NM - 20

GENERAL CORRESPONDENCE

YEAR(S):

2001 - 1988

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

GARY E. JOHNSON
Governor
Jennifer A. Salisbury
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

FAX

TO: MARTYENE

FROM: GARY W. WINK
Energy, Minerals and Natural Resources Department,
Oil Conservation Division

RE:

DATE: 3/23/01

4 Pages (Including Transmittal)

MAR 20, 2001

WELLS INVOLVED IN OPERATOR CHANGE
FINAL LIST WITH C-104A

This is a final list of wells being transferred. If all bonding requirements are satisfied, submit this list to the OCD District with your C-104A.

PREVIOUS OPERATOR: 267 AGUA INC

NEW OPERATOR: 194197 PETROTRAN CORPORATION

OCD DISTRICT: HOBBS

PROP-ERTY	WELL NAME	ULSTR	OCD UNIT LTR	API	WELL TYPE	POOL ID	POOL NAME	LAST PROD/INJ
34	CORBIN ABO #031	G-31-17S-33E	G	30-025-01337	S	96121	SWD;SAN ANDRES	12-2000

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-104A
August 11, 2000

Submit 1 copy of the final affected wells list along with 2 copies of this form per number of wells on that list to appropriate District Office

Change of Operator

Previous Operator Information:

OGRID: 000267
Name: AGUA, INC.
Address: 7704 PIONEER TR., NE
Address: ALBUQUERQUE, NM 87109
City, State, Zip:

New Operator Information:

Effective Date: FEBRUARY 1, 2001
New Ogrid: 194197
New Name: PETROTRAN CORPORATION
Address: P. O. BOX 92090
Address:
City, State, Zip: PASADENA, CA 91109-2090

I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information on this form and the attached list of wells is true and complete to the best of my knowledge and belief.

New Operator Signature:
Printed name: ROBERT W. ABBOTT
Title: PRESIDENT
Date: 2-1-01 Phone: 800.336.3730

Previous operator complete below:

Previous Operator: AGUA, INC.
Previous OGRID: 000267
Signature:
Printed Name: JAMES ABBOTT

NMOCD Approval

Signature:
Printed Name:
District:
Date:

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

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Printed name: ROBERT W. ABBOTT
Title: PRESIDENT
Date: 2-1-01 Phone: 800.336.3730

Previous operator complete below:

Previous Operator: AGUA, INC.
Previous OGRID: 000267
Signature:
Printed Name: JAMES ABBOTT

NMOCD Approval

Signature:
Printed Name:
District:
Date:

NMPRC Corporation Information Inquiry

- Follow this link to start a new search.

PETRO-THERMO CORPORATION

SCC Number:	**0677096**
Tax & Revenue Number:	**01757097002**
Incorporation Date:	**SEPTEMBER 28, 1970, in NEW MEXICO**
Corporation Type:	**DOMESTIC PROFIT**
Corporation Status:	**ACTIVE**
Good Standing:	**In GOOD STANDING through 11/15/2002**
Purpose:	**OIL-FIELD**

CORPORATION DATES

Taxable Year End Date:	08/31/00
Filing Date:	10/09/00
Expiration Date:	

SUPPLEMENTAL POST MARK DATES

Supplemental:	
Name Change:	
Purpose Change:	

MAILING ADDRESS

PO BOX 92090 PASADENA , CALIFORNIA 91109-2090

PRINCIPAL ADDRESS

7704 PIONEER TRAIL NE ALBUQUERQUE NEW MEXICO 87109

PRINCIPAL ADDRESS (Outside New Mexico)

NONE

REGISTERED AGENT

ROBERT W ABBOTT

7704 PIONEER TRAIL NE ALBUQUERQUE NEW MEXICO 87109

Designation date: 10/09/00
Agent Post Mark Date:
Resignation date:

COOP LICENSE INFORMATION

Number:
Type:
Expiration Year:

OFFICERS

President ***ABBOTT, ROBERT W***
Vice President ***ABBOTT, JAMES T***
Secretary ***ABBOTT, JAMES T***
Treasurer ***ABBOTT, ROBERT W***

DIRECTORS

Date Election of Directors: 08/31/01

ABBOTT, JAMES PO BOX 92090 PASADENA , CA 91109-20
ABBOTT, ROBERT PO BOX 92090 PASADENA , CA 91109-20

NMPRC Corporation Information Inquiry

- Follow this link to start a new search.

