specify:* ☐ A: 5ml conc. HNO_3 added ☐ A: 4ml fuming HNO_3 added

ANALYTICAL RESULTS from SAMPLES

NA		Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	141398 135461	µmho	1-3
☐ Total non-filterable residue (suspended) (00530)		mg/l	
☒ Other: pH	7.06		12/14
☐ Other:			
☐ Other:			

A-H_2SO_4			
☐ Nitrate-N +, Nitrate-N total (00630)		mg/l	
☐ Ammonia-N total (00610)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Chemical oxygen demand (00340)		mg/l	
☐ Total organic carbon ( )		mg/l	
☐ Other:			
☐ Other:			

From NF, NA Sample:

			Date Analyzed
☒ Calcium	896	mg/l	12/06
☒ Potassium	2457	mg/l	12/13
☒ Magnesium	1391	mg/l	12/06
☒ Sodium	127,100	mg/l	12/13
☒ Bicarbonate	218	mg/l	12/14
☒ Chloride	210000	mg/l	12/20
☒ Sulfate	8020	mg/l	12/19
☒ Total Solids	410,000	mg/l	12/22
☒ BROMIDE	0.12		12/12/89
☐			
☒ Cation/Anion Balance			

Analyst | Date Reported 1/10/90 | Reviewed by CS

Laboratory remarks

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initals _____

CATIONS				ANIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT	ANALYTE	MEQ.	PPM	DET. LIMIT
Ca	44.71	896.00	<3.0	HC03	3.57	218.00	<1.0
Mg	114.25	1391.00	<0.3	SO4	167.08	8020.00	<10.0
Na	5311.00	122100.00	<10.0	CL	5923.84	#########	<5.0
K	62.84	2457.00	<0.3				
Mn	0.00	0.00		NO3	0.00	0.00	< 0.
Fe	0.00	0.00		C03	0.00	0.00	< 1.
				NH3	0.00	0.00	< 0.
				PO4	0.00	0.00	< 0.
SUMS	5532.80	126844.00			6094.49	#########	

Total Dissolved Solids= 410000
Ion Balance = 90.78%

WC No. = 8903920
Date out/By 1/16

LAB NUMBER RC-89-349
DATE RECEIVED 12-01-89
DATE REPORTED

REPORT TO: Mr. David G. Boyer
NM Oil Conservation Div.
P.O. Box 2088
Santa Fe, NM 87504

User Code: 55430 ~~82235~~

Subr Code: 260

Attention: _____

(X) Water ( ) Soil ( ) Sediment ( ) Vegetation ( ) Air Filter ( )

Sample Location SALADO BRINE POND Sample # 891129 1015

Purpose _____

Date Collected 11/29/89 Time 1015 Name BOYER

Remarks by Collector _____

Sample Preparation

( ) Filtered (X) Non Filtered (X) HNO_3 ( ) H_2SO_4 ( ) _____

pH _____ Temp. _____

Conductivity 50000 umho Conductivity at 25°C _____ umho

ANALYSES REQUESTED

	Units ±	Counting Error	Date Analysed
(X) Gross Alpha (Rel to U 238)			
(X) Gross Alpha (Rel to Am 241)			
(X) Gross Beta			
( ) Uranium 238			
( ) Uranium 235			
( ) Uranium 234			
( ) Thorium 232			
( ) Thorium 230			
( ) Thorium 228			
(X) Radium 226			
(X) Radium 228			
( ) Lead 210			
( ) Polonium 210			
( ) Radon 222			
( ) Gamma Spectroscopy			
( ) Other			

REMARKS BY ANALYST _____

STATE OF NEW MEXICO HEALTH AND ENVIRONMENT DEPARTMENT
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud, NE
Albuquerque, NM 87106 [505]-841-2500
RADIOCHEMISTRY SECTION [505]-841-2574

January 3, 1990

ANALYTICAL REPORT
SLD Accession No. RC-89-0349

Distribution
(■) Submitter
(※) SLD Files

To: Mr. David G. Boyer
NM Oil Conservation Div.
P. O. Box 2088
Santa Fe, NM 87504

From: Radiochemistry Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: **A water sample submitted to this laboratory on December 1, 1989**

DEMOGRAPHIC DATA

COLLECTION
On: 29-Nov-89 *By:* Boy . . .
At: 10:15 hrs. *In/Near:*

LOCATION
Salado Brine Pond

ANALYTICAL RESULTS

Analysis	Value	Sigma	D. Lmt.	Units	Analyst
G-Alpha w/ Am-241 ref.	-250.00	100.00	250.00	pCi/L	Cress
G-Alpha w/ U -nat ref.	-400.00	200.00	400.00	pCi/L	Cress
G-Beta w/ Cs-137 ref.	2500.00	200.00	250.00	pCi/L	Cress
G-Beta w/ Sr/Y90 ref.	2300.00	200.00	250.00	pCi/L	Cress
Ra-226, non-SDWA Mth'd	-0.30	1.00	1.00	pCi/L	Cress
Ra-228, non-SDWA Mth'd	9.00	15.00		pCi/L	Bay
U -238, non-SDWA Mth'd	7.00	2.00		pCi/L	Lusk
U -234, non-SDWA Mth'd	5.00	2.00		pCi/L	Lusk
Th-230, non-SDWA Mth'd	0.80	2.00		pCi/L	Lusk

Notations & Comments:

Uncertainties, sigmas, are expressed as +- one standard deviation, i.e. one standard error.

Small negative or positive values which are less than two(2) standard deviations should be interpreted as: including 'zero'; as 'not detected'; as 'less than the detection limit (<D. Lmt.)' when reported; or 'less than twice the standard deviation'.

Reviewed By: Loren A. Berge
Loren A. Berge, Ph.D. 01/03/90
Supervisor, Radiochemistry Section

OIL CONSERVATION DIVISION
RECEIVED
'90 JAN 5 AM 10 53

SALADO BRINE SALES

Drawer A

Jal, New Mexico 88252

(505) 395-2010

New Mexico Health and Environment Department
Environmental Improvement Division
Ground Water Section
P. O. Box 968
Santa Fe, New Mexico 87504-0968

Attn: Kevin Lambert

Re: DP-320

Dear Mr. Lambert:

Salado Brine Sales pumped 76,211 barrels of fresh water to the brine station and sold 81,900 barrels of produced brine for the first quarter of 1989.

Cordially,

Christine Brininstool
Office Manager

CB/th

Kermit State Bank

Manzy Simms
Senior Vice President

June 1, 1989

State of New Mexico
c/o Director
Enviromental Improvement
Division of the New Mexico
Health and Environment Department
P. O. Box 968
Santa Fe, New Mexico 87504-0968

Dear Sir:

We hereby establish our irrevocable Standby Letter of Credit No. ll-1989 in your favor, at the request and for the account of Salado Brine Sales, P .O. Drawer A, Jal, New Mexico 88252, up to the aggregate amount of Five Thousand and No/100 U.S. dollars ($5,000.00), available upon presentation by you of:

1. Your sight draft, bearing reference to this letter of credit, No. ll-1989; and

2. Your signed statement reading as follows: "I certify that the amount of the draft is payable pursuant to regulations issued under authority of the New Mexico Water Quality Act, Sec. 74-6-1 et seq. NMSA 1978."

This letter of credit may be drawn on to cover any needed proper closing, plugging and abandonment of a well, and hydrogeologic investigation for ground-water contamination costs arising from the injection well identified below in the amount of Five Thousand and No/100 Dollars ($5,000.00) annual aggregate:

New Mexico Discharge Plan Number DP-320
Salado No. 1
Southeast 1/4, Section 14, Township 25 South, Range 37 East

This letter of credit is effective as of June 1, 1989 and shall expire on June 1, 1990, but such expiration date shall be automatically extended for a period of one year on June 1, 1990 and on each successive expiration date, unless, at least 120 days before the current expiration date, we notify both you and Salado Brine Sales by certified mail that we have decided not to extend this letter of credit beyond the current expiration date. In the event that you are so notified, any unused portion of the credit shall be available upon presentation of your sight draft for 120 days after the date of receipt by both you and Salado Brine Sales as shown on the signed return receipts.

Drawer K • Kermit, Texas 79745 • (915) 586-3421

Whenever this letter of credit is drawn on under and in compliance with the terms of this credit, we shall duly honor such draft upon presentation to us, and we shall deposit the amount of the draft directly into the standby trust fund of Salado Brine Sales in accordance with your instructions.

Sincerely,

Manzy Simms

Manzy Simms
Executive Vice-President

June 1, 1989

This credit is subject to the Uniform Customs and Practice for Documentary Credits, ICC Publication No. 290 (1983 Revision).

William H. Brininstool
dba
X L Transportation Company
Jet Disposal System
Salado Brine Sales
Brininstool Ranch

Statement of Assets and Liabilities 1986

Assets		
Cash Kermit State Bank	406,219.00	
First Interstate Bank	18,000.00	
Salado Brine Sales	195,000.00	
Jet Disposal System	206,000.00	
Shearn State Well #1	35,000.00	
Cash Value On Insurance	45,000.00	
Fuel, Oil, Tires and Parts	30,000.00	
Pick-ups and Cars	75,000.00	
X L Transportation Land & Buildings	349,352.00	
Trucks and Trailers Less Depreciation	225,000.00	
Ranch Land	1,100,000.00	
Ranch House	850,000.00	
Property San Angelo	49,000.00	
Home In Jal	175,000.00	
Airplane Seneca III	185,000.00	
Helicopter R22	50,000.00	
Hangar	20,000.00	
Total Assets		4,013,571.00
Liabilities		
Accounts Payable	55,000.00	
Encumbrance in Real Estate	26,000.00	
Total Liabilities		81,000.00

W H Brininstool

William H. Brininstool
dba
X L Transportation Company
Jet Disposal System
Salado Brine Sales
Brininstool Ranch

Statement of Assets and Liabilities 1988

Assets

Cash Kermit State Bank	243,000.00	
Cash First Interstate Bank	14,000.00	
Jet Disposal System	210,000.00	
Salado Brine Sales	205,000.00	
Shearn State Well #1	35,000.00	
Leta Jones Wells #1 & #2	22,000.00	
State IG Well #1	78,000.00	
HNG 4-F State Well #1	32,000.00	
Cash value on Insurance	48,000.00	
Fuel, Oil, Tires and Parts	42,000.00	
Pick-ups and Cars	82,000.00	
X L Transportation Land & Buildings	349,352.00	
Trucks & Trailers Less Depreciation	238,000.00	
Ranch Land	1,100,000.00	
Ranch House	850,000.00	
Property San Angelo	49,000.00	
House San Angelo	75,000.00	
House In Jal	175,000.00	
Airplane 414	220,000.00	
Helicopter R22	50,000.00	
Hangar	20,000.00	
Total Assets		4,137,352.00

Liabilities

Accounts Payable	50,000.00	
Encumbrance in Real Estate	21,000.00	
Total Liabilities		71,000.00

W H Brininstool

~~AOGCC Copy~~

hand delivered 12/7/89

1/9/89 Review of ~~Salado Documentation~~ received 12/9/88

OK 1. Two P&A estimate: Pool Co. #4,250.00; Can Well Service Inc #4,500.00 OK #5,000.00

OK 2. Completion Reports OK

EID Response

OK 1. AOR & Completion Report adequate

OK 2. Must commence Reporting Injected & produced fluid volumes

* 3. P&A adequate must:

A) Obtain FA for #5,000.00 using acceptable financial assurance forms provided. Remembering Trust Agreement must be submitt in conjunction w/ FG Bond, Performance Bond & Letter of Credit

* 4. Self-insurance lacking need

A. F.S. for 1986 & 1988 to supplement 1987.

B. documentation on your fiscal year

C. Type of Company i.e. limited partnership, partnership etc...

J N M Construction Co.

PHONES: 505-395-2523 or 395-2524
NIGHT PHONE 505-395-3089
HIGHWAY 128 P.O. BOX 566
JAL, NEW MEXICO 88252

January 10, 1989

XL Transportation
PO Box
Jal, NM 88252

RE: SALADO BRINE STATION

Attn: Chris Brinistool

We submit our quote to decommission pit and bring back to surface level. The amount of the quote is: One Thousand Eight Hundred and 00/100 Dollars plus all appropriate taxes, (1,800.00 + Tax).

This is submitted under New Mexico Contractor License #22715 with Mr. Jimmy Hill as qualifying party.

Sincerely yours,

Jimmy Hill
President

JRH/klc

cc: file

DONNIE'S WELDING
P.O. Box 1326 PHONE 505 395-3392
JAL, NEW MEXICO 88252

DATE: February 10, 1989

XL Transportation
113 N. Third Street
Jal, NM 88252

WORK DESCRIPTION:

Back-fill brine pit to natural grade terrain.

Bid includes equipment, labor, and taxes **$1,100.00**

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

ENVIRONMENTAL IMPROVEMENT DIVISION
Harold Runnels Bldg.-1190 St. Francis Drive
Santa Fe, New Mexico 87503

Richard Mitzelfelt
Director

GARREY CARRUTHERS
Governor
CARLA L. MUTH
Secretary
MICHAEL J. BURKHART
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

January 10, 1989

Christine Brininstool
Salado Brine Sales
P.O. Drawer A
Jal, New Mexico 88252

RE: Discharge Plan DP-320

Dear Ms. Brininstool:

The Environmental Improvement Division (EID) Ground Water Section has completed review of the material hand delivered to EID staff December 7, 1988. Please address the following questions and comments so that review and evaluation of your renewal application may proceed.

1. The completion reports for the oil wells within a 1/4-mile radius of your brine well satisfy the applicable requirements covering "area of review".

2. EID requests Salado commence quarterly reporting of injected and produced fluid volumes associated with your brine extraction facility (i.e., March, June, September, December).

3. The total amount of the costs for plugging and abandonment is $5,000.00. Therefore, you should use the forms we provided you in our August 2, 1988, correspondence to obtain financial assurance(s) to cover a total amount of $5,000.00. Please note that a trust agreement must also be submitted with a financial guarantee bond, performance bond, or irrevocable standby letter of credit. Submit a copy of your financial assurance and trust agreement as soon as possible, so we may complete our review.

4. Your financial statement for 1987 is currently being reviewed by HED's Office of Internal Audit for adequacy in satisfying the self insurance requirements. They request the following information be submitted to aid in their review: Salado's fiscal year; type of company, e.g. partnership, limited partnership, etc.; and financial statements for 1986 and 1988.

Thank you for your cooperation. Should you have any questions, feel free to contact me at (505) 827-2902 or John Parker at (505) 827-0027.

Sincerely,

Kevin A Lambert

Kevin Lambert
Hydrologist
Ground Water Section - UIC Program

KL/mw

cc: Roelf Ruffner, EID Hobbs Field Office
Garrison McCaslin, EID District IV Manager, Roswell

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

ENVIRONMENTAL IMPROVEMENT DIVISION
Harold Runnels Bldg.-1190 St. Francis Drive
Santa Fe, New Mexico 87503

Richard Mitzelfelt
Director

GARREY CARRUTHERS
Governor
CARLA L. MUTH
Secretary
MICHAEL J. BURKHART
Deputy Secretary

Salado

MEMORANDUM

TO: Hazeldine Romero, Office of Internal Audit

FROM: Ernest C. Rebuck, Program Manager
Kevin Lambert, Hydrologist KL
Ground Water Section

RE: Determination of Net Worth

DATE: December 15, 1988

Attached is a financial statement for W.H. & J.A. Brininstool. Please review and evaluate, and determine net worth. Additional financial statements (e.g. 1986 and current 1988) will be forwarded to you upon receipt by EID Ground Water.

ECR/KL/mw

Attachment

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

ENVIRONMENTAL IMPROVEMENT DIVISION
Harold Runnels Bldg.-1190 St. Francis Drive
Santa Fe, New Mexico 87503

Richard Mitzelfelt
Director

GARREY CARRUTHERS
Governor
CARLA L. MUTH
Secretary
MICHAEL J. BURKHART
Deputy Secretary

December 14, 1988

W.H. Brininstool, Owner
Salado Brine Sales
P.O. Drawer A
Jal, New Mexico 88252

Dear Mr. Brininstool:

The Underground Injection Control staff of the New Mexico Environmental Improvement Division Ground Water Section would like to thank you for your cooperation during our recent inspection of Salado Brine Sales brine facility. A copy of the inspection form is attached for your reference.

Deficiencies noted during the inspection are as follows:

1. Spillage of brine and produced waters near collection system noted. Facility should be free of ponded brine or produced waters, facility should be inspected frequently, and spillage cleaned up when detected.

Thank you for your continued cooperation. Should you have any questions feel free to contact me (827-2902) or John Parker (827-0027).

Sincerely,

Kevin A Lambert

Kevin Lambert
Hydrologist
Ground Water Section - UIC Program

KL/mw

Enclosure

No. of Samples	Ion
1	Na
1	K
1	Ca
1	Mg
1	Cl
1	HCO3
1	CO3
1	SO4
1	TDS
	NO3+ NO2
	NH3
	kjeld N
	As
	Ba
	Cd
	CN
	Cr
	F
	Pb
	Hg
	Se
	Ag
	U
	V
	Ra 226
	Ra 228
	Cu
	Fe
	Mn
	Phenols
	Zn
	Al
	B
	Co
	Mo
	Ni
	pH
	Conduct.

FIELD TRIP REPORT
GROUND WATER SECTION

SLD USER CODES

County Eddy/Lea

Ground Water: 59300

NO_3, HC, & Toxics: 59600

UIC: 59500

FACILITY VISITED

Name of Facility: 20 Brine Facilities & Climax Chemical

Location: Carlsbad/Hobbs in Southeast NM

Discharge Plan Number: DP- See Below

Type of Operation: Brine Production / Chemical Manufacturing

ENVIRONMENTAL IMPROVEMENT DIVISION FIELD VISIT

EID Inspector(s): Lambert

Date of Inspection or Visit: 12/5-8/88

Discharger's Representative Present During EID Visit:

Name:

Title or Position:

Purpose of Visit:

a. Evaluation of Proposed Discharge Plan _____

b. Compliance Inspection of Discharge with Approved Plan _____

c. Other (specify) _____

Inspection Activities During Field Visit:

a. Inspection of Facilities or Construction (specify)

b. Sampling of Effluents (give sampling locations)

c. Sampling of Ground Water (give names or locations of wells)
Sampled M.W. at Marathon

d. Evaluation of geology, soils, water levels or other physical characteristics of the location (specify)

e. Other (specify)

Observations and Information Obtained during the Visit:
The 20 Brine Facilities & Climax are listed below by DP#. See Individual File for specifics

ACTION REQUIRED

#	#	#	#	#
	323	354	370	298
318	324	355	371	426
319	325	360	372	
320	326	361	394	
321	351	369	401	
322				

BRINE STATION INSPECTION FORM

1515

DATE 12/7 1988 EID INSPECTOR Lambert
FACILITY Salado Brine Sale LOCATION JAL
FACILITY REP ON SITE _____ COUNTY Lea

WELL OPERATION Valved for reversal to control salt buildup

WELL IS INJECTING: ✓ THROUGH ANNULUS __ THROUGH TUBING
SOURCE OF FRESH WATER Water Well to East
TRACE INJECTION/PRODUCTION LINES Underground

WELL HEAD PRESSURE _____ PSIG PUMP PRESSURE _____ PSIG
LEAKS AROUND WELL OR PUMP None Looks Good

STORAGE AREA

FOR PONDS: 1 pond brine storage
GENERAL LINER APPEARANCE Hypalon lined Looks good
fenced
AMOUNT OF FREEBOARD ~ 2 feet
ANY SIGN OF OVERFLOW OR LEAKS None In Good Shape
LEAK DETECTION SYSTEM Yes FLUIDS could not get access locked DRY

FOR TANKS: 2 tanks for fresh water makeup
GENERAL APPEARANCE _____
LABLED PLAINLY ✓ YES __ NO
BERMED TO PREVENT RUNOFF ✓ YES __ NO
CHECK CONTENTS TO ASSURE PROPER FLUID/LABLE MATCH _____

NUMBER OF TANKS FOR BRINE ____ FRESH WATER 2

LOADING AREA Looks Good Entire station graded + drains toward collection system near overhead rack

PROPERLY GRADED AND BERMED TO CONTAIN SPILLAGE ✓ YES __ NO
ANY EVIDENCE OF RECENT SPILLAGE ✓ YES __ NO
DOES FACILITY HAVE A SPILL COLLECTION SYSTEM ✓ YES __ NO
ANY EVIDENCE OF OIL SPILLING/DUMPING ✓ YES __ NO
Minor brine & produced water spillage near collection system

MONITORING WELLS Nothing major regrade

DEPTH _____ FT STATIC WATER LEVEL _____ FT BELOW CASING
SAMPLED THIS VISIT __ YES __ NO TEMP _____ Ec _____

COMMENTS Overall in Good Shape
Recommend general cleanup of spillage near collection system i.e. Regrade

96159
216

hand delivered
12/7/88
KAC

ROBERT M HARRIS
CERTIFIED PUBLIC ACCOUNTANT

ACCOUNTANTS COMPILATION REPORT

W.H. & J.A. BRININSTOOL
JAL, NEW MEXICO

THE ACCOMPANYING BALANCE SHEET AS OF NOVEMBER 30 1987 , AND RELATED STATEMENT OF INCOME FOR THE PERIOD THEN ENDED HAVE BEEN COMPILED BY US, IN ACCORDANCE WITH STANDARDS ESTABLISHED BY THE AMERICAN INSTITUTE OF CERTIFIED PUBLIC ACCOUNTANTS.

A COMPILATION IS LIMITED TO PRESENTING IN THE FORM OF FINANCIAL STATEMENTS INFORMATION THAT IS THE REPRESENTATION OF MANAGEMENT. WE HAVE NOT AUDITED OR REVIEWED THE ACCOMPANYING FINANCIAL STATEMENTS AND, ACCORDINGLY, DO NOT EXPRESS AN OPINION OR ANY OTHER FORM OF ASSURANCE ON THEM.

MANAGEMENT HAS ELECTED TO OMIT SUBSTANTIALLY ALL OF THE DISCLOSURES AND THE STATEMENT OF CHANGES IN FINANCIAL POSITION REQUIRED BY GENERALLY ACCEPTED ACCOUNTING PRINCIPLES. IF THE OMITTED DISCLOSURES AND STATEMENT OF CHANGES IN FINANCIAL POSITION WERE INCLUDED IN THE FINANCIAL STATEMENTS, THEY MIGHT INFLUENCE THE USER'S CONCLUSIONS ABOUT THE COMPANY'S FINANCIAL POSITION, RESULTS OF OPERATIONS, AND CHANGES IN FINANCIAL POSITION. ACCORDINGLY, THESE FINANCIAL STATEMENTS ARE NOT DESIGNED FOR THOSE WHO ARE NOT INFORMED ABOUT SUCH MATTERS.

DECEMBER 14 1987

Robert M Harris

BALANCE SHEET

ASSETS

CASH:		
CHECK. A/C - F.I.B. REGULAR	25,841.66	
CHECK. A/C - F.I.B. SPECIAL	11,611.31	
SAV. A/C - K.S.B. #60-501-8	36,301.37	
SAV. A/C - K.S.B. #60-602-2	37,482.12	
SAV. A/C - K.S.B. #60-603-0	14,392.05	
SAV. A/C - K.S.B. #60-604-9	25,814.98	
SAV. A/C - K.S.B. #60-605-7	32,001.48	
TOTAL CASH		183,444.97
RECEIVABLES:		
H.F. VAUGHN - $360 / MONTH	25,171.86	
S.H. POPE - $380 / MONTH	18,966.99	
MITCH BRININSTOOL - HOUSE	64,000.00	
MITCH BRININSTOOL - LOAN	1,555.27	
TOTAL RECEIVABLES		109,694.12
RANCH:		
LAND AND RESIDENCE - MEMO	1.00	
PROPERTY AND EQUIPMENT	153,514.75	
-ACCUMULATED DEPRECIATION	142,984.31CR	
DEPRECIABLE LIVESTOCK	39,660.00	
-ACCUMULATED DEPRECIATION	8,271.95CR	
NET RANCH PROPERTY		41,919.49
OIL AND GAS PROPERTIES:		
SHEARN STATE #1 -EQUIPMENT	34,500.00	
-ACCUMULATED DEPRECIATION	12,132.50CR	
EDWARDS #1 -EQUIPMENT	3,303.08	
-ACCUMULATED DEPRECIATION	434.39CR	
LETA JONES #1 & #2-EQUIPMENT	35,441.70	
-ACCUMULATED DEPRECIATION	6,464.45CR	
STATE I.G. -EQUIPMENT	82,467.69	
-ACCUMULATED DEPRECIATION	4,144.43CR	
NET OIL AND GAS PROPERTIES		132,536.70
OTHER REAL ESTATE:		
COMMERCIAL BUILDING - ARCO	34,073.00	
-ACCUMULATED DEPRECIATION	13,311.88CR	
SAN ANGELO PROPERTY	30,170.70	
JAL LOTS - MEMO	1.00	
NET OTHER REAL ESTATE		50,932.82
OTHER INVESTMENTS:		

XL TRANS.:	BEGINNING OF YEAR	192,002.37	
	CURRENT ACTIVITY	226,160.35	
	EARNINGS OR LOSS	98,002.93	
COMMON STK.-JET DISPOSAL, INC		86,121.00	
COMMON STK.-SALADO, INC.		1,000.00	
CASH VALUE OF LIFE INSURANCE		57,538.56	
TOTAL OTHER INVESTMENTS			660,825.21
TOTAL ASSETS			1,179,353.31

BALANCE SHEET

LIABILITIES & NET WORTH

LIABILITIES:		
FEDERAL INCOME TAX	4,228.00	
N.M. INCOME TAX	2,994.76	
NOTE - JET DISPOSAL, INC.	116,693.82CR	
ACCRUED INTEREST - JET, INC.	10,372.78CR	
NOTE-DOVE CREEK PROP.-293/MO	24,552.85CR	
NOTE-DOVE CREEK PROP.-216/MO	18,125.95CR	
TOTAL LIABILITIES		162,522.64CR
NET WORTH:		
BALANCE AT BEGINNING OF YEAR	927,366.02CR	
NET EARNINGS/LOSS:RANCH	21,840.53CR	
OIL & GAS	7,740.98CR	
OTHER INC.	137,832.48CR	
OTHER EXP.	77,949.34	
TOTAL NET WORTH		1,016,830.67CR
TOTAL LIAB. & NET WORTH		1,179,353.31CR

SEE ACCOUNTANTS COMPILATION REPORT
NOVEMBER 30 1987

PAGE

	CURRENT PERIOD	PERCENT	11 MONTH TO DATE	PERC
RANCH OPERATIONS				
INCOME:				
CATTLE SALES - RAISED	21,439.29CR		51,228.24CR	
CATTLE SALES - PURCHASED	4,384.44		4,384.44	
WATER SALES			6,917.00CR	
SURFACE DAMAGES	7,000.00CR		7,000.00CR	
AGRICULTURE PROGRAM PAYMENTS	3,500.00CR		3,500.00CR	
TOTAL INCOME	27,554.85CR		64,260.80CR	
COSTS AND EXPENSES:				
CATTLE PURCHASES	23,115.00CR			
LABOR			1,440.50	
FEED AND HAY	8,537.30		20,497.52	
SUPPLIES	3,143.16		7,044.59	
REPAIRS AND MAINTENANCE	1,497.61		1,801.86	
GRAZING LEASE	1,284.57		3,294.72	
VETERINARIAN			335.42	
OTHER TAXES AND LICENSES			101.00	
DUES AND SUBSCRIPTIONS	50.00		187.00	
UTILITIES AND PROPANE	75.43		75.43	
FREIGHT			1,017.00	
DEPRECIATION	1,602.07		6,563.36	
OTHER EXPENSES			61.87	
TOTAL COSTS AND EXPENSES	6,924.86CR		42,420.27	
NET EARNINGS OR LOSS	34,479.71CR		21,840.53CR	

	CURRENT PERIOD	PERCENT	11 MONTH TO DATE	PERC
OIL AND GAS OPERATIONS				
SHEARN STATE #1:				
INCOME:				
OIL	7,138.03CR		29,577.61CR	
GAS	783.89CR		3,694.81CR	
TOTAL INCOME	7,921.92CR		33,272.42CR	
EXPENSES:				
CONTRACT PUMPING	600.00		2,200.00	
UTILITIES	36.36		501.62	
REPAIRS AND MAINTENANCE	2,112.28		3,016.34	
ROYALTIES	12.17		215.69	
PRODUCTION TAXES	51.82		51.82	
DEPRECIATION	1,897.50		6,957.50	
DEPLETION	-4,990.86		4,990.86	
TOTAL EXPENSES	-9,700.99		17,933.83	
NET EARNINGS OR LOSS	1,779.07		15,338.59CR	
- - - - - - - - - - - - - - - -				
EDWARDS #1:				
INCOME:				
OIL	128.90CR		536.67CR	
GAS			187.17CR	
TOTAL INCOME	128.90CR		723.84CR	
EXPENSES:				
INTANGIBLE DRILLING COSTS			1,783.78	
LEASE OPERATING COSTS	106.71		3,052.02	
DEPRECIATION	74.36		290.75	
TOTAL EXPENSES	181.07		5,126.55	
NET EARNINGS OR LOSS	52.17		4,402.71	
- - - - - - - - - - - - - - - -				
LETA JONES #1 & #2:				
INCOME:				
OIL	23,300.37CR		23,300.37CR	
GAS	1,371.91CR		1,371.91CR	
TOTAL INCOME	24,672.28CR		24,672.28CR	
EXPENSES:				

	CURRENT PERIOD	PERCENT	11 MONTH TO DATE	PERC
CONTRACT PUMPING	300.00		300.00	
TREATING	354.64		394.34	
HAULING AND DISPOSAL	1,051.80		1,051.80	
UTILITIES	1,155.78		2,100.60	
REPAIRS AND MAINTENANCE	12,994.58		12,994.58	
DEPRECIATION	1,041.04		4,214.45	
DEPLETION	1,777.15		1,777.15	
OTHER EXPENSES			62.25	
TOTAL EXPENSES	18,674.99		22,895.17	
NET EARNINGS OR LOSS	5,997.29CR		1,777.11CR	
- - - - - - - - - - - - - - - -				
STATE I.G.:				
INCOME:				
OIL	15,638.49CR		15,638.49CR	
TOTAL INCOME	15,638.49CR		15,638.49CR	
EXPENSES:				
CONTRACT PUMPING	786.57		1,097.25	
TREATING	236.59		236.59	
HAULING AND DISPOSAL	1,995.26		2,748.06	
REPAIRS AND MAINTENANCE	10,976.90		12,158.44	
DEPRECIATION	460.50		4,144.43	
SUPPLIES	106.21		106.21	
OTHER EXPENSES	275.00		285.00	
TOTAL EXPENSES	14,837.03		20,775.98	
NET EARNINGS OR LOSS	801.46CR		5,137.49	
- - - - - - - - - - - - - - - -				
OTHER OIL AND GAS:				
OIL ROYALTY - ENRON			107.12CR	
DEPLETION	16.07		16.07	
GAS ROYALTY - CITIES SERVICE	12.03CR		87.56CR	
DEPLETION	13.13		13.13	
NET EARNINGS OR LOSS	17.17		165.48CR	
TOTAL OIL AND GAS ACTIVITY	4,950.34CR		7,740.98CR	

	CURRENT PERIOD	PERCENT	11 MONTH TO DATE	PERC
OTHER INCOME				
X L TRANSPORTATION - NET	31,511.52CR		98,002.93CR	
SALADO, INC. - SALARY	20,000.00CR		20,000.00CR	
INTEREST: KERMIT STATE BANK	1,868.96CR		10,490.85CR	
H.F. VAUGHN	823.70CR		3,343.01CR	
S.H. POPE	840.48CR		2,606.61CR	
MITCH BRININSTOOL	69.26CR		413.28CR	
ARCO BLDG.: RENT	1,200.00CR		4,400.00CR	
DEPRECIATION	744.14		2,728.52	
NON-TAXABLE RECEIPTS			1,304.32CR	
TOTAL OTHER INCOME	55,569.78CR		137,832.48CR	

	CURRENT PERIOD	PERCENT	11 MONTH TO DATE	PERC
OTHER EXPENSES				
INTEREST: DOVE CREEK DEV.	1,021.67		3,803.52	
JET DISPOSAL, INC.	2,593.19		10,372.78	
PROPERTY TAXES	1,120.11		1,792.96	
CONTRIBUTIONS	2,000.00		2,000.00	
MEDICAL EXPENSES	2,764.07		4,065.66	
SAFE DEPOSIT BOX RENT	55.00		55.00	
PERSONAL EXPENSES	5,634.79		55,859.42	
TOTAL OTHER EXPENSES	15,188.83		77,949.34	

NUMBER OF COPIES RECEIVED			
DISTRIBUTION			
SANTA FE			
FILE			
U.S.G.S.			
LAND OFFICE			
TRANSPORTER	OIL		
	GAS		
PRORATION OFFICE			
OPERATOR			

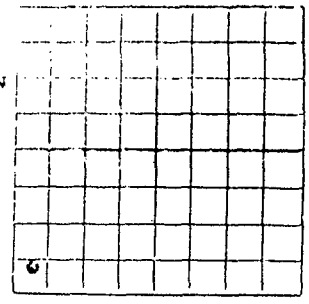
Revised 7/1/58
Form C-105

NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico, Nov 25 1963 8:58

WELL RECORD

Mail to District Office, Oil Conservation Commission, to which Form C-101 was sent not later than twenty days after completion of well. Follow instructions in Rules and Regulations of the Commission. Submit in QUINTUPLICATE If State Land submit 6 Copies



AREA 640 ACRES
LOCATE WELL CORRECTLY

Gulf Oil Corporation (Company or Operator) Learcy McBuffington (Lease)

Well No. 13, in SW ¼ of SW ¼, of Sec. 13, T. 25 S, R. 37 E, NMPM.

Justis Blinebry Pool, Lea County.

Well is 330 feet from South line and 330 feet from West line of Section 13. If State Land the Oil and Gas Lease No. is

Drilling Commenced 12-14, 1962 Drilling was Completed 1-7, 1963

Name of Drilling Contractor Moran Oil Producing & Drilling Company

Address P. O. Box 1718, Hobbs, New Mexico

Elevation above sea level at ~~Top of Tubing Head~~ ground level 3089.71 The information given is to be kept confidential until -, 19

OIL SANDS OR ZONES

No. 1, from to No. 4, from to

No. 2, from to No. 5, from to

No. 3, from to No. 6, from to

RECEIVED
DEC 09 1988
GROUND WATER BUREAU

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from to feet.

No. 2, from to feet.

No. 3, from to feet.

No. 4, from to feet.

CASING RECORD

SIZE	WEIGHT PER FOOT	NEW OR USED	AMOUNT	KIND OF SHOE	CUT AND PULLED FROM	PERFORATIONS	PURPOSE
9-5/8	40	Used	902	Rector	-	-	
4-1/2	9.5	New	5546	Larkin	-	5443 - 5515	Blinebry

MUDDING AND CEMENTING RECORD

SIZE OF HOLE	SIZE OF CASING	WHERE SET	NO. SACKS OF CEMENT	METHOD USED	MUD GRAVITY	AMOUNT OF MUD USED
12-1/4	9-5/8	907	310	P&P		
8-3/4	4-1/2	5559	640	P&P		

Hand delivered 12/7/88 KAC

RECORD OF PRODUCTION AND STIMULATION

(Record the Process used, No. of Qts. or Gals. used, interval treated or shot.)

Spotted 1000 gal 15% NE acid, perforated 4½" casing 5443-47, 5473-77, 5511-15', frac in 3 stages, each stage 1000 gal gelled lease oil w/1/10# SFPG and 4000 gal gelled lease oil w/1/10# SFPG & 1½# (20-40) SPG w/RCR ball sealers between stages.

Result of Production Stimulation After recovery of load oil, well flowed 97 BO, 2 BW in 9 hrs, thru 2-3/8" tbg, 14/64" choke.

Depth Cleaned Out

RECORD OF DRILL-STEM AND SPECIAL TESTS

If drill-stem or other special tests or deviation surveys were made, submit report on separate sheet and attach hereto

TOOLS USED

Rotary tools were used from 0 feet to 5559 feet, and from ..... feet to ..... feet.

Cable tools were used from ..... feet to ..... feet, and from ..... feet to ..... feet.

PRODUCTION

Put to Producing 1-23, 19 63

OIL WELL: The production during the first 24 hours was 89 barrels of liquid of which 98 % was was oil; ..... % was emulsion; 2 % water; and ..... % was sediment. A.P.I. Gravity 39.5

GAS WELL: The production during the first 24 hours was ..... M.C.F. plus ..... barrels of liquid Hydrocarbon. Shut in Pressure ..... lbs.

Length of Time Shut in .....

PLEASE INDICATE BELOW FORMATION TOPS (IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE):

Southeastern New Mexico		Northwestern New Mexico		Northwestern New Mexico	
T. Anhy	818	T. Devonian		T. Ojo Alamo	
T. Salt	1105	T. Silurian		T. Kirtland-Fruitland	
B. Salt	2176	T. Montoya		T. Farmington	
T. Yates	2326	T. Simpson		T. Pictured Cliffs	
T. 7 Rivers	2555	T. McKee		T. Menefee	
T. Queen Penrose	3120	T. Ellenburger		T. Point Lookout	
T. Grayburg Glorita	4630	T. Gr. Wash		T. Mancos	
T. San Andres Blinebry	5010	T. Granite		T. Dakota	
T. Glorieta		T.		T. Morrison	
T. Drinkard		T.		T. Penn	
T. Tubbs		T.		T.	
T. Abo		T.		T.	
T. Penn		T.		T.	
T. Miss		T.		T.	

FORMATION RECORD

From	To	Thickness in Feet	Formation	From	To	Thickness in Feet	Formation
Ground	KDB	10					
	510	500	Sand				
	818	308	Red Beds				
	1105	287	Anhydrite				
	2176	1071	Salt				
	2326	150	Anhydrite & Dolomite				
	3283	957	Sand & Dolomite				
	5559	2276	Dolomite				

ATTACH SEPARATE SHEET IF ADDITIONAL SPACE IS NEEDED

I hereby swear or affirm that the information given herewith is a complete and correct record of the well and all work done on it so far as can be determined from available records.

January 24, 1963
(Date)

Gulf Oil Corporation
Company or Operator

P. O. Box 980, Kermit, Texas
Address

M. W. Whitaker
Name

Area Engineer
Position or Title

Form 9-330

HOBBS

Budget Bureau No. 42-R355.4.
Approval expires 12-31-60.

U. S. LAND OFFICE New Mexico
SERIAL NUMBER 056968
LEASE OR PERMIT TO PROSPECT Langlie B

1960 AUG 9 AM 9 55

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LOCATE WELL CORRECTLY

LOG OF OIL OR GAS WELL

Company Anderson-Prichard Oil Corporation Address Box 196, Midland, Texas

Lessor or Tract Langlie "B" Field Justis State New Mexico

Well No. 2 Sec. 14 T. 25S R. 37E Meridian NMPM County Lea

Location 330 ft. S of S Line and 1650 ft. W of E Line of Section 14 Elevation 3120 (Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed [signature]

Date August 3, 1960 Title District Engineer

The summary on this page is for the condition of the well at above date.

Commenced drilling 5-24, 1960 Finished drilling 6-19, 1960

OIL OR GAS SANDS OR ZONES

(Denote gas by G)

No. 1, from Tubb 5824' to 5860' No. 4, from ... to ...

No. 2, from Blinebry 5338' to 5460' No. 5, from ... to ...

No. 3, from ... to ... No. 6, from ... to ...

RECEIVED
DEC 09 1988
GROUND WATER BUREAU

IMPORTANT WATER SANDS

No. 1, from ... to ... No. 3, from ... to ...

No. 2, from ... to ... No. 4, from ... to ...

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated From—	Perforated To—	Purpose
9-5/8"	32.3	8	H-40	975	Guide				Surface
	36		J-55						
	40								
7"	20	8	N-80	5999	Guide		5333	5460	Production
	23		J-55				5824	5860	

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
9-5/8"	975	450 Sacks	Pump & Plug		
7"	5999	710 "	Pump & Plug		

PLUGS AND ADAPTERS

Heaving plug—Material ... Length ... Depth set ...

Adapters—Material ... Size ...

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

Hand delivered 12/7/88 KAC

TOOLS USED

Rotary tools were used from 0 feet to 6000 feet, and from ... feet to ... feet

Cable tools were used from ... feet to ... feet, and from ... feet to ... feet

DATES

August 3, 1960 Put to producing 7-25, 1960

The production for the first 24 hours was 93.8 barrels of fluid of which 100 % was oil; ... % emulsion; ... % water; and ... % sediment. Gravity, °Bé. 37°

If gas well, cu. ft. per 24 hours ... Gallons gasoline per 1,000 cu. ft. of gas ...

Rock pressure, lbs. per sq. in. ...

EMPLOYEES

See reverse side for Tubb zone

B. G. Hay, Driller W. L. Carter, Driller

[illegible], Driller ..., Driller

FORMATION RECORD

FOLD | MARK

7"	7559	710		Pump & Plug	

FOLD | MAR

PLUGS AND ADAPTERS

Heaving plug—Material ..... Length ..... Depth set .....

Adapters—Material ..... Size .....

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

TOOLS USED

Rotary tools were used from 0 feet to 6000 feet, and from ..... feet to ..... feet

Cable tools were used from ..... feet to ..... feet, and from ..... feet to ..... feet

DATES

August 3, 19 60 Put to producing 7-26, 19 60

The production for the first 24 hours was 93.8 barrels of fluid of which 100 % was oil; ..... % emulsion; ..... % water; and ..... % sediment.

Gravity, °Bé. 37°

If gas well, cu. ft. per 24 hours ..... Gallons gasoline per 1,000 cu. ft. of gas .....

Rock pressure, lbs. per sq. in. .....

EMPLOYEES

See reverse side for Tubb zone

D. G. Ray, Driller W. L. Carter, Driller

....., Driller ....., Driller

FORMATION RECORD

FROM—	TO—	TOTAL FEET	FORMATION
0	40	40	Sand Caliche
40	975	935	Red & Anhy
975	2375	1400	Anhy, Gyp & Salt
2375	2974	599	Anhy & Lime
2974	5755	2781	Lime
5755	5829	74	Lime & Sand
5829	6000	171	Dolo & Lime TD

FROM— TO— TOTAL FEET FORMATION

FORMATION RECORD—Continued (OVER)

16—43004-4

Form 9-330

COPY TO O. C. C. HOBBS

Budget Bureau No. 42-R355.4.
Approval expires 12-31-60.

U. S. Land Office Las Cruses
Serial Number 056968
Lease or Permit to Prospect Langlie B

1960 FEB 16 AM 10:40

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LOCATE WELL CORRECTLY

LOG OF OIL OR GAS WELL

Company Anderson-Prichard Oil Corporation Address Box 196, Midland, Texas

Lessor or Tract Langlie "B" Field Justis Blinebry State New Mexico

Well No. 1 Sec. 14 T. 25S R. 37E Meridian NMPM County Lea

Location 300 ft. {N./S.} of S. Line and 330 ft. {E./W.} of E. Line of Sec. 14 Elevation 3109
(Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed Clara C. Thomas

Date February 8, 1960 Title District Clerk

The summary on this page is for the condition of the well at above date.

Commenced drilling November 17, 19 59 Finished drilling December 28, 19 59

OIL OR GAS SANDS OR ZONES

(Denote gas by G)

No. 1, from 5375 to 5502 No. 4, from ..... to .....

No. 2, from ..... to ..... No. 5, from ..... to .....

No. 3, from ..... to ..... No. 6, from ..... to .....

DEC 09 1988

IMPORTANT WATER SANDS

GROUND WATER BUREAU

No. 1, from ..... to ..... No. 3, from ..... to .....

No. 2, from ..... to ..... No. 4, from ..... to .....

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated From—	Perforated To—	Purpose
13 3/8	48	8	Rmc	839	Guide				Surface
7	20 & 23	8	J-55	5980	Guide		5375	5502	Production

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
13 3/8	839	700	Pump & Plug		
7	5980	1170	Pump & Plug		

PLUGS AND ADAPTERS

Heaving plug—Material ..... Length ..... Depth set .....

Adapters—Material ..... Size .....

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

TOOLS USED

Rotary tools were used from 0 feet to 5980 feet, and from ..... feet to ..... feet

Cable tools were used from ..... feet to ..... feet, and from ..... feet to ..... feet

DATES

February 8, 19 60 Put to producing February 4, 19 60

The production for the first 24 hours was 392.70 barrels of fluid of which 97 % was oil; ..... % emulsion; ..... % water; and 3 % sediment. Gravity, °Bé. 38.2

If gas well, cu. ft. per 24 hours ..... Gallons gasoline per 1,000 cu. ft. of gas .....

Rock pressure, lbs. per sq. in. .....

EMPLOYEES

C.W. WATSON, Driller R. E. DANVERS, Driller

W.A. SMITH, Driller

Hand delivered 12/7/88 KAL

FOLD | MARK

Heaving plug—Material .... Length .... Depth set ....

Adapters—Material .... Size ....

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

TOOLS USED

Rotary tools were used from 0 feet to 5980 feet, and from .... feet to .... feet

Cable tools were used from .... feet to .... feet, and from .... feet to .... feet

DATES

February 8, 1960 Put to producing February 4, 1960

The production for the first 24 hours was 392.70 barrels of fluid of which 97 % was oil; .... % emulsion; 3 % water; and .... % sediment. Gravity, °Bé. 38.2

If gas well, cu. ft. per 24 hours .... Gallons gasoline per 1,000 cu. ft. of gas ....

Rock pressure, lbs. per sq. in. ....

EMPLOYEES

C.W. WATSON, Driller R. F. DANVERS, Driller

W.A. SMITH, Driller ...., Driller

FORMATION RECORD

FROM—	TO—	TOTAL FEET	FORMATION
0	40	40	Sand & Caliche
40	822	782	Redbed
822	3184	2362	Anhy, Gyp & Lime
3184	5980	2796	Lime

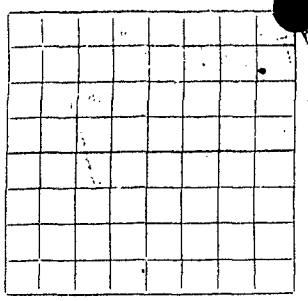
ELECTRIC LOG TOPS

Glorietta	4660
Tubb	5660
Drinkard	5920

[OVER]

16—43094-4

N.



AREA 640 ACRES
LOCATE WELL CORRECTLY

(Revised 7/1/52)
(Form C-106)

NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

HOBBS OFFICE OCC

WELL RECORD

APR 25 AM 9 47

Mail to District Office, Oil Conservation Commission, to which Form C-101 was sent not later than twenty days after completion of well. Follow instructions in Rules and Regulations of the Commission. Submit in QUINTUPLICATE.

Olsen Oil & Inc. (Company or Operator) Wimberly (Lease)

Well No. 2, in SE NE ¼ of NE ¼, of Sec. 23, T. 25S, R. 37E, NMPM.

Undesignated Pool, Lea County.

Well is 990 feet from North line and 330 feet from East line of Section 23. If State Land the Oil and Gas Lease No. is .....

Drilling Commenced 2-12-60, 19..... Drilling was Completed 3-18-60, 19.....

Name of Drilling Contractor R. Olsen

Address 2811 Liberty Bank Building, Oklahoma City Oklahoma

Elevation above sea level at Top of Tubing Head 3084.2 3086.2 GL The information given is to be kept confidential until ....., 19.....

OIL SANDS OR ZONES

No. 1, from 2980 to 3162 O — No. 4, from 5660 to 5919 O

No. 2, from 4648 to 4800 G — No. 5, from 5919 to 5962 O

No. 3, from 5300 to 5510 O — No. 6, from ..... to .....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from ..... to ..... feet. .....

No. 2, from ..... to ..... feet. .....

No. 3, from ..... to ..... feet. .....

No. 4, from ..... to ..... feet. .....

RECEIVED
DEC 09 1988
GROUND WATER BUREAU

hand delivered 12/7/88 KH

CASING RECORD

SIZE	WEIGHT PER FOOT	NEW OR USED	AMOUNT	KIND OF SHOE	CUT AND PULLED FROM	PERFORATIONS	PURPOSE
9 5/8"	36#	Used	832'	Howco			Surface
7"	23#	New	5896.9	Howco			Oilstring
7 7/8"	26.40#	New	89				

MUDDING AND CEMENTING RECORD

SIZE OF HOLE	SIZE OF CASING	WHERE SET	NO. SACKS OF CEMENT	METHOD USED	MUD GRAVITY	AMOUNT OF MUD USED
12¼"	9 5/8"	848	350	Howco		
8 3/4	7"	5986'	660	Howco		160 sx. @ shoe, 500 sx. @ DV Tool @ 5002
8 3/4	7 5/8"	104				

TOP CEMENT 2,000'

RECORD OF PRODUCTION AND STIMULATION

(Record the Process used, No. of Qts. or Gals. used, interval treated or shot.)

NOTE: 7 5/8" Casing on top of 7" for 2½" and 2" Tubing strings.

BLINEBRY ZONE: 500 gal. M.A. + 20,000 gal. Lease Oil + 38,000# sd. + 1,000 gal. M.A.

DRINKARD ZONE: 500 gal. M.A. + 1,000 gal Penetrol acid.

Result of Production Stimulation

Blinebry Zone 384 BOPD

Drinkard Zone 497 BOPD + 43 BWPD

Depth Cleaned Out 5863

RECORD OF DRILL-STEM AND SPECIAL TESTS

If drill-stem or other special tests or deviation surveys were made, submit report on separate sheet and attach hereto

TOOLS USED

Rotary tools were used from Surface feet to 5988 feet, and from ..... feet to ..... feet.

Cable tools were used from ..... feet to ..... feet, and from ..... feet to ..... feet.

Blinebry 4-7-60

PRODUCTION

Put to Producing Drinkard 3-22-60, 19.....

OIL WELL: The production during Drinkard hours was 540 barrels of liquid of which 87.5 % was was oil; ..... % was emulsion; 12.5 % water; and ..... % was sediment. A.P.I. Gravity 41 degrees Blinebry 384 BOPD, 100% oil, Gravity 38.6 degrees.

GAS WELL: The production during the first 24 hours was ..... M.C.F. plus ..... barrels of liquid Hydrocarbon. Shut in Pressure ..... lbs.

Length of Time Shut in .....

PLEASE INDICATE BELOW FORMATION TOPS (IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE):

Southeastern New Mexico				Northwestern New Mexico	
T. Anhy	830	T. Devonian		T. Ojo Alamo	
T. Salt	1015	T. Silurian		T. Kirtland-Fruitland	
B. Salt	2170	T. Montoya		T. Farmington	
T. Yates	2293'	T. Simpson		T. Pictured Cliffs	
T. 7 Riv	2515'	T. McKee		T. Menefee	
T. Queen	2950'	T. Ellenburger		T. Point Lookout	
T. Grayburg		T. Gr. Wash		T. Mancos	
T. San Andres		T. Granite		T. Dakota	
T. Glorieta	4648'	T.		T. Morrison	
T. Drinkard	5919'	T.		T. Penn	
T. Tubbs	5660'	T.		T.	
T. Abo		T.		T.	
T. Penn		T.		T.	
T. Miss		T.		T.	

FORMATION RECORD

From	To	Thickness in Feet	Formation	From	To	Thickness in Feet	Formation
0	830	830	Caliche Red beds.				
830	1015	185	Anhy and Red beds				
1015	2170	1155	Salt, Anhy, Red beds, Potash stringers				
2170	2293	120	Br. Dolomite and anhydrite				
2293	2515	222	Dolomite and Shale and Sand				
2515	2950	435	Dolomite and Sand Stringers				
2950	3250	300	Sand and Dolomite stringers				
3250	4648	1388	Dolomite & few Sand Stringers				
4648	4870	222	Dolomite and Sand				
4870	5075	205	Dolomite and Limestone				
5075	5660	585	Dolomite				
5660	5919	259	Sand and Dolomite				
5919	5988	69	Dolomite				
	T.D.						

ATTACH SEPARATE SHEET IF ADDITIONAL SPACE IS NEEDED

I hereby swear or affirm that the information given herewith is a complete and correct record of the well and all work done on it so far as can be determined from available records.

4-25-60 (Date)

Company or Operator Olsen Oils, Inc. Address Box 691 Jal, New Mexico

Name Jerry Watson Position or Title Engineer

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

Form C-105
Revised 10-1-78

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OPERATOR		

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5a. Indicate Type of Lease: State [ ] Fee [ ]
5. State Oil & Gas Lease No.

1a. TYPE OF WELL
b. TYPE OF COMPLETION
OIL WELL [X] GAS WELL [ ] DRY [ ] OTHER
NEW WELL [ ] WORK OVER [ ] DEEPEN [X] PLUG BACK [ ] DIFF. RESVR. [ ] OTHER DHC-658

7. Unit Agreement Name

8. Farm or Lease Name: Wimberly WN

2. Name of Operator: ARCO Oil & Gas Company

9. Well No.: 7

3. Address of Operator: Box 1610, Midland, TX 79702

10. Field and Pool, or Wildcat: Justis Blinebry; Justis Tubb-Drinkard

4. Location of Well
UNIT LETTER B LOCATED 660 FEET FROM THE North LINE AND 1650 FEET FROM THE East LINE OF SEC. 23 TWP. 25S RGE. 37E NMPM

12. County: Lea

15. Date Spudded	16. Date T.D. Reached	17. Date Compl. (Ready to Prod.)	18. Elevations (DF, RKB, RT, GR, etc.)	19. Elev. Cashinghead
8-9-87	8-20-87	9-1-87	3094 GR	

20. Total Depth	21. Plug Back T.D.	22. If Multiple Compl., How Many	23. Intervals Drilled By	Rotary Tools	Cable Tools
6042	NA		→	5910-6042	

24. Producing Interval(s), of this completion — Top, Bottom, Name
5111-5719 Blinebry
5776-5880 Tubbs
5917-6042 Drinkard

Land delivered 12/7/88 KTC

25. Was Directional Survey Made: No

26. Type Electric and Other Logs Run: CNL

27. Was Well Cored: No

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
10-3/4		904		610 sx - TOC Surf	
7-5/8		5917		1760 sx - TOC Unknown	

29. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN

30. TUBING RECORD

SIZE	DEPTH SET	PACKER SET
2-3/8	5721	

31. Perforation Record (Interval, size and number)
5111-5719
5776-5880
5917-6042 (Open Hole)

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GROUND WATER BUREAU

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
5917-6042	A w/2500 gals
5776-5880	A w/5000 gals
5194-5719	A w/10,000 gals

33. PRODUCTION

Date First Production	Production Method (Flowing, gas lift, pumping — Size and type pump)	Well Status (Prod. or Shut-in)
9-1-87	Pumping	Producing

Date of Test	Hours Tested	Choke Size	Prod'n. For Test Period →	Oil — Bbl.	Gas — MCF	Water — Bbl.	Gas — Oil Ratio
9-18-87	24			9	22	60	2444

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate →	Oil — Bbl.	Gas — MCF	Water — Bbl.	Oil Gravity — API (Corr.)
			9	22	60	

34. Disposition of Gas (Sold, used for fuel, vented, etc.): Sold

Test Witnessed By

35. List of Attachments: CNL Log

36. I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief.

SIGNED Kim Gosnell TITLE Engr. Tech. 915/688-5672 DATE 9-24-88

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, Items 30 through 34 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico				Northwestern New Mexico			
T. Anhy		T. Canyon		T. Ojo Alamo		T. Penn. "B"	
T. Salt		T. Strawn		T. Kirtland-Fruitland		T. Penn. "C"	
B. Salt		T. Atoka		T. Pictured Cliffs		T. Penn. "D"	
T. Yates	2378	T. Miss		T. Cliff House		T. Leadville	
T. 7 Rivers	2606	T. Devonian		T. Menefee		T. Madison	
T. Queen	3028	T. Silurian		T. Point Lookout		T. Elbert	
T. Grayburg	3302	T. Montoya		T. Mancos		T. McCracken	
T. San Andres	3702	T. Simpson		T. Gallup		T. Ignacio Qtzte	
T. Glorieta	4703	T. McKee		Base Greenhorn		T. Granite	
T. Paddock	4941	T. Ellenburger		T. Dakota		T.	
T. Blinebry	5093	T. Gr. Wash		T. Morrison		T.	
T. Tubb	5766	T. Granite		T. Todilto		T.	
T. Drinkard	5946	T. Delaware Sand		T. Entrada		T.	
T. Abo		T. Bone Springs		T. Wingate		T.	
T. Wolfcamp		T.		T. Chinle		T.	
T. Penn.		T.		T. Permian		T.	
T Cisco (Bough C)		T.		T. Penn. "A"		T.	

OIL OR GAS SANDS OR ZONES

No. 1, from ..... to ..... No. 4, from ..... to .....

No. 2, from ..... to ..... No. 5, from ..... to .....

No. 3, from ..... to ..... No. 6, from ..... to .....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from ..... to ..... feet. .....

No. 2, from ..... to ..... feet. .....

No. 3, from ..... to ..... feet. .....

No. 4, from ..... to ..... feet. .....

FORMATION RECORD (Attach additional sheets if necessary)

From	To	Thickness in Feet	Formation	From	To	Thickness in Feet	Formation

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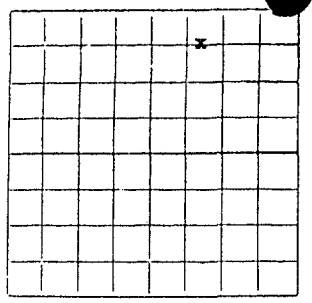

AREA 640 ACRES
LOCATE WELL CORRECTLY

Checked 7/1/58
(Form C-105)

NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

HOBBS OFFICE OCC

1962 JUN 28 AM 10 32

WELL RECORD

Mail to District Office, Oil Conservation Commission, to which Form C-101 was sent not later than twenty days after completion of well. Follow instructions in Rules and Regulations of the Commission. Submit in QUINTUPLICATE. If State Land submit 6 Copies

Western Natural Gas Company (Company or Operator) Wimberley (Lease)

Well No. 7, in NW ¼ of NE ¼, of Sec. 23, T. 25-S, R. 37-E, NMPM.

Justis Blinebry - Justis Tubb Drinkard Pool, Lea County.

Well is 1650 feet from East line and 660 feet from North line of Section 23. If State Land the Oil and Gas Lease No. is Patented

Drilling Commenced 5-15-62, 19.... Drilling was Completed 6-8-62, 19....

Name of Drilling Contractor Great Western Drilling Company

Address Midland, Texas

Elevation above sea level at Top of Tubing Head 3094 The information given is to be kept confidential until Not confidential, 19....

OIL SANDS OR ZONES

No. 1, from 5324 to 5418 No. 4, from ... to ...

No. 2, from 5826 to 5862 No. 5, from ... to ...

No. 3, from ... to ... No. 6, from ... to ...

DEC 09 1988
GROUND WATER BUREAU

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from ... to ... feet. ...

No. 2, from ... to ... feet. ...

No. 3, from ... to ... feet. ...

No. 4, from ... to ... feet. ...

CASING RECORD

SIZE	WEIGHT PER FOOT	NEW OR USED	AMOUNT	KIND OF SHOE	CUT AND PULLED FROM	PERFORATIONS	PURPOSE
10 3/4"	32.75	New	904	Float	None	None	Surface
7 5/8"	39, 33.7, 26.4	New	5903	Float	None	5324-5418	Production
						5826-5862	

Land delivered 12/7/88 KAL

MUDDING AND CEMENTING RECORD

SIZE OF HOLE	SIZE OF CASING	WHERE SET	NO. SACKS OF CEMENT	METHOD USED	MUD GRAVITY	AMOUNT OF MUD USED
15	10 3/4	905	510 sx 6% gel	Pump and		
			100 sx neat	Plug &	9.6#/gal	-
9 7/8	7 5/8	5917	360 sx neat	Pump and		
			1400 sx poz.	Plug	9.9#/gal	-

RECORD OF PRODUCTION AND STIMULATION

(Record the Process used, No. of Qts. or Gals. used, interval treated or shot.)

Perforated interval 5826-5862 w/2 JSPF and intervals of 5324, 5328, 5338, w/1 JS; 5346,5354,5380 and 5418 w/2 JSPF. Fraced interval 5324-5418 feet w/1500 gals reg. acid, 15,000 gals refined oil, 17,000 lbs 10-20 mesh sand at 22.1 BPM at 3000 psi. Acidized interval 5826-5862' with 2000 gals Dowell XM-38 acid at 4½ BPM at 2200 psi.

Result of Production Stimulation Flowed 412 bbls oil and no water in 24 hrs thru 18/64" choke.

Depth Cleaned Out 5910 feet.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

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OIL CONSERVATION DIVISION

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hand delivered 12/7/88 KAL

Form C-103
Revised 10-1-78

5a. Indicate Type of Lease State ☐ Fee ☐

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

OIL WELL ☐ GAS WELL ☐ OTHER-

7. Unit Agreement Name

1. Name of Operator

8. Farm or Lease Name

2. Address of Operator

9. Well No.

4. Location of Well

UNIT LETTER _____ , _____ FEET FROM THE _____ LINE AND _____ FEET FROM THE _____ LINE, SECTION _____ TOWNSHIP _____ RANGE _____ NMPM.

10. Field and Pool, or Wildcat

15. Elevation (Show whether DF, RT, GR, etc.)

12. County

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER _____ ☐		OTHER _____ ☐	

17. Describe Proposed or Completed Operations (*Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work*) SEE RULE 1103.

MIRU-Pull 2 7/8 tubing, GIH w/23/8 work string. Set CIBP @ bottom of casing. Spot 280' cmt plug-spot 400' cmt plug below f/w zone-spot 50' cmt plug @ surface-between cmt plugs spot 10# salt gel. Total cost $4,500.00

RECEIVED
DEC 09 1988
GROUND

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

SIGNED _____ TITLE _____ DATE _____

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

NEW MEXICO
HEALTH AND ENVIRONMENT DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

August 2, 1988

Christine Brininstool
Salado Brine Sales
Drawer A
Jal, NM 88252

RE: Discharge Plan (DP-320)

Dear Ms. Brininstool:

The Water Quality Control Commission (WQCC) Regulations (Section 5-210.B.17) require that all dischargers operating an in situ extraction facility must be able to undertake measures necessary to prevent contamination of ground water having 10,000 mg/l or less TDS after cessation of operations. This includes the proper closing (i.e. decommissioning of surface facilities), plugging and abandonment of well(s), ground water restoration if applicable, and any post-operational monitoring as may be required. Adequate financial assurances for these measures are required along with written documentation for the costs involved prior to approval of a discharge plan application for an in situ extraction operation.

Acceptable forms for the following types of financial assurances to cover the proper closing of surface facilities, and plugging and abandonment of well(s) are available from the EID:

1. Financial Guarantee Bond

2. Performance Bond

3. Trust Agreement

4. Irrevocable Standby Letter of Credit

(note: a trust agreement must also be submitted for options 1, 2, or 4.)

Pursuant to Section 5-210. B. 17. of the WQCC regulations, EID is requiring all applicants for a discharge plan to operate a brine station to have in place financial assurance for the purpose of conducting a hydrogeological investigation. A hydrogeological investigation may be required if there is cause to believe that ground water contamination has occurred resulting from the

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

ENVIRONMENTAL IMPROVEMENT DIVISION

Michael J. Burkhart
Director

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

July 20, 1988

Christine Brininstool
Salado Brine Sales
Drawer A
Jal, NM 88252

RE: Discharge Plan DP-320

Dear Ms. Brininstool:

The Environmental Improvement Division (EID) Ground Water Section has completed review of Salado Brine Sale's (Salado) May 5, 1988, submittal responding to our letter of December 16, 1987, concerning your discharge plan renewal application; DP-320. The EID is presently developing a policy concerning adequate financial assurance for brine operations pursuant to Section 5-210.B.17. of the New Mexico Water Quality Control Commission (WQCC) regulations. Once complete, the EID will notify you by letter concerning the specific information needed for plugging and abandonment, decommissioning of the surface facilities, and ground water investigation.

Please address the following questions and comments so that review and evaluation of your renewal application may proceed while awaiting our letter on financial assurance requirements.

1. Please submit the completion reports for the oil wells, listed below, which are within a ¼-mile radius of your brine well. Be aware that the last two wells listed were not provided in your letter to the EID, but were discovered during our evaluation of the "area of review". Finally completion reports are not required at this time for the additional oil wells you submitted since they are outside the ¼-mile radius of "area of review".

   a. Chevron U.S.A., Inc.
   Lease Name: Learcy McBuffington
   Well No: 13
   Unit letter M, 330 feet from South line and 330 feet from the West line of Section 13, T25S, R37E, NMPM Lea County.

   b. Union Texas Petroleum Corporation
   Lease: Langlie "B"
   Well No: 1
   Unit letter P, 330 feet from the East line and 330 feet from the South line of Section 14, T25S, R37E, NMPM Lea County.

   c. Union Texas Petroleum Corporation
   Lease: Langlie "B"
   Well No: 2
   Unit letter O, 330 feet from the South line and 1650 feet from the East line of Section 14, T25S, R37E, NMPM Lea County.

d. Owner & Name Unknown
Approximately 660 feet from the North line and approximately 1650 feet from the East line of Section 23, T25S, R37E, NMPM Lea County.

e. Owner & Name Unknown
Approximately 990 feet from North line and approximately 330 feet from East line of Section 23, T25S, R37E, NMPM Lea County.

The completion reports are required to document that all known wells within the area of review which may penetrate the injection none are properly sealed, completed, plugged or abandoned (5-203.A.; 5-210.B.3.).

2. Injected and produced fluid volumes shall be reported to the EID commencing September 30, 1988, and quarterly thereafter (i.e., December, March, and June).

3. The plugging and abandonment procedure does not furnish sufficient detail on methods and materials used. A minimum of 100 feet of cement is required above the cast iron bridge plug and at any plugging interval. What is the purpose of the 10 lbs salt gel? Please explain how the cement plugs will be set without the use of bridge plugs. Please submit specific information on plugging and abandonment procedure so that we may determine its adequacy. EID needs written documentation for the cost of plugging and abandonment of the brine well and decommissioning of the surface facilities, and recommends a minimum of these estimates be submitted.

Thank you for your cooperation. Should you have any questions feel free to contact me at (505) 827-2902 or John Parker at (505) 827-0027.

Sincerely,

Kevin A Lambert

Kevin Lambert
Ground Water Hydrologist
Ground Water Section

KL:mc

cc: Roelf Ruffner, EID Hobbs Field Office
Garrison McCaslin, EID District IV Manager, Roswell

5/9/88 Salado Brine R&E of 5/5/88 letter in response to EID letter of 12/16/87

1. Received signed & notarized signatary requirements

2. Submitted Design Specs for lined evaporation ponds

3. Submitted list of all known wells that penetrate injection zone within AOR, 14 Oil/Gas wells
   - According to discharger file search shows all to be properly sealed, completed, or abandoned
   * - EID must verify completion status

EID letter 12/16/87 #4

* 4. No documentation submitted
   - dischargers file search shows every thing to be properly P & A, completed
   - EID will Verify

5. Submitted Pressure Test checks out OK
   Committed to conduct cement bond log in next 5 years

6. Provided commitment to notify this office of well workover etc. - -

7. Provided literature on salt fracture pressure

* 8. Salado will submitt quarterly injected and produced fluid volumes upon EID notification of when to commence reporting

9. Have committed to notify EID w/in 48 hours of leaks, spill or other unanticipated discharges

* 10. Submitted procedure w/ diagram showing abandonment of Brine well
   - No cost estimates to verify bond amount adequate for P&A or decommissioning surface facility
   - Need additional financial surety for hydrogeological investigation

11. Provided reference citation for GW Rpt #6, Geology and Ground Water Conditions in Southern Lea County, NM

12 Included various generalized/specific maps of area geology

13 Will shut-in well and shutdown operation until repairs are made to ~~open~~ system

SALADO BRINE SALES

Drawer A

Jal, New Mexico 88252

(505) 395-2010

I, W. H. Brininstool, attest that Christine Brininstool is duly authorized to represent Salado Brine Sales.

W. H. Brininstool

Signed before me this 18th day of March.

Teresa Henneke
Notary Public

My commission expires: June 7, 1988

SALADO BRINE SALES

Drawer A

(505) 395-2010

Jal, New Mexico 88252

I Certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisoment.

Christine Brininstool

Christine Brininstool

Signed before me this 18th day of March.

Teresa Henneke

Teresa Henneke
Notary Public

My commission expires: June 7, 1988

SALADO BRINE SALES

Drawer A

(505) 395-2010

Jal, New Mexico 88252

May 5, 1988

New Mexico Health and Environment Department
Environmental Improvement Division
Ground Water Section
P. O. Box 968
Santa Fe, New Mexico 87504-0968

Attn: Kevin Lambert
Hydrologist

Re: Known wells within area of review which may penetrate injection zone.

Dear Mr. Lambert:

Attached is a list of all known wells, drill holes, and other conduits within the area of review which may penetrate injection zone. All well files and logs are on file at the Oil Conservation Division, 1000 West Broadway, Hobbs, New Mexico.

With the help of Mr. Eddie Seay of the Oil Conservation Division office, Hobbs, New Mexico, I find all wells, drill holes and other conduits within area of review have no violations on file, are properly sealed, completed or abandoned, therefore, wells, drill holes and other conduits are in compliance.

Cordially,

Christine Brininstool
Office Manager

CB/th

Attached are all know wells within area of review which may penetrate the injection zone. All well files and logs on file at Oil Conservation Division Office in Hobbs, 1000 West Broadway.

Texaco Producing Inc.
Lease Name: A. B. Coates C
Well No. 25
Unit letter A, 990 feet from the North line and 940 feet from the East line of Section 24 Township 25S Range 37E, NMPM Lea County.

Texaco Producing Inc.
Lease Name: A. B. Coates C
Well No. 20
Unit letter A, 990 feet from the North line and 990 feet from the East line of Section 24 Township 25S Range 37E, NMPM Lea County.

Texaco Producing Inc.
Lease Name: A. B. Coates C
Well No. 2
Unit letter A, 660 feet from the North line and 660 from the East line of Section 24 Township 25S Range 37E, NMPM Lea County.

Mobil Producing Texas & New Mexico Inc.
Lease Name: Langlie Mattix Queen Unit
Well No. 31
Unit letter D, 660 feet from the North line and 660 feet from the West line of Section 23 Township 25S Range 37E, NMPM Lea County.

Chevron U.S.A., Inc.
Lease Name: Learcy McBuffington
Well No. 13
Unit letter M, 330 feet from the South line and 330 feet from the West line of Section 13 Township 25S Range 37E, NMPM Lea County.

Chevron U.S.A., Inc.
Lease Name: Learcy McBuffington
Well No. 10
Unit letter L, 1650 feet from the South line and 990 feet from the West line of Section 13 Township 25S Range 37E, NMPM Lea County.

Chevron U.S.A., Inc.
Lease Name: Learcy McBuffington
Well No. 7
Unit letter M, 660 feet from the South line and 990 feet from the West line of Section 13 Township 25S Range 37E, NMPM Lea County.

Chevron U.S.A., Inc.
Lease Name: Learcy McBuffington
Well No. 1
Unit letter L, 1980 feet from the South line and 660 feet from the West line of Section 13 Township 25S Range 37E, NMPM Lea County.

Union Texas Petroleum Corporation
Lease: Langlie "B"
Well No. 1
Unit letter P, 330 feet from the East line and 330 feet from the South line of Section 14 Township 25S Range 37E, NMPM Lea County.

ADR 1/4

Union Texas Petroleum Corporation
Lease: Langlie "B"
Well No. 2
Unit letter O, 330 feet from the South line and 1650 feet from the East line of Section 14 Township 25S Range 37E, NMPM Lea County.

ADR 1/4

Meridian Oil Inc.
Lease Name: Langlie Federal
Well No. 1
Unit letter J, 1980 feet from the South line and 1980 feet from the East line of Section 14 Township 25S Range 37E, NMPM Lea County.

Arco Oil and Gas Company
Lease Name: Langlie Federal
Well No. 1
Unit letter I, 1650 feet from the South line and 330 feet from the East line of Section 14 Township 25S Range 37E, NMPM Lea County.

Arco Oil and Gas Company
Lease Name: Langlie Federal
Well No. 2
Unit letter J, 1650 feet from the South line and 1650 feet from the East line of Section 14 Township 25S Range 37E, NMPM Lea County.

El Paso Exploration Company
Lease Name: Langlie Federal
Well No. 1
Unit letter I, 2310 feet from the South line and 660 feet from the East line of Section 14 Township 25S Range 37E, NMPM Lea County.

~660' from North Line and ~ 1650' from the East line of Sec 23, T25S, R37E

~990' from North Line and ~ 330' from East Line of Sec 23, T25S, R37E

SALADO BRINE SALES

Drawer A

(505) 395-2010

Jal, New Mexico 88252

March 18, 1988

New Mexico Health and Environment Department
Environmental Improvement Division
Ground Water Section
P. O. Box 968
Santa Fe, New Mexico 87504-0968

Attn: Kevin Lambert
Hydrologist

Re: DP-320

Dear Mr. Lambert:

Thank you so much for meeting with me in Santa Fe, February 18, 1988 and discussing the problems I had pertaining to your letter December 16, 1987. Hopefully I have answered all of your questions with this letter and the enclosures that are attached. Please attach this letter and enclosures with Salado Brine Sales discharge plan that was submitted April 23, 1987.

Salado Brine Sales will notify the Water Quality Control Commission prior to commencement of drilling, cementing and casing, well loggings, mechanical integrity tests and any well work-over to allow opportunity for on site inspection by the director or his representative. Also if any well work-over occurs in the next 5 years we will conduct a cement bond log or equivalent procedure.

The injection pressure is approximately 250 psi. Please refer to Petroleum Transaction Vol. 210, 1957 page 153, title Machanics of Hydraulic Fracturing and Applyed Salt Water Mechanics 1977, chapter 3, Physical

Properties and Mechanical Behavior of Evaporities as a reference for comparison of fracture pressure for salt at the injection interval of approximately 2100 feet.

Salado Brine Sales is visually monitored daily by Mr. Brininstool or one of his management employees and inspected on a monthly basis by the Bureau of Land Management. I report monthly to the Bureau of Land Management volumes of produced fluid sold. I also keep monthly records of fresh water used for injection. Please notify Salado Brine Sales when to start quarterly reports of injected and produced fluid volumes.

If we encounter a leak, spill or other unanticipated discharge on the surface or underground, we will notify the Environmental Improvement Division, Ground Water Bureau in Santa Fe or the district office in Hobbs, Lea County within 48 hours.

Upon abandonment, drill holes will be properly sealed to protect water bearing aquifers in a manner approved by the Mining Supervisor of the United States Department of the Interior, Bureau of Land Management. Plugging procedure I propose using is placing a cast iron bridge plug at bottom of casing with 20 sacks of cement on top of plug. A Cement plug at the bottom of the fresh water zone which is approximately 400 feet. The last plug will be a cement plug at the surface. Between all plugs we will fill with 10# salt gel. Decommissioning of surface facilities would consist of selling surface equipment. Storage pit will be dirt filled and made level with the surrounding land.

The maps showing cross-section, vertical and horizontal limits of all ground water having less than 10,000/l TDS and generalized and specific maps and cross-sections depicting both regional and site-specific geology please refer to the following report: Ground Water Report #6, Geology and Ground Water Conditions in Southern Lea County, New Mexico, United States Geological

Survey, State Bureau of Mines and Mineral Resources, New Mexico Institute of Mining & Technology.

If loss of mechanical integrity in the injection well we will shut well down, pull tubing and correct problem. If a leak in pit, pit would be drained and liner repaired.

Should you have any more questions please contact me at 395-2010.