PETROTRAN CORPORATION

SCC Number:	**1132570**
Tax & Revenue Number:	**02054297006**
Incorporation Date:	**FEBURARY 25, 1982, in NEW MEXICO**
Corporation Type:	**DOMESTIC PROFIT**
Corporation Status:	**ACTIVE**
Good Standing:	**In GOOD STANDING through 11/15/2002**
Purpose:	**OIL-FIELD**

CORPORATION DATES

Taxable Year End Date:	08/31/00
Filing Date:	10/09/00
Expiration Date:	

SUPPLEMENTAL POST MARK DATES

Supplemental:	07/06/87
Name Change:	
Purpose Change:	

MAILING ADDRESS

PO BOX 92090 PASADENA , CALIFORNIA 91109-2090

PRINCIPAL ADDRESS

7704 PIONEER TRAIL NE ALBUQUERQUE NEW MEXICO 87109

PRINCIPAL ADDRESS (Outside New Mexico)

NONE

REGISTERED AGENT

ROBERT W. ABBOTT

7704 PIONEER TRAIL NE ALBUQUERQUE NEW MEXICO 87109

Designation date: 10/09/00
Agent Post Mark Date:
Resignation date:

COOP LICENSE INFORMATION

Number:
Type:
Expiration Year:

OFFICERS

President ***ABBOTT, ROBERT W***
Vice President ***ABBOTT, JAMES T***
Secretary ***ABBOTT, JAMES T***
Treasurer ***ABBOTT, ROBERT W***

DIRECTORS

Date Election of Directors: 08/31/01

ABBOTT , JAMES PO BOX 92090 PASADENA , CA 91109-20

ABBOTT , ROBERT PO BOX 92090 PASADENA , CA 91109-20

NMPRC Corporation Information Inquiry

- Follow this link to start a new search.

AGUA, INC.

SCC Number:	**0569491**
Tax & Revenue Number:	
Incorporation Date:	**AUGUST 22, 1966, in NEW MEXICO**
Corporation Type:	**DOMESTIC PROFIT**
Corporation Status:	**MERGED OUT**
Good Standing:	
Purpose:	

CORPORATION DATES

Taxable Year End Date:	08/31/81
Filing Date:	//
Expiration Date:	08/22/2066

SUPPLEMENTAL POST MARK DATES

Supplemental:	
Name Change:	
Purpose Change:	

MAILING ADDRESS

PRINCIPAL ADDRESS

PRINCIPAL ADDRESS (Outside New Mexico)

REGISTERED AGENT

MERGED OUT OF EXISTENCE

SEE FT11 FOR SERVICE OF PROCESS

Designation date: 01/14/83
Agent Post Mark Date:
Resignation date:

COOP LICENSE INFORMATION

Number:
Type:
Expiration Year:

INCORPORATORS

DIRECTORS

Date Election of Directors:

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

GARY E. JOHNSON
Governor
Jennifer A. Salisbury
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

March 7, 2001

Mr. David Coss, Division Director
New Mexico State Land Office
P.O. Box 1148
Santa Fe, NM 97504-1148

RE: Investigation, Cleanup and Environmental Remediation of the Goodwin Treating Plant located on State Land SW/4 NW/4 of Section 31, Township 18 South, Range 37 East, NMPM Lea County, New Mexico.

Dear Mr. Coss:

The New Mexico Oil Conservation Division (OCD) has awarded a contract to Philip Environmental Services Corporation (Philip) for the investigation, cleanup and environmental remediation of the Goodwin Treating Plant located SW/4 NW/4 of Section 31, Township 18 South, Range 37 East, Lea County, New Mexico.

The OCD is requesting a Right of Access to the above location for our contractor, Philip. Philip will secure the facility with locking gate and be working under a site health and safety plan. They will be using heavy equipment on site to remove old equipment, oilfield product, waste and contaminated soil. In addition, Philip will be contracting with Eads Drilling to install a monitor well to investigate vadose zone and groundwater contamination. Staging of contaminated soil in piles or in roll-off containers is expected, as is the stockpiling of clean soil for backfilling excavations.

As was discussed with OCD Environmental Bureau Staff on February 12 and 28, 2001, a formal request will be made regarding onsite land spreading and removal of soil containing Naturally Occurring Radioactive Material (NORM). That request will specify volumes of material, level of NORM and land area that would be needed to perform the land spreading prior to off site disposal.

We are requesting Right of Access for Philip to complete the contracted work for one (1) year from the date of this letter. If you have any questions or need additional information regarding this matter please contact Martyne Kieling at (505) 476-3488.

Sincerely,

Stephen C. Ross
Assistant General Counsel

xc: Mike Matush, SLO Environmental specialist
Don Fernald, Philip Environmental Services Corporation

OIL CONSERVATION DIVISION
RECEIVED
'95 DEC 15 AM 8 52

TO: CHRIS EUSTICE
NMOCD - SANTA FE

...ale Wurlitzer piano
...397-5096 or after 5 392-
...59.

112 OILFIELD SERVICES & EQUIP.

SALT Water Disposal Well and treating plant for sale, 11 miles west of Hobbs, NM on 62/180. Includes well Nat J-60 Triplex, tanks and SWD lines. $85,000 Call (800) 336-3730 or (505) 294-8115.