Cordially,

Chris Brininstool

Christine Brininstool
Office Manager

CB/th

Enclosures

S P E C I F I C A T I O N S F O R T H E D E S I G N

A N D C O N S T R U C T I O N

O F L I N E D E V A P O R A T I O N P I T S

NEW MEXICO OIL CONSERVATION COMMISSION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

1. LOCATION

(A) Evaporation pits shall not be located in any watercourse or in any lake-bed, sink-hole, or other depression. Pits adjacent to any such watercourse or depression shall be located safely above the high-water level of such watercourse or depression.

2. DESIGN AND CONSTRUCTION

(A) Evaporation pits shall be so designed and constructed as to provide a minimum of 600 square feet of evaporative surface for each barrel (42 U. S. gallons) of water to be placed in said pits on a daily average basis throughout the year.

(B) Pits shall be located on level ground and shall be approximately square. They shall be constructed by excavating and levelling a maximum of six inches below ground level. Excavated material shall be used to form the levees around the pit, said levees to rise a minimum of 18 inches above ground level.

(C) Levees shall be compacted and shall be so constructed as to have an inside grade no flatter than 1:2. Levees shall have an outside grade no steeper than 1:3 (See Fig. 3).

(D) The top of levees shall be flat and level and shall be at least 18 inches wide.

3. MATERIALS

(A) Materials used for lining evaporation pits shall be impermeable and may be rigid, semi-rigid, or flexible.

(B) If rigid or semi-rigid materials are used, leak-proof expansion joints shall be provided, or the material shall be of sufficient thickness and strength to withstand, without cracking, expansion and contraction and settling movements in the underlying earth.

(C) If flexible membrane types of materials are used, they shall be of at least 30 mil thickness and shall have good resistance to tears or punctures.

(D) All materials used for lining evaporation pits shall be resistant to hydrocarbons, salts, and aqueous acids and alkalis.

They shall be fungus- and rot-resistant and shall be sun-resistant or provision made to protect the material from the sun as specified in Section 6 (E).

4. LEAKAGE DETECTION SYSTEM

(A) A leakage detection system of an approved design shall be built into the pit-bed and shall be inspected and approved by the Commission prior to installation of the liner.

(B) Leakage detection systems may consist of but are not necessarily limited to approved fail-safe electric detection devices or the drainage-and-sump method.

(C) If an electric grid detection system is used, provision must be made for adequately testing all components to ensure the system remains functional.

(D) If the drainage-and-sump method of leakage detection system is used, a network of gravel-packed drainage canals or slotted or perforated drainage pipes shall be installed. The network shall be of sufficient density that no point in the evaporation pit-bed shall be more than 20 feet from a drainage canal or drainage pipe or a lateral thereof. Slope for all drainage lines and laterals shall be at least six inches per 50 feet. All drainage shall be to the outer perimeter of the pit and shall gather into concrete or corrosion-proof metal sumps. (See Fig. 2)

5. PREPARATION OF PIT-BED FOR INSTALLATION OF LINER

(A) The bed of the pit and the inside grades of the levee shall be smooth and compacted and shall be free of holes, rocks, stumps, clods, or any other debris which might rupture the liner. In extremely rocky areas, it will probably be necessary to cover the pit-bed with a compacted layer of sand or other suitable material.

(B) Drainage canals shall be dug and sloped prior to requesting inspection of the pit-bed. They shall not be gravel-filled nor shall they receive the slotted drainage pipe (if used) until after the slope and direction of drainage has been approved.

(C) A trench shall be dug on the top of the levee the entire perimeter of the pit for the purpose of anchoring flexible liners.

This trench shall be located nine inches out from the slope break and shall be a minimum of six inches deep. (See Fig. 3)

6. INSTALLATION OF FLEXIBLE MEMBRANE LINERS

(A) The liner shall be put in place only after the pit-bed, leakage detection system, and levee walls have been inspected and approved by a Commission representative.

(B) The pit liner shall be installed and joints sealed according to manufacturer's specifications and with approval of the Commission representative.

(C) The liner shall be laid as evenly and wrinkle-free as possible and shall rest smoothly on the pit-bed and the inner face of the levees, and shall be of sufficient size to extend down to the bottom of the anchor trench, and to come back out and a minimum of two inches beyond. (See Fig. 3)

(D) An anchor of used pipe, old sucker-rods, or other similar material shall be placed over the liner in the anchor trench and said trench backfilled. The anchor shall extend the entire perimeter of the evaporation pit.

(E) If the lining material used for the pit is not sun-resistant, at least one inch sand or other suitable material shall be spread uniformly to cover the liner over the floor of the pit. Gravel or other wave-resistant material with sufficient angle of repose to remain in place shall be used to cover the sloping inner wall of the levee. This material shall extend at least to the anchor trench.

7. HEADER PIT OR SETTLING TANK

(A) A header pit capable of containing a minimum of 30 days produced water shall be installed to receive the salt water to be evaporated prior to running it into the evaporation pit.

(B) Header pits shall be constructed similarly to evaporation pits (including minimum depth of two feet from top of levee to floor of pit and leakage detection system) and shall be lined with neoprene or some other highly oil-resistant material of at least 30-mil thickness.

(C) Syphons or other suitable means shall be employed to draw water from well beneath the oil-water interface in the header pit for transfer to the evaporation pit. The syphon shall be located as far possible from the inflow line into the header pit.

(D) Header pits shall at all times be kept free of appreciable oil build-up to avoid running oil into the evaporation pit.

(E) A settling tank with a minimum capacity of 30 days water production may be used in lieu of a header pit provided that it shall be maintained in leak-proof condition and provided that the water draw-off connection shall be so located and the water-oil interface so maintained as to prevent any flow of oil into the evaporation pit.

8. FENCES AND SIGNS

(A) A fence shall be constructed and maintained in good condition around the evaporation pit installation. Fences shall be constructed with a minimum of four strands of barbed wire on sturdy posts no more than 20 feet apart. Corners shall be braced in two directions. Fences shall not be constructed on the levees.

(B) A sign not less than 12" x 24" with lettering of not less than two inches shall be posted in a conspicuous place on the fence surrounding the evaporation pit installation. The sign shall be maintained in legible condition and shall identify the operator of the evaporation system, the location of the system by quarter-quarter section, township and range, and the permit number of the permit authorizing the installation.

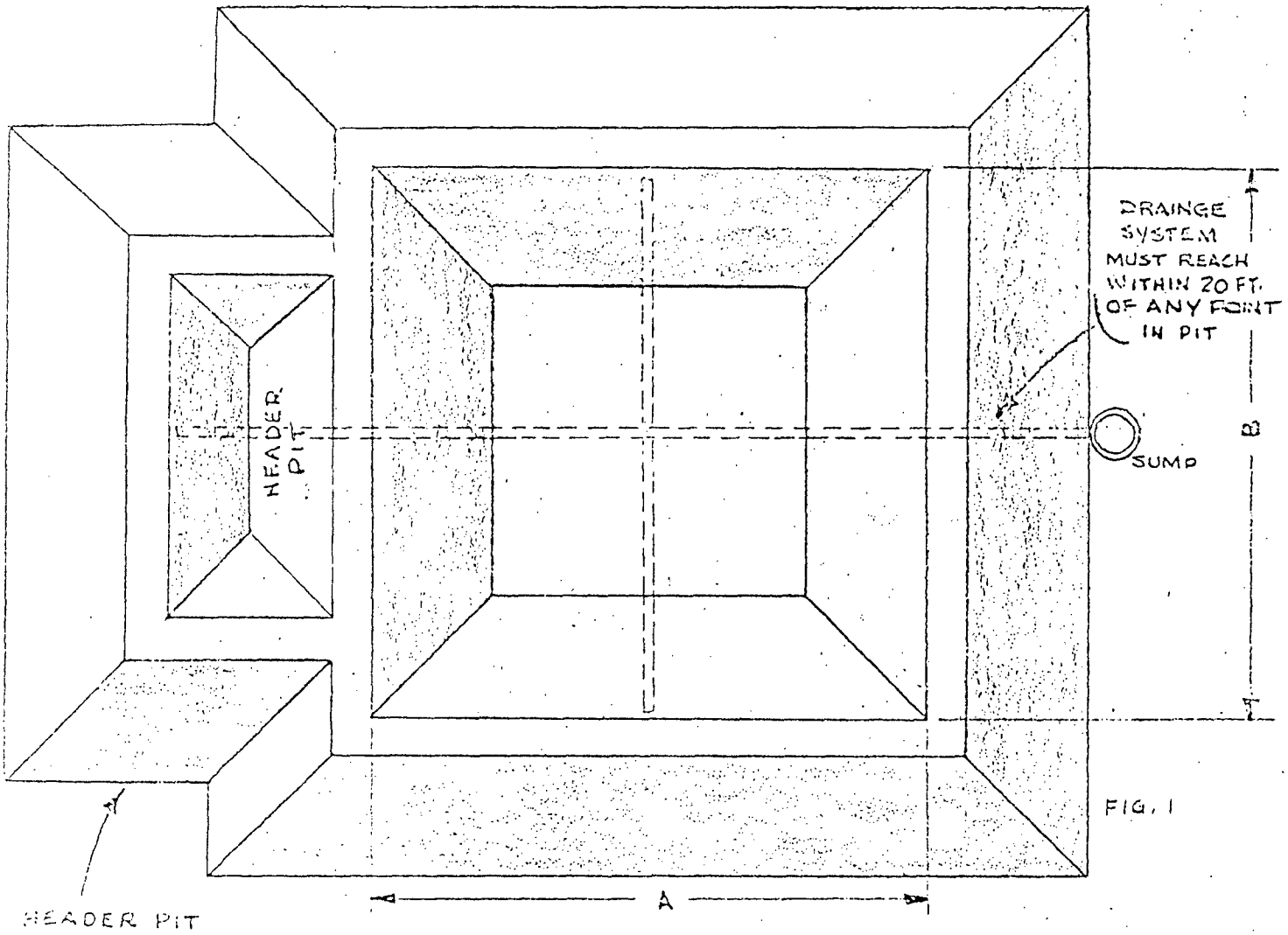


FIG. 1

HEADER PIT MUST HAVE ADEQUATE CAPACITY TO CONTAIN 30 DAYS WATER PROD.

DIM. "A" x "B" MUST EQUAL AT LEAST 600 SQ. FT FOR EACH BBL. OF WATER TO BE PLACED IN PIT ON DAILY AVE. BASIS

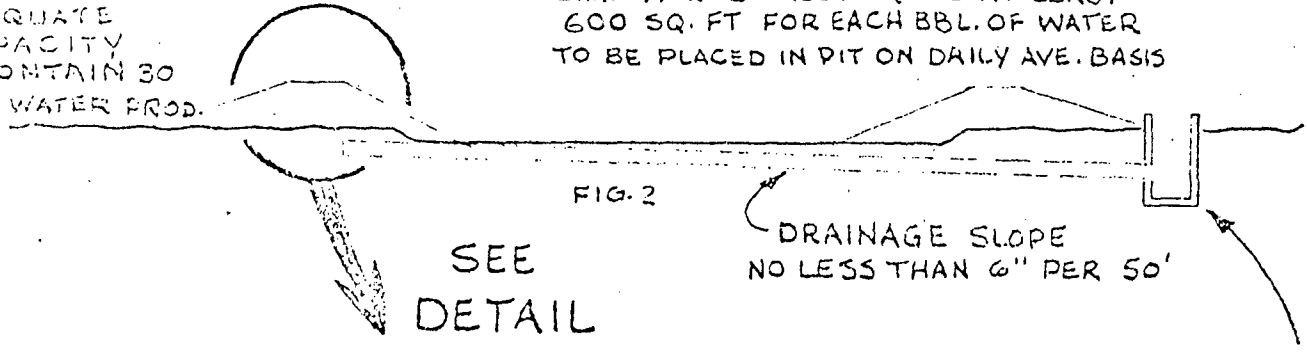


FIG. 2

SEE DETAIL

DRAINAGE SLOPE NO LESS THAN 6" PER 50'

SUMP TO BE OF CONCRETE OR OTHER CORROSION-PROOF MATERIAL & MUST BE KEPT COVERED.

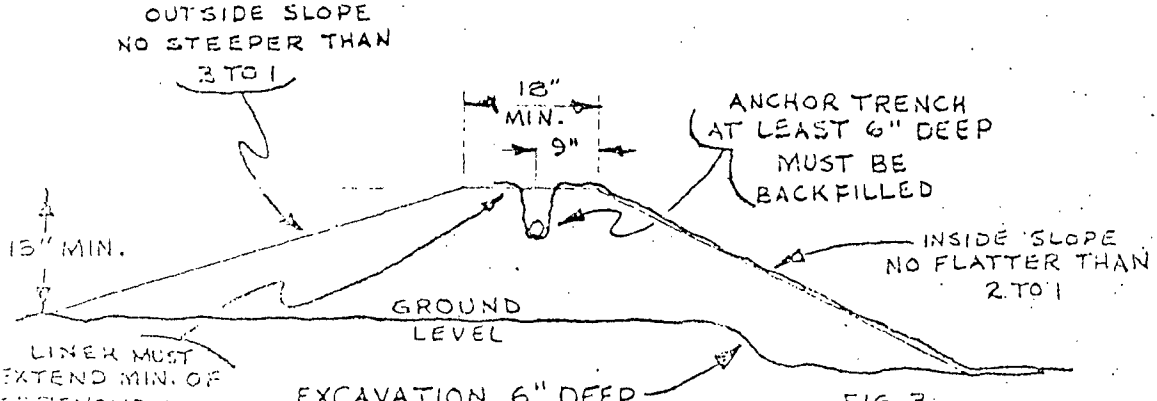


FIG. 3

N.M.O.C.C.

SALT WATER EVAPORATION PIT DESIGN SPECIFICATIONS

Storage pit is approximately 110' x 110' at the top and 90' x 90' at the bottom with a total depth of 10'.

Pit was constructed according to the exact specifications as outlined by the Energy and Minerals Department, Oil Conservation Division-inspected and approved by same office before during and after liner was applied.

Pit is located on level ground and constructed square. A drainage-and-sump method of leakage detection system was used. A network of slotted drainage pipes were installed. The network is of sufficient density that no point in the evaporation pit-bed is more than 20 feet from a drainage pipe or a lateral thereof. Slope for all drainage lines and laterals are at least six inches per 50 feet. All drainage is to the outer perimeter of the pit and shall gather into a concrete sump.

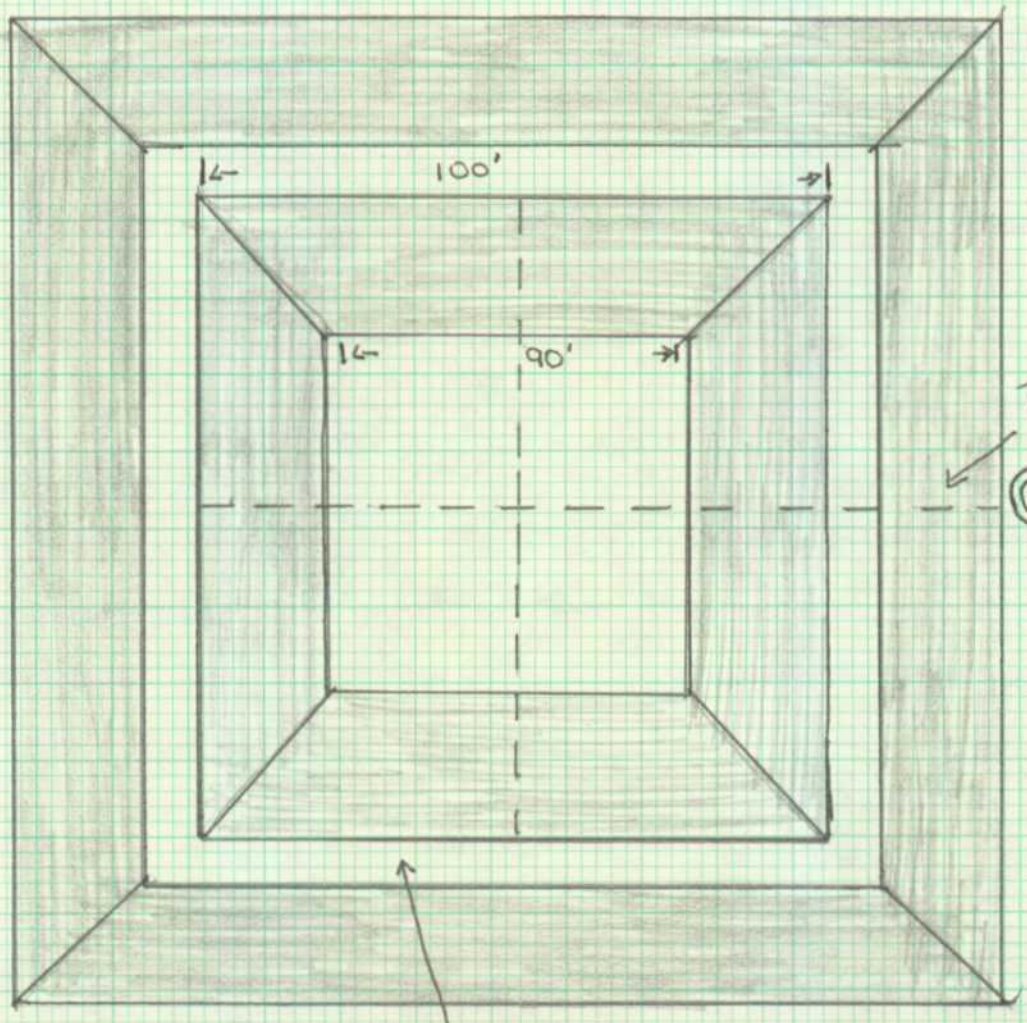
The bed of the pit and the inside grades of the levee is smooth and compacted and is free of holes, rocks, stumps, clods, or any other debris which might rupture the liner. A trench was dug on the top of the levee the entire perimeter of the pit for the purpose of anchoring flexible liner. This trench was located nine inches out from the slope break and was approximately 6 inches deep.

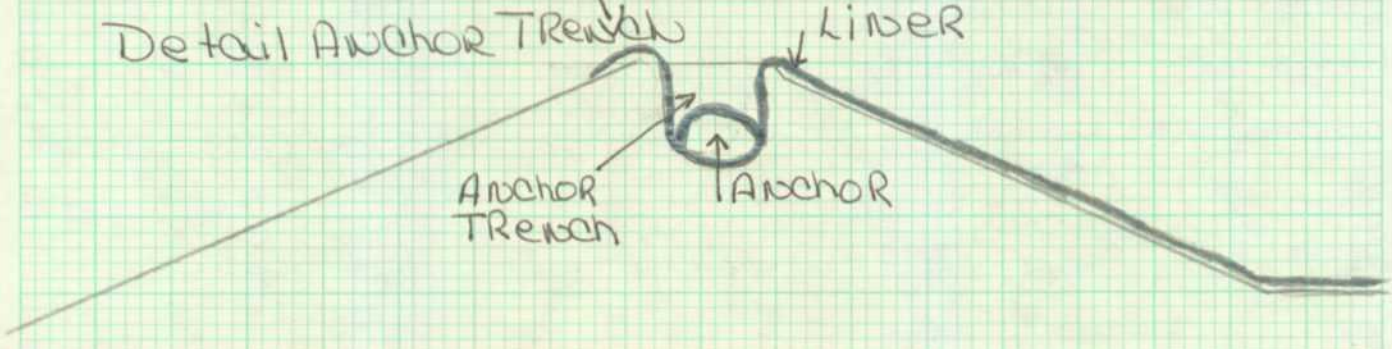
The pit liner was installed and joints sealed according to manufacturer's specifications and with approval of the commission representative. The flexible liner material is of 30 mil thickness and has good resistance to tears and punctures.

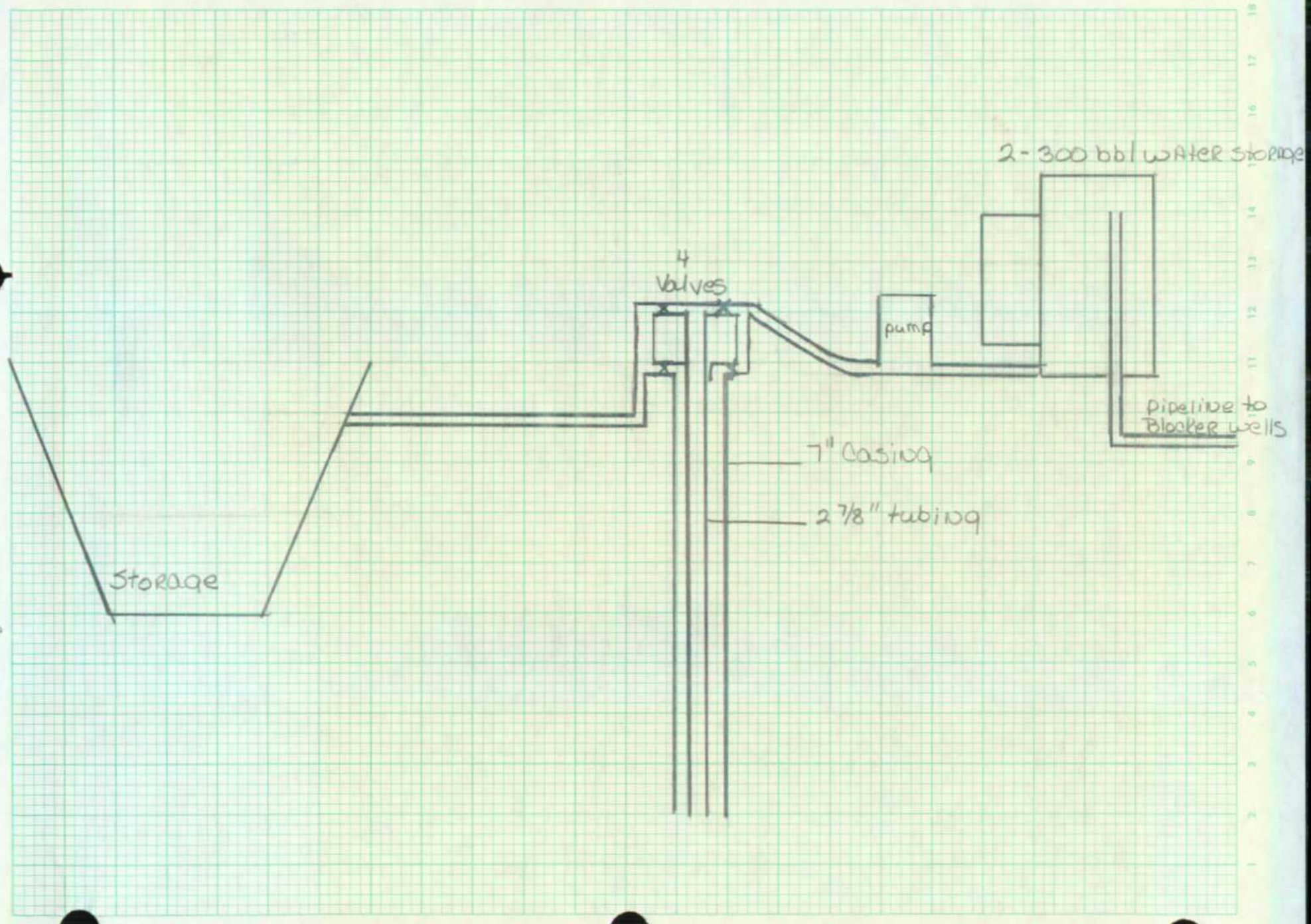
The liner was laid as evenly and wrinkle-free as possible and rest smoothly on the pit-bed and the inner face of the levees, and was of sufficient size to extend down to the bottom of the anchor trench and to come back out approximately 1 foot.

An anchor of used pipe was placed over the liner in the anchor trench and said trench backfilled. The anchor was extended to entire perimeter of the evaporation pit.

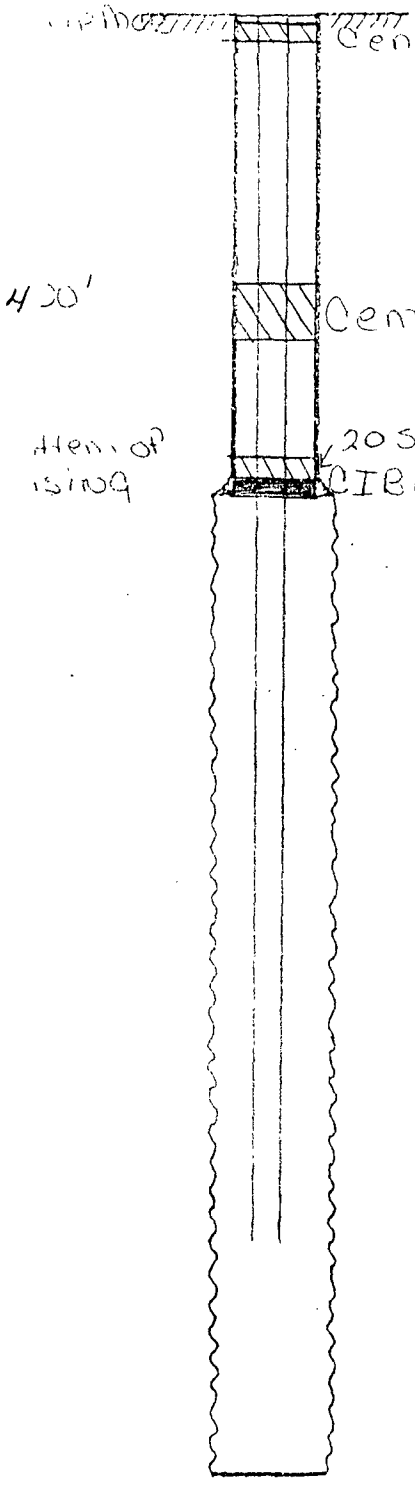
Storage Pit


100'
90'
Drainage system
Sump


Detail Anchor Trench
Liner
Anchor Trench
Anchor


2-300 bbl water storage
4
Valves
pump
pipeline to
Blocker wells
7" Casing
2 7/8" tubing
Storage

OPERATOR		DATE
W. H. Brinkerstock, Salada Brine Sales		
LEASE	WELL No.	LOCATION
Langlie Fed. Brine Well	1	Sec. 14 T25 R37



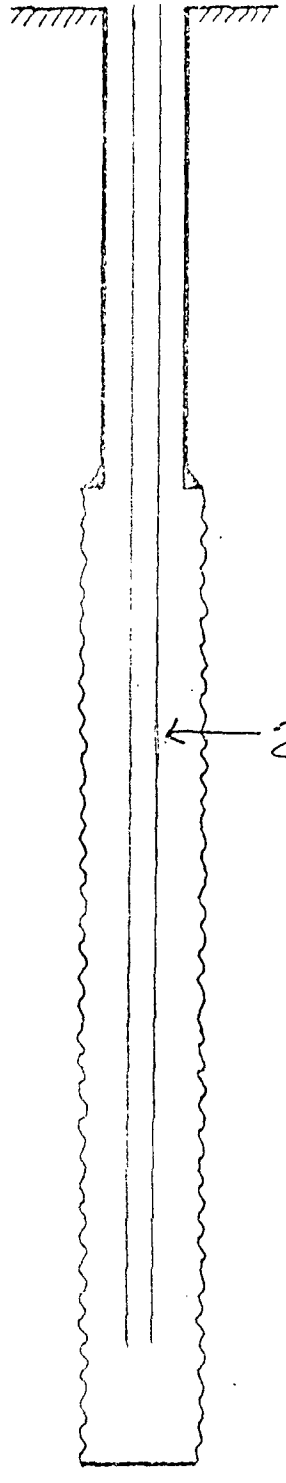
CIBP 7 " casing set at 970' with sufficient to circulate to surface sx of cement

Hole size ____"

Open hole from 970 ' to 2105' ~~Hole size~~ 2 1/2 " production tubing

Total depth 2105 '

OPERATOR		DATE
W. H. BRININSTOOL, SALADO Brine Sales		
LEASE	WELL No.	LOCATION
Langlie Fed. Brine Well		Sec. 14 T25 R37



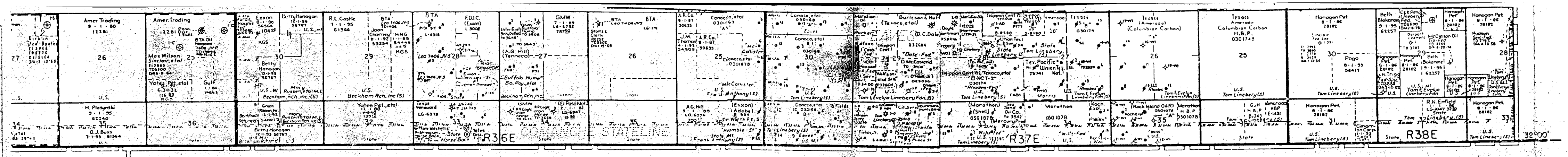
7 " casing set at 970 ' with Sufficient to circulate to surface sx of cement

Hole size _____ "

← 2 1/2 " Tubing

Open hole from 970 ' to 2105 ' ~~Hole size~~ Run 2 1/2 " production tubing

Total depth 2105 '



LEGEND

- Well as Shown
- Well as Below 5000' or Discovery
- Location
- Abandoned Producer
- Completed — Producing Oil
- Completed — Producing Gas
- Dry & Abandoned
- Fee Owner — *Slant Lettering*
- Lease Owner — Vertical Lettering
- State Highway (F.M.)
- State Highway
- U. S. Highway

Midland Map Company

P. O. BOX 1233 MIDLAND, TX 79702
TELEPHONE (915) 682-1503
1-800-592-1650
Toll Free in Texas

BETTER MAPS - FASTER SERVICE
COMPLETE COMMERCIAL REPRODUCTION

Lease and Fee Information
Posted to 12-20-86

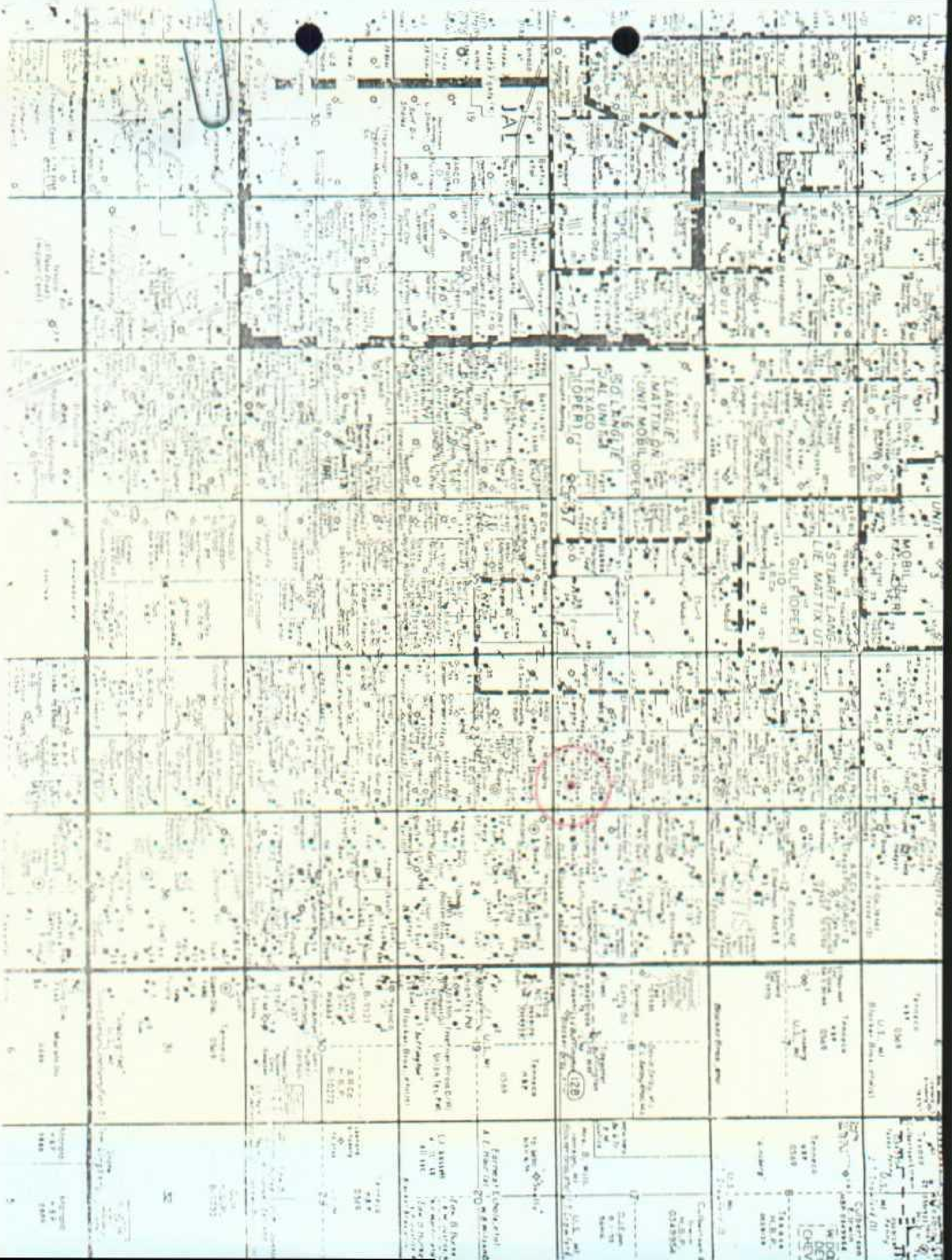
Oil Conservation Commission Well Information
Posted to JAN 28 1987
Date Sold JAN 23 1987

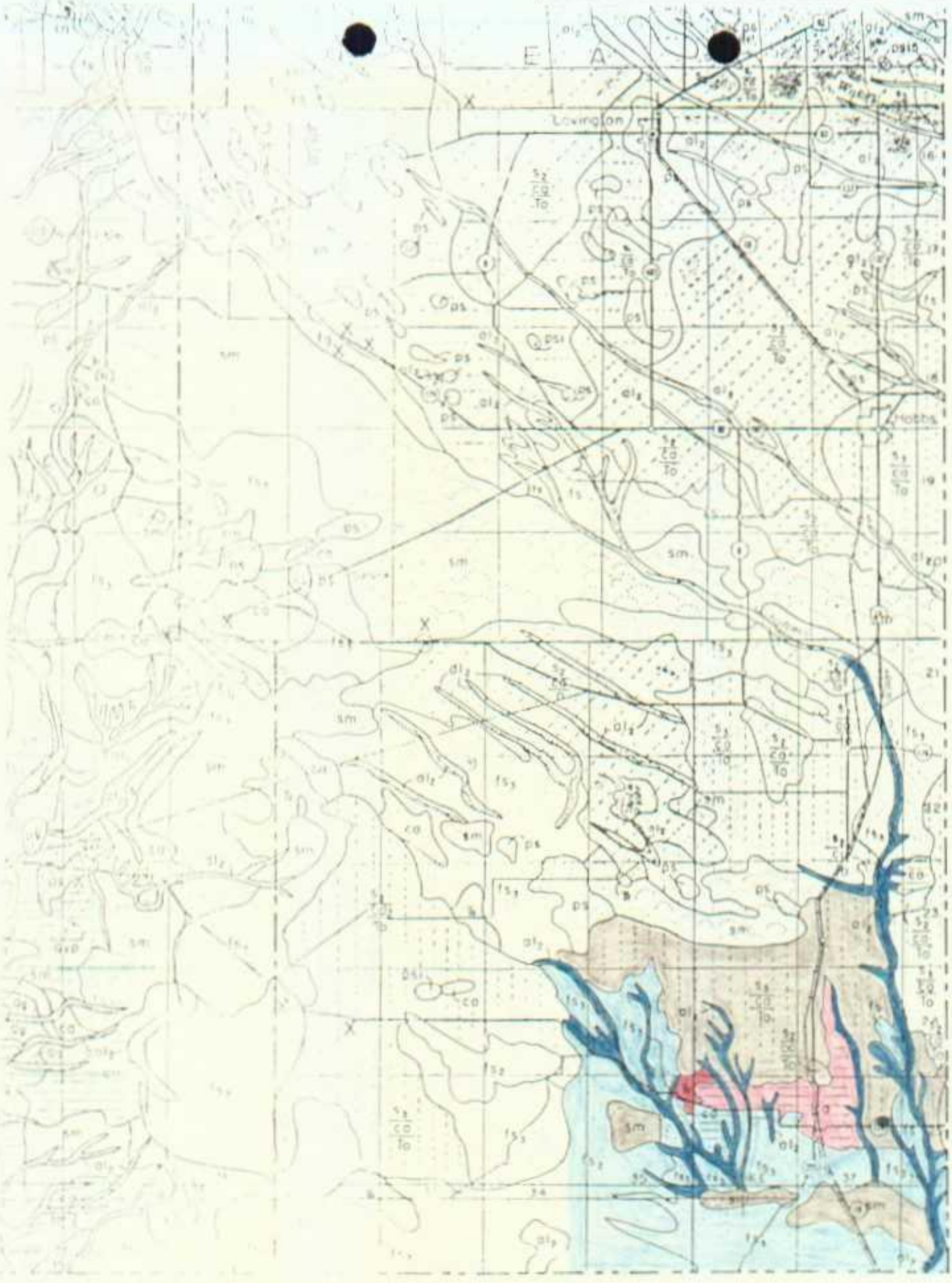
Ownership Map

Southeast LEA COUNTY, NEW MEXICO

SCALE: 1" = 4,000 Ft.

REG. NO. F28637


JAL
LANGLIE MATTIX PN UNIT MOBIL (OPER)
SO LANGLIE JAL UNIT TEXACO (OPER)
STUART LANGLIE MATTIX UT GULF (OPER)
MOBIL
UNIT
128


E
A
Lovington
33°
Salado Brine Station

DESERT PAVEMENT

Not shown on map. Consists of a [illegible] layer of closely spaced stones angular or rounded, over a vesicular layer of [illegible] and silt. Stones collect at the surface by a sorting action, apparently due to frost and or salt heaving, or swelling and shrinking of clay. Silt layer beneath the pavement may be partly eolian in origin. In general, within a particular part of the state, thickness of silt increases from about 1 to 12 inches with increasing age of the surface, due to advanced weathering and rock disintegration. Some areas of desert pavement also form where wind or water removes fine grained sediments, leaving behind the coarser lag deposits. While desert pavement favors high runoff, it protects the ground from erosion

CAVE DEPOSITS

Not shown on map. Commonly have gravel at base, recording an early stage of substantial water flow that eroded the cave. The gravel is overlain by clay or ochre deposited as the flow of water diminished, and this in turn is overlain by stalagmites. Stalagmites are overlain by dust. Fossil remains of Pleistocene animals may occur in deposits below the stalagmites; remains of Holocene animals characterize the overlying deposits. Other cave deposits occur in basaltic lavas, especially in the area southwest of the Zuni Mountains. These deposits include blocks fallen from the roofs, dust, and some ice

ORGANIC DEPOSITS

Not shown on map. Accumulations of fibrous peat in sedge marshes border many New Mexico lakes. Both fibrous and woody peat accumulated in small, poorly-drained depressions and mountain meadows. Mostly less than 15 ft

DESERT VARNISH

Not shown on map. A black stain of iron and manganese oxides on bare rock surfaces and on pebbles of desert pavement. Predates prehistoric pottery-bearing occupations of the region. Predominantly middle Holocene, partly late Pleistocene. Many of these stained surfaces have petroglyphs carved by prehistoric peoples

TRANSITIONAL DEPOSITS

Deposits transitional between those formed in situ and those transported; deposits moved downslope chiefly by gravity, particularly slow creep (colluvium). Also includes rock falls. Landslides and avalanches are shown as periglacial features

Colluvium includes the heterogenous mantle of soil and rock fragments derived from residuum, bedrock, and/or unconsolidated surficial deposits moved slowly downslope by gravitational force and sheet wash. Slopes generally steeper than 20 percent. Mass wasting, the process causing debris to move downslope, is aided by added weight and lubrication of water-saturated debris, frost heaving, alternate wetting and drying of clays, crystallization of salts, growth of roots, burrowing and trampling by animals, falling of trees, and impact of hail or rain. These, like other erosional processes, may be accelerated by man's activities

Colluvium is basically a chaotic mixture of angular rock fragments and finer grained materials. In New Mexico colluvium is generally less than 10 ft thick (rarely 25 ft or more) but may grade into thick cones of debris at bases of hillsides. In the northeast and northwest parts of the state where steep shale slopes underlie resistant caprock of sandstone or lava, two, and locally three, ages of colluvium may be distinguished. These are thought to be mid-Holocene, late Wisconsinan and early Wisconsinan, respectively. Such occurrences provide an index of retreat of cliffs. Some shale slopes are armored and protected against erosion by blocks of the caprock.

On long dip slopes such as flanks of the Zuni Mountains and east flank of the Sacramento Mountains, the colluvium is generally thin (commonly 1 to 2 ft thick) except near the base of steep hillsides and is composed of the resistant rock, forming the dip slope. Some of this colluvium could as well be mapped as stony residuum over limestone. Hillsides on granitic and volcanic rocks may also be overlain by thin but bouldery sandy colluvium. Colluvium on steep, faulted mountain fronts consists of a mixture of stones representing all the exposed formations upslope

co COLLUVIUM — *Subscripts indicate the underlying hillside formations (e.g., coTv, colluvium on Tertiary volcanic rocks)*

TRANSPORTED DEPOSITS

Most surficial deposits are rocks and particles weathered from bedrock in one area, transported by water, wind, ice, or gravity to an area of deposition, and are susceptible to further erosion and transportation. These deposits are much younger than and unrelated to the underlying bedrock. They are classified according to their mode of transportation to the site of deposition

ALLUVIUM IN FLOODPLAINS AND STREAM CHANNELS

Well stratified sandy and silty stream deposits with gravel lenses; gravel terraces along valley sides. Generally alluvial deposits record complex response to Quaternary climatic shifts. In New Mexico climates were comparatively wet during the Pleistocene glacial stages. Conversely, during the interglaciations, climates were drier, with conditions similar to Holocene environments. Alluvial deposits locally contain fossils, including bones of mammals and rodents, and shells of freshwater snails and clams. Late Pleistocene deposits contain fossil remains of extinct animals such as elephants, camels, horses (not re-introduced until the arrival of the Spaniards), sloths, and long-horned bison. Archaeological remains are common in and on Holocene deposits and help date them. Three ages of alluvium generally can be distinguished: late Pleistocene, mid-Holocene, and historic. At least three recognized types of alluvial floodplain deposits reflect relative capacity for sediment transport by the main stream and its tributaries. A fourth type along the Pecos River in the southeastern part of the state, is characterized by saline ground. A fifth is restricted to basalt-capped mesas

al_1 FLOODPLAIN AND CHANNEL DEPOSITS ALONG MAIN STREAMS — *Generally flat but includes terraces to about 10 ft high, shallow curved swales at cutoff meanders, and local stabilized dunes. Mostly sand, silt, and some layers of gravel. Caliche absent or weakly developed in thin veinlets, fibers, coatings on rocks, and soft nodules. Deposits commonly 25 ft thick. Ground water shallow, subject to pollution. Extensively farmed; subject to flooding*

al_2 FLOODPLAIN AND CHANNEL DEPOSITS ALONG GENERALLY DRY ARROYOS AND WASHES — *Includes deposits along some perennial mountain streams. Extent exaggerated to emphasize drainage patterns. Sandier than al_1, gradients 5 to 15 percent. Arroyos 10 ft deep common. Surface flat where deposit was formed by stream overflowing its banks; hummocky where built of coalescing fans at mouths of tributaries that crowd the main stream against its far bank, or V-shaped where alluvium grades laterally into fan sand washed from adjoining hillsides. Ephemeral perched water tables under some deposits. Width of deposits represented has been exaggerated but total area probably about right because small ones had to be omitted*

al_3 COALESCING SILTY AND SANDY ALLUVIAL FANS — *Intermediate between al and alluvial fan deposits fs and fsi*

al_4 SALINE ALLUVIUM — *Borders Pecos River south of Fort Sumner*

al/b ALLUVIUM OVER BASALT — *Restricted to basalt-capped mesas. Stony, or sandy [illegible] in old valleys, thickness commonly 10 ft or more [illegible]*

tg GRAVEL TERRACES — *Well-rounded stream gravels with cobbles 6 inches or more [illegible]meter; some terraces 250 ft higher than the streams. Especially well devel[illegible]ong the San Juan River, less so along the Pecos, Gila, and Canadian Rive[illegible] most represent deposits by Pleistocene melt waters from mountains. Abundant caliche deposits, especially on the higher terraces, which may be Kansan; lowest are Wisconsinan*

ALLUVIAL FAN DEPOSITS

In alluvial fans, unlike floodplain alluvium, beds tend to be thick, massive, and highly lenticular rather than well stratified. This is characteristic of all the facies, whether boulder, gravel, sand, or silt. Beds lenticular and elongated down the slope of the fans; slopes 2 to 20 percent. Deposition mostly by flash floods, with poor sorting and mixed textures. Coarse-textured lenses commonly form ridges extending down the fan onto generally finer grained sediment. Boundaries between the textural facies of the deposits roughly parallel the fan contour, but detailed boundaries are irregularly lobate; those shown are approximations. Fan textures and slopes depend partly on composition of the parent rocks and partly on height and steepness of the bordering hill or mountain. Fans extensive in the Basin and Range part of the state where they comprise about half the total area; in other parts of the state, fans are small. On the larger fans, arroyos become shallower towards the toe; many head at low mounds that probably mark old mudflows. Ground subject to sheet flooding

fg GRAVEL FACIES — *Bouldery towards apex of fan, grading downslope to cobble and fine gravel with increasing proportion of sand and finer grained material. Commonly dissected to form 2 to 3 levels of gravel benches up to 50 ft above present washes. A few streams (e.g., Mulligan Wash, Alamosa River, Cuchillo Negro Creek, and Rincon Arroyo are incised 100 ft below fan surfaces. On short, steep fans, depths of valleys generally decrease downslope. On the broad Palomas surface, west of the Rio Grande above Hatch, valleys maintain their depth. Except near the apex, extensive surfaces have smooth desert pavement. On short, steep fans, gravels show minimal weathering and are weakly cemented with caliche; age probably Wisconsinan and Holocene. On broad, more gently sloping fans, gravels are more weathered and commonly cemented by caliche; age probably pre-Wisconsinan. In south half of the state, gravel facies is characterized by creosote bush cover. Thin alluvial gravel covering pediments is denoted by fg over subscript that identifies parent formation*

fs SAND FACIES — *Sandy alluvium with subordinate amounts of fine gravel, silt, and clay. Forms at least four kinds of ground: 1) On short, steep fans sloping from the mountains of granitic or gneissic rock (e.g., parts of the Florida Mountains), this facies may form a smooth sandy layer a few feet thick covering gravel below; slopes 5 to 20 percent; washes 1 to 10 ft deep may expose underlying gravel. 2) On other short fans, sand facies may form arcuate belt at toe of fan with slopes averaging 10 percent, commonly reworked into coppice dunes 3 to 7 ft high (sm). 3) Other belts of smooth sandy ground commonly slope 5 percent or less and consist of sand mounds approximately 1 ft high over caliche (fs_2). 4) Gypsiferous sand (fs_3), especially in the Jornada del Muerto, Tularosa Valley and east side of the Pecos Valley. Sand facies absent on the broad Las Palomas surface. Thin fan sand covering pediments is denoted by fs over subscript that identifies underlying formation. Boundary with residual sand, fan gravel, and fan silt is approximate*

fsi SILT FACIES — *In Basin and Range parts of the state, toes of fans may be silty and clayey rather than sandy; surface smooth, with slopes less than 5 percent. Slow infiltration rates and low slopes result in sluggish runoff. Forms a belt below the sand facies and grades downward to playa silt (psi) with slopes less than 2 percent. Abundant swelling clays and exchangeable sodium. Surface layers predominantly Holocene; subject to sheet flooding, gradational with al_3. East and west of Sangre de Cristo Mountains, also forms fans of sandy or silty loam with little gravel in upper 3 to 4 ft, but abundant gravel below the loam. Caliche soft. Includes loess on isolated hilltops. Boundary with residual loam (rl), playa silt (psi), and fan sand (fs) approximate*

EOLIAN DEPOSITS

Eolian deposits are laid down by wind, mostly as sheets of sand or silt (loess). Rarely, after prolonged drought on shale desert in the San Juan Basin, shale flakes may accumulate in rippled sheets or even small dunes, but with the next rain, these become mud. Sand dune shapes depend on topography, relative strength of the winds, supply of sand, and vegetation. Some dunes are concave towards the windward (parabolic), others are concave towards the leeward (barchans), and others are longitudinal or transverse. Some dune clusters (e.g., Great White Sands) have all four kinds. Dunes may climb a windward slope or fall on a leeward slope. Most of New Mexico's eolian sand sheets have a basal layer of weathered, partly cemented, reddish stabilized sand; some sand surfaces on such layers are smooth. In the Basin and Range and Great Plains parts of the state, these surfaces are generally underlain by caliche; in the San Juan Basin, sand sheets commonly overlie residuum, fan deposits, or bedrock. Where sand is thick, as on sand facies of fans in the Basin and Range and at climbing dunes east of the Pecos River (Mescalero Sands) the sand is in mounds (coppice dunes) with profuse growth of vegetation — mesquite, and saltbush in the Basin and Range; sand sage, shinnery oak, small soapweed yucca, and occasional mesquite on the Mescalero Sands. Sand sheets are predominantly late Pleistocene; mounds and dunes are largely Holocene

s/b SAND UNDERLAIN BY BASALT — *Extensive on basaltic plains south and east of Zuni Mountains and on West Potrillo Mountains. At Kilbourne Hole and Hunt's Hole, the sand is of volcanic origin*

s/ca/QTs SAND UNDERLAIN BY CALICHE ON SANTA FE GROUP — *Mostly on La Mesa and south part of the Jornada del Muerto*

s_1/ca/To THIN SAND ON CALICHE ON OGALLALA FORMATION — *Thickness about 1 ft. Chips of caliche comprise 30 percent of the sand. Generally too shallow for farming, but good shallow source for aggregates*

s_2/ca/To MODERATELY THICK SAND ON CALICHE ON OGALLALA FORMATION — *Sand 1 to 3 ft thick. Surface layers noncalcareous over reddish loam. Local sand mounds. Ground favored for farming. Boundaries approximate*

s_3/ca/To THICK SAND ON CALICHE ON OGALLALA FORMATION — *Sand 3 to 5 ft thick. Local mounds. Brownish-red, fine sandy loam over reddish-brown, sandy clay loam; noncalcareous to depths of 3 ft; calcareous subsoil contains filaments of lime carbonate. Where farmed, ground is subject to wind erosion. Boundaries approximate*

sm LOOSE SAND IN MOUNDS — *Coppice dunes, commonly 3 to 7 ft high and 25 to 50 ft in diameter; generally elongated north of east but a local exception lies east of Columbus where elongation is south of east. Age is Holocene. Boundaries fairly accurate*

es, s SAND SHEETS — *Surfaces smooth except for ripples 2 to 3 inches high and scattered sand mounds 3 to 12 inches high, especially around small shrubs. Thickness of loose sand generally no more than about 12 to 24 inches, but commonly overlies stabilized sand. Underlying material where known identified by subscript*

ds LONGITUDINAL DUNES — *Sand commonly 6 ft thick, locally 10 ft. Forms distinct ridges generally oriented north of east. Locations diagrammatic and width exaggerated*

ds OTHER DUNES — *ds_1, quartzose sand, ds_2, gypsiferous sand*

l/b LOAM ON OLD BASALTIC LAVA — *Probably pre-Wisconsinan loess*

si EOLIAN SILT

EXPLANATION OF SURFICIAL GEOLOGY

by Charles B. Hunt 1977

LAKE AND PLAYA [illegible]ITS

New Mexico has five kinds of lake deposits in addition to those forming today in artificial reservoirs. The most extensive deposits were laid down in Pleistocene lakes that flooded closed basins now marked by playas. Many of these deposits in the Basin and Range are alkaline flats. Most numerous are the so-called "buffalo wallows" of the Great Plains on the Ogallala Formation. Some of these wallows are deflation hollows with small mounds on the lee side; others may be due to solution and sagging of the surface. Still others may be attributed to warping. Third are sinkholes clearly due to solution, like Bottomless Lakes, sinks at Santa Rosa, and some of the depressions (related to karst) of the San Andres Formation and gypsum-covered ground north of the Sacramento Mountains. A fourth type is represented by ephemeral ponds in swales marking cutoff meanders on alluvial floodplains. A fifth type occurs only in the maar volcanoes at Kilbourne Hole, Hunt's Hole, and Zuni Salt Lake. Only the first three types appear on the map. Area of deposits represented has been exaggerated because of map scale, but total area probably about right because smaller deposits are omitted

psi — SILTY LAKE OR PLAYA DEPOSITS — *Ground mostly bare, gypsiferous deposits labeled* psi;

ps — SANDY LAKE OR PLAYA DEPOSITS — *Gypsiferous deposits labeled* ps;

be, bg — BEACH DEPOSITS — *Sand or gravel; sandy stretches mostly reworked into low dunes. Incompletely shown*

ev — EVAPORITES — *Saline or alkaline deposits precipitated from brines in playas having high evaporation rates, notably Estancia Valley, Animas Valley, and Zuni Salt Lake. Salts are gradational with playa silt (psi) and occur in orderly concentric zones reflecting relative solubility of the salts. Thicknesses range from 1 to several inches, but salts mixed with mud may be tens of feet deep. Efflorescent crusts subject to wind erosion contribute to salinity of ground to leeward*

GLACIAL AND PERIGLACIAL DEPOSITS

During the Pleistocene New Mexico had mountain (alpine) glaciers high on the Sangre de Cristo Range, Tusas Mountains, and Sierra Blanca Peak. The source of such glaciers was in nearly circular, steep-sided basins (cirques) at valley heads. High valleys eroded by the glacial tongues tend to be U-shaped; at lower elevations where eroded by streams, these valleys are V-shaped. Gravels deposited along each side of valley ice represent debris that rolled down the mountainside onto the ice to form lateral moraines. Hummocky ridges of sand and gravel deposited across the lower ends of the glaciers form terminal moraines. Within the cirques generally stand two ramparts of boulders. An inner rampart, forming today, is located at the lower edge of the snowbank that accumulates annually in the cirque; it represents rocks broken by frost from the headwall of the cirque, rolled down the snowbank, and collected at the ridge. These inner ridges are treeless. Farther out in the cirque -- perhaps at the mouth -- is a second ridge, forested, with firm unweathered rock darkly stained with iron and manganese oxide. These outer cirque ridges formed during the mid-Holocene "little ice age"

mg — DEPOSITS AND GEOMORPHIC FEATURES OF PLEISTOCENE MOUNTAIN GLACIERS — *Extent exaggerated*

pg — PERIGLACIAL DEPOSITS ON MOUNTAIN TOPS — *Primarily represented by boulder fields and patterned ground where frost action was intensive during the glaciations. Extent and boundaries approximate; graded laterally to stony residuum and colluvium*

av — AVALANCHE DEPOSITS — *Bouldery; some are lag concentrates of boulders where fine grained sediments have been removed by erosion. Deposits narrow and long downslope; commonly 10 to 50 ft thick. Apparently deposited as mudflows during late Pleistocene time when there were numerous perennial mountain snowfields. Frost action at the time was vigorous; sudden thaws could trigger floods or mudflows on the mountainsides. Slow movement downslope may be reactivated in artificial cuts through these deposits if water enters the plane of slippage*

lds — LANDSLIDE DEPOSITS — *Abundant on slopes of Cretaceous shale. Whereas avalanche deposits are elongate downslope, landslide deposits are short downslope but wide along the contour. Characteristically, they retain a cap of the lava or sandstone sloping into the hillside atop a steep colluvial-covered shale slope. Stabilized landslides may be reactivated if water is allowed to enter the plane of slippage*

MISCELLANEOUS TYPES OF GROUND

BASALT — *Includes lava flows, lava cones, cones of scoriae, necks, and fields of scoriae. Predominantly Quaternary and late Tertiary; some young enough to have sustained minimal weathering and retained their original structures and shapes are commonly referred to as malpais (Spanish, bad ground). Includes some Tertiary basalt that conspicuously controls the topography. Locally covered by loam (l/b), eolian deposits, al/b, stream deposits). These older surfaces are more deeply eroded, tilted, and faulted. Individual flows generally less than 50 ft thick; locally, several flows may aggregate a few hundred feet thick. Commonly interbedded with volcanic ash (tuff). Excludes lavas mantled by loess or other sediments, such areas indicated by subscript (e.g., l/b -- loam over basalt; fs/b - fan sand over basalt). Boundaries shown are adequate*

OTHER BEDROCK — *Colluvium or other cover amounts to less than half the area. Only extensive areas are shown; age and rock type keyed by symbol to State geologic map (e.g.,* Kd, *Cretaceous Dakota Sandstone,* TRs *Triassic Santa Rosa Sandstone). Many small areas omitted; indicated boundaries are approximate. Principal formations and subscripts used are:*

- Qg – *Gatuna Fm.*
- Qbt – *Bandelier Tuff*
- Qvr – *Rhyolite flows*
- QTsf – *Upper Santa Fe Group*
- QTs – *Santa Fe Group, undivided, and related formations*
- QTg – *Gila Conglomerate*
- To – *Ogallala Fm.*
- Tsa – *Lower Santa Fe Group*
- Tc – *Chuska Sandstone*
- Tu – *Alluvial and lacustrine deposits*
- Tca – *Carson Conglomerate (generally equivalent to Los Pinos Fm.*
- Tpt – *Picuris Tuff*
- Tp – *Potosi volcanic series*
- Tv – *Tertiary volcanics; largely Datil Fm. in SW; includes some pre-and post Datil volcanic sequences*
- Tbb – *Blanco Basin Fm*
- Tg – *Galisteo Fm*
- Tsj – *San Jose Fm*
- Tn – *Nacimiento Fm.*
- T – *Tertiary sedimentary formations in Raton district*
- TKpc – *Poison Canyon Fm*
- TKa – *Animas Fm.*
- TKr – *Raton Fm.*
- TKoa – *Ojo Alamo Sandstone*
- Kv – *Volcanics of Cretaceous age; various composition*
- Kkf – *Kirtland Shale and Fruitland Fm.*
- Kpc – *Pictured Cliffs Sandstone*
- Kl – *Lewis Shale*
- Kmv – *Cretaceous sandstone and shale, mostly Mesaverde Fm.*
- Kch – *Cliffhouse Sandstone*
- Kpl – *Point Lookout Sandstone*
- Ksh – *Cretaceous shale*
- Kg – *Gallup Sandstone*
- Km – *Mancos Shale*
- Kd – *Dakota Sandstone*
- J – *Jurassic, undivided*
- Jm – *Morrison Fm.*
- Jz – *Zuni Sandstone*
- TR, J – *Triassic and Jurassic, undifferentiated*
- TR – *Triassic, undifferentiated*
- TRgc – *Glen Canyon Sandstone*
- TRc – *Chinle Fm.*
- TRs – *Santa Rosa Sandstone*
- TRr – *Dockum Fm.*
- Pat – *Artesia Group*
- Psa – *San Andres Fm. (limestone)*
- Pg – *Glorieta Sandstone*
- Pc – *Cutler Fm*

[OF NEW MEXICO

EXPLANATION FOR GEOLOGIC MAPS 40, 41, 42 AND 43

- Py – *Yeso Fm.*
- Pa – *Abo Fm.*
- Ph – *Hueco Fm.*
- Pal – *Paleozoic, undivided*
- Pms – *Madera Limestone and Sandia Fm., undivided*
- P, IP – *Permian, Pennsylvanian*
- M, D – *Mississippian, Devonian*
- S, O, Є – *Silurian, Ordovician, Cambrian*
- pЄ – *Precambrian*
- gr – *Granitic, gneissic, and intrusive rocks of various ages*

D — *Disturbed ground. Mostly urban areas large enough to show on state base; farmed lands excluded. Includes airports, mined areas, tailings dumps, and feedlots. Incompletely shown*

X — *Open pits for road fill, sand, gravel, caliche, or other aggregates*

Playa-lake depressions. Mostly small closed basins produced by eolian activity and local solution subsidence

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New Mexico State University, Agricultural Experiment Station, Research reports showing soil association and land classification for irrigation for each county

New Mexico State Highway Department supplied data for aggregate resources in New Mexico

Soil Conservation Service, 1/62,500 aerial mosaics of New Mexico Quadrangles

Data from these and other sources were plotted on the 1/250,000 quadrangle maps, field checked with about 40,000 mi of automobile traverses and 20 hours aerial reconnaissance over areas difficult of ground access. Mapping began spring 1974 and was completed June 1976

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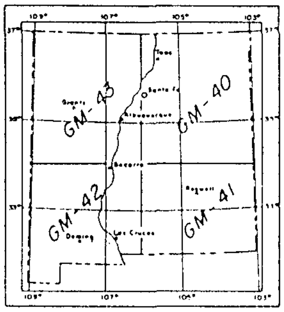


Index map of New Mexico

YUCCA PLANTS

INTRODUCTION

Surficial geology concern[illegible] origin, distribution, and significance of deposits and soils at or near the earth's surface. Completely bare bedrock forms probably less than 5 percent of New Mexico's land surface; consequently surficial materials form by far the largest and most-used part of the ground around us. Several aspects of surficial geology that contribute significantly to an understanding of our environment are water yielding properties of the ground; its susceptibility to flooding and erosion; its susceptibility to such hazards as landslides, avalanches, and earthquakes; ease of excavation; suitability for foundations and road building; agricultural potential, including suitability for irrigation or pasturage; and mineral resources potential

Surficial materials commonly are poorly consolidated, consisting partly of bedrock weathered in situ (residuum), but mostly of sediments derived by erosion and transported by water, wind, ice, or gravity (mass wasting) to a site of temporary deposition before being further eroded and transported downslope.

Four major categories of surficial materials are distinguished on the map by color: residual materials, transitional deposits, transported deposits, and miscellaneous types of ground.

RESIDUAL MATERIALS

Materials generally formed in place, including: residuum, *formed in situ by weathering of a parent formation;* caliche; travertine and related spring deposits; shale or sandstone baked by coal beds burning in situ (clinker); karst and related deposits in sinks; *and the following, which are not distinguished on the map --* organic deposits; desert pavement; cave deposits; and desert varnish.

RESIDUUM

In New Mexico, residuum tends to be thin, generally less than 2 ft thick -- rarely as much as 5 ft. Texture depends upon composition of parent rock, and ranges from clay to coarse sand; texture may be bouldery in granitic areas. Areas shown as residuum include small outcrops of parent rocks and some alluvial or eolian deposits either mistaken for residuum or too small to show on the map. These materials are predominantly of late Pleistocene (Wisconsinan) or Holocene age. Ground is hummocky with slopes less than 10 percent; scattered small outcrops of resistant beds form small ledges.

rl — LOAMY RESIDUUM — *Texture variable -- mixed clay, silt, and sand. Thickness 1 to 5 ft. Parent formations fine grained, shallow, and identified by subscripts. Where clayey, this residuum generally contains appreciable amounts of swelling clay and is highly susceptible to sodium exchange, especially over the Chinle Formation (subscript* Trc*), Cretaceous shale (subscript* Ksh*), and Tertiary clayey volcanic formations. Slopes locally 10 percent and subject to washing. Although the unit is distinctive, the indicated boundaries are approximate.*

rg — STONY RESIDUUM — *Stony residuum, with accompanying sand and silt. Thickness mostly less than 3 ft. Texture variable depending on parent material, indicated by subscript. Boundaries gradational with co and fg.*

l/b — STONY LOAM OVER BASALT — *Lithology highly variable; locally abundant clay and silt, probably loessial; stones basaltic, mostly rough scoriae or angular blocks and flakes. Includes alluvium along small washes; numerous basalt mounds and low scarps along some washes and at edges of flows; thickness generally less than 3 ft. Surface smooth; slopes usually less than 5 percent except at sides of washes, bases of volcanic cones (including spatter cones), and edges of flows. Not subject to severe erosion. Boundaries indicated are fairly well defined despite variable lithology; boundaries with alluvium are approximate.*

rs — SANDY OR SANDY LOAM RESIDUUM — *The shallow sandy or sandy silt substrates are distinguished by subscripts (e.g.,* rs/Kd, *sandy residuum over Dakota Sandstone). Thickness commonly 1 ft. Subject to wind erosion where vegetation is sparse; minimal washing. A distinctive unit with adequate boundaries, except in the San Juan Basin and along the Canadian River.*

r/gyp — GYPSIFEROUS AND SANDY RESIDUUM ALONG PECOS RIVER VALLEY — *Parent material Artesia* (Pat) *and related formations. Rarely over 2 ft thick. Numerous small outcrops of gypsum thinly mantled by loose sand with or without small pebbles. A distinctive unit; boundaries are approximate.*

r/ls — RESIDUUM ON LIMESTONE — *Widespread on east slope of Sacramento Mountains, Chupadera Mesa, and flanks of Zuni Mountains; less extensive on Cretaceous limestone beds south of Raton. Stony and blocky; generally well cemented with calcium carbonate; little subject to erosion. Slopes average steeper than most residuum. Thickness generally less than 2 ft, rarely as much as 5 ft. A distinctive unit; boundaries indicated are adequate.*

CALICHE

ca — CALICHE — *Partly indurated zone of calcium carbonate accumulation formed in upper layers of surficial deposits, 2 to 10 ft thick; commonly overlain by windblown sand. Much caliche shown on the map consists of tough, slabby surface layers underlain by calcium carbonate nodules that grade downward to fibers and veinlets. Especially well developed in Basin and Range and Great Plains parts of the state. Thick caliches (locally >20 ft) associated with undissected High Plains surfaces of the Great Plains commonly comprise an upper sequence of several carbonate-cemented zones interlayered with reddish loamy paleosol horizons over a basal caprock zone developed on Ogallala* (To) *sediments. Forms on various types of parent formations, indicated by subscripts. The extensive caliche along Rio Salado northwest of Socorro is partly a travertine deposit. Where buried by sand, the caliche is identified by subscript* ca. *A distinctive unit; boundaries are well defined where the caliche forms rimrock and approximate where exposed in deflation hollows. Where thick and well indurated, caliche is quarried for road metal and other aggregate, subject to minimal erosion.*

SPRING DEPOSITS

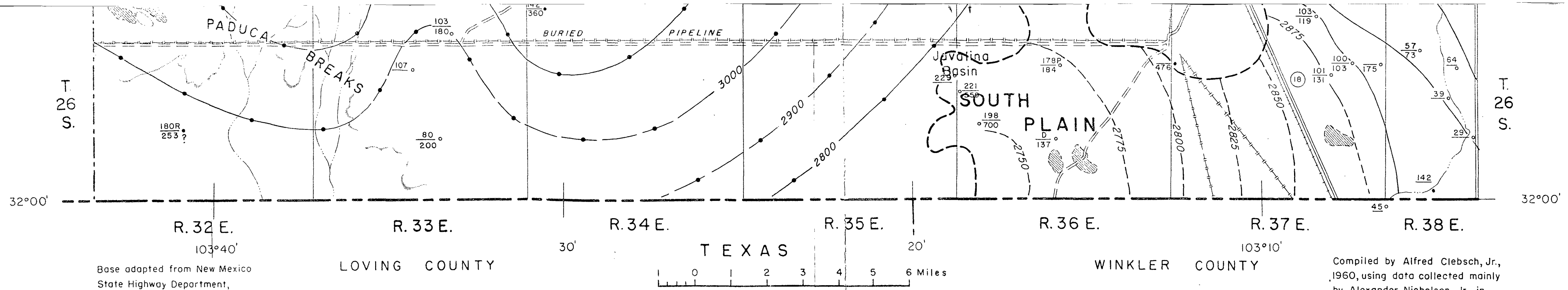
sp — TRAVERTINE AND RELATED DEPOSITS — *Most deposits shown have been formed at springs discharging water hotter than 100°F (34°C). Travertine mounds and benches to 50 ft high. Deposits at east base of Mesa Lucero may not have been created by hot springs.*

CLINKER

cl — SLAGGY COAL ASH AND VITRIFIED SHALE AND SANDSTONE MASSES FUSED BY BURNING COAL BEDS -- *Incompletely shown -- coal may ignite spontaneously, by lightning or ground fire. Depending on oxygen availability, the coal may burn tens of feet back into the ground. Common in coal-bearing formations of San Juan Basin and Raton district. Used for road metal.*

KARST DEPRESSION DEPOSITS

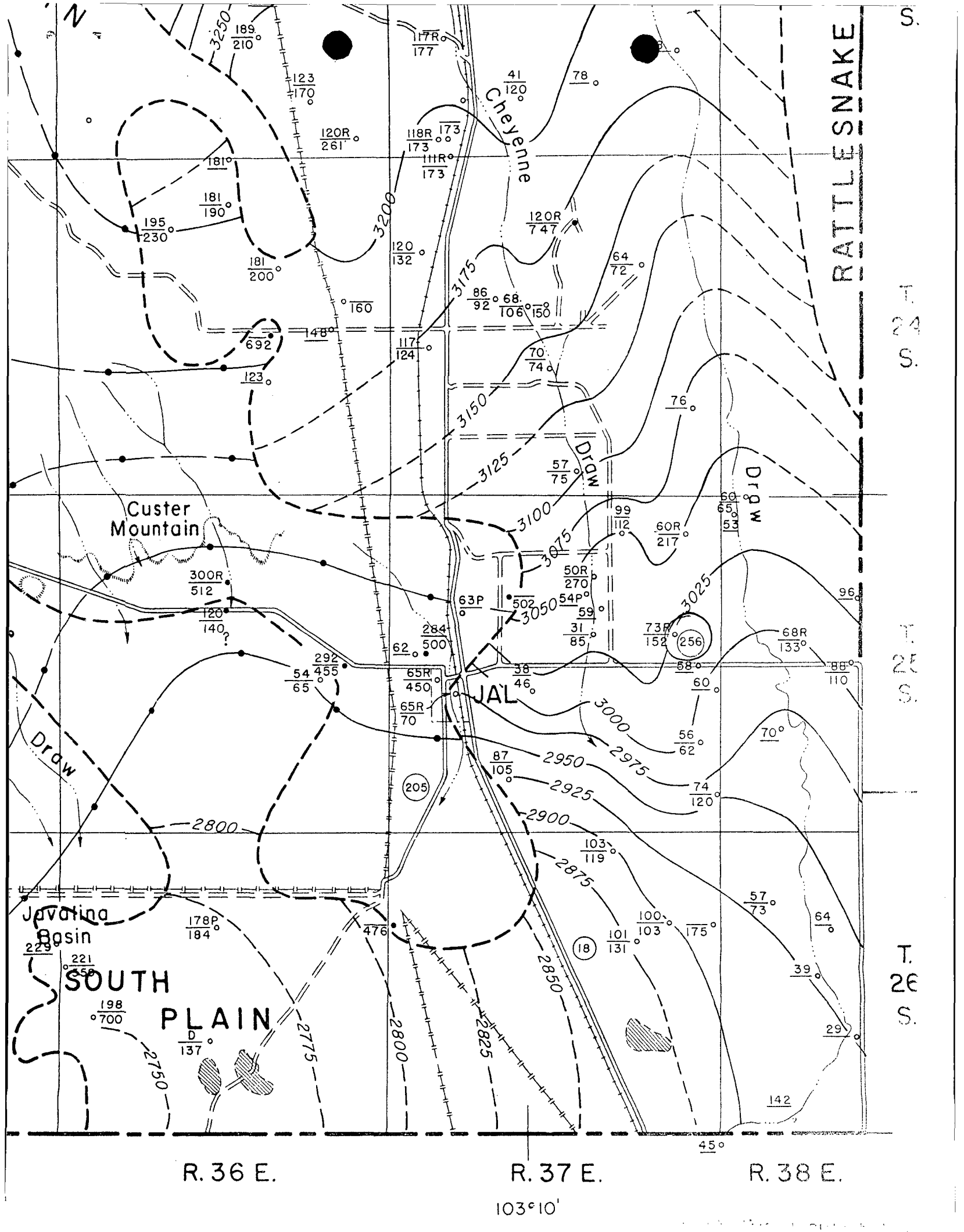
ka — KARST-RELATED DEPOSITS — *Underground solution of limestone and gypsum produces caverns or smaller subsurface voids, and causes roof-rock collapse, forming closed karst depressions (sinkholes) at the surface, mantled with blocks of the roof rock. Widespread in San Andres Formation (subscript* Pca*) north of the Sacramento Mountains and on Chupadera Mesa. Sinks commonly 50 ft deep and 500 to 1,000 ft wide. Similar deposits composed of slumped gravel and alluvium along the Pecos River valley are attributed to solution of underlying gypsum or other salts. Slumped beds dip 1 to 5 degrees into the depression; may be overlain by undisturbed gravels. Thickness to 300 ft. Although these are distinctive features, extent and boundaries, largely derived from the 1/250,000 quadrangle maps, are approximate.*



Base adapted from New Mexico State Highway Department, general highway map, 1941.

Compiled by Alfred Clebsch, Jr., 1960, using data collected mainly by Alexander Nicholson, Jr., in 1953 and 1954.

PLATE 2. GROUND-WATER MAP OF SOUTHERN LEA COUNTY, NEW MEXICO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S.
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Cheyenne
Draw
Draw
Draw
Custer Mountain
JAL
SOUTH PLAIN
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2775
2750
T. 24 S.
T. 25 S.
T. 26 S.
R. 36 E.
R. 37 E.
R. 38 E.
103°10'

EXPLANATION

$\frac{150}{252}$ o

Water well

Upper figure is depth to water; lower figure is depth of well. Open circles are wells finished in Tertiary or Quaternary rocks; solid circles are wells finished in Triassic rocks

F = Flowing
R = Reported
P = Water level measured while pumping
D = Dry
? = Uncertainty as to aquifer
> = More than
< = Less than

(See tables 6 and 7 for detailed well data.)