141 PETS

5 Week old puppies, free to good home. Will be big ... Call 392-4901.

...ua puppies
females

...ers,

Wayne,

I think this was in Sunday's Hobbs-News Sun on 11-19 or 11-26

Erik

3/4/96 OCD/Petrothermo Meeting on Goodwin Treating Plant 2:00 pm

participants - Bill Olson - OCD Environmental Bureau
Roger Anderson - " " "
Chris Eustice - " " "
Rand Carroll - OCD Attny
Dave Catanach - OCD Engineering Bureau
Bill Carr - Attny for Petrothermo
~~Bud~~ Bob Abbott - Petro. thermo

Bill Carr
2 principals - Bob Abbott + brother J.M. division of Petrotran
also operate another company Agua, Inc. ~~(injection well)~~
Petrotran (separate company) is operator of injection well
- company is insolvent
- judgements against company including interest on bond
- equipment onsite is only asset
- Agua wants to continue to operate the injection well
- facility on State lands
- facility last operated in approx 1 1/2 yrs.

R.C. - OCD ~~Bill~~ wants to continue with hearing process and order on closure

B.C. - Petrothermo would like to attempt to sell equip tanks, heater treaters in next 6 months. This would help clear surface equipment
- would be willing to work with OCD to develop stipulated order to be presented to hearing examiner

R.C. - OCD will work with Petrothermo (Bill Carr) on stipulated order

PETRO-THERMO MEETING

3-4-96 2 PM

BOB ABBOT
BILL CARR
CHRIS EUSTICE
ROGER ANDERSON
RAND CARROLL
DAVID CATANACH
BILL OLSON

MATTER SET ~~for~~ HEARING

the treating plant

Only asset to PT, including $25,000 bond
$500,000 in debt no income
Admin procedures are needless; insolvency is problem
Have not filed bankruptcy
PETRO TRAN operates AGUA SWD
division of Petro Tran
Possible Sell of facility - still must be cleaned up
Propose OCD allow time to sell
Clean Up possibilities
full spectrum

OCD is giving
PT 6 mos to
initiate anything
till 9-96

PETRO THERMO TP
(file chronology)

11-10-70 permit issued (R-4061)

1-13-88 OCD correspondence to PT to upgrade bond from 10M to 25M

9-19-90 OCD corresp to PT
RE: Regulatory Notification, New Fed. Requirements

3-7-95 OCD inspection (C. Eustice & W. Price)

6-17-95 OCD correspond to PT asking for closure plan

6-27-95 RECORD OF CONVERSATION betw/ C. Eustice & J. Abbot
RE: does active SWD make treating plant active? No!

8-14-95 Corresp from PT to OCD asking that PT be allowed to call facility "active" cause they sell oil from SWD

9-1-95 OCD correspond to above request

9-15-95 PT submits closure plan

10-10-95 OCD adresses inadequacies of the 9-15-95 closure plan

10-25-95 PT submits C-118 for August 95

11-27-95 OCD receives Memo to Ray Powell from Hic staff @ SLO

11-6-95 PT responds to OCD corresp of 10-10-95

2-6-96 OCD Enviro Bureau meets w/ Bill Carr dba PT

2-6-96 2-6-96

Petro-Thermo Meeting @ 1000AM

Bill Carr, Roger Anderson, Bill Olson, Chris Eustice

- Talked in gen about how problem originated
- What would an "order" entail
  - time frame to start clean up
  - don't know extent of contam
  - ask Petro Thermo to determine
- Possibilities of hearing or an alternative
  - by phone
  - probably in person
- Settlements
  - Abbot come to SF for conference & settlement agree.
- Misc Possibilities

Bill Carr will call him to ask him if he wants to pursue an agreement w/ serious intentions

AGUA
Division of PetroTran Corp.
POST OFFICE BOX 92090
PASADENA, CALIFORNIA
91109-2090

TELEPHONE (505) 393-6188
(800) 336-3730

November 3, 1995

VIA CERTIFIED MAIL

William J. LeMay
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87505

RE: Petro-Thermo Corporation
Goodwin Treating Plant
Lea County, NM

Dear Mr. LeMay:

Thank you for your letter of October 10, 1995. After careful consideration of OCD's closure proposal, Petro-Thermo Corporation (PTC) wishes to delay closure of the Goodwin Treating Plant (GTP) at this time.

As stated in our letter of September 15, 1995, PTC does not have financial resources to pay for closure expenditures over and above $25,000. OCD's proposal to complete closure procedures prior to accessing PTC's $25,000, demolish PTC's GTP assets, level berms, etc. by November 6, 1995 is not possible, and would cost much more than $25,000. Furthermore, PTC continues to operate the GTP and does not wish to incur financial liability for closure expenses, as mentioned in your letter.

In the meantime, PTC has entered into discussions with certain third parties to sell and/or transfer GTP assets to facilitate continued use of those assets, and/or continue GTP operations under new ownership. Discussions, negotiations and impending transactions will take at least 6-months or more to complete.