3925

Water-table contour in Tertiary or Quaternary rocks

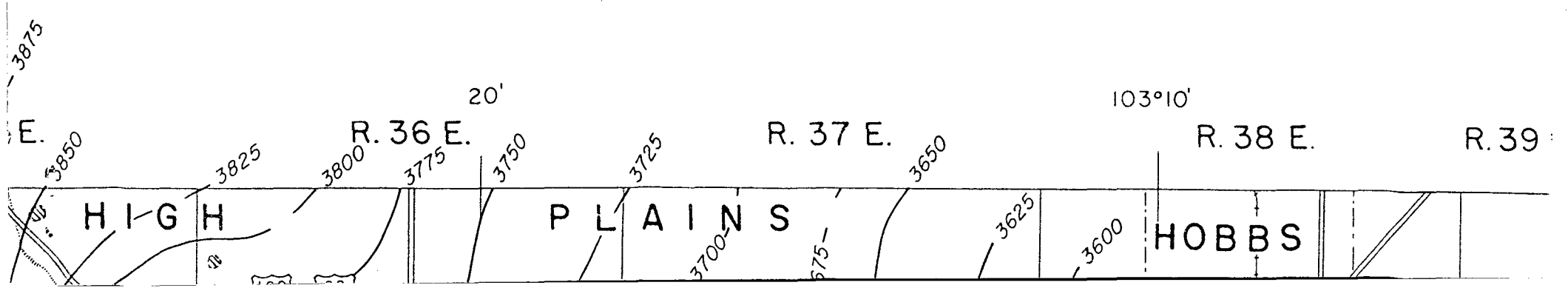
Dashed where inferred or uncertain. Contour interval 25 feet. Datum mean sea level

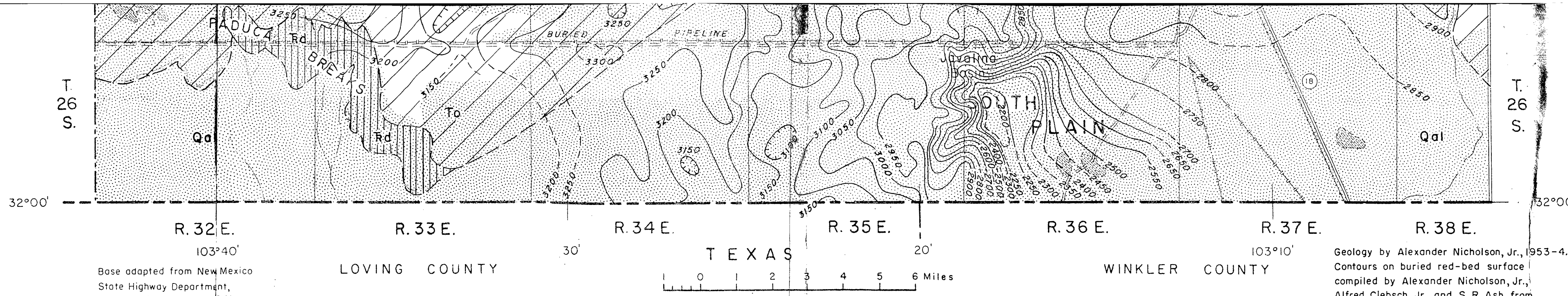
3500

Water-table or piezometric contour on water body in Triassic aquifers

Dashed where inferred or uncertain. Contour interval 100 feet. Datum mean sea level

Approximate position of boundary between Triassic rocks and saturated Tertiary and Quaternary rocks

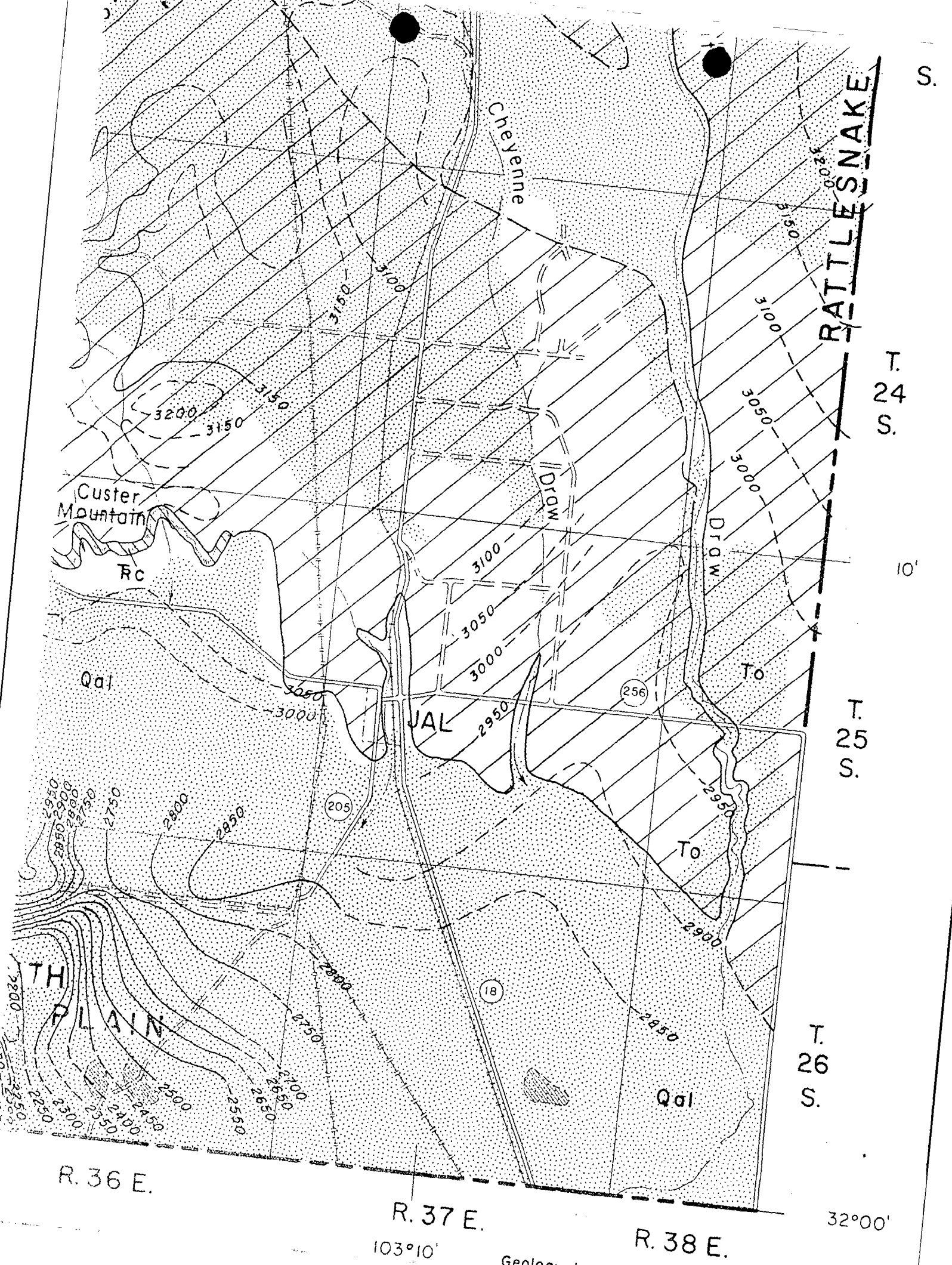




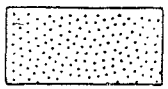
Base adapted from New Mexico State Highway Department, general highway map, 1941.

Geology by Alexander Nicholson, Jr., 1953-4. Contours on buried red-bed surface compiled by Alexander Nicholson, Jr., Alfred Clebsch, Jr., and S. R. Ash from shothole logs, 1960.

PLATE 1. GEOLOGIC MAP OF SOUTHERN LEA COUNTY, NEW MEXICO


Cheyenne Draw
RATTLESNAKE
Draw
Custer Mountain
Rc
Qal
JAL
To
To
Qal
256
205
18
3200
3150
3100
3050
3000
2950
2900
2850
2800
2750
2700
2650
2600
2550
2500
2450
2400
2350
2300
2250
T. 24 S.
T. 25 S.
T. 26 S.
10'
S.
ANDREWS
R. 36 E.
R. 37 E.
R. 38 E.
103°10'
32°00'

EXPLANATION



Sand

Thin cover of drift sand in most places; locally dunes 20-40 feet high

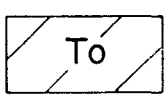
Qal

Alluvium

Sand and gravel along dry washes; silt and sand in lake beds; includes some wind-deposited sand around depressions

Pleistocene and Recent

QUATERNARY



Ogallala formation

Chiefly sand, poorly to well-cemented with calcium carbonate; contains some clay, silt, and gravel; capped in most places by caliche

Pliocene

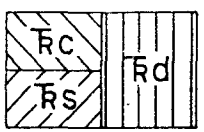
TERTIARY

Cretaceous rocks, undifferentiated

Slumped blocks of buff, tan, or white fossiliferous limestone

CRETACEOUS

Upper Triassic



Dockum group

Rc-*Chinle formation, red and green claystone, minor siltstone, and fine-grained sandstone;* Rs-*Santa Rosa sandstone, red to white poorly sorted, coarse-grained, crossbedded sandstone;* Rd-*rocks of the Dockum group, undifferentiated*

TRIASSIC

3500

Contours on the red-bed surface

Dashed where approximate or inferred. Contour interval 50 feet. Datum mean sea level

20'

103°10'

R. 36 E.

R. 37 E.

R. 38 E.

R. 39 E

HIGH PLAINS

THE REPRODUCTION OF

THE

FOLLOWING

DOCUMENT (S)

CANNOT BE IMPROVED

DUE TO

THE CONDITION OF

THE ORIGINAL

2-18-88

Form O & G D-1
Adopted 6-27-77
Revised 10-1-78

STATE OF NEW MEXICO

ONE-WELL PLUGGING BOND

FOR CHAVES, EDDY, LEA, McKINLEY, RIO ARRIBA, ROOSEVELT, SANDOVAL, AND SAN JUAN COUNTIES ONLY

BOND NO. AR71407-11
(For Use of Surety Company)

AMOUNT OF BOND $5000.00

COUNTY Lea

NOTE: For wells less than 5,000 feet deep, the minimum bond is $5,000.00*
For wells 5,000 feet to 10,000 feet deep, the minimum bond is $7,500.00*
For wells more than 10,000 feet deep, the minimum bond is $10,000.00

* Under certain conditions, a well being drilled under a $5,000 (a) or $7,500.00 bond may be permitted to be drilled as much as 500 feet deeper than the normal maximum depth, i.e., a well being drilled under a $5,000 (a) bond may be permitted to go to 5,499 feet, and a well being drilled under a $7,500 (a) bond may be permitted to go to 10,500 feet (See Rule 101)

File with Oil Conservation Division, P.O.Box 2088, Santa Fe 87504

KNOW ALL MEN BY THESE PRESENTS:

That William H. Brininstool DBA X L Transportation, (An individual) (a partnership) (a corporation organized in the State of New Mexico, with its principal office in the city of Jal, State of New Mexico, and authorized to do business in the State of New Mexico), as PRINCIPAL, and _____, a corporation organized and existing under the laws of the State of Massachusetts, and authorized to do business in the State of New Mexico, as SURETY, are held firmly bound unto the State of New Mexico, for the use and benefit of the Oil Conservation Division of New Mexico pursuant to Section 65-3-11, New Mexico Statutes Annotated, 1953 Compilation, as amended, in the sum of Five Thousand dollars---------- Dollars lawful money of the United States, for the payment of which, well and truly to be made, said PRINCIPAL and SURETY hereby bind themselves, their successors and assigns, jointly and severally, firmly by these presents.

The conditions of this obligation are such that:

WHEREAS, The above principal has heretofore or may hereafter enter into oil and gas leases, or carbon dioxide (CO_2) gas leases, or helium gas leases with the State of New Mexico; and

WHEREAS, The above principal has heretofore or may hereafter enter into oil and gas leases, or carbon dioxide (CO_2) gas leases, or helium gas leases on lands patented by the United States of America to private individuals, and on lands otherwise owned by private individuals; and

WHEREAS, The above principal, individually, or in association with one or more other parties, has commenced or intends to commence the drilling of one well not to exceed a depth of 2400 feet, to prospect for and produce oil or gas, or carbon dioxide (CO_2) gas or helium gas, or does own or may acquire, own or operate such well, or such well is drilled by owners on land embraced in said State oil and gas leases, or carbon dioxide (CO_2) leases, or helium gas leases, and on land patented by the United States of America to private individuals, and on land otherwise owned by private individuals, the notification and location of said well being *See Below
(Here state exact legal subdivision by 40-acre tract or lot)
Section 14, Township 25 (~~North~~) (South), Range 37 (East) (~~West~~), N.M.P.M. Lea County, New Mexico.

NOW, THEREFORE, If the above bounden principal and surety or either of them or their successors or assigns, or any of them, shall plug said well when dry or when abandoned in accordance with the rules, regulations, and orders of the Oil Conservation Division of New Mexico in such way as to confine the oil, gas, and water in the strata in which they are found, and to prevent them from escaping into other strata;

THEN, THEREFORE, This obligation shall be null and void; otherwise and in default of complete compliance with any and all of said obligations, the same shall remain in full force and effect.

* Beginning at a point which lies West a Distance of 671.3 feet from the Southeast corner of said section 14; thence West a distance of 1452 feet to a point; thence N00°01' W a distance of 203 feet to a point; thence East a distance of 1452 feet to a point; thence S00°01'E a distance of 203 feet to the point of beginning, containing 6.77 acres, more or less.

RECEIVED
FEB 19 1988
EL PASO BRANCH

William H. Brininstool	American Employers' Insurance Company
PRINCIPAL	SURETY
P.O. Drawer A Jal, NM 88252	P.O. Box 937001, El Paso, Texas 79937
Address	Address
By William H Brininstool	By Jane Price
Signature	Jane Price Attorney-in Fact
Owner	
Title	
(Note: Principal, if corporation, affix corporate seal here.)	(Note: Corporate surety affix corporate seal here.)

ACKNOWLEDGEMENT FORM FOR NATURAL PERSONS

STATE OF New Mexico)
COUNTY OF Lea) ss.

On this 16th day of February, 19 88, before me personally appeared William H Brininstool, to me known to be the person (persons) described in and who executed the foregoing instrument and acknowledged that he (they) executed the same as his (their) free act and deed.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

Pam Messer
Notary Public

OFFICIAL SEAL
Signature
PAM MESSER
NOTARY PUBLIC-NEW MEXICO
NOTARY BOND FILED WITH SECRETARY OF STATE
My Commission Expires

My Commission expires 2-19-89

ACKNOWLEDGEMENT FORM FOR CORPORATION

STATE OF)
COUNTY OF) ss.

On this ______ day of ______, 19___, before me personally appeared ______, to me personally known who, being by me duly sworn, did say that he is ______ of ______ and that the foregoing instrument was signed and sealed on behalf of said corporation by authority of its board of directors, and acknowledged said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

______
Notary Public

My Commission expires

ACKNOWLEDGEMENT FORM FOR CORPORATE SURETY

STATE OF Texas)
COUNTY OF El Paso) ss.

On this 15th day of March, 19 88, before me appeared Jane Price, to me personally known, who, being by me duly sworn, did say that he is Attorney-in-Fact of American Employers' Insurance Company and that the foregoing instrument was signed and sealed on behalf of said corporation by authority of its board of directors, and acknowledged said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

[signature]
Notary Public

[illegible] 1989
My Commission expires

(Note: Corporate surety attach power of attorney.)

APPROVED BY:

OIL CONSERVATION DIVISION OF NEW MEXICO

By ______

Date ______

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that the AMERICAN EMPLOYERS' INSURANCE COMPANY, a corporation duly organized and existing under the laws of the Commonwealth of Massachusetts, and having its principal office in the City of Boston, Massachusetts, hath made, constituted and appointed, and does by these presents make and constitute and appoint LINDA SLAPE and JANE PRICE both of El Paso, Texas

and each of them its true and lawful Attorney-in-Fact, to make, execute, seal and deliver for and on its behalf as surety any and all bonds or undertakings

and the execution of such bonds or undertakings in pursuance of these presents, shall be binding upon said Company as fully and amply, to all intents and purposes, as if such bonds were signed by the President, sealed with the corporate seal of the Company, and duly attested by its Secretary, hereby ratifying and confirming all the acts of said Attorney-in-Fact pursuant to the power herein given. This Power of Attorney is made and executed pursuant to and by authority of the following resolutions adopted by the Board of Directors of the AMERICAN EMPLOYERS' INSURANCE COMPANY at a meeting duly called and held on the twenty-seventh day of July, 1972:

Resolved: That the President, or any Vice-President, or any Assistant Vice-President, may execute for and in behalf of the company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, the same to be attested when necessary and the seal of the company affixed thereto by the Secretary, or any Assistant Secretary; and that the President, or any Vice-President, or Assistant Vice-President, may appoint and authorize an Attorney-in-Fact to execute on behalf of the company any and all such instruments and to affix the seal of the company thereto; and that the President, or any Vice-President, or any Assistant Vice-President, may at any time remove, any such Attorney-in-Fact and revoke all power and authority given to any such Attorney-in-Fact.

Resolved: That Attorneys-in-Fact may be given full power and authority to execute for and in the name and on behalf of the company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and any such instrument executed by any such Attorney-in-Fact shall be as binding upon the company as if signed by the President and sealed and attested by the Secretary, and, further, Attorneys-in-Fact are hereby authorized to verify any affidavit required to be attached to bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and are also authorized and empowered to certify to a copy of any of the by-laws of the company as well as any resolution of the Directors having to do with the execution of bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and to certify copies of the Power of Attorney or with regard to the powers of any of the officers of the company or of Attorneys-in-Fact.

This power of attorney is signed and sealed by facsimile under the authority of the following Resolution adopted by the Directors of the AMERICAN EMPLOYERS' INSURANCE COMPANY at a meeting duly called and held on the twenty-seventh day of July, 1972:

"Resolved: That the signature of the President, or any Vice-President, or any Assistant Vice-President, and the signature of the Secretary or any Assistant Secretary and the Company Seal may be affixed by facsimile to any power of attorney or to any certificate relating thereto appointing Attorneys-in-Fact for purposes only of executing and attesting any bond, undertaking, recognizance or other written obligation in the nature thereof, and any such signature and seal where so used, being hereby adopted by the company as the original signature of such officer and the original seal of the company, to be valid and binding upon the company with the same force and effect as though manually affixed."

IN WITNESS WHEREOF, the AMERICAN EMPLOYERS' INSURANCE COMPANY, has caused these presents to be signed by its Assistant Vice President and its corporate seal to be hereto affixed, duly attested by its Secretary on this 8th day of April 19 86

AMERICAN EMPLOYERS' INSURANCE COMPANY

Attest Raymond M. Defossez
Raymond M. Defossez — Secretary

By John M. Garrett
John M. Garrett — Assistant Vice-President

COMMONWEALTH OF MASSACHUSETTS
COUNTY OF SUFFOLK SS.

On this 8th day of April 1986, before me personally came John M. Garrett, Assistant Vice-President, and Raymond M. Defossez, Secretary of the AMERICAN EMPLOYERS' INSURANCE COMPANY, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and they acknowledge the execution of the same, and being by me duly sworn, severally and each for himself deposeth and sayeth, that they are the said officers of the Company aforesaid, and that the seal affixed to the preceding instrument is the corporate seal of said Company and that the said corporate seal and their signatures as such officers were duly affixed and subscribed to the said instrument by the authority and direction of the said Company.

Edward W. Shay
Edward W. Shay — Notary Public
(My Commission expires August 10, 1990)

CERTIFICATE

I, the undersigned, Assistant Secretary of the AMERICAN EMPLOYERS' INSURANCE COMPANY, a Massachusetts Corporation, do hereby certify that the foregoing power of attorney is in full force and has not been revoked; and furthermore, that the Resolutions of the Board of Directors set forth in the power of attorney are now in force.

Signed and sealed at the City of Boston. Dated this 15th day of March 19 88

Daniel J. Boyle
Daniel J. Boyle — Assistant Secretary

The Ohio Casualty Insurance Company

HAMILTON, OHIO

STIPULATION

To be attached to and form part of Bond No. 2-160-175-10 issued by

THE OHIO CASUALTY INSURANCE COMPANY on behalf of William H. Brininstool

in favor of The United States Department of the Interior, Bureau of Land Management

in the amount of Five Thousand

($ 5,000) Dollars, and dated October 1, 1980

WHEREAS, is the desire of all parties that this bond be amended as hereinafter provided,

NOW, THEREFORE, IT IS HEREBY STIPULATED AND AGREED that said bond hereinbefore described is hereby amended as follows:

The Ohio Casualty Insurance Company, as Surety, agrees to remain bound to the terms and conditions of preference Right Sodium Lease, Serial Number #NM40527

mailed 3-26-82

IT IS FURTHER STIPULATED AND AGREED that nothing herein contained shall vary, alter or modify any of the conditions of said bond except as herein expressly modified.

SIGNED, SEALED and DATED this 23rd day of March 19 82

Principal

THE OHIO CASUALTY INSURANCE COMPANY

By

Attorney-in-fact

William C. Slater, Jr.

Agreed to and accepted by:

Form S-1812-Rev.
Blank Stipulation
(Not to be used to change amount of bond)

CERTIFIED COPY OF POWER OF ATTORNEY

THE OHIO CASUALTY INSURANCE COMPANY

HOME OFFICE, HAMILTON, OHIO

No. 15-226

Know All Men by These Presents: That THE OHIO CASUALTY INSURANCE COMPANY, in pursuance of authority granted by Article VI, Section 7 of the By-Laws of said Company, does hereby nominate, constitute and appoint:

William C. Slater, Jr. ---------- of Albuquerque, New Mexico ----

its true and lawful agent and attorney -in-fact, to make, execute, seal and deliver for and on its behalf as surety, and as its act and deed Any and all bonds, recognizances, stipulations or undertakings excluding, however, any bonds or undertakings guaranteeing payment of loans, notes or the interest thereon. ----------

---

And the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Company, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the Company at its office in Hamilton, Ohio, in their own proper persons.

SEAL

In WITNESS WHEREOF, the undersigned officer of the said The Ohio Casualty Insurance Company has hereunto subscribed his name and affixed the Corporate Seal of the said The Ohio Casualty Insurance Company this 9th day of March 19 78.

(Signed) Richard T. Hoffman

Asst. Vice President

STATE OF OHIO, COUNTY OF BUTLER } SS.

On this 9th day of March A. D. 19 78 before the subscriber, a Notary Public of the State of Ohio, in and for the County of Butler, duly commissioned and qualified, came Richard T. Hoffman, Asst. Vice President of THE OHIO CASUALTY INSURANCE COMPANY, to me personally known to be the individual and officer described in, and who executed the preceding instrument, and he acknowledged the execution of the same, and being by me duly sworn deposeth and saith, that he is the officer of the Company aforesaid, and that the seal affixed to the preceding instrument is the Corporate Seal of said Company, and the said Corporate Seal and his signature as officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporation.

NOTARIAL SEAL BUTLER COUNTY, OHIO

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal at the City of Hamilton, State of Ohio, the day and year first above written.

(Signed) Dorothy Bibee

Notary Public in and for County of Butler, State of Ohio

My Commission expires December 11, 1981.

This power of attorney is granted under and by authority of Article VI, Section 7 of the By-Laws of the Company, adopted by its directors on April 2, 1954, extracts from which read:

"ARTICLE VI"

"Section 7. **Appointment of Attorney-in-Fact, etc.** The chairman of the board, the president, any vice-president, the secretary or any assistant secretary shall be and is hereby vested with full power and authority to appoint attorneys-in-fact for the purpose of signing the name of the Company as surety to, and to execute, attach the corporate seal, acknowledge and deliver any and all bonds, recognizances, stipulations, undertakings or other instruments of suretyship and policies of insurance to be given in favor of any individual, firm, corporation, or the official representative thereof, or to any county or state, or any official board or boards of county or state, or the United States of America, or to any other political subdivision."

This instrument is signed and sealed by facsimile as authorized by the following Resolution adopted by the directors of the Company on May 27, 1970:

"RESOLVED that the signature of any officer of the Company authorized by Article VI Section 7 of the by-laws to appoint attorneys in fact, the signature of the Secretary or any Assistant Secretary certifying to the correctness of any copy of a power of attorney and the seal of the Company may be affixed by facsimile to any power of attorney or copy thereof issued on behalf of the Company. Such signatures and seal are hereby adopted by the Company as original signatures and seal, to be valid and binding upon the Company with the same force and effect as though manually affixed."

CERTIFICATE

I, the undersigned Assistant Secretary of The Ohio Casualty Insurance Company, do hereby certify that the foregoing power of attorney, Article VI Section 7 of the by-laws of the Company and the above Resolution of its Board of Directors are true and correct copies and are in full force and effect on this date.

IN WITNESS WHEREOF, I have hereunto set my hand and the seal of the Company this day of A. D., 19

SEAL

Assistant Secretary

S-4295-C 10-74-2500

United States Department of the Interior

IN REPLY REFER TO
NM 40527
3500-B (943c-3)

BUREAU OF LAND MANAGEMENT
NEW MEXICO STATE OFFICE
P.O. BOX 1449
SANTA FE, NEW MEXICO 87501

MAR 5 1982

CERTIFIED--RETURN RECEIPT REQUESTED

	Decision
William H. Brininstool c/o XL Transportation Company Drawer A Jal, NM 88252	Sodium

Sodium Lease Forms Submitted for
Execution and Bond Required

Prior to issuance of sodium preference right lease NM 40527 the applicant must sign and return the enclosed lease forms together with special stipulations. At present, applicant maintains a $5,000 bond No. 2-160-175-10 with the Ohio Casualty Insurance Company, as surety, in connection with prospecting permit NM 40527. Applicant must file, within 30 days from receipt of this notice, a rider to this existing bond whereby the surety agrees to remain bound to the terms and conditions of this preference right lease, or file a substitute bond.

The applicant is allowed 30 days from the day this decision is received in which to return the 6 signed copies of the lease forms with stipulations and file the required bond.

In accordance with 43 CFR 3520.2-2, if applicant would like this lease effective March 1, 1982, we need a statement to that effect otherwise the effective date will be the first day of the following month in which it was signed.

In the event of noncompliance within the time allowed, the application will be finally rejected and closed.

Jessie R. Anchondo
Acting Chief, Mining Unit

Enclosure:
Form 3520-3 w/stips (6 cys)

THE REPRODUCTION OF

THE

FOLLOWING

DOCUMENT (S)

CANNOT BE IMPROVED

DUE TO

THE CONDITION OF

THE ORIGINAL

Form 3520–3
(September 1977)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
PREFERENCE RIGHT
SODIUM LEASE

Serial Number

NM 40527

This lease, entered into on , by the United States of America, the lessor, through the Bureau of Land Management, and William H. Brininstool, c/o XL Transportation Company, Drawer A, Jal, New Mexico 88252

, the lessee, pursuant and subject to the terms and provisions of the act of February 25, 1920 (41 Stat. 437), as amended, hereinafter referred to as the act, and to all reasonable regulations of the Secretary of the Interior now or hereafter in force when not inconsistent with any express and specific provisions herein, which are made a part hereof.

WITNESSETH:

Sec. 1. *Rights of lessee.* The lessor, in consideration of the rents and royalties to be paid and the conditions to be observed as hereinafter set forth, does hereby grant and lease to the lessee the exclusive right and privilege to mine and dispose of all the sodium compounds and related products, hereinafter referred to as the leased deposits, in, upon, or under the following-described tracts of land, situated in the State of New Mexico :

T. 25 S., R. 37 E., NMPM

Sec. 14: SE¼

containing 160 acres, more or less, together with the right to construct all such works, buildings, plants, structures, and appliances as may be necessary and convenient for the mining and preparation of the leased deposits for market; the housing and welfare of employees, and subject to the conditions herein provided, to use so much of the surface as may reasonably be required in the exercise of the rights and privileges herein granted for a period of 20 years, with preferential right in the lessee to renew the same for successive periods of 10 years under such reasonable terms and conditions as may be prescribed by the Secretary of the Interior, unless otherwise provided by law at the expiration of any period.

Sec. 2. *In consideration of* the foregoing the lessee hereby agrees:

(a) Bond. To maintain the bond furnished upon the issuance of this lease, which bond is conditioned upon compliance with all of the provisions of the lease, and to increase the amount of or furnish such other bond as may be required.

(b) Royalty. To pay the lessor a royalty of 5 percent of the quantity or gross value of the output of the leased deposits at the point of shipment to market, during the first 20 years succeeding the execution of this lease. Royalties shall be payable monthly in cash or delivered in kind at the option of the lessor. It is expressly understood that the Secretary of the Interior may establish reasonable minimum values for the purpose of computing royalty on any of the leased deposits, due consideration being given to the highest price paid for a part or a majority of the production of like quality products from the same general area, the price received by the lessee, posted prices, and other relevant matters.

When paid in value such royalty on production shall be due and payable monthly on the last day of the calendar month following the calendar month in which produced.

When royalty is to be taken in kind the lessee will be notified prior to March 1 that delivery of royalty products will be required beginning June 1 of that year for a stated period not exceeding 12 months. When paid in kind royalty products shall be delivered in merchantable condition at the point of shipment without cost to the lessor, unless otherwise agreed to by the parties hereto, at such time and in such storage compartments provided by the lessee as may reasonably be required

by the lessor, *provided* that the lessee shall not be required to hold the royalty products in storage for more than 60 days beyond the end of the month in which produced, and, *provided further,* that the lessee shall in no manner be responsibile or held liable for the loss or destruction of the royalty product in storage from causes over which the lessee has no control.

(c) Rental. To pay the lessor, annually, in advance, for each acre or part thereof covered by this lease, beginning with the date hereof, the following rentals: 25 cents per acre or fraction thereof for the first calendar year; 50 cents per acre for the second, third, fourth, and fifth calendar years, respectively; and $1 per acre for the sixth and each succeeding calendar year during the continuance of the lease, such rental for any year to be credited against the first royalties as they accrue under the lease during the year for which the rental was paid.

(d) Minimum production. Beginning the sixth full calendar year of the lease, except when operations are interrupted by strikes, the elements or casualties not attributable to the lessee, or unless on application and showing made, operations shall be suspended when market conditions are such that the lessee cannot operate except at a loss, or suspended for the other reasons specified in sec. 39 of the act, to mine each year the leased deposits from any of the lands covered by this lease to a royalty value of $2 per acre or fraction thereof, or in lieu of any mining to pay minimum royalty of $2 an acre or fraction thereof.

(e) Payments. To make rental payments to the manager of the proper BLM office, except that when this lease becomes productive the rentals and royalties shall be paid to the appropriate regional mining supervisor of the United States Geological Survey, with whom all reports concerning operations under the lease shall be filed. All remittances to the manager shall be made payable to the Bureau of Land Management, those to the Geological Survey shall be made payable to the United States Geological Survey.

(f) Plats, reports, maps. At such times and in such form as the lessor may prescribe, to furnish a plat showing development work and improvements on the leased lands and a report with respect to stockholders, investment, depreciation, and costs. To furnish in such form as the lessor may prescribe, within 30 days from the expiration of each quarter a report covering such quarter, certified by the superintendent of the mine, or by such other agent having personal knowledge of the facts as may be designated by the lessee for such purpose, showing the amount of leased deposits mined during the quarter, the character and quality thereof, amount of its products and byproducts disposed of and price received therefor, and amount in storage or held for sale. To keep and prepare maps of the leased lands in accordance with the regulations in 30 CFR 231.

(g) Weights. To determine accurately the weight or quantity and quality of all leased deposits mined, and to enter accurately the weight or quantity and quality thereof in due form in books to be kept and preserved by the lessee for such purposes.

(h) Inspection. To permit at all reasonable times (1) inspection by any duly authorized officer of the Department of the leased premises and all surface and underground improvements, works, machinery, equipment, and all books and records pertaining to operations and surveys or investigations under this lease; and (2) the lessor to make copies of and extracts from any or all books and records pertaining to operations under this lease, if desired.

(i) Assignment. To file for approval in the proper BLM office within 90 days from the date of execution, any assignment or transfer made of this lease, whether by direct assignment, operating agreement, working or royalty interest, or otherwise. Such instrument will take effect the first day of the month following approval by the Bureau of Land Management, or if the assignee requests, the first day of the month of approval. The showing required to be made with an assignment or transfer is set forth in the appropriate regulations.

(j) Equal Opportunity clause. To comply with the following:

(1) The lessee will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The lessee will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The lessee agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of the Equal Opportunity clause.

(2) The lessee will, in all solicitations or advertisements for employees placed by or on behalf of the lessee, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.

(3) The lessee will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the lessee's commitments under this Equal Opportunity clause, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The lessee will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The lessee will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, as amended, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the lessee's noncompliance with the Equal Opportunity clause of this contract or with any of the said rules, regulations, or orders, this contract may be cancelled, terminated or suspended in whole or in part and the lessee may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, as amended, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, as amended, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The lessee will include the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, as amended, so that such provisions will be binding upon each subcontractor or vendor. The lessee will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance: *Provided, however,* That in the event the lessee becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the lessee may request the United States to

enter into such litigation to protect the interests of the United States.

(k) Lands disposed of with leased deposits reserved to the United States. If the lands embraced herein have been or shall hereafter be disposed of under laws reserving to the United States the leased deposits therein, to comply with all conditions as are or may hereafter be provided by the laws and regulations reserving such deposits.

(l) Operations, wages, freedom of purchase. To comply with the operating regulations (30 CFR 231) to exercise reasonable diligence, skill, and care in the operation of the property, and to carry on all operations in accordance with approved methods and practices as provided in the operating regulations, having due regard for the prevention of injury to life, health, or property, and of waste or damage to any water or mineral deposits; to pay all wages due miners and employees both above and below ground, at least twice each month in lawful money of the United States; to accord all miners and employees complete freedom of purchase; to restrict the workday to not exceeding 8 hours in any one day for underground workers, except in cases of emergency; to employ no boy under the age of 16 and no girl or woman, without regard to age, in any mine below the surface, unless the laws of the State otherwise provide, in which case the State laws control.

(m) Taxes. To pay when due all taxes lawfully assessed and levied under the laws of the State or the United States upon improvements, output of mines, or other rights, property, or assets of the lessee.

(n) Overriding royalties. Not to create, by assignment or otherwise, an overriding royalty in excess of 1 percent of the gross value of the output at the point of shipment to market unless the owner of that interest files his agreement in writing that such interest is subject to reduction or suspension to a total of not less than 1 percent of such gross value, whenever, in the interest of conservation, it appears necessary to do so in order to (1) prevent premature abandonment or (2) make possible the economic mining of marginal or low-grade deposits on the leased lands or any part thereof.

(o) Delivery of premises in case of forfeiture. In case of forfeiture of this lease to deliver up to the lessor in good order and condition the land leased, including all buildings and underground timbering, and such other supports and structures as are necessary for the preservation of the mine or deposits.

(p) Extraction by solution. Where the minerals are taken from the earth in solution, with the express consent of the lessor which must be first had and obtained, such extraction shall not be within 500 feet of the boundary line of leased lands without the permission of or unless directed by the lessor.

Sec. 3. The lessor expressly reserves:

(a) Rights reserved. The right to permit for joint or several use such easements or rights-of-way, including easements in tunnels, upon, through, or in the land leased, occupied, or used as may be necessary or appropriate to the working of the same or other lands containing the deposits described in the act, and the treatment and shipment of the products thereof by or under authority of the Government, its lessees or permittees, and for other public purposes.

(b) Disposition of surface. The right to lease, sell, or otherwise dispose of the surface of the leased lands under existing law or laws hereafter enacted, insofar as said surface is not necessary for the use of the lessee in the extraction and removal of the leased deposits therein, or to dispose of any resource in such lands which will not unreasonably interfere with operations under this lease.

(c) Monopoly and fair prices. Full power and authority to promulgate and enforce all orders and regulations issued under the provisions of sec. 30 of the act, as amended, necessary to insure the sale of the production of the leased lands to the United States and to the public at reasonable prices, to prevent monopoly, and to safeguard the public welfare.

(d) Renewal terms. The right reasonably to fix royalties payable hereunder and other terms and conditions at the end of 20 years from the date hereof and thereafter at the end of each succeeding 10-year period during the continuance of this lease unless otherwise provided by law at the time of the expiration of any such period. Unless the lessee files objections to the proposed terms or a relinquishment of the lease within 30 days after receipt of the notice of proposed terms for a 10-year period, he will be deemed to have agreed to such terms and to the renewal of the lease.

(e) Waiver of conditions. The right to waive any breach of the conditions contained herein, except the breach of such conditions as are required by the act, as amended, but any such waiver shall extend only to the particular breach so waived and shall not limit the rights of the lessor with respect to any future breach; nor shall the waiver of a particular cause of forfeiture prevent cancellation of this lease for any other cause, or for the same cause occurring at another time.

Sec. 4. *Relinquishment of lease.* Upon a satisfactory showing that the public interest will not be impaired, the lessee may surrender the entire lease or any legal subdivision thereof. A relinquishment must be filed, in *duplicate*, in the proper BLM office. Upon its acceptance it shall be effective as of the date it is filed, subject to the continued obligation of the lessee and his surety to make payment of all accrued rentals and royalties, and to provide for the preservation of any mines or productive works or permanent improvements on the leased lands in accordance with the regulations and terms of the lease.

Sec. 5. *Protection of the surface, natural resources, and improvements.* The lessee agrees to take such reasonable steps as may be needed to prevent operations, including operation of operating plants on the leased premises, from unnecessarily: (1) causing or contributing to soil erosion or damaging any forage and timber growth on the leased lands or on Federal or non-Federal lands in the vicinity; (2) polluting air and water; (3) damaging crops, including forage, timber, or improvements of a surface owner; (4) damaging improvements whether owned by the United States or by its permittees or lessees; or (5) destroying, damaging, or removing fossils, historic or prehistoric ruins, or artifacts; and upon any partial or total relinquishment or the cancellation or expiration of this lease, or at any other time prior thereto when required and to the extent deemed necessary by the lessor to fill any sump holes, ditches, and other excavations, remove or cover all debris, and, so far as reasonably possible, restore the surface of the leased land and access roads to its former condition, including the removal of structures as and if required. The lessor may prescribe the steps to be taken and restoration to be made with respect to the leased lands and improvements thereon, whether or not owned by the United States.

Sec. 6. *Removal of equipment, etc., on termination of lease.* Upon termination of this lease, by surrender or forfeiture, the lessee shall have the privilege at any time within a period of 90 days thereafter of removing from the premises all machinery, equipment, tools, and materials, other than underground timbering placed in or on the leased lands, by the lessee, which are not necessary for the preservation of the mine. Any materials, tools, appliances, machinery, structures, and equipment, subject to removal as above provided, which are allowed to remain on the leased lands shall become the property of the lessor on expiration of the 90-day period or such extension thereof as may be granted

because of adverse climatic conditions but the lessee shall remove any or all of such property when so directed by the lessor.

Sec. 7. *Proceedings in case of default.* If the lessee shall not comply with any of the provisions of the act or the regulations thereunder or make default in the performance or observance of any of the provisions of this lease and such default shall continue for a period of 30 days after service of written notice thereof by the lessor, the lessor may institute appropriate proceedings in a court of competent jurisdiction for the forfeiture and cancellation of this lease as provided in sec. 31 of the Mineral Leasing Act. If the lessee fails to take prompt and necessary steps to prevent loss or damage to the mine, property, or premises, or danger to the employees, the lessor may enter on the premises and take such measures as may be deemed necessary to prevent such loss or damage or to correct the dangerous or unsafe condition of the mine, or works thereof, which shall be at the expense of the lessee. However, the lessee shall not be held responsible for delays or casualties occasioned by causes beyond the lessee's control.

Sec. 8. *Heirs and successors in interest.* Each obligation hereunder shall extend to and be binding upon, and every benefit hereof shall inure to, the heirs, executors, administrators, successors, or assigns of the respective parties hereto.