As you may be aware, PTC has operated the GTP for over 25 years. As with any long term oil-field location, occasional spills or tank run-overs have inevitably occurred during the course of normal operations over this long period of time, through no fault of PTC. However, all have been cleaned up in accordance with OCD guidelines as they transpired. We notice that photocopies of your recent letters have been circulated to State Land Office representatives. We assume that OCD's spill/staining documentation referred to in Reason Number 3 of your letter dated October 10, 1995, also includes information regarding PTC's clean-up activities for such spills, and its longstanding willingness to comply with OCD regulations, and certainly hope that Mr. Eric Nelson of the State Land Office, or any other third party, have been accurately informed about the same, as well as the contents of our letter dated September 15, 1995, which refer to the current condition of the GTP, current level of PTC's oil treating activity, and, SWD well, attendant tankage and emergency overflow pit ownership.

Should OCD request a hearing to discuss this matter, PTC representatives will attend to outline their ongoing GTP operations, intentions to sell/transfer their GTP assets/interests, and will request an adequate and reasonable amount of time to complete the same.

Please respond at your earliest convenience. Our mailing address is P. O. Box 92090, Pasadena, CA 91109-2090. For field operations, our telephone number is (505) 393-6188. All other calls should be directed to (800) 336-3730.

Yours truly,

Petro-Thermo Corporation

J. T. Abbott
Manager

State of New Mexico
Commissioner of Public Lands
310 OLD SANTA FE TRAIL P.O. BOX 1148
SANTA FE, NEW MEXICO 87504-1148

RAY POWELL, M.S., D.V.M.
COMMISSIONER

(505) 827-5760
FAX (505) 827-5766

November 28, 1995

Chris Eustice
New Mexico Energy, Minerals and Natural Resources Department
Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87505

Dear Mr. Eustice;

In response to your request of November 21, I am sending the current field reports regarding Petro-Thermo Corporation (PTC) Goodwin Treating Plant (SW/4 NW/4 of Section 31, Township 18 South, Range 37 East, NMPM. Lea County, NM).

The reports include recent photographs of the site taken by SLO Land Use Specialist (Hobbs), Eric Nelson. Petro-Thermo Corporation, Jim Abbot and/or AGUA, Inc. have a current application for renewal of SWD-6 pending with the SLO Commercial Division. My recommendation to them is for denial at this time. I have also requested that any correspondence regarding leasing of State Trust Land or remediation of said property be copied to you.

Perhaps by mutual cooperation, we can prevent and/or mitigate future environmental impacts such as this one. I would appreciate any additional information as it comes available. If there are any questions, please feel free to reach me at 827-5734.

Sincerely,

Linda Drew Freedman
Environmentalist

LDF/ldf

Attachments

State of New Mexico
Commissioner of Public Lands

RAY POWELL, M.S., D.V.M.
COMMISSIONER

310 OLD SANTA FE TRAIL P.O. BOX 1148

SANTA FE, NEW MEXICO 87504-1148

(505) 827-5760
FAX (505) 827-5766

DATE: 11/27/95 **LF-SA-003**

MEMORANDUM

TO: **RAY B. POWELL, COMMISSIONER OF PUBLIC LANDS**
SANTA FE, NEW MEXICO

FROM: LINDA DREW FREEDMAN
ENVIRONMENTALIST

SUBJECT: EN-SA-09, SWD-6 Lot 2 Section 31, Township 18 South, Range 37 East, N.M.P.M., Lea County, New Mexico

SYNOPSIS

This report follows a September 9 report by LUS Eric Nelson regarding an unauthorized oil reclamation facility on State Trust Land within the boundary of SLO business lease, SWD-6. Petro-Thermo Corporation (PTC) has been operating the oil reclamation facility since 1969 (EN-SA-009). The site is shared by SLO SWD-6 (PTC SWD Well E-31) and Goodwin Treating Plant which are operated by a related entity, AGUA, a division PetroTran Corporation. According to Bea Mirabal, SLO Commercial Resources, the SLO has not issued a business lease for anything other than SWD-6. Photographs submitted with the report indicate severely corroded tanks, storage buildings, miscellaneous equipment, an open discharge pit and gross soil staining (EN-SA-009). The NMOCD requested a closure and remediation plan from PTC on June 6.

Conversation with Roger Anderson (NMOCD) revealed that OCD had received an inadequate response from PTC. The OCD plans to initiate enforcement action against PTC, and expect attendance by SLO personnel at a subsequent hearing. Roger offered to send the OCD file on the site to the SLO, and requested a similar response from us. Assistant Commissioner Bob Jenks asked that the OCD send a written request for correspondence. The file and the request from OCD Geologist Chris Eustice were received by the SLO Field Division November 22. A copy of EN-SA-09 and LF-SA-003 will be forwarded to Chris Eustice at OCD this week.