Sec. 9. *Unlawful interest.* No Member of, or Delegate to, Congress, or Resident Commissioner, after his election or appointment, or either before or after he has qualified and during his continuance in office, and no officer, agent, or employee of the Department of the Interior, except as provided in 43 CFR 7.4(a)(1), shall be admitted to any share or part in this lease or derive any benefit that may arise therefrom; and the provisions of section 3741 of the Revised Statutes of the United States (41 U.S.C. sec. 22), as amended, and sections 431, 432, and 433, Title 18 U.S.C., relating to contracts, enter into and form a part of this lease so far as the same may be applicable.

SPECIAL STIPULATIONS ARE ATTACHED.

THE UNITED STATES OF AMERICA

By: _____
(Authorized Officer)

_____
(Title)

_____
(Date)

(Seal)

WITNESSES TO SIGNATURE OF LESSEE(S)

Linda R Hurley

MY COMMISSION EXPIRES
MAY 26, 1985

NOTARY PUBLIC
STATE OF NEW MEXICO

William H Brunstad
(Signature of Lessee)

_____
(Signature of Lessee)

_____
(Signature of Lessee)

If this lease is executed by a corporation, it must bear the corporate seal.

GPO 842 - 443

STIPULATIONS

The Mining Supervisor means the authorized representative of the District Mining Supervisor, Minerals Management Service, P. O. Box 1716, Federal Building, Fox and Halagueno Streets, Carlsbad, New Mexico 88220. The Authorized Officer means the authorized representative of the District Manager, Bureau of Land Management, P. O. Box 1397, 1717 W. 2nd Street, Roswell, New Mexico 88201.

1. Before conducting any operations under this lease, the operator is required to submit an exploration or mining plan to the Mining Supervisor in accordance with regulations 30 CFR 231.10. The Mining Supervisor will consult with the Authorized Officer prior to approval of the plan. No operations will be conducted without an approved plan.

2. Operations shall not be conducted which in the opinion of the Mining Supervisor would constitute a hazard to oil and gas production or that would unreasonably interfere with orderly development and production under any oil and gas lease issued for the same lands.

3. Existing roads and trails will be used to the extent practical. Unless otherwise restricted, access roads will be planned so that they are as inconspicuous as possible when reviewed from the public vantage point. Roads shall be constructed so as to control and minimize channeling and other erosion and to minimize surface disturbance. The routes of proposed access roads will be field checked by the Mining Supervisor, after consultation with the Authorized Officer prior to construction to ensure that surface disturbance is minimized.

4. Construction activities will not be allowed within 300 yards of any wildlife waters, sinks containing perennial water or groves of trees (three or more) which are over 15 feet high unless otherwise authorized by the Mining Supervisor, after consultation with the Authorized Officer.

5. Construction activities will not be allowed within 500 yards of any active raptor nest, except crows and ravens, from April 1 to September 30 unless otherwise authorized by the Mining Supervisor, after consultation with the Authorized Officer.

6. No construction sites will be located in forb producing depressions without specific authorization of the Mining Supervisor, after consultation with the Authorized Officer.

7. Top soil from construction sites shall be removed and stockpiled to facilitate its use in final back filling and grading as provided in an approved exploration or mining plan.

8. Unless otherwise authorized, reclamation of drill pads and access roads will be completed within 6 months of completion of exploration at any particular drill hole. This may include reseeding with a specified seed mixture.

9. Any use of water from wildlife exclosures will require the approval of the Mining Supervisor, after consultation with the Authorized Officer.

10. The lessee may be requested to convert certain exploration drill holes into water or brine observation wells. The conversion will be done by the lessee in a manner approved by the Mining Supervisor. The lessee will be reimbursed for the cost of conversion that exceeds the normal cost of abandonment of the well. The Federal Government will assume the responsibility for subsequent plugging and abandonment.

11. Upon abandonment, drill holes will be properly sealed to protect water bearing aquifers in a manner approved by the Mining Supervisor.

12. No new caliche pits or other material pits on federal lands will be allowed without the approval of the Mining Supervisor, after consultation with the Authorized Officer.

13. All trash shall be hauled to an approved sanitary landfill or dump site. Any other methods of disposal shall first be approved by the Mining Supervisor, after consultation with the Authorized Officer.

14. a. Prior to any surface-disturbing activities, the lessee shall have a qualified archaeologist acceptable to the Authorized Officer conduct an archaeological survey of the areas to be disturbed.

The Mining Supervisor, after consultation with the Authorized Officer, may require the relocation of construction activities to protect archaeological values located on areas to be disturbed or he may require the lessee to have the site excavated and salvaged by a qualified archaeologist, if relocation is not possible.

b. If during surface-disturbing activities any cultural resources materials are uncovered, the lessee will immediately halt construction and notify the Mining Supervisor or, if unavailable, the Authorized Officer.

A BLM archaeologist will then assess the significance of the find and recommend appropriate mitigation measures. The Mining Supervisor, after consultation with the Authorized Officer, will then notify the lessee of those mitigating measures required preceding further surface disturbing activities.

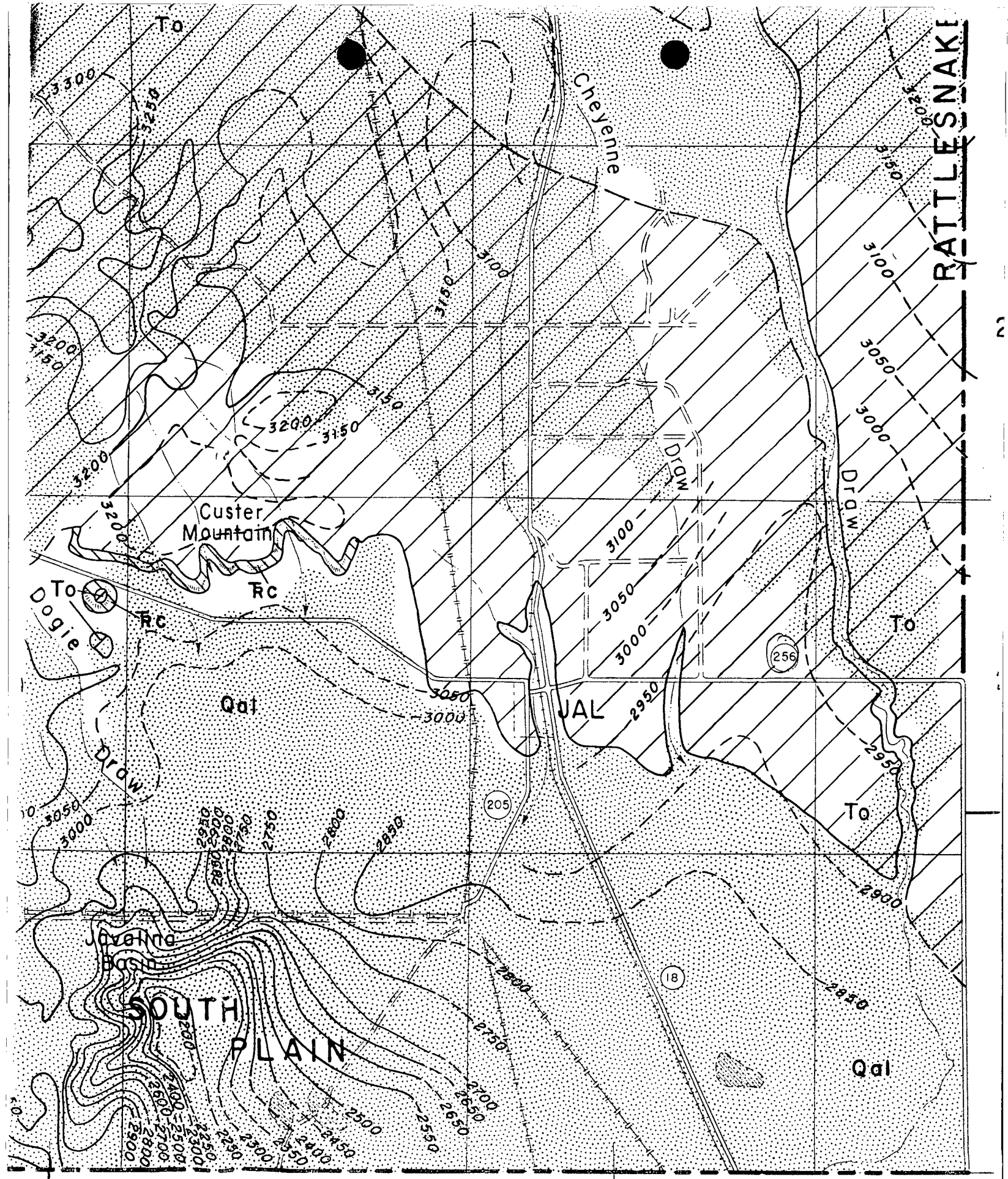
2/18/88 Salado Brine Station

BLM / Roswell - Carlsbad ~~Jamie Murdock~~

IN = Out ± ΔS

Discussed EID Q&C Letter on renewal ~~application~~ application

1. OK
2. OK will send us copies of inspections
3. OK
4. OK
5. OK
6. OK EID
7. OK - will provide paper fracture pressure lbs/in²
8. OK
9. OK Down-hole = 250 ± 2100 ft -
10. P&A, ~~decommission facility~~, hydrogeologic study
11. OK working on providing X-section regional, site specific
12. OK Have copies from GW Report 6, Bureau of Mines & Mineral Resources, Nicholson
13. Will Commit to Ceased operation if problem & Clebsch 1961

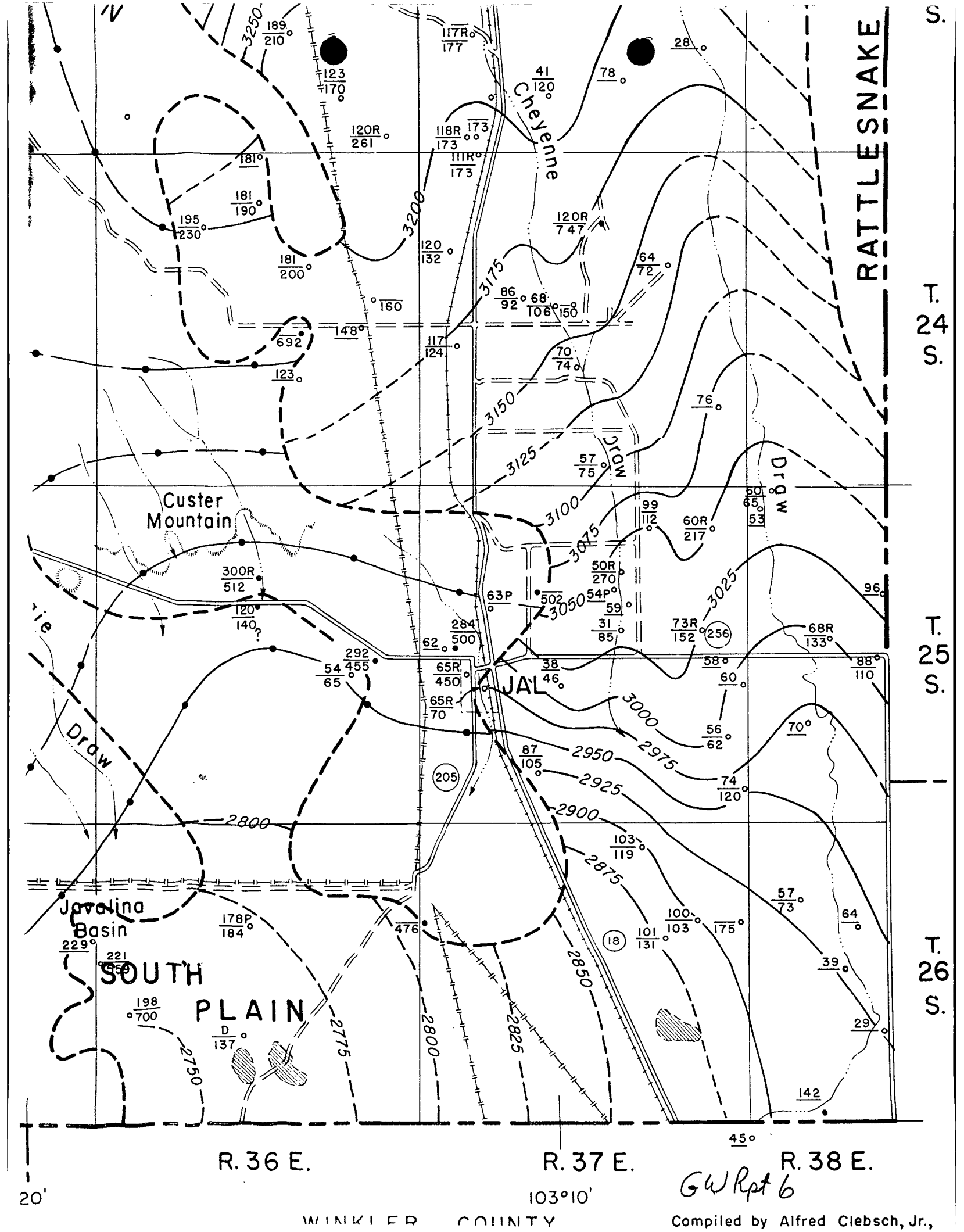


R. 36 E. R. 37 E. GW Rpt 6 R. 38 E.

20' 103°10'

WINKLER COUNTY

Geology by Alexander Nicholson, J
Contours on buried red-bed surfa
compiled by Alexander Nicholson


RATTLESNAKE
Cheyenne
Custer Mountain
Draw
Draw
Draw
JAL
SOUTH PLAIN
Javalina Basin
3250
3200
3175
3150
3125
3100
3075
3050
3025
3000
2975
2950
2925
2900
2875
2850
2825
2800
2775
2750
T. 24 S.
T. 25 S.
T. 26 S.
R. 36 E.
R. 37 E.
R. 38 E.
20'
103°10'
GW Rpt 6
WINKLER COUNTY
Compiled by Alfred Clebsch, Jr.,

[redacted]

[redacted]

2/2/88 B.C. Mtg on Salado Brine Station
Richard Mitzelfelt
Ernie Rebuck
Kevin Lambert

I will schedule a meeting to discuss Salado Brine Station w/ Christine B. call ~~Thursday~~ Monday 2/8/88

2/8/88
395-2010
8:15 Am

Doesn't like regs

will call Friday to schedule mtg Next week

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

ENVIRONMENTAL IMPROVEMENT DIVISION

Michael J. Burkhart
Director

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

December 31, 1987

W.H. Brininstool
Salado Brine Sales
P.O. Drawer A
Jal, NM 88252

Dear Mr. Brininstool:

The Underground Injection Control staff of the New Mexico Environmental Improvement Division Ground Water Section would like to thank you for your cooperation during our recent inspection of Salado Brine Sales brine facility. A copy of the inspection form is attached for your reference. No violations were noted during the inspection.

Thank you for your continued cooperation. Should you have any questions feel free to contact me (827-2902) or John Parker (827-0027).

Sincerely,

John W Parker

for Kevin Lambert
Hydrologist
Ground Water Section

KL:JP:egr

Enclosure

BRINE STATION INSPECTION FORM

DATE Dec. 02 1987 EID INSPECTOR Lambert / Parker
FACILITY Salado Brine LOCATION Sal
FACILITY REP ON SITE W. H. Brininstool COUNTY Lea

WELL OPERATION

WELL IS INJECTING: ✓ THROUGH ANNULUS __ THROUGH TUBING
SOURCE OF FRESH WATER Well Water
TRACE INJECTION/PRODUCTION LINES Buried lines

WELL HEAD PRESSURE 200-300 PSIG PUMP PRESSURE ____ PSIG
LEAKS AROUND WELL OR PUMP Clean w/ spill collection system

STORAGE AREA

FOR PONDS:
GENERAL LINER APPEARANCE Looks Good

AMOUNT OF FREEBOARD 2-3 ft
ANY SIGN OF OVERFLOW OR LEAKS None
LEAK DETECTION SYSTEM __ FLUIDS ✓ DRY

FOR TANKS:
GENERAL APPEARANCE Looks Good
LABLED PLAINLY ✓ YES __ NO
BERMED TO PREVENT RUNOFF ✓ YES __ NO
CHECK CONTENTS TO ASSURE PROPER FLUID/LABLE MATCH

NUMBER OF TANKS FOR BRINE ____ FRESH WATER 2

LOADING AREA

PROPERLY GRADED AND BERMED TO CONTAIN SPILLAGE	✓ YES	__ NO
ANY EVIDENCE OF RECENT SPILLAGE	__ YES	✓ NO
DOES FACILITY HAVE A SPILL COLLECTION SYSTEM	✓ YES	__ NO
ANY EVIDENCE OF OIL SPILLING/DUMPING	__ YES	✓ NO

MONITORING WELLS

DEPTH ____ FT STATIC WATER LEVEL ____ FT BELOW CASING
SAMPLED THIS VISIT __ YES __ NO TEMP ____ Ec ____

COMMENTS Station is clean & operated in very professional manner
Will be sending discharge O&C letter regarding renewal

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

ENVIRONMENTAL IMPROVEMENT DIVISION

Michael J. Burkhart
Director

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

December 16, 1987

Salado Brine Sales
Christine Brininstool
Drawer A
Jal, New Mexico 88252

RE:DP-320

Dear Ms. Brininstool:

The Environmental Improvement Division's (EID) Ground Water Section has completed review of Salado Brine Sales (Salado) April 23, 1987, submittal for renewal of your previously approved discharge plan DP-320. The focus of our review for renewal is on conformance to Part V of the Water Quality Control Commission (WQCC) regulations. Before the evaluation can be completed the following comments and informational requests need to be addressed.

Comments and questions are itemized as follows (WQCC regulatory reference in parenthesis):

1. The discharge plan lacks the signatory requirement certification: "I certify under penalty of law..." which must be signed by a principal executive officer, general partner, or duly authorized representative (5-101.H.1. and 2.).

2. Please submit detailed information on the type of pond liner used for your brine storage pond, and construction specifications for the pond and leak detection system (3-107.C.7.). Please include information concerning installation procedures for all aspect of the brine storage pond.

3. Please submit a detailed map showing the "area of review" that identifies the location of all known wells and fractures which may penetrate the injection zone (5-202.A.). The area of review must be at least a quarter mile radius around the injection well and the map must include appropriate scales (5-202.B.2.; 5-210.B.2.). We suggest you contact the local Oil Conservation Division (OCD) office to solicit this information since oil and gas wells would be likely to penetrate the injection zone.

4. Please submit documentation which demonstrates that all known wells, drill holes, and other conduits within the area of review which may penetrate the injection zone are properly sealed, completed, plugged or abandoned (5-203.A.; 5-210.B.3.). Also, Salado needs to make a commitment to take such steps (corrective action) as necessary to eliminate conduits for the migration contaminants into ground water (5-203.B.; 5-210.B.4.). The OCD may be able to provide information regarding the proper completion or plugging and abandonment of oil and gas wells which may penetrate the injection zone.

5. Please provide this office with a copy of the results of a pressure test, using the attached "Brine Well Pressure Test" procedure (5-204.B.1.b.). If you wish you can use a different procedure, but you must provide us with a copy of the alternate procedure used as well as a copy of the test results (5-204.C.). Also, in order to determine existence of possible conduits for fluid movement, EID needs a commitment from you to conduct a cement bond log or equivalent procedure during the five year renewal period (5-204.B.2.; 5-205.A.4.b.).

6. Salado needs to make a commitment to notify this office "prior to commencement of drilling, cementing and casing, well loggings, mechanical integrity tests, and any other well workover..." (5-205.A.5.).

7. Please provide a comparison of fracture pressure for salt at the injection interval (approximately 2400 feet) with the down-hole pressure resulting from the maximum operating pressure (5-205.A.3.i.; 5-206.A.1.). Also, include a description of the injection procedure for the well specifying average and maximum injection pressure, injection volume, and other pertinent procedures (5-205. A.3.b.,f.; 5-210.B.8.,12.).

8. Salado must make a commitment to monitor injected and produced fluid volumes (5-207.C.2.) and report quarterly required monitoring (5-208.B.2.). Also, all reports submitted must meet the report signatory requirements (5-208.C.1.; 5-210.B.16.).

9. Salado needs to make a commitment to notify EID within 48 hours of a leak, spill, or other unanticipated discharge on the surface or underground at your facility (5-208.B.1.).

10. Please provide this office with a plugging and abandonment plan for our review. This plan must explain plugging and abandonment procedures and include a plan for decommissioning of surface facilities. Also, please submit copies of the blanket/surety bond and documentation that demonstrates the sum of the bond is adequate to properly plug and abandon the brine well (5-209.A.,D.; 5-210.B.17.).

11. Please provide maps and cross-sections showing vertical and horizontal limits of all ground water having less than 10,000 mg/l TDS in the area (5-210.B.5.).

12. Please provide generalized and specific maps and cross-sections depicting both regional and site-specific geology (5-210.B.7.).

13. Please provide a detailed contingency plan which at a minimum addresses: all shut-ins or loss of mechanical integrity in the injection well (5-210.B.15.).

Should you have any questions, please feel free to contact me (827-2902).

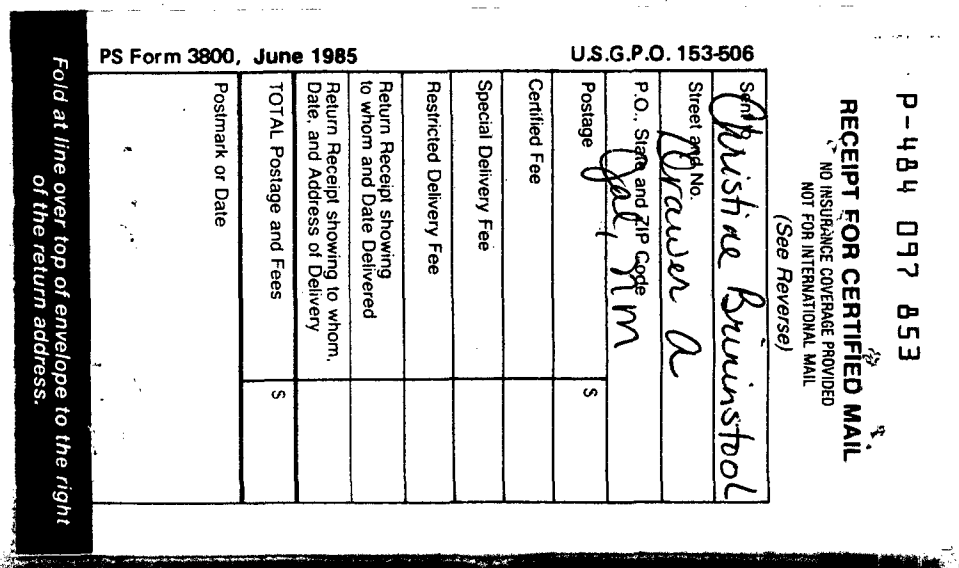
Sincerely,

Kevin Lambert
Hydrologist
Ground Water Section

KL:kl

cc: Garrison McCaslin, EID District IV Manager, Roswell
Roelf Ruffner, EID Field Office, Hobbs

Enclosure



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

Ecological Services
Suite D, 3530 Pan American Highway NE
Albuquerque, New Mexico 87107

July 7, 1987

Mr. Michael J. Burkhart, Director
New Mexico Health and Environment Department
Environmental Improvement Division
P. O. Box 968-Crown Building
Santa Fe, New Mexico 87504-0968

Dear Mr. Burkhart:

This responds to your public notice dated July 1, 1987 in which several proposed groundwater discharge plans were described. We have reviewed all of the plans and have not identified any resource issues of concern to our agency in the following:

DP-381, Conoco Incorporated, Lea County, Hobbs, NM.
DP-497, Kirtland Air Force Base, Bernalillo County, Kirtland AFB, NM.
DP-496, Phelps Dodge Corp., Grant County, Tyrone, NM.
DP-320, Salado Brine Sales, Lea County, Jal, NM.
DP-326, Sims-McCasland Water Sales, Lea County, Eunice, NM.
DP-297, U.S. Army White Sands Missile Range, Otero County, NM.

These comments represent the views of the Fish and Wildlife Service. If you have any questions concerning our comments, please contact Tom O'Brien at FTS 474-7877 or (505) 883-7877.

Sincerely yours,

John C. Peterson
Field Supervisor

cc:
Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico
Regional Administrator, Environmental Protection Agency, Dallas, Texas
Regional Director, FWS, FWE, Albuquerque, New Mexico

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

June 23, 1987

Salado Brine Sales
W.H. Brininstool, Owner-Operator
Drawer A
Jal, New Mexico 88252

Dear Mr. Brininstool:

Enclosed is a copy of the public notice pertaining to your proposed discharge which was issued by this division pursuant to New Mexico Water Quality Control Commission Regulations, Section 3-108.

If you have any questions, please do not hesitate to contact me at the address listed above or at phone number (505) 827-2900.

Sincerely,

Ernest C. Rebuck
Program Manager
Ground Water Section

ECR/mp

Enclosure

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

June 23, 1987

The Honorable JoAnn Martin, Mayor
City of Hobbs
P.O. Box 1117
Hobbs, New Mexico 88240

Dear Mayor Martin:

Enclosed is a public notice which includes notice of a proposed discharge plan(s) for one or more operations in or near your city.

If you have any questions, please do not hesitate to contact me at the address given above or at 827-2900.

Sincerely,

Ernest C. Rebuck
Program Manager
Ground Water Section

ECR/mp

Enclosure

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

June 23, 1987

Board of County Commissioners
Lea County Courthouse
Hobbs, New Mexico 88240

Board of County Commissioners:

Enclosed is a public notice for one or more operations located in your county.

If you have any questions, please do not hesitate to contact me at the address listed above or at phone number (505) 827-2900.

Sincerely,

Ernest C. Rebuck
Program Manager
Ground Water Section

ECR/mp

Enclosure

TO BE PUBLISHED ON OR BEFORE JULY 1, 1987

PUBLIC NOTICE
NEW MEXICO ENVIRONMENTAL IMPROVEMENT DIVISION

Notice is hereby given that, pursuant to New Mexico Water Quality Control Commission Regulations, the following proposed discharge plans have been submitted for approval to the Director of the New Mexico Environmental Improvement Division, P.O. Box 968, Santa Fe, New Mexico 87504-0968; telephone (505) 827-2900.

(DP-318) CONOCO INCORPORATED, P.O. Box 460, Hobbs, New Mexico 88240, proposes to renew their approved discharge plan (DP-318) for a brine water in situ extraction well and surface facility located at Section 2, T20S, R38E, Lea County, New Mexico. The operation involves the injection of fresh water into an underlying salt formation thereby dissolving the salt and forming a brine water solution which is then extracted via a production well and used for oil and gas production. The groundwater below the site is at a depth of 70 to 145 feet and has a total dissolved solids concentration of 1,150 mg/l.

(DP-497) KIRTLAND AIR FORCE BASE, Harry M. Davidson, contact person, 1606 ABW/DEEV, Kirtland AFB, New Mexico 87117-5000, has submitted a discharge plan application for their existing sewage lagoons. Approximately 440,000 gallons per day of mixed sewage effluent (30% domestic, 70% nondomestic) are applied to their 161 acre golf course during the months of March thru October. The effluent is mixed with ground water from a water supply well near the golf course before it is applied. The location of the discharge site is T4N, R4E, Section 8 in Bernalillo County, New Mexico. During the months of November through February, approximately 27,370,000 gallons are stored in two 7 acre lagoons located at T9N, R4E, Section 6. The effluent is pumped from the lagoons to a holding pond at the gold course from which they irrigate. The depth to ground water is estimated by the discharger to be approximately 580 feet with a total dissolved solids concentration of 380 mg/l.

(DP-496) PHELPS DODGE CORPORATION, Tyrone Branch, Tyrone, New Mexico 88065, Richard E. Rhoades, Manager, has submitted a proposed discharge plan for the 1D copper leach dump located in Sections 13 and 14, T19S, R15W, NMPM in Grant County. The dump area covers approximately 266 acres. Copper is leached out of the dump by low pH, acidic fluids. The copper bearing solution is then pumped to a solvent extraction/electrowinning plant for removal of the copper. The barren solution is then returned to the leach circuit. The flowrate is approximately 6000 gpm. The ground water most likely to be affected is at a depth ranging from 200 to 600 feet with a total dissolved solids concentration ranging from 300 to 2500 mg/l.

(DP-320) SALADO BRINE SALES, W.H. Brininstool, Owner-Operator, Drawer A, Jal, New Mexico 88252, proposes to renew its approved discharge plan (DP-320) for their brine in situ extraction well and surface facility located in T25S, R37E, Section 14, Lea County, New Mexico. Brine is manufactured by injecting fresh water down their injection well to an underlying salt formation. The brine water solution has a total dissolved solids content of approximately 350,000 mg/l. Ground water most likely to be affected is at a depth of 200 feet with a total dissolved solids concentration of about 1000 mg/l.

(DP-326) SIMS-McCASLAND WATER SALES, 2105 Avenue O, Eunice, New Mexico 88231, proposes to renew their approved discharge plan (DP-326) for a brine water in situ extraction well and surface facility located at Section 32, T21S, R37E, Lea County, New Mexico. The operation involves the injection of fresh water into an underlying salt formation thereby dissolving the salt and forming a brine water solution with a total dissolved solids content of approximately 300,000 mg/l. The brine solution is then extracted via a production well and sold to other companies for oil and gas production use. The groundwater below the site is at a depth of 140 feet and has a total dissolved solids concentration of 2,500 mg/l.

(DP-297) U.S. ARMY WHITE SANDS MISSILE RANGE, White Sands Missile Range, New Mexico 88002-5076, proposes to renew and modify previously approved discharge plan DP-297. The original discharge plan was for the discharge of 15,000 gallons per day of domestic wastewater from the High Energy Laser Systems Test Facility into Hypalon lined evaporation lagoons located in Section 28, T19S, R6E, Otero County, New Mexico. The proposed modification is to discharge overflow from the lined lagoons into an adjacent unlined lagoon during emergency situations. Wastewater from the lined lagoons would also be used to water trees. The ground water below the site is at a depth of 90 to 130 feet and has total dissolved solids concentration of approximately 6,700 mg/l.

Any interested person may obtain further information from the Ground Water Section, Ground Water/Hazardous Waste Bureau, EID, and may submit written comments to the Director of the EID at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of EID will allow thirty (30) days after the date of publication of this Notice during which comments may be submitted to him and a public hearing may be requested by any interested person. Requests for public hearing shall set forth the reasons why the hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

SALADO BRINE SALES

Drawer A

Jal, New Mexico 88252

(505) 395-2010

April 23, 1987

Kevin Lambert
Ground Water Section/Underground
Injection Control
P.O. Box 968
Santa Fe, NM 87504-0968

Re: Discharge plan for brine insitu extraction well, Section 14, Township 25S, Range 37E, NMPM, Lea County, New Mexico, permit #40527.

Dear Mr. Lambert:

The topographic map shows the location of our facility, the location of the fresh water supply pipelines and all water wells within a two mile radius.

The drilling information contained on the enclosed injection well data sheet was furnished by Baber Well Service of Hobbs, New Mexico, drillers of the well. Also enclosed is a legible copy of brine water analysis and a summary of brine production.

The following information is taken from the report of the U. S. Geological Survey following their investigation of data taken from three petroleum well logs near the site area: Halite beds in the area are found principally in the Salado formation and in some instances in the overlying Rustler formation, of Permian Age. The Halite beds are from 1,150' to 1,250' thick, and occur at depths between 860' and 1060' below the surface. Potable water sources in the area are located at depths of about 200' in the Tertiary Ogallala formation. No abnormal pressure zones or lost return zones were found on the drilling logs. Geologically, the land in the site area lie on the shelf East of the Delaware Basin, just East of the buried Capitan Reef front. Surface rocks consist of Quaternary Alluvium and Bolson deposits. There are no nearby arroyos or draws and the facility is situated on a basically level portion of the South Plain.

Cordially,

Chris Brininstool

Christine Brininstool
CB/th

Enclosures: Brine production summary
Injection well data sheet
Brine water Analysis
Photos
Topographic map
Operational chart & Narration

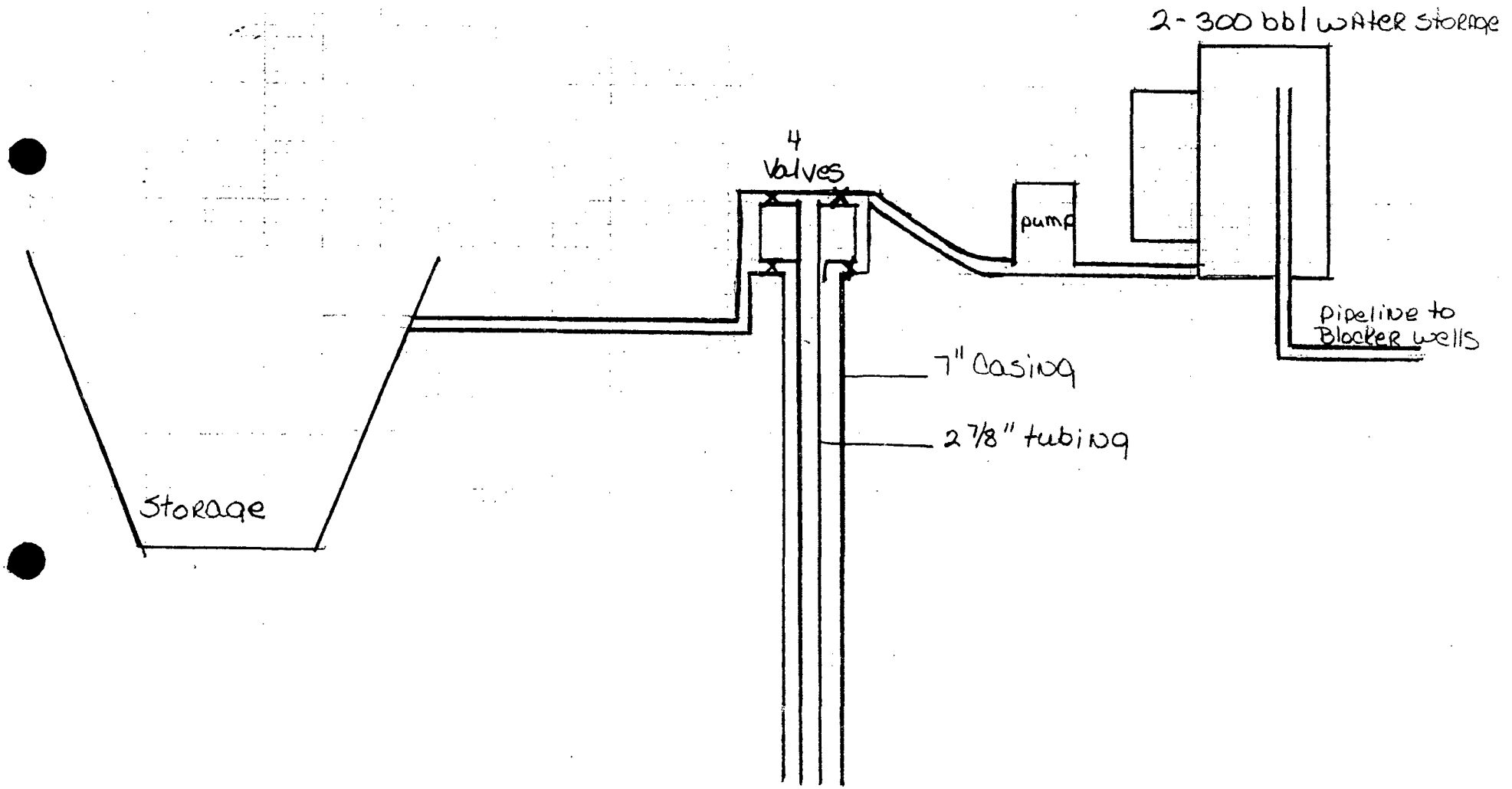
Fresh water for brine production is stored in the two 300 bbl fiberglass tanks on the facility location (photo 1). When the tanks' level drops, the Blocker water well pumps are automatically turned on.

The three Blocker Ranch water wells shown on the map (wells CP258, CP261 both .8 miles East, and CP260, one mile Southeast, are 100 feet deep) are our source for the fresh water used in our injection well. Blocker Ranch owns the three wells and are our commercial suppliers. Blocker Ranch pumps the water to our facility via a 3" SDR 17 polyethylene pipeline from their CP258 and CP261 wells constructed December, 1980, and a 4" SDR 17 polyethylene pipeline from their CP260 well constructed July, 1981. Both pipelines are positioned 18 inches below ground level and all three have metering devices at the well pumps.

The brine storage pit is equipped with an underwater probe divice that automatically activates the injection well pump when the pit level reaches a certain level. Fresh water is pumped from the 300 bbl storage tanks down the casing to a depth of 2101', dissolves in the Halite fromation and is pumped to the surface in the 2 7/8" tubing, enters a 3" polyethylene pipeline buried 1' below ground level and travels via this pipeline to the storage pit 258' from the well head (photo 2). The well head is equipped with 4 valves for backflushing. Brine is produced at 120 gallons per minute. The process is instantanious: When a gallon of fresh water is pumped into the injection well, a gallon of brine enters the the storage pit. Other than signs of water on the ground surface above the pipeline, you would know immediately of leakage if no return occurred in the storage pit. The same holds true on the water supply pipeline. Our brine station is checked several times a day by our pushers on duty and all of our drivers are also checking as they come in for brine.

The loading area (photo 3 & 4) is concrete with a drainage system connected to a concrete sump pit covered by a metal grill. If overflow occurs during loading, the brine goes into the sump pit. The pit is pumped out periodically by our trucks and transported to our disposal well East of Jal. The brine metering device (photo 5) is a key system: When the driver inserts a key into the device, it activates the pump at the storage pit which pumps 150 bbls in 8.6 minutes.