LEGAL DESCRIPTION

Lot 2 (2.5 Acres) Section 31, Township 18 South, Range 37 East, NMPM, Lea County, New Mexico

LOCATION

This site is located approximately 8 miles west of Hobbs, New Mexico. It can be accessed via Lea County Road 41.

REMARKS

Eric Nelson believes this oil treatment facility has been operating in trespass on State Trust Land for an unknown amount of time. The SLO has never received a business lease from Petro-Thermo Corporation, Goodwin Treating Plant, Goodwin SWD System, AGUA or PetroTran Corporation. According to SLO tract records, two leases for Right of Way were issued to William Abbot and/or Agua, Inc. beginning May 24, 1968. A further search reveals that these leases were renewed as SWDs in 1973. Currently only the SWD (SWD-6) and a grazing lease (GS-500) remain active. There is no record of any additional commercial leasing of this property. Jim Abbot has indicated a desire to renew the SWD, but has not completed the necessary paperwork.

The NMOCD has determined that a closure plan (CP) submitted to OCD by PTC for the Goodwin Treating Plant on September 15 cannot be approved for the following reasons:

1. PTC cannot access the $25,000 bond (required by OCD) until closure of the facility is completed and the OCD approves the release of the bond.

2. The CP did not address tanks #122 and #123 or the demolition of the storage buildings.

3. The CP did not address the soil staining due to spills previously documented by OCD field personnel.

4. The CP did not address the open discharge pit on the site.

5. The CP did not address the leveling of the berm around the site.

6. The CP did not address the disposal and/or removal of miscellaneous debris associated with the operation of the facility.

Petro-Thermo was required to implement the above requirements (see Attachment letter 10/10/95) no later than November 6. As no action was taken by PTC, the Director of the OCD will call a hearing for the purpose of revoking the facility permit and foreclosing on

the $25,000 bond (attachment of 10/10/95). If the amount is insufficient to address the Division's concerns, PTC will be held liable for the deficiency.

RECOMMENDATIONS

The oil treatment (reclamation) business associated with SWD-6 has been, and expects to be engaged in the sale of reclaimed oil (attachment of 8/14/95). Perhaps there is a way to back date a business lease for this type of facility and thereby recover monies in kind.

Due to continued OCD enforcement and remediation problems associated with the facilities on this State Trust Land, it is recommended that Commercial Division **not issue a renewal for SWD-6** at this time. All correspondence (written or verbal) regarding this current lease or any future lease should be documented and submitted to NMOCD as requested by Chris Eustice. State Land personnel should actively participate in the enforcement activities conducted by the NMOCD pursuant to the attached letter of October 10 because it is in the best interest of the Trust to bring this facility into compliance or have the facility properly closed.

LDF/ldf

Attachments

State of New Mexico
Commissioner of Public Lands

RAY POWELL, M.S., D.V.M.
COMMISSIONER

310 OLD SANTA FE TRAIL P.O. BOX 1148

SANTA FE, NEW MEXICO 87504-1148

(505) 827-5760
FAX (505) 827-5766

September 19, 1995 EN-SA-09

TO: Ray Powell, Commissioner of Public Lands
Santa Fe, New Mexico

FROM: Erik Nelson, Land Use Specialist
Hobbs, New Mexico

SUBJECT: Commercial Business in Trespass: SWD #6
Petro-Thermo Corporation (Agua SWD)

SYNOPSIS

Mr. Jim Abbott, who operates a salt water disposal well under the name of Agua, has also been operating an oil reclamation facility in addition to the SWD since 1969. This type of facility requires a business lease. I recommend an annual rental of $1,500.00 per year.

This facility is currently not operating and is in the process of renewing its permit with the NMOCD. This facility has numerous environmental concerns including soil contamination and possibly groundwater pollution. Each of these problems should be addressed to the satisfaction of the State Land Office before issuance of a business lease. Mark Schmidt, Environmental Engineer, is familiar with this situation and should be consulted in regards to this issue. The NMOCD is currently requiring clean-up of the site prior to repermitting (see enclosures), with the exception of groundwater investigation which should be required by the State Land Office.

LEGAL DESCRIPTION

T18S, R37E			NMPM
SECTION 31:	Lot 2	2.5 Acres	LEA COUNTY

LOCATION

This site is located approximately 8 miles west of Hobbs, New Mexico with access via C-41.
Site Description: The site is fenced with a caliche base and contains numerous holding tanks, heater-treaters and sheds. This area has been subject to numerous oil and salt water spills including an open discharge pit.

HIGHEST AND BEST USE

The highest and best use of the surrounding land is for oil/gas and livestock production. The SWD and business lease is a higher and better use for this particular 2.5 acre tract.

ESTIMATE OF VALUE

No private land comparables are available for this type of facility but the State Land Office maintains two other similar business leases.

B.L.#	SEC/TWP/RGE	GRANTOR	/	GRANTEE	RENTAL
1301	16/20S/37E	NMSLO	/	Bandera Petroleum	$1,500.
1129	03/19S/37E	NMSLO	/	AA Oilfield Service	1,000.

Petro Thermo is a larger facility than either of the above business leases, therefore I recommend a minimum of $1,500.00 annual rental.

The State Land Office holds a $10,000.00 bond from AA Oilfield Service. I recommend similar bonding be required for Petro Thermo.

IMPROVEMENTS

Improvements to this facility include the following:

19-500 bbl. tanks
1-1,000 bbl. tank
2-Miscellaneous tanks
2-heater treaters
1-shed
-caliche base
-perimeter fencing
-electric and natural gas service

EN:bw

Attachments

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

June 17, 1995

CERTIFIED MAIL
RETURN RECEIPT NO. P-176-012-149

Mr. Jim Abbot, Manager
Petro-Thermo Corporation
PO Box 92090
Pasadena, California 91190

Re: PETRO-THERMO CORPORATION
GOODWIN TREATING PLANT
LEA COUNTY, NEW MEXICO

Dear Mr. Abbot:

New Mexico Oil Conservation Division (OCD) records indicate that the Petro-Thermo Corporation (Petro-Thermo) Goodwin Treating Plant, located in the SW/4 NW/4 of Section 31, Township 18 South, Range 37 East, NMPM, Lea County, New Mexico, has been inactive in excess of six (6) consecutive months.

Pursuant to OCD rule 312.A.13., you are required to submit closure plans detailing how Petro-Thermo plans to clean up and restore the facility site. Closure shall be in accordance with a plan acceptable to the Division Director and may include removal or demolition of buildings, removal of all tanks, vessels, equipment or hardware, containment and removal of fluids and chemicals, removal of contaminated soils, backfilling and grading of pits, and general reclamation of the plant site. Please submit a closure plan no later than August 14, 1995 or the OCD will take action to address Petro-Thermo's continuing violation of OCD rules.

To help you in preparing your closure plan, enclosed you will find the OCD's "GUIDLINES FOR REMEDIATION OF LEAKS, SPILLS AND RELEASES" which provides guidance for the remediation of contaminants resulting from leaks, spills and releases of oilfield wastes or products.

If you have any questions, please contact Chris Eustice at (505) 817-7153.

Sincerely,

by Bill LeMay - Deputy Director
William J. LeMay
Director

Enclosure

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

NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 S. Pacheco
Santa Fe, New Mexico 87505

September 1, 1995

CERTIFIED MAIL
RETURN RECEIPT NO. P-176-012-181

Mr. Jim Abbot, Manager
Petro-Thermo Corporation
PO Box 92090
Pasadena, California 91190

Re: PETRO-THERMO CORPORATION
GOODWIN TREATING PLANT
LEA COUNTY, NEW MEXICO

Dear Mr. Abbot:

New Mexico Oil Conservation Division (OCD) has received Petro-Thermo Corporation's (Petro-Thermo) request dated August 14, 1995 that the Goodwin Treating Plant, located in the SW/4 NW/4 of Section 31, Township 18 South, Range 37 East, NMPM, Lea County, New Mexico, be allowed to continue operating.

For the OCD to consider the request , Petro-Thermo must submit the following by September 15, 1995:

1. Petro-Thermo will submit a work plan to the OCD Santa Fe Office for approval that addresses the clean up of contaminated soils and the restoration of integrity of all storage tanks at the facility. The work plan must contain specific actions to be taken and dates for such action.

2. Petro-Thermo will submit a modification plan describing in detail the downsizing of the treating facility.

3. Petro-Thermo will obtain OCD approval prior to disposal of all wastes.

4. Petro-Thermo will submit a routine inspection and maintenance plan to ensure permit compliance.

5. Petro-Thermo will consult with the OCD Hobbs District Office to verify and demonstrate that the Goodwin Waste Water Well No. E-31, permitted for injection by Division Order No. SWD-68 and located in Unit E of Section 31, Township 18 South, Range 37 East, NMPM, is in compliance with current UIC Rules and Regulations and that its continued use does not pose a threat to any underground sources of drinking water.

If Petro-Thermo fails to provide any of the above requested information by the specified times, the Director of the OCD will order Petro-Thermo to close the facility pursuant to an OCD approved closure plan and properly plug and abandon the Goodwin Waste Water Well No. E-31. If Petro-Thermo fails to close the facility and plug the Goodwin Waste Water Well No. E-31 in accordance with such order, the OCD will initiate enforcement action including, but not limited to, forfeiting the $25,000 bond for the treating plant and the $50,000 blanket plugging bond for the injection well and seeking the imposition of civil and/or criminal penalties. Please note that Petro-Thermo is now subject to the new amended Rule 711 (enclosed) which incorporated former Rule 312. OCD Rule 711.D.2.c. states: "In the event forfeiture of the financial assurance is required by this rule, the Director shall proceed to collect the forfeited amount and use the funds collected from the forfeiture to complete the closure. In the event the amount forfeited is insufficient for closure, the permittee shall be liable for the deficiency". OCD Rule 101.M. has similar language regarding the $50,000 bond for the injection well.