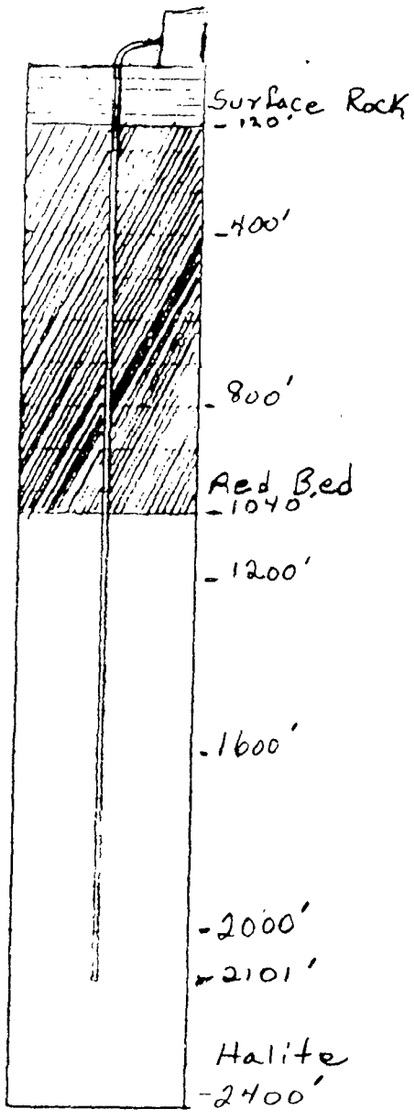
The storage pit is fenced and a sign displayed according to regulations (photo 6). As all of the photographs of our facility indicate, there would be no way that liquids on the ground would go unnoticed or that we could lose a vloumn of water or brine on the site and not be aware instantly of the problem. The storage pit is 110' x 110' at the top and 90' x 90' at the bottom and 10' deep, and is constructed according to the exact specifications as outlined by the Energy and Minerals Department, Oil Conservation Division-inspected and approved by same office before and after the liner was applied.


2 - 300 bbl water storage
4
Valves
pump
pipeline to
Blocker wells
7" casing
2 7/8" tubing
Storage

INJECTION WELL DATA SHEET

OPERATOR	LEASE			
W. H. BRININSTOOL	SALADO			
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE
1		14 SE 1/4	25S	37E.

Schematic



Tabular Data

Surface Casing

Size 7" " Cemented with 124 sx.

TOC SURFACE feet determined by _____

Hole size 8 3/4"

Intermediate Casing

Size -0- " Cemented with _____

TOC _____ feet determined by _____

Hole size _____

Long string

Size 3 1/2" " Cemented with -0- sx.

TOC -0- feet determined by _____

Hole size 6 1/4"

Total depth 2101

Injection interval

-0- feet to -0- feet

(perforated or open-hole, indicate which)

INFORMATION SUPPLIED BY BABER WELL SERVICE

Tubing size 2 7/8" lined with -0- (material) set in a

-0- (brand and model) packer at -0- feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation NONE
2. Name of Field or Pool (if applicable) _____
3. Is this a new well drilled for injection? [X] Yes [ ] No

   If no, for what purpose was the well originally drilled? _____
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. NO OVERLYING

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. 587465

TO: [illegible] SAMPLE RECEIVED 5-28-87

[illegible] RESULTS REPORTED 5-29-87

COMPANY [illegible] LEASE

FIELD OR POOL

SECTION BLOCK SURVEY COUNTY [illegible] STATE

SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1 [illegible]

NO. 2

NO. 3

NO. 4

REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES				
	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.				
pH When Sampled				
pH When Received				
Bicarbonate as HCO_3				
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$				
Calcium as Ca				
Magnesium as Mg				
Sodium and/or Potassium				
Sulfate as SO_4	[illegible]			
Chloride as Cl	7,2[illegible]			
Iron as Fe	208,7[illegible]			
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated				
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide				
Resistivity, ohms/m at 77° F.				
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				
	20[illegible].0			
Results Reported As Milligrams Per Liter				
Additional Determinations And Remarks				
The undersigned certifies the [illegible] knowledge [illegible].				

Form No. 3

By

BRINE PRODUCTION SUMMARY

YEAR	BBLS.
1981	502,258
1982	430,576
1983	319,536
1984	454,351
1985	306,396
1986	111,191
1987 1st 5 months	79,713
Total to date	2,204,021

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L MUTH
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

February 25, 1987

JoAnn Brininstool
Salado Brine Sales
P.O. Drawer A
Jal, NM 88252

RE: Discharge Plan DP-320

Dear Ms. Brininstool:

In the summer of 1983, the Water Quality Control Commission (WQCC) transferred its delegation of authority from the Oil Conservation Division (OCD) to the Environmental Improvement Division (EID) to administer discharge plans for brine extraction facilities. On December 18, 1982, the discharge plan DP-320 for the Salado Brine Sales brine station in Jal located in Lea County was approved by the Director of the OCD. This discharge plan was required and submitted pursuant to WQCC Regulations and it was approved for a period of up to five years. The approval will expire on December 18, 1987.

If you are still discharging at this facility and wish to continue discharging, please submit your application for renewal of plan approval, including a complete Part 5 discharge plan amendment/renewal, as quickly as possible. The necessary forms for making those submissions are enclosed. Submitting your application in a timely fashion will aid the EID in processing your discharge plan prior to the expiration date. Also, please indicate whether you have made or intend to make any changes in your discharge.

Section 5-101.G. of the WQCC regulations assures that those who are in compliance with their approved discharge plan on the date of its expiration, and who submit a complete application for a discharge plan renewal at least 180 days before the expiration date, which in this case would be June 15, 1987, will remain in compliance until the application for discharge plan renewal has been approved or disapproved. Applications for renewals submitted after June 15, 1987 may result in a discharge not in compliance, if EID is not provided sufficient time to process the application. Therefore, the EID recommends you submit an application for discharge plan renewal which include and adequately address all of the information necessary for evaluation of a new discharge plan well in advance of June 15, 1987.

If you are no longer discharging and discharge plan renewal is not needed, please notify this office.

If you have any questions, please do not hesitate to contact me at the address listed on the letterhead or telephone number 827-2902.

Sincerely,

Kevin Lambert
Hydrologist
Ground Water Section/Underground
Injection Control

KL:egr

Enclosures

cc: Garrison McCaslin, EID District IV Manager, Roswell

BRINE STATION INSPECTION FORM

DATE 12/10 1996 EID INSPECTOR Lambert, Koschal / Baker
FACILITY Salado Brine Sales LOCATION JAL T25S R37E Sec 14
FACILITY REP ON SITE Brinistool COUNTY LEA
DP-320

WELL OPERATION

WELL IS INJECTING: __ THROUGH ANNULUS Reversable __ THROUGH TUBING
SOURCE OF FRESH WATER Water well / City Water
TRACE INJECTION/PRODUCTION LINES Buried Lines

WELL HEAD PRESSURE _____ PSIG PUMP PRESSURE 150 PSIG
LEAKS AROUND WELL OR PUMP None

STORAGE AREA

FOR PONDS:
GENERAL LINER APPEARANCE Hypalon Liner Good Shape
AMOUNT OF FREEBOARD ~2 ft
ANY SIGN OF OVERFLOW OR LEAKS None
LEAK DETECTION SYSTEM __ FLUIDS X DRY

FOR TANKS:
GENERAL APPEARANCE Good Shape Fresh Water Only
LABLED PLAINLY __ YES [redacted] NO
BERMED TO PREVENT RUNOFF __ YES __ NO
CHECK CONTENTS TO ASSURE PROPER FLUID/LABLE MATCH _____

NUMBER OF TANKS FOR BRINE _____ FRESH WATER 2

LOADING AREA

PROPERLY GRADED AND BERMED TO CONTAIN SPILLAGE	X YES	__ NO
ANY EVIDENCE OF RECENT SPILLAGE	__ YES	X NO
DOES FACILITY HAVE A SPILL COLLECTION SYSTEM	X YES	__ NO
ANY EVIDENCE OF OIL SPILLING/DUMPING	__ YES	X NO

MONITORING WELLS

DEPTH _____ FT STATIC WATER LEVEL _____ FT BELOW CASING
SAMPLED THIS VISIT __ YES __ NO TEMP _____ Ec _____

COMMENTS Facility in good shape Jamie Murdock w/ BLM Carlsbad
located on federal

HEALTH ENVIRONMENT department

STATE OF NEW MEXICO

ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 984-0020

Steven Asher, Director

TONEY ANAYA
GOVERNOR

ROBERT McNEILL
SECRETARY

ROBERT L. LOVATO, M.A.P.A.
DEPUTY SECRETARY

JOSEPH F. JOHNSON
DEPUTY SECRETARY

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

February 9, 1984

Ms. Jo Ann Brininstool
Salado Brine Sales
P.O. Drawer A
Jal, NM 88252

Dear Ms. Brininstool:

For your information, the responsibility for regulating brine extraction wells in the state of New Mexico was transfered in September, 1983 from the Oil Conservation Division (OCD) of the Energy and Minerals Department, to the Environmental Improvement Division (EID) of the Health and Environment Department.

The transfer will probably have no effect on your operation until 1986, when, if you plan to continue producing brine at your facility, you will need to start the process of applying for renewed approval of your discharge plan. Your present approval expires December 18, 1987, five years after the date the plan was approved.

At that time, you will need to prepare a discharge plan which includes the elements required under Section 5 as well as Section 3 of the Water Quality Control Commission (WQCC) Regulations (copy enclosed). Prior to December 20, 1982, a discharge plan consisted of only those elements listed in Section 3. Section 5 was added to the regulations in order to comply with federal Environmental Protection Agency (EPA) regulations to protect drinking water from pollution that might occur due to injection of fluids underground. The preparation of a Part 5 UIC application will require you to provide considerably more technical information than was needed for Part 3 discharge plan approval. It is for this reason that we recommend you begin to prepare your discharge plan renewal about eighteen months before the date that you current permit lapses. This should allow ample time for preparation, review, correction and final submittal of your new plan.

In the meantime, you are required to operate your facility in compliance with the standards of Section 3 of the WQCC Regulations. As time permits, we will

undertake a review of your present discharge plan and your field operation, to assure that it meets those standards.

If you have any questions or require further information, please contact me at the above address and telephone number (ext. 285).

Sincerely,

Paige Grant

Paige Grant
Hydrologist
Ground Water Section

PG:egr

Enclosure

cc: John Guinn, EID District IV, Manager
EID Field Office, Hobbs
Joe Ramey, Director, OCD

mse

LANGLIE #1

B11

INVENTORY OF SOLUTION MINING WELLS OIL CONSERVATION DIVISION, 1981

*.= please attach pertinent documents

I. OPERATOR / LOCATION INFORMATION LANGLIE FED. BRINE WELL #1

Operator W. H. BRININSTOOL

Address DRAWER A

JAL, NM 88252 Phone 505-395-2010

Well unit # P Location 115/S 725/E

T. 25 R. 37 Sec. 14 SE 1/4 SE 1/4 SW 1/4

County LEA .344

Purpose of well (brine supply, LPG storage, potash dissolution)

BRINE SUPPLY WELL

II. DRILLING / SITING INFORMATION

Contractor BABER WELL SERVICING CO.

Date drilling started _____ Date drilling completed _____

Drilling method _____

Elevation of ground surface _____ How measured _____

Date measured _____ Order of survey _____

Name of surveyor _____

Total depth of hole _____

Attach schematic of well ,include open hole interval, perforations, etc. *

Type of drilling fluid _____

Type of drilling mud if used (brand if known) _____

List any additives to the drilling mud, or any other chemicals put down well:

Describe casing tests performed _____

Other tests _____

* = please attach pertinent documents

II. DRILLING / SITING (continued)

Casing, tubing, and cementing record (please attach copy)*

Note: if a copy is not available detail casing record on back of this sheet using the following format. Include brand or type of cement if known.

From	To	Size of Hole	Size of Casing	Weight per Foot	Sacks of Cement	Estimated Top of cmt.

Was mudcake on bore wall removed before cementing production casing? _____

Was salt saturated cementing material used opposite salt formation? _____

Is site within 1/2 mile of another well? If so, use note to explain. _____

Site preparation (concrete pad, graded dirt, pit, etc) _____

Type of surface seal or well-head (locking security cap, welded, etc.) _____

Comments (include problems encountered while drilling, loss of circulation, deviation of hole from vertical, centralizers used, tools lost or stuck, fracturing techniques used, etc.)_____

_____ (use back of sheet if more space is required)

* = please attach pertinent documents

III. FORMATION INFORMATION

Formation Record

From	To	Thickness	Formation (name, description)

Logs (specify type) _____

_____

_____

Identify where logs are on file _____

_____

_____

* = please attach pertinent documents

IV. AQUIFER INFORMATION

Aquifers encountered during drilling

From	To	Aquifer Description	Amount of Water entering hole	Quality of Water

Note: if water quality analyses are available please attach.*

Source of aquifer description _____

Depth at which water was first encountered _____

Depth to which water rose _____

Source of water level data _____

Comments (include information regarding determination of piezometric level and method of sealing off water zone) _____

* = please attach pertinent documents

V. PRODUCTION / BRINE STORAGE INFORMATION

Method of production (describe fully) PUMP WATER INTO SODIUM CAVITY, CIRCULATE AND THEN PUMP INTO STORAGE PIT.

Was well used previously for some purpose other than brine supply, potash dissolution, or LPG storage. If so use note to explain. NO

Use of brine OIL WELL DRILLING

Source of injection water (be specific) BLOCKER BROTHERS RANCH, WELL LOCATED SOUTHEAST QUARTER OF SECTION 14, TOWNSHIP 25 SOUTH, RANGE 37 EAST- 115.3' F.S.L. 8, 728.3' F.E.L.

Attach detailed production history (include dates of production, amount of water injected, injection rates, amount of brine produced, production rates, method of gaging injection/production rates)*

Note: If the cavity was used for LPG storage include volumes of product injected and withdrawn as well as a summary of the maximum and minimum pressures during injection, storage and withdrawal.

Chemical analyses of injection water (attach)*

Note : Chemical analyses should include sampling point and method, pH, temperature, method of analysis, name and location of laboratory, etc.

Chemical analyses of water produced (attach)*

INVENTORY OF SOLUTION MINING WELLS OIL CONSERVATION DIVISION, 1981

* = please attach pertinent documents

V. PRODUCTION / BRINE STORAGE (continued)

Brine storage facilities (describe) BRINE PIT CONSTRUCTED WITH 30 MIL BLACK HYPALON 6X6 SCRIM WITH A FINISHED BLANKET 155'X155'=24,025 SQ. FT.

Current condition/status of brine storage pit EXCELLENT

Is brine storage pit currently being monitored for leakage? YES

Specify company or agency which is monitoring leakage NEW MEXICO STATE ENGINEER

If pit leakage has been monitored in past use note to explain.

Comments on production history (note if production rates or brine concentrations have changed through time) NO CHANGE FROM INITIAL INSTALLATION

*.= please attach pertinent documents

VI. ABANDONMENT / PLUGGING RECORD

Date well abandoned/plugged _____

Reason for well abandonment or plugging _____

_____

Method of Plugging (describe fully, include amounts of cement, est. top, plug type, depth, etc.) _____

_____

_____

_____

_____

_____

_____

_____

VII. Further comments (subsidence noted, subsidence monitoring, leakage noted, natural subsidence features noted nearby, LPG storage data, etc.)

_____

_____

_____

_____

_____

_____

_____

Recorded by _____

Date _____

SALADO BRINE SALES

Drawer A

Jal, New Mexico 88252

(505) 395-2010

BRINE PRODUCED FROM SALADO BRINE SALES 17,412,654 GAL.
414,587 bbl. in 10 months

WE ARE UNABLE TO ANSWER ANY OF THE OTHER QUESTIONS CONCERNING THE DRILLING. BABER WELL SERVICING SHOULD HAVE THE REMAINING INFORMATION THAT YOU REQUIRE.

P. O. Box 1772 | INVOICE | Phone (505) 393-5516

BABER WELL SERVICING CO.

HOBBS, NEW MEXICO 88240

WILLIAM H. BRININSTOOL
P. O. Drawer "A"
JAL, NEW MEXICO 88252

INVOICE NO. 1-113

CONTRACT NO.

ORDER NO.

Terms: Net 30 Days. 6% On Past Due Accounts. Payable at Hobbs, New Mexico

DATE November 24, 1980

Date	Description of Work	Hours	Rate	Amount
	BRININSTOOL BRINE WELL WELL NO. 1			
11/11/80	Move in, rig up. Drill well and set approximately 970' of 7" casing. Rig up Halliburton and cement 7" casing. Circulate to surface. Drill well to approximately 2105' and run 2½" tubing. Hook up well head and circulate well to clean up fluid. Rig down and move off location.			
	BID PRICE			$72,800.0
	4% New Mexico Sales Tax			2,912.0
				$75,712.0

THANK YOU

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

Martin Water Laboratories, Inc

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

RESULT OF WATER ANALYSES

LABORATORY NO. 780147

TO: Mr. W. H. Brininstool
P.O. Drawer "A", Jal, New Mexico

SAMPLE RECEIVED 7-17-80

RESULTS REPORTED 7-18-80

COMPANY XL Transportation Company LEASE

FIELD OR POOL Justes

SECTION BLOCK SURVEY COUNTY Lea STATE NM

SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1 Water to be used to make brine.

NO. 2

NO. 3

NO. 4

REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES

	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0068			
pH When Sampled				
pH When Received	7.53			
Bicarbonate as HCO_3	239			
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$	2,750			
Calcium as Ca	730			
Magnesium as Mg	225			
Sodium and/or Potassium	1,466			
Sulfate as SO_4	369			
Chloride as Cl	3,800			
Iron as Fe	0.41			
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	6,829			
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide	0.0			
Resistivity, ohms/m at 77° F.	0.820			
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks: The above results reveal no evidence of any condition that we would consider unusually detrimental in the utilization of this water to prepare brine.

Form No. 3

By Waylan C. Martin, M.A.

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

Martin Water Laboratories, Inc

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

RESULT OF WATER ANALYSES

LABORATORY NO. 881184
SAMPLE RECEIVED 8-18-81
RESULTS REPORTED 8-19-81

TO: XL Transportation Company
112 North Third, Jal, New Mexico

COMPANY XL Transportation Company LEASE As Listed
FIELD OR POOL
SECTION BLOCK SURVEY COUNTY Lea STATE NM
SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1 Brine water - taken from Salado brine station @ Jal. 8-18-81
NO. 2 Brine water - taken from Permian brine station @ Jal. 8-18-81
NO. 3 Brine water - taken from McCasland brine station @ Eunice. 8-18-81
NO. 4

REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.2027	1.1563	1.2022	
pH When Sampled				
pH When Received	6.70	7.65	6.96	
Bicarbonate as HCO_3	207	134	124	
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$	5,300	5,800	8,600	
Calcium as Ca	1,720	1,280	1,640	
Magnesium as Mg	243	632	1,094	
Sodium and/or Potassium	129,610	89,364	134,545	
Sulfate as SO_4	4,331	3,550	4,402	
Chloride as Cl	200,274	139,197	210,216	
Iron as Fe	1.5	1.5	2.2	
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	336,385	234,157	352,018	
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide				
Resistivity, ohms/m at 77° F.	0.0	0.0	0.0	
Suspended Oil	0.042	0.052	0.041	
Filtrable Solids as mg/l				
Volume Filtered, ml				
Weight, lbs/gal.	10.0	9.6	10.0	

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks Please contact us if we can be of any assistance in interpretation of the above results.

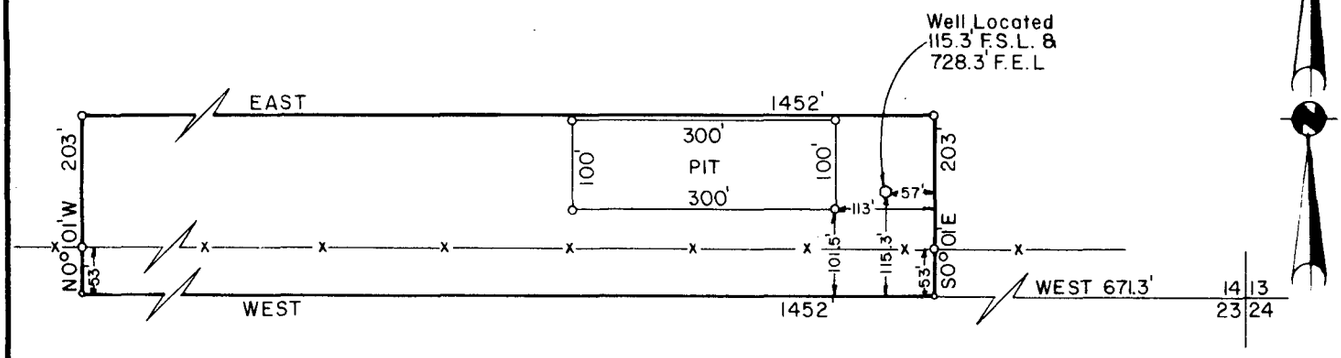
Form No. 3

By

Waylan C. Martin, M. A.

TOWNSHIP 25 SOUTH, RANGE 37 EAST

LEA COUNTY NEW MEXICO



A TRACT OF LAND LOCATED IN SECTION 14, TOWNSHIP 25 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT WHICH LIES WEST A DISTANCE OF 671.3 FEET FROM THE SOUTHEAST CORNER OF SAID SECTION 14; THENCE WEST A DISTANCE OF 1452 FEET TO A POINT; THENCE N00°01'W A DISTANCE OF 203 FEET TO A POINT; THENCE EAST A DISTANCE OF 1452 FEET TO A POINT; THENCE S00°01'E A DISTANCE OF 203 FEET TO THE POINT OF BEGINNING, CONTAINING 6.77 ACRES, MORE OR LESS.

REG. PROF. ENGINEER & LAND SURVEYOR
STATE OF
676
NEW MEXICO
JOHN W. WEST

ENGINEER'S CERTIFICATE

JOHN W. WEST STATES HE IS BY OCCUPATION A CIVIL ENGINEER EMPLOYED BY XL TRANSPORTATION TO MAKE THE SURVEY OF THE PLANT SITE AS DESCRIBED AND SHOWN ON THIS PLAT, THAT THE SURVEY OF SAID WORKS WAS MADE UNDER HIS SUPERVISION AND UNDER AUTHORITY COMMENCING ON THE 3rd DAY OF SEPTEMBER, 1980 AND ENDING ON THE 3rd DAY OF SEPTEMBER, 1980 AND THAT SUCH SURVEY IS ACCURATELY REPRESENTED UPON THIS PLAT

John W. West
ENGINEER

APPLICANT'S CERTIFICATE

THIS IS TO CERTIFY THAT JOHN W. WEST WHO SUBSCRIBED THE STATEMENT HEREON IS THE PERSON EMPLOYED BY THE UNDERSIGNED APPLICANT TO PREPARE THIS PLAT, WHICH HAS BEEN ADOPTED BY THE APPLICANT AS THE APPROXIMATE FINAL LOCATION OF THE WORKS THEREBY SHOWN; AND THAT THIS PLAT IS FILED AS PART OF THE COMPLETE APPLICATION, AND IN ORDER THAT THE APPLICANT MAY OBTAIN THE BENEFITS OF ACTS OF FEB. 25, 1920 AS AMENDED, AND I FUTHER CERTIFY THAT THE RIGHT-OF-WAY HEREIN DESCRIBED IS DESIRED FOR PLANT SITE

APPLICANT'S SIGNATURE

TITLE

XL TRANSPORTATION

PROPOSED PLANT SITE LOCATED IN THE SOUTHEAST QUARTER OF SECTION 14, TOWNSHIP 25 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO.

DRAWN BY: C. RAINS	DATE: 5 SEPTEMBER 1980	SCALE: 1" = 200'	SHEET 1 OF 1 SHEETS

Add To 3-11-82

9-128a
(Rev. May 1957)

Budget Bureau No. 42-R343.5.
Approval expires 12-31-64.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Serial No. NM 40527
Land Office .....
State .....

Potassium / Sodium } Production and Royalty Report for MONTH ending APRIL 30, 1982

(Report to be submitted to the Regional Mining Supervisor, U. S. Geological Survey)

Mine Output: (*a*) Crude salts hoisted ..... tons.

(*b*) Production from brines (Give ~~gallons~~ BARRELS pumped.) 18,685 BARRELS

Crude Salts to Factory: (*a*) for refinery ..... tons; (*b*) for mixing ..... tons.

FACTORY OUTPUT AND CRUDE SALT SALES

NAME OF PRODUCT	TONS PRODUCED	TONS IN STORAGE	~~TONS DISPOSED OF~~ BARRELS SOLD	UNIT VALUE AT POINT OF SHIPMENT	TOTAL VALUE OF PRODUCT DISPOSED OF	ROYALTY AT 5 %
SALT			18,685	6,539.75		326.99
TOTAL			18,685	6,539.75		326.99

Remarks: EVERYTHING IS DONE IN BARRELS IN OUR COMPANY, ALL OUR REPORTS WILL BE IN BARRELS

Name J. Dennis Bannerstock Title VICE-PRESIDENT

Section 35(A) of the United States Criminal Code, 18 U. S. C. 1001, makes it a criminal offense to make a willfully false statement or representation to any Department or Agency of the United States as to any matter within its jurisdiction.

U. S. GOVERNMENT PRINTING OFFICE 16—48741-7

9-128a
(Rev. May 1957)

Budget Bureau No. 42-R343.5.
Approval expires 12-31-64.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Serial No. NM 40527
Land Office .....
State .....

Potassium / Sodium } Production and Royalty Report for MONTH ending MAY 31, 1982

(Report to be submitted to the Regional Mining Supervisor, U. S. Geological Survey)

Mine Output: (*a*) Crude salts hoisted ..... tons.

(*b*) Production from brines (Give ~~gallons~~ BARRELS pumped.) 32,007 BARRELS

Crude Salts to Factory: (*a*) for refinery ..... tons; (*b*) for mixing ..... tons.

FACTORY OUTPUT AND CRUDE SALT SALES

NAME OF PRODUCT	TONS PRODUCED	TONS IN STORAGE	BARRELS ~~SOLD OR DISPOSED OF~~ SOLD	UNIT VALUE AT POINT OF SHIPMENT	TOTAL VALUE OF PRODUCT DISPOSED OF	ROYALTY AT %
SALT			32,007	11,202.45		560.12
TOTAL			32,007	11,202.45		560.12

Remarks: EVERYTHING IS DONE IN BARRELS IN OUR COMPANY, ALL OUR REPORTS WILL BE IN BARRELS

Name [signature] Title VICE-PRESIDENT

Section 35(A) of the United States Criminal Code, 18 U. S. C. 1001, makes it a criminal offense to make a willfully false statement or representation to any Department or Agency of the United States as to any matter within its jurisdiction.

U. S. GOVERNMENT PRINTING OFFICE 16—48741-7

9-198 a
(Rev. May 1957)

Budget Bureau No. 42-R348.6.
Approval expires 12-31-64.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Serial No. NM 40527
Land Office .....
State .....

Potassium / Sodium } Production and Royalty Report for MONTH ending JUNE 30, 1982

(Report to be submitted to the Regional Mining Supervisor, U. S. Geological Survey)

Mine Output: (*a*) Crude salts hoisted ..... tons.

(*b*) Production from brines (Give ~~gallons~~ BARRELS pumped.) 32,980 BARRELS

Crude Salts to Factory: (*a*) for refinery ..... tons; (*b*) for mixing ..... tons.

FACTORY OUTPUT AND CRUDE SALT SALES

NAME OF PRODUCT	TONS PRODUCED	TONS IN STORAGE	~~TONS DISPOSED OF~~ BARRELS SOLD	UNIT VALUE AT POINT OF SHIPMENT	TOTAL VALUE OF PRODUCT DISPOSED OF	ROYALTY AT %
			32,980	11,543.00		577.15
		Paid	7-5-82			
		OK #	1113			
		12,352.36				
TOTAL			32,980	11,543.00		577.15

Remarks: EVERYTHING IS DONE IN BARRELS IN OUR COMPANY, ALL OUR REPORTS WILL BE IN BARRELS

Name John R Brannstool Title VICE-PRESIDENT

Section 35(A) of the United States Criminal Code, 18 U. S. C. 1001, makes it a criminal offense to make a willfully false *statement or representation to any Department or Agency of the United States as to any matter within its jurisdiction.*

U. S. GOVERNMENT PRINTING OFFICE 16—48741-7

9-129a
(Rev. May 1957)

Budget Bureau No. 42-R343.5.
Approval expires 12-31-64.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Serial No. NM 40527
Land Office .....
State .....

Potassium / Sodium } Production and Royalty Report for MONTH ending FEBRUARY 1981 THRU APRIL 1982

(Report to be submitted to the Regional Mining Supervisor, U. S. Geological Survey)

Mine Output: (*a*) Crude salts hoisted ..... tons.

(*b*) Production from brines (Give ~~gallons~~ BARRELS pumped.) 672,869 BARRELS

Crude Salts to Factory: (*a*) for refinery ..... tons; (*b*) for mixing ..... tons.

FACTORY OUTPUT AND CRUDE SALT SALES

NAME OF PRODUCT	TONS PRODUCED	TONS IN STORAGE	~~TONS DISPOSED OF~~ BARRELS SOLD	UNIT VALUE AT POINT OF SHIPMENT	TOTAL VALUE OF PRODUCT DISPOSED OF	ROYALTY AT %
			672,869	235,504.15		11,775.21
			paid 7-3-82			
			OK # 1113			
			12,352.36			
TOTAL			672,869	235,504.15		11,775.21

Remarks: EVERYTHING IS DONE IN BARRELS IN OUR COMPANY, ALL OUR REPORTS WILL BE IN BARRELS

Name [signature] Title VICE-PRESIDENT

Section 35(A) of the United States Criminal Code, 18 U. S. C. 1001, makes it a criminal offense to make a willfully false statement or representation to any Department or Agency of the United States as to any matter within its jurisdiction.

U. S. GOVERNMENT PRINTING OFFICE 16—48741-7

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

December 18, 1982

Salado Brine Sales
P.O. Drawer A
Jal, New Mexico 88252

RE: GWB-8
Discharge Plan

Gentlemen:

The discharge plan submitted for the brine production facility and in situ extraction well located in Section 14, Township 25 South, Range 37 East, NMPM, Lea County, New Mexico, is hereby approved.

The discharge plan was submitted pursuant to Section 3-106 of the Water Quality Control Commission regulations. It is approved pursuant to Section 109. Please note subsections 3-109.E and 3-109F which provide for possible future amendment of the plan. Please also be advised that the approval of this plan does not relieve you of liability should your operation result in actual pollution of surface or ground waters which may be actionable under other laws and/or regulations.

Yours very truly,

Joe D. Ramey
Director

JDR/OS/dp

cc: Hobbs District Office

BSW#8

NOTICE OF PUBLICATION

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

SANTA FE, NEW MEXICO

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission regulations, the following proposed discharge plan has been submitted for approval to the Director of the Oil Conservation Division, P. O. Box 2088, State Land Office Building, Santa Fe, New Mexico 87501, telephone (505) 827-3260. (DP-320) SALADO BRINE SALES, P. O. Drawer A, Jal, New Mexico 88252 telephone (505) 395-2010, requests approval of their discharge plan for their in situ extraction well and facility located in Section 14, Township 25 South, Range 37 East, NMPM, Lea County, New Mexico. Salado Brine Sales injects water down their injection well to an underlying salt formation thereby dissolving the salt, forming a brine water solution with a total dissolved solids content of approximately 300,000 mg/L. Salado Brine Sales extracts and sells the brine water solution to various companies for use in oil and gas production.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and a public hearing may be requested by any interested person. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan based on information in the plan and information submitted at the hearing.

GIVEN Under the Seal of the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 12th day of November, 1982.

STATE OF NEW MEXICO

OIL CONSERVATION DIVISION

JOE D. RAMEY

Director

S E A L

SALADO BRINE SALES

Drawer A

Jal, New Mexico 88252

(505) 395-2010

OCTOBER 28, 1982

OSCAR A. SIMPSON
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

RE: DISCHARGE PLAN FOR BRINE INSITU EXTRACTION WELL, SECTION 14, TOWNSHIP 25S, RANGE 37E, NMPM, LEA COUNTY, NEW MEXICO, PERMIT #40527.

DEAR MR. SIMPSON:

ENCLOSED IS THE ADDITIONAL INFORMATION YOU REQUESTED.

THE TOPOGRAPHIC MAP SHOWS THE LOCATION OF OUR FACILITY, THE LOCATION OF THE FRESH WATER SUPPLY PIPELINES AND ALL WATER WELLS WITHIN A TWO MILE RADIUS.

THE DRILLING INFORMATION CONTAINED ON THE ENCLOSED INJECTION WELL DATA SHEET WAS FURNISHED BY BABER WELL SERVICE OF HOBBS, NEW MEXICO, DRILLERS OF THE WELL. ALSO ENCLOSED IS A LEGIBLE COPY OF BRINE WATER ANALYSIS AND A SUMMARY OF BRINE PRODUCTION.

THE FOLLOWING INFORMATION IS TAKEN FROM THE REPORT OF THE U. S. GEOLOGICAL SURVEY FOLLOWING THEIR INVESTIGATION OF DATA TAKEN FROM THREE PETROLEUM WELL LOGS NEAR THE SITE AREA: HALITE BEDS IN THE AREA ARE FOUND PRINCIPALLY IN THE SALADO FORMATION AND IN SOME INSTANCES IN THE OVERLYING RUSTLER FORMATION, OF PERMIAN AGE. THE HALITE BEDS ARE FROM 1,150' TO 1,250' THICK, AND OCCUR AT DEPTHS BETWEEN 860' AND 1060' BELOW THE SURFACE. POTABLE WATER SOURCES IN THE AREA ARE LOCATED AT DEPTHS OF ABOUT 200' IN THE TERTIARY OGALLALA FORMATION. NO ABNORMAL PRESSURE ZONES OR LOST RETURN ZONES WERE FOUND ON THE DRILLING LOGS. GEOLOGICALLY, THE LAND IN THE SITE AREA LIE ON THE SHELF EAST OF THE DELAWARE BASIN, JUST EAST OF THE BURIED CAPITAN REEF FRONT. SURFACE

ROCKS CONSIST OF QUATERNARY ALLUVIUM AND BOLSON DEPOSITS. THERE ARE NO NEARBY ARROYOS OR DRAWS AND THE FACILITY IS SITUATED ON A BASICALLY LEVEL PORTION OF THE SOUTH PLAIN.

CORDIALLY,

Jo Ann Brininstool

JO ANN BRININSTOOL

JAB:PM

ENCLOSURES: BRINE PRODUCTION SUMMARY
INJECTION WELL DATA SHEET
BRINE WATER ANALYSIS
PHOTOS
TOPOGRAPHIC MAP
OPERATIONAL CHART & NARRATION

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. 881184-A

TO: XL Transportation Company
112 North Third, Jal, NM

SAMPLE RECEIVED 8-18-81
RESULTS REPORTED 8-19-81

COMPANY XL Transportation Company LEASE As listed
FIELD OR POOL
SECTION BLOCK SURVEY COUNTY Lea STATE NM
SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1 Brine water - taken from Salado brine station @ Jal. 8-18-81
NO. 2
NO. 3
NO. 4

REMARKS:

CHEMICAL AND PHYSICAL PROPERTIE	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.2027			
pH When Sampled				
pH When Received	6.70			
Bicarbonate as HCO_3	207			
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$	5,300			
Calcium as Ca	1,720			
Magnesium as Mg	243			
Sodium and/or Potassium	129,610			
Sulfate as SO_4	4,331			
Chloride as Cl	200,274			
Iron as Fe	1.5			
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	336,385			
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide	0.0			
Resistivity, ohms/m at 77° F.	0.042			
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				
Weight, lbs/gal.	10.0			

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. 3

Waylan C. Martin, M. A.

BRINE PRODUCTION SUMMARY

		BBLS	BBLS
1981			502,258
1982	JANUARY	70,790	
	FEBRUARY	46,581	
	MARCH	53,240	
	APRIL	18,685	
	MAY	32,007	
	JUNE	32,980	
	JULY	36,745	
	AUGUST	17,745	
	SEPTEMBER	41,600	
1982 TOTAL			350,373
TOTAL TO DATE			852,631


I


SALADO BRINE SALES
NM W 40527
SE¼ of SE¼
SECTION 14 - T-25S - R-37E
OPERATOR W.H. BRININSTOOL
VI

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

October 6, 1982

Salado Brine Sales
P.O. Drawer A
Jal, New Mexico 88252

ATTENTION: Joann Brininstool

RE: Discharge Plan for Brine
Insitu Extraction Well
Sec. 14, T-25S, R-37E,
NMPM, Lea County, NM

Dear Mrs. Brininstool:

The Oil Conservation Division (OCD) received your discharge plan for the Brine well located in Section 14, Township 25 South, Range 37 East, NMPM, Lea County, New Mexico.

I have reviewed your plan and find that the following additional information is needed:

1. Submit a topographic map or photo copy thereof showing the location of your facilities. Suggested map; USGS Topographic Map, 7.5 minute series, entitled "Jal 1976".

2. Submit a detailed schematic diagram of your injection well. Supply the information requested as per the attached sheet "Injection Well Data Sheet". Also submit similar information on your water supply well. Describe what material your water transmission line is constructed of. Is it buried and when was it constructed? What methods of control (flow of water) are used on the water supply well and pipeline. Is a metering system used on the water supply system? Explain.

3. Resubmit a legible copy of the analysis of brine water. Submit yearly summaries of past production of brine. What capacity is brine produced? What metering system is used to keep track of brine production?

4. Submit a flow diagram which illustrates the operation of how fresh water is obtained, used to produce brine, storage of brine, and loading facility. Submit a narrative description of this process and how each stage is controlled to prevent spillage or leakage.

5. Submit a schematic diagram of your storage pit and permit number of your pit.

6. Show location of water wells within a 2 mile radius of your facility on a map. Preferably, on your topographic map.

7. Submit information on the groundwater beneath your facility. A) Depth B) Total Dissolved Solids (TDS) Concentration of groundwater.

8. State if any flooding potential exists at or near your facility, relate this to the topographic map. (Example: Nearby arroyos)

9. Submit photographs of all pertinent material as described where appropriate.

The above requests were based upon Section 3-106 (C) one through 8 and Section 3-107 (A) 1 to 11, pages 24,25, and 26. Please refer to these sections.

If you have any questions regarding this matter, please call me at (505) 827-2534.