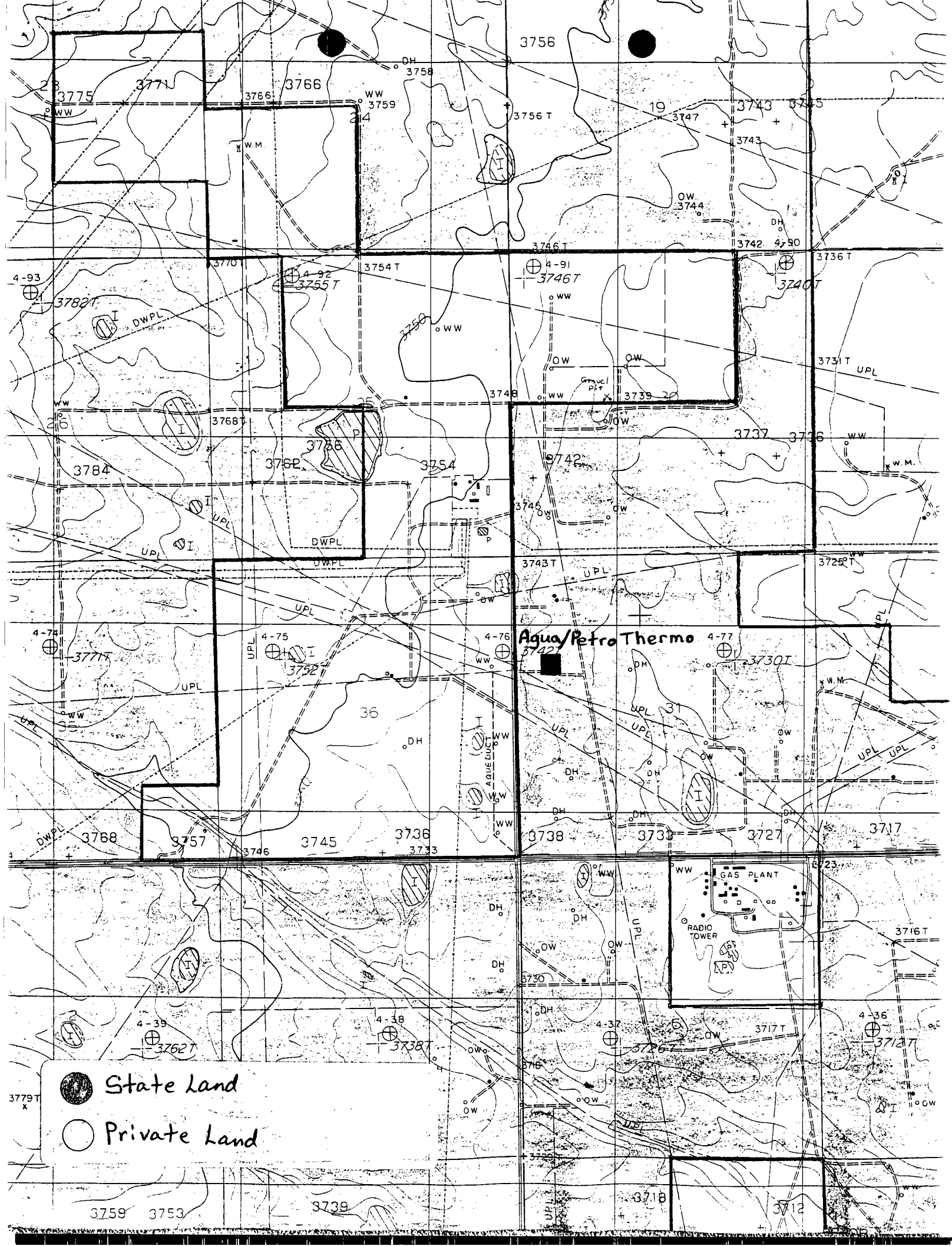
If you have any questions regarding this letter, please call Chris Eustice at (505) 827-7153.

Sincerely,

William J. LeMay
Director

Enclosure

xc: Jerry Sexton, OCD Hobbs Office
David Catanach, UIC Director, OCD Santa Fe Office
Mark Schmidt, State Land Office (Santa Fe)
Eric Nelson, State Land Office (Hobbs)


Agua/PetroThermo
GAS PLANT
RADIO TOWER
State Land
Private Land

NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 S. Pacheco
Santa Fe, New Mexico 87505

November 21, 1995

Mr. Mark Schmidt
New Mexico State Land Office
310 Old Santa Fe Trail
Santa Fe, New Mexico 87505

Dear Mr. Schmidt;

The Oil Conservation Division (OCD) would like to request a copy of any current or future correspondence the State Land Office (SLO) has pertaining to the Petro-Thermo Corporation (PTC) Goodwin Treating Plant located in the SW/4 NW/4 of Section 31, Township 18 South, Range 37 East, NMPM. Lea County, New Mexico.