Sincerely,

Oscar A. Simpson III

Oscar A. Simpson III
Water Resource Specialist

OAS/dp

SALADO BRINE SALES

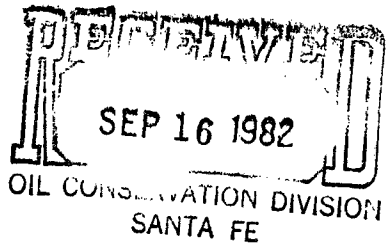
Drawer A

Jal, New Mexico 88252

(505) 395-2010

SEPTEMBER 14, 1982

JOE D. RAMEY, DIRECTOR
OIL CONSERVATION DIVISION
ENERGY AND MINERALS DEPARTMENT
STATE OF NEW MEXICO
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501



GENTLEMEN:

ENCLOSED IS THE DISCHARGE PLAN FOR W. H. BRININSTOOL IN SITU EXTRACTION WELL LOCATED IN LEA COUNTY.

I HAVE INCLUDED ALL INFORMATION PERTAINING TO OUR OPERATION AS OUTLINED IN OUR TELEPHONE CONVERSATION. IF IT IS INCOMPLETE OR YOUR OFFICE NEEDS ADDITIONAL DATA TO APPROVE OUR DISCHARGE PLAN, PLEASE NOTIFY ME.

THANK YOU FOR YOUR ASSISTANCE.

CORDIALLY,

JoAnn Brininstool

JOANN BRININSTOOL

JB:PM

DISCHARGE PLAN FOR BRINE WELL LOCATED IN SECTION, 14, TOWNSHIP 25 SOUTH, RANGE 37 EAST, NMPM, LEA COUNTY, NEW MEXICO.

OPERATOR: W. H. BRININSTOOL
DRAWER A
JAL, NEW MEXICO 88252

THE EXACT LOCATION OF THE ABOVE INJECTION WELL AND THE STORAGE PIT, DOING BUSINESS AS SALADO BRINE SALES, IS SHOWN ON THE ENCLOSED PLOT (EXHIBIT I) SURVEYED BY JOHN WEST ENGINEERING OF HOBBS, NEW MEXICO.

WATER FOR THE INJECTION PROCESS IS TRANSPORTED BY PIPELINE FROM A LOCATION ONE HALF MILE EAST OF THE WELL SITE, PUMPED UNDER 400 POUNDS PRESSURE INTO THE SALT FORMATION AT A DEPTH OF 2105 FEET THROUGH 7 INCH CEMENTED CASING, CIRCULATED, THEN PUMPED TO THE SURFACE IN 2 1/2 INCH TUBING. (ENCLOSED: EXHIBIT II - ANALYSIS OF INJECTION FLUID. EXHIBIT III - ANALYSIS OF BRINE PRODUCTION.)

THE PRODUCED BRINE IS STORED IN A PIT 90' BY 90' BY 6' DEEP LINED WITH 30 MIL HYPALON WITH HYPALON OVERLAP. THE LINED, EVAPORATIVE PIT WAS DESIGNED AND CONSTRUCTED ACCORDING TO SPECIFICATIONS FURNISHED BY THE NEW MEXICO OIL CONSERVATION COMMISSION. THE LEAKAGE DETECTION SYSTEM WAS INSPECTED AND APPROVED BY THE COMMISSION PRIOR TO THE INSTALLATION OF THE LINER, AND THE PIT HAS BEEN INSPECTED SEVERAL TIMES SINCE COMPLETION. (EXHIBIT IV) THE WELL AND PIT ARE INSPECTED DAILY BY THE OPERATOR AND/OR HIS EMPLOYEES AND SINCE PRODUCTION STARTED

JANUARY 30, 1981, NO LEAKAGE OR SPILLAGE HAS OCCURRED.

AN ARCHAEOLOGICAL AND GEOLOGICAL SURVEY DONE BY DR. J. LORING HASKELL OF CARLSBAD, NEW MEXICO, WAS CONDUCTED PRIOR TO THE INSTALLATION OF THE WELL AND PIT AND A PORTION OF THE SURVEY CONCERNED THE SITE TERRAIN AND READS IN PART: THE SITE WILL BE SITUATED ON A BASICALLY LEVEL PORTION OF SOUTH PLAIN DUE EAST OF JAL. LOCALLY, THIS LANDFORM TRENDS GENTLY TOWARD THE WEST WITH DRAINAGE BEING TRIBUTARY TO A COLLAPSE/SUBSIDENCE STRUCTURE. SOIL INDIVIDUALS ARE UNIFORMLY FINE TEXTURED AND ARE COMPOSED OF SILT LOAMS AND SILTY CLAY LOAMS. CALICHE COBBLES AND GRAVELS COMMONLY OCCURS IN ATTENDANT SOILS.

THE NEAREST FRESH WATER WELLS ARE ALL AT LEAST ONE MILE AWAY FROM THE SITE LOCATION IN ANY DIRECTION. THE INJECTION WATER FURNISHED BY THE WELLS ONE HALF MILE EAST ARE NOT POTABLE FOR HUMAN OR ANIMAL CONSUMPTION.

THE BRINE PRODUCED FROM THE WELL IS SOLD TO TRUCKING COMPANIES, DRILLING MUD COMPANIES, AND OIL COMPANIES AND IS USED IN OIL WELL DRILLING.

BRINE PRODUCED AND SOLD SINCE THE JANUARY 30, 1981 STARTING DATE HAS AVERAGED 40,552 BARRELS PER MONTH. THE PRODUCTION OF BRINE FROM THIS WELL HAS SLOWED COMMENSURATE TO THE DECREASED DRILLING ACTIVITY OF THE AREA. AUGUST PRODUCTION FIGURES WERE 17,745 BARRELS PRODUCED AND

SOLD. PRODUCTION FIGURES ARE TAKEN FROM RECORDS FILED WITH THE U. S. DEPARTMENT OF THE INTERIOR, MINERALS MANAGEMENT SERVICE, DENVER, COLORADO.

Exhibit IV

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

September 13, 1982

P.O. BOX 1980
HOBBS, NEW MEXICO 88240
(505) 393-6161

Mr. W. R. Brinninstool
Salado Inc.
Drawer A
Jal, New Mexico 88252

SUBJECT: Langlie Federal Brine Well in Sec. 14, T25S, R37E
Lined pit at this installation

Dear Mr. Brinninstool:

This is to certify that the elevations of the laterals on your lined pit at the above-mentioned brine well were shot by Eddie W. Seay on December 30, 1980, and that they were set on 50' spacing with a 6" slope. At a later date they were rechecked after they had been gravel-packed and lined.

This installation has been inspected by the OCD for compliance with our rules and regulations governing such installations on March 20, 1981, and June 24, 1982. It was observed on these inspections that the liner was in good shape and the monitor hole was dry, as well as the facility was exceptionally clean.

Very truly yours,

OIL CONSERVATION DIVISION

Eddie W. Seay

Eddie W. Seay
Oil & Gas Inspector

ED

Exhibit TTT

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

Martin Water Laboratories, Inc

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

RESULT OF WATER ANALYSES

LABORATORY NO. 881184

TO: XL Transportation Company
112 North Third, Jal, New Mexico

SAMPLE RECEIVED 8-18-81

RESULTS REPORTED 8-19-81

COMPANY XL Transportation Company LEASE As Listed

FIELD OR POOL

SECTION BLOCK SURVEY COUNTY Lea STATE NM

SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1 Brine water - taken from Salado brine station @ Jal. 8-18-81

NO. 2

NO. 3

NO. 4

REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES				
	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.2027			
pH When Sampled				
pH When Received	6.70			
Bicarbonate as HCO_3	207			
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$	5,300			
Calcium as Ca	1,720			
Magnesium as Mg	243			
Sodium and/or Potassium	138,610			
Sulfate as SO_4	4,331			
Chloride as Cl	200,274			
Iron as Fe	1.5			
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	336,385			
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide	0.0			
Resistivity, ohms/m at 77° F.	0.042			
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				
Weight, lbs/gal.	10.0			

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks: Please contact us if we can be of any assistance in interpretation of the above results.

Form No. 3

By

Waylan C. Martin, M. A.

Exhibit II

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

Martin Water Laboratories, Inc

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

RESULT OF WATER ANALYSES

TO: Mr. W. H. Brininstool
P.O. Drawer "A", Jal, New Mexico

LABORATORY NO. 780147
SAMPLE RECEIVED 7-17-80
RESULTS REPORTED 7-18-80

COMPANY XL Transportation Company LEASE
FIELD OR POOL Juster
SECTION BLOCK SURVEY COUNTY Lea STATE NM
SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1 Water to be used to make brine.
NO. 2
NO. 3
NO. 4

REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0068			
pH When Sampled				
pH When Received	7.53			
Bicarbonate as HCO_3	239			
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$	2,750			
Calcium as Ca	730			
Magnesium as Mg	225			
Sodium and/or Potassium	1,466			
Sulfate as SO_4	369			
Chloride as Cl	3,800			
Iron as Fe	0.41			
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	6,829			
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide	0.0			
Resistivity, ohms/m at 77° F.	0.820			
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks ~~The above results reveal no evidence of any condition that we would consider unusually detrimental in the utilization of this water to prepare brine.~~

Form No. 3

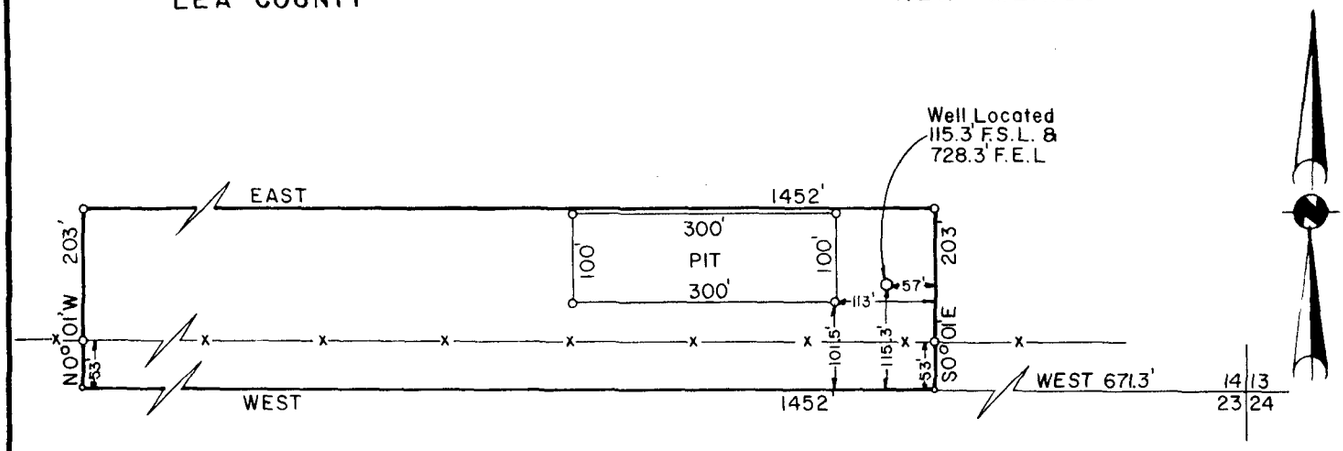
By

Waylan C. Martin, M.A.

Exhibit I

TOWNSHIP 25 SOUTH, RANGE 37 EAST

LEA COUNTY NEW MEXICO



A TRACT OF LAND LOCATED IN SECTION 14, TOWNSHIP 25 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT WHICH LIES WEST A DISTANCE OF 671.3 FEET FROM THE SOUTHEAST CORNER OF SAID SECTION 14; THENCE WEST A DISTANCE OF 1452 FEET TO A POINT; THENCE N00°01'W A DISTANCE OF 203 FEET TO A POINT; THENCE EAST A DISTANCE OF 1452 FEET TO A POINT; THENCE S00°01'E A DISTANCE OF 203 FEET TO THE POINT OF BEGINNING, CONTAINING 6.77 ACRES, MORE OR LESS.

REG. PROF. ENGINEER & LAND SURVEYOR
STATE OF
676
NEW MEXICO
JOHN W WEST

ENGINEER'S CERTIFICATE

JOHN W. WEST STATES HE IS BY OCCUPATION A CIVIL ENGINEER EMPLOYED BY XL TRANSPORTATION TO MAKE THE SURVEY OF THE PLANT SITE AS DESCRIBED AND SHOWN ON THIS PLAT, THAT THE SURVEY OF SAID WORKS WAS MADE UNDER HIS SUPERVISION AND UNDER AUTHORITY COMMENCING ON THE 3rd DAY OF SEPTEMBER, 1980 AND ENDING ON THE 3rd DAY OF SEPTEMBER, 1980 AND THAT SUCH SURVEY IS ACCURATELY REPRESENTED UPON THIS PLAT

John W West
ENGINEER

APPLICANT'S CERTIFICATE

THIS IS TO CERTIFY THAT JOHN W. WEST WHO SUBSCRIBED THE STATEMENT HEREON IS THE PERSON EMPLOYED BY THE UNDERSIGNED APPLICANT TO PREPARE THIS PLAT, WHICH HAS BEEN ADOPTED BY THE APPLICANT AS THE APPROXIMATE FINAL LOCATION OF THE WORKS THEREBY SHOWN; AND THAT THIS PLAT IS FILED AS PART OF THE COMPLETE APPLICATION, AND IN ORDER THAT THE APPLICANT MAY OBTAIN THE BENEFITS OF ACTS OF FEB. 25 1920 AS AMENDED, AND I FUTHER CERTIFY THAT THE RIGHT-OF-WAY HEREIN DESCRIBED IS DESIRED FOR PLANT SITE

APPLICANT'S SIGNATURE

TITLE

XL TRANSPORTATION

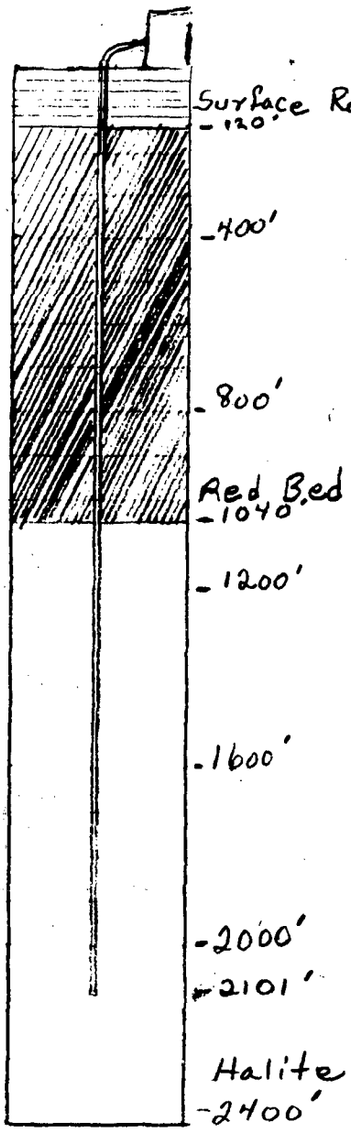
PROPOSED PLANT SITE LOCATED IN THE SOUTHEAST QUARTER OF SECTION 14, TOWNSHIP 25 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO.

DRAWN BY: C. RAINS	DATE: 5 SEPTEMBER 1980	SCALE: 1" = 200'	SHEET 1 OF 1 SHEETS

INJECTION WELL DATA SHEET

OPERATOR	LEASE			
W. H. BRININSTOOL	SALADO			
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE
1		14 SE 1/4	25S	37E

Schematic



Tabular Data

Surface Casing

Size 7" Cemented with 124 sx.

TOC SURFACE feet determined by _____

Hole size 8 3/4"

Intermediate Casing

Size -0- Cemented with _____

TOC _____ feet determined by _____

Hole size _____

Long string

Size 3 1/2" Cemented with -0- sx.

TOC -0- feet determined by _____

Hole size 6 1/4"

Total depth 2101

Injection interval

-0- feet to -0- feet

(perforated or open-hole, indicate which)

INFORMATION SUPPLIED BY BABER WELL SERVICE

Tubing size 2 7/8" lined with -0- (material) set in a

-0- (brand and model) packer at -0- feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation NONE

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

3. Is this a new well drilled for injection? [X] Yes [ ] No

   If no, for what purpose was the well originally drilled? _____

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. NO OVERLYING

SALADO BRINE SALES
DRAWER A
JAL, NM 88252
505-395-2010

SALADO BRINE SALES
DISCHARGE PLAN BW-3
3RD QUARTER 1992

	BBLS BRINE SOLD	BBLS FRESH WATER INJECTED
JULY	10,790	9,760
AUGUST	3,395	4,870
SEPTEMBER	12,623	10,450

Salado Brine Sales
Drawer A
Jal, NM 88252
505-395-2010

SALADO BRINE SALES
DISCHARGE PLAN BW-3
2ND QUARTER 1992

	BBLS BRINE SOLD	BBLS FRESH WATER INJECTED
APRIL	17,095	16,980
MAY	8,820	10,700
JUNE	6,315	5,549

Salado Brine Sales
Drawer A
Jal, NM 88252
505-395-2010

SALADO BRINE SALES
DISCHARGE PLAN BW-3
1ST QUARTER 1992

	BBLS BRINE SOLD	BBLS FRESH WATER INJECTED
JANUARY	27,680	25,897
FEBRUARY	29,165	25,465
MARCH	29,890	25,198

Salado Brine Sales
Drawer A
Jal, NM 88252
505-395-2010

SALADO BRINE SALES
DISCHARGE PLAN BW-3
4TH QUATER 1991

	BBLS BRINE SOLD	BBLS FRESH WATER INJECTED
October	6,571	8,571
November	7,010	9,010
December	18,705	20,705

SALADO BRINE SALES

Drawer A

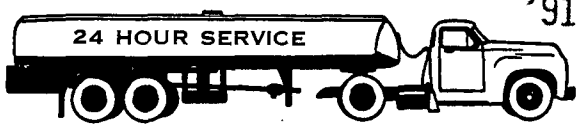
Jal, New Mexico 88252

(505) 395-2010

SALADO BRINE SALES
DISCHARGE PLAN BW-3

	BBLS BRINE SOLD	BBLS FRESH WATER INJECTED
July	17,960	12,749
August	31,929	31,373
September	7,410	7,414

XL Transportation Company



PHONE (505) 395-2010 — DAY OR NIGHT
DRAWER A — JAL, NEW MEXICO 88252

SALADO BRINE SALES

DISCHARGE PLAN BW-3

BRINE BBLS SOLD		**FRESH WATER BBLS INJECTED**
14,705	April	10,300
18,891	May	19,286
10,206	June	11,082

July 18, 1991 2nd Qtr Report

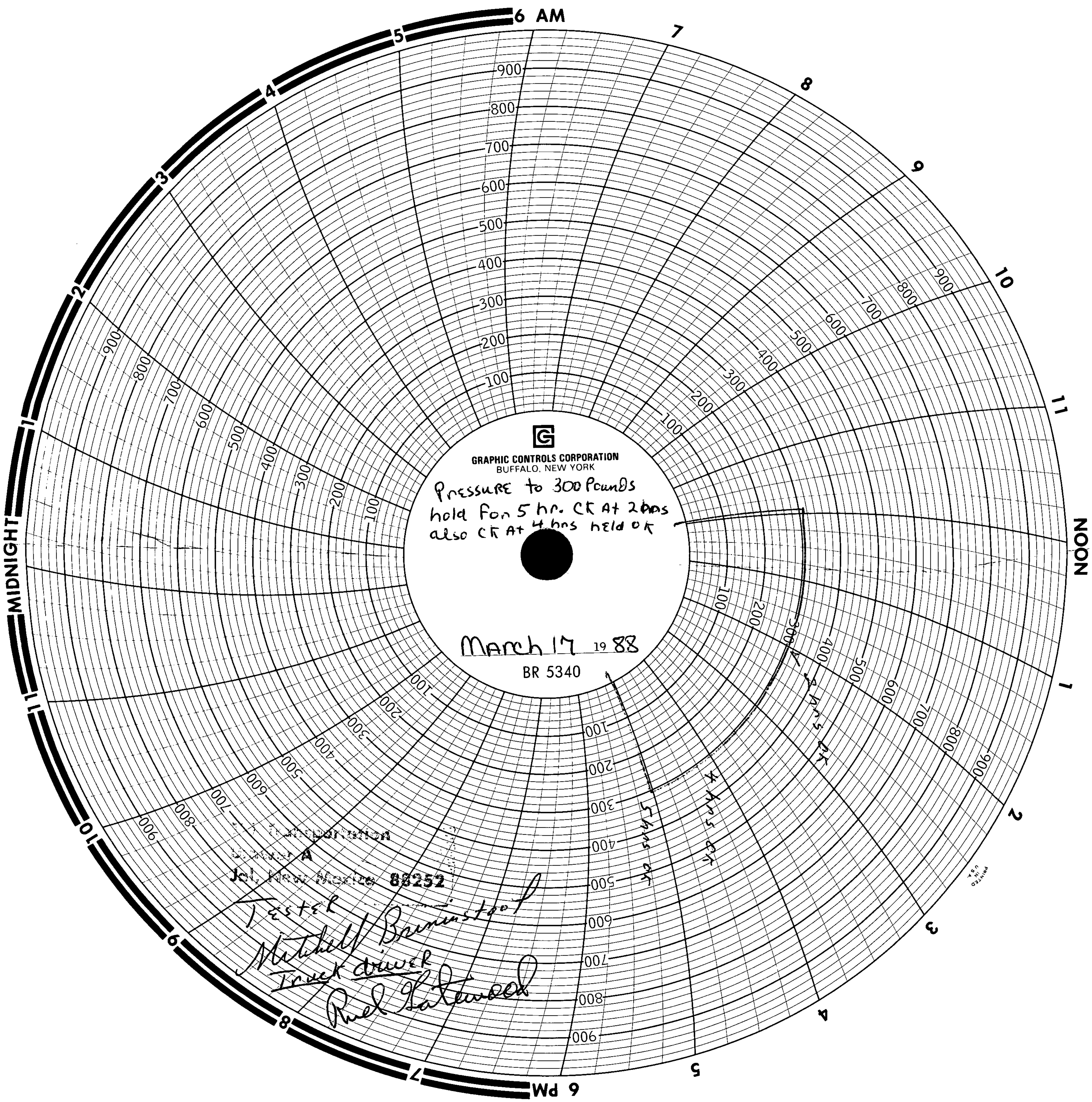
SALADO BRINE SALES

Drawer A

Jal, New Mexico 88252

(505) 395-2010

1989	Fluids Injected	Fluids Sold
April	28,026	39,432
May	40,983	30,090
June	41,653	55,613
July	43,132	27,470
August	22,305	29,644
September	22,646	26,194
October	17,666	26,935
November	17,521	30,850
December	26,814	23,374
1990		
January	12,979	16,656
February	15,358	25,940
March	27,282	20,782
April	14,940	16,470
May	17,790	21,440
June	15,660	6,860
July	9,023	7,040
August	9,333	5,614
September	11,940	10,421
October	5,580	7,976
November	7,885	8,551
December	7,024	5,433
1991		
January	12,546	18,444
February	19,560	20,300
March	18,026	14,880



GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
Pressure to 300 Pounds
hold for 5 hr. CK At 2 hrs
also CK At 4 hrs held OK
March 17 19 88
BR 5340
2 hrs ok
4 hrs CK
5 hrs ok
88252
Tester
Truck driver
6 AM
7
8
9
10
11
NOON
1
2
3
4
5
6 PM
MIDNIGHT

1. A

1B

1C

2

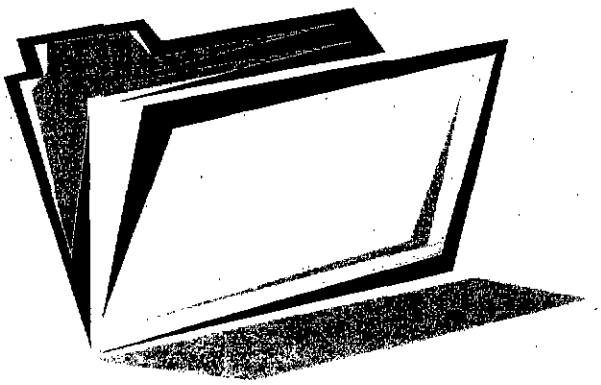
3

4

5


SALADO BRINE SALES
N.M. # 40327
SE ¼ of SE ¼
SECTION 14 - T 25S - R 9E
OPERATOR W.H. BRINKSTOOL

6



REPRODUCTION OF DOCUMENTS

IN THIS FILE CANNOT BE

IMPROVED DUE TO CONDITION

OF ORIGINALS

J. M. Owen Water Well
1.8 Miles NW.

Ray Brimstool Stock
1.5 Miles SW.

Salado Brine well
Operator - W. A. Brimstool
Permit # 40527
(see Attached plat)

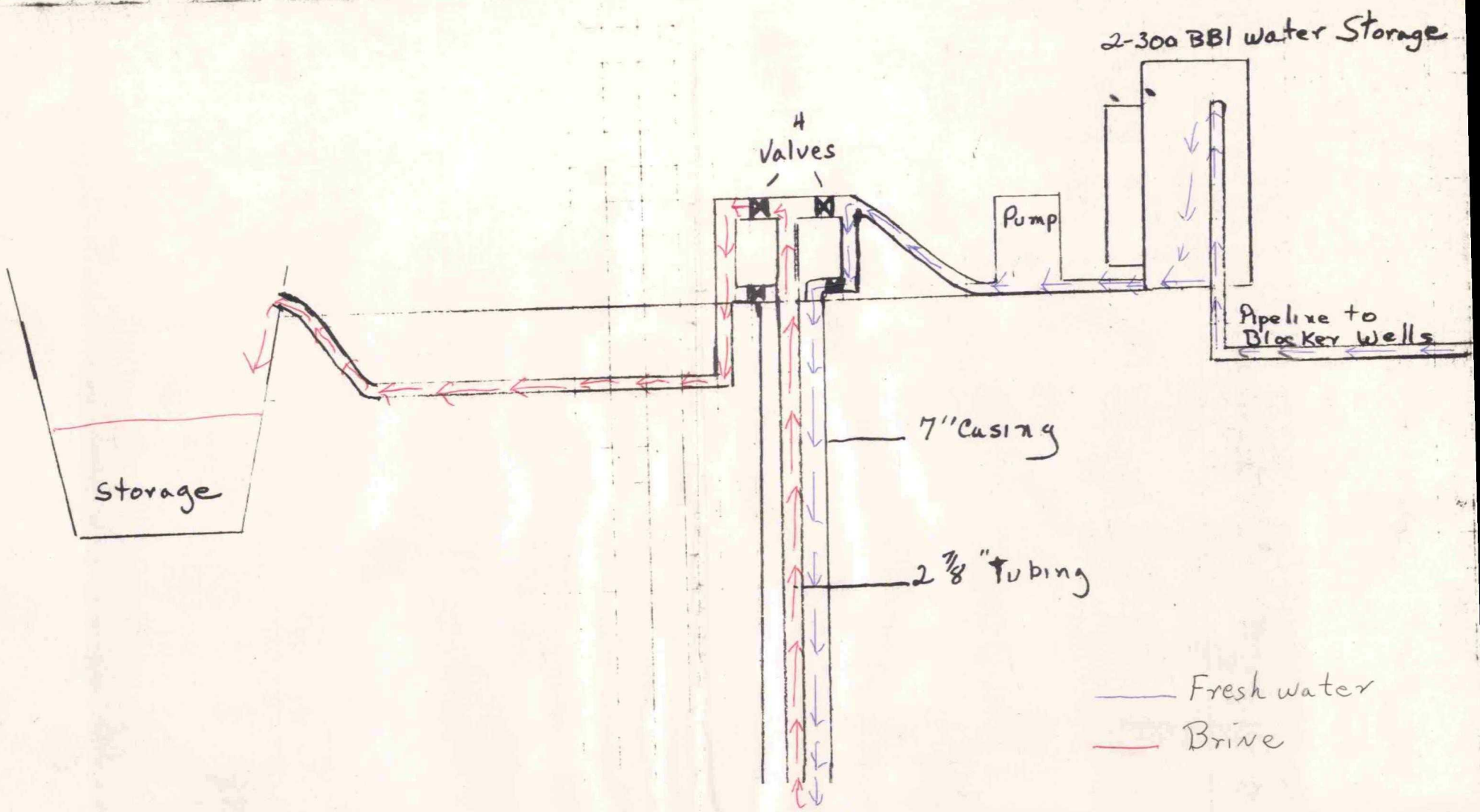
CP254 = Blocker Water Wells
CP251

Water Pipeline

CP260 = Blocker Water Wells

Storage pit

Injection Well



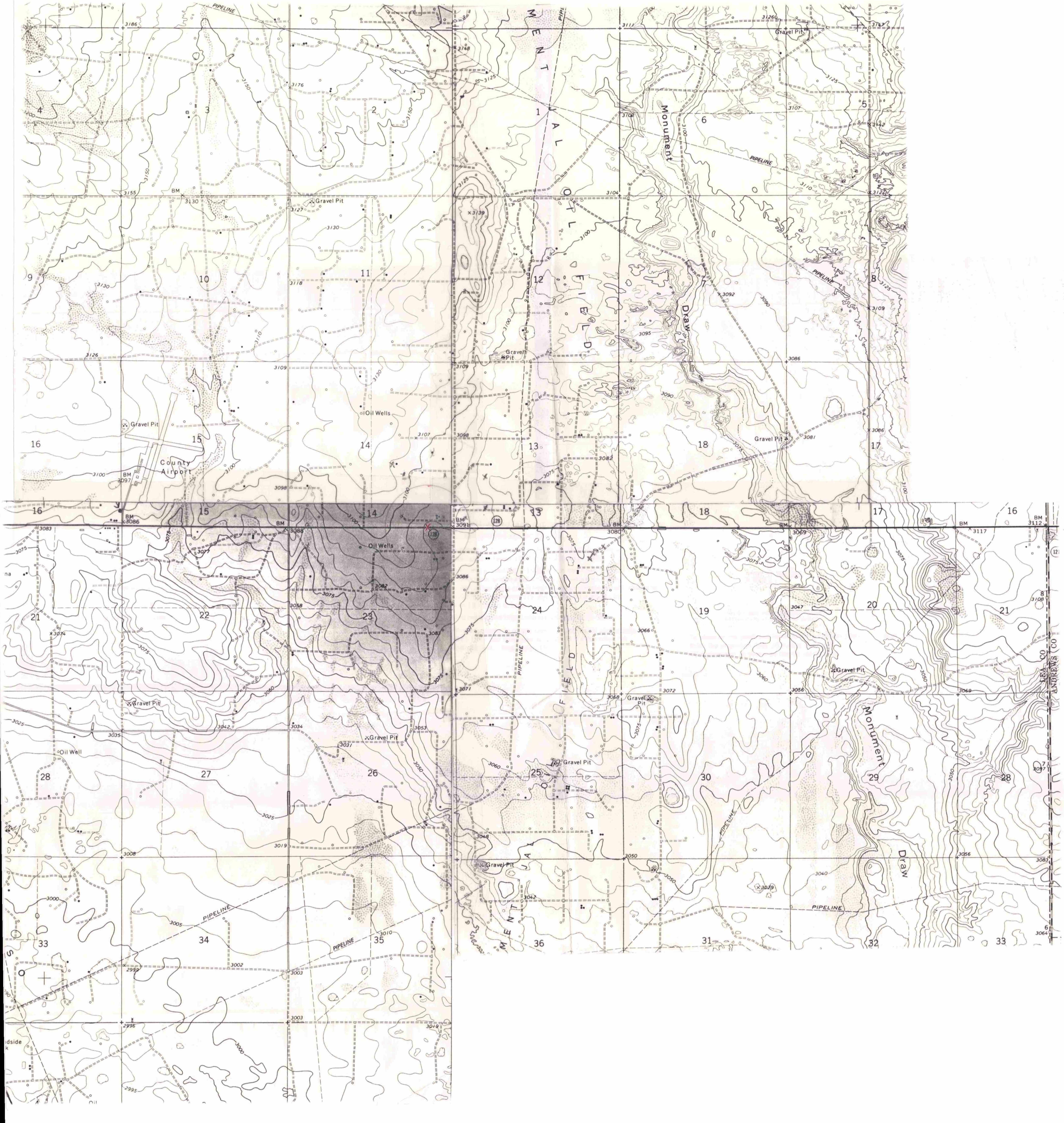
FRESH WATER FOR BRINE PRODUCTION IS STORED IN THE TWO 300 BBL FIBERGLASS TANKS ON THE FACILITY LOCATION (PHOTO 1). WHEN THE TANKS' LEVEL DROPS, THE BLOCKER WATER WELL PUMPS ARE AUTOMATICALLY TURNED ON.

THE THREE BLOCKER RANCH WATER WELLS SHOWN ON THE MAP (WELLS CP258, CP261 BOTH .8 MILES EAST, AND CP260, ONE MILE SOUTHEAST, ARE 100 FEET DEEP) ARE OUR SOURCE FOR THE FRESH WATER USED IN OUR INJECTION WELL. BLOCKER RANCH OWNS THE THREE WELLS AND ARE OUR COMMERCIAL SUPPLIERS. BLOCKER RANCH PUMPS THE WATER TO OUR FACILITY VIA A 3" SDR 17 POLYETHYLENE PIPELINE FROM THEIR CP258 AND CP261 WELLS CONSTRUCTED DECEMBER, 1980, AND A 4" SDR 17 POLYETHYLENE PIPELINE FROM THEIR CP260 WELL CONSTRUCTED JULY, 1981. BOTH PIPELINES ARE POSITIONED 18 INCHES BELOW GROUND LEVEL AND ALL THREE HAVE METERING DEVICES AT THE WELL PUMPS.

THE BRINE STORAGE PIT IS EQUIPPED WITH AN UNDERWATER PROBE DEVICE THAT AUTOMATICALLY ACTIVATES THE INJECTION WELL PUMP WHEN THE PIT LEVEL REACHES A CERTAIN LEVEL. FRESH WATER IS PUMPED FROM THE 300 BBL STORAGE TANKS DOWN THE CASING TO A DEPTH OF 2101', DISSOLVES IN THE HALITE FORMATION AND IS PUMPED TO THE SURFACE IN THE 2 7/8" TUBING, ENTERS A 3" POLYETHYLENE PIPELINE BURIED 1' BELOW GROUND LEVEL AND TRAVELS VIA THIS PIPELINE TO THE STORAGE PIT 258' FROM THE WELL HEAD (PHOTO 2). THE WELL HEAD IS EQUIPPED WITH 4 VALVES FOR BACKFLUSHING. BRINE IS PRODUCED AT 120 GALLONS PER MINUTE. THE PROCESS IS INSTANTANIOUS: WHEN A GALLON OF FRESH WATER IS PUMPED INTO THE INJECTION WELL, A GALLON OF BRINE ENTERS THE STORAGE PIT. OTHER THAN SIGNS OF WATER ON THE GROUND SURFACE ABOVE THE PIPELINE, YOU WOULD KNOW IMMEDIATELY OF LEAKAGE IF NO RETURN OCCURRED IN THE STORAGE PIT. THE SAME HOLDS TRUE ON THE WATER SUPPLY PIPELINE. OUR BRINE STATION IS CHECKED SEVERAL TIMES A DAY BY OUR PUSHERS ON DUTY AND ALL OF OUR DRIVERS ARE ALSO CHECKING AS THEY COME IN FOR BRINE.

THE LOADING AREA (PHOTO 3 & 4) IS CONCRETE WITH A DRAINAGE SYSTEM CONNECTED TO A CONCRETE SUMP PIT COVERED BY A METAL GRILL. IF OVERFLOW OCCURS DURING LOADING, THE BRINE GOES INTO THE SUMP PIT. THE PIT IS PUMPED OUT PERIODICALLY BY OUR TRUCKS AND TRANSPORTED TO OUR DISPOSAL WELL EAST OF JAL.P THE BRINE METERING DEVICE (PHOTO 5) IS A KEY SYSTEM: WHEN THE DRIVER INSERTS A KEY INTO THE DEVICE, IT ACTIVATES THE PUMP AT THE STORAGE PIT WHICH PUMPS 150 BBLS IN 8.6 MINUTES.

THE STORAGE PIT IS FENCED AND A SIGN DISPLAYED ACCORDING TO REGULATIONS (PHOTO 6). AS ALL OF THE PHOTOGRAPHS OF OUR FACILITY INDICATE, THERE WOULD BE NO WAY THAT LIQUIDS ON THE GROUND WOULD GO UNNOTICED OR THAT WE COULD LOSE A VOLUMN OF WATER OR BRINE ON THE SITE AND NOT BE AWARE INSTANTLY OF THE PROBLEM. THE STORAGE PIT IS 110' X 110' AT THE TOP AND 90' X 90' AT THE BOTTOM AND 10' DEEP, AND IS THE DRAINAGE AND SUMP SYSTEM OF LEAKAGE DETECTION WITH A 30 MIL LINER. IT WAS CONSTRUCTED ACCORDING TO THE EXACT SPECIFICATIONS AS OUTLINED BY YOUR OFFICE - INSPECTED AND APPROVED BY YOUR OFFICE BEFORE AND AFTER THE LINER WAS APPLIED.


PIPELINE
3186
3148
3176
3125
3150
4
3
2
1
3200
3155
BM
3130
Gravel Pit
3127
3130
3139
3104
3100
MENT
JAL OIL FIELD
3111
3126
3107
3142
3102
6
5
Monument
Draw
3110
3121
9
10
11
12
3118
3125
8
3092
3090
3109
3095
3126
3109
3110
3130
3086
Oil Wells
3107
3098
16
15
14
13
18
17
County Airport
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3069
3108
LEA CO
ANDREWS CO
3025
3035
3042
3034
3053
3031
Oil Well
28
27
26
25
30
29
3050
3097
3019
3008
3048
3040
3029
3083
3000
3005
3010
33
34
35
36
31
32
3064
2999
3002
3003
2996
2995

J.M. Owen water well
1.8 miles North, West

Ray Burmingham windmill
1.5 miles Southwest

CP258 Blocker
CP257 Water Wells

Brine Station

CP260 Blocker Water Well