The OCD is currently corresponding with PTC in an attempt to bring the facility into compliance or have the facility properly closed. In addition, the OCD will continue to copy the SLO on all future correspondence facilitated from this office.

If you have any questions call me at (505) 827-7153.

Sincerely,

Chris Eustice
Geologist

NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 S. Pacheco
Santa Fe, New Mexico 87505

October 10, 1995

CERTIFIED MAIL
RETURN RECEIPT NO. Z-765-962-568

Mr. Jim Abbot, Manager
Petro-Thermo Corporation
PO Box 92090
Pasadena, California 91190-2090

Re: PETRO-THERMO CORPORATION
GOODWIN TREATING PLANT
LEA COUNTY, NEW MEXICO

Dear Mr. Abbot:

New Mexico Oil Conservation Division (OCD) has received Petro-Thermo Corporation's (PTC) Closure Plan dated September 15, 1995 for the Goodwin Treating Plant, located in the SW/4 NW/4 of Section 31, Township 18 South, Range 37 East, NMPM, Lea County, New Mexico.

PTC's Closure Plan is not approvable for the following reasons:

1. PTC cannot access the $25,000 bond until the closure of the facility has been completed and the OCD approves the release of the bond.

2. The closure plan did not address tank numbers 122 and 123 or the demolition of the storage buildings.

3. The closure plan did not address the gross soil staining that has been documented by numerous OCD inspections of the facility. The staining is a result of a number of leaks that have also been documented by the OCD.

4. The closure plan did not address the pit that is present at the facility.

5. The closure plan did not address the leveling of the berms.

6. The closure plan did not address the disposal and/or removal of miscellaneous equipment such as piping, drums, hoses, pumps, and various refuge.

Therefore, the OCD hereby requires that Petro-Thermo take the following actions to close the facility **by November 10, 1995**:

1. All tanks and gunbarrels will be emptied and their contents disposed of at an OCD approved waste management facility.

2. After the above referenced tanks have been emptied of their contents, the tanks will be removed from the facility.

3. Any buildings or miscellaneous surface equipment will be demolished and disposed of properly.

4. All stained and contaminated soils will be investigated to determine the vertical and horizontal extent of contamination, and cleaned up according to the OCD "Guidelines for Remediation of Leaks, Spills and Releases" (attached).

5. All berms will be leveled.

6. Petro-Thermo will contact Mr. Jerry Sexton, the OCD Hobbs District Supervisor, to obtain written approval to transfer any surface tank(s) associated with the treating plant to the salt water disposal well operations.

7. Notify the OCD Santa Fe Office 48 hours prior to any closure activities to allow the OCD the opportunity to witness the work and/or split samples.

If Petro-Thermo fails to comply with any of the above requirements by November 6, 1995, the Director of the OCD will call a hearing for the purpose of revoking the facility permit and foreclosing on the $25,000 bond. The Director shall then proceed to collect the foreclosed-upon amount to conduct the closure. In the event the amount forfeited is insufficient for closure, Petro-Thermo shall be held liable for the deficiency.

If you have any questions regarding this letter, please call Chris Eustice at (505) 827-7153.

Sincerely,

William J. LeMay
Director

Enclosure

xc: OCD Hobbs Office
Eric Nelson, State Land Office

PETRO-THERMO CORPORATION

P.O. BOX 2069 PHONES (505) 393-2417 — 397-3557
HOBBS, NEW MEXICO 88241-2069

September 15, 1995

VIA CERTIFIED MAIL

William J. LeMay
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87505

RE: Petro-Thermo Corporation
Goodwin Treating Plant
Lea County, NM

Dear Mr. LeMay:

Reference is made to your letter of September 1, 1995. In response, Petro-Thermo Corporation (PTC) respectfully wishes to submit the following cessation procedures for the Goodwin Treating Plant (GTP) as requested by the New Mexico Oil Conservation Division (OCD).

PTC operates the GTP, which is located on 2.5 acres of state trust land in the SW/4, NW/4 of Sec. 31, T. 18S, R. 37E. PTC shares a small portion of the site with SWD Well E-31 and attendant tankage, and Goodwin SWD System, located in Unit E of the same section, which are operated by AGUA, division PetroTran Corporation (AGUA), a related entity [See Exhibit 1].

PTC ceased operations July, 1994 and sold all assets to pay creditors, except for the GTP which has minimal market value. PTC ceased hauling produced water, oil, etc. to the GTP at that time. The GTP is not open for disposal, or treating services to outside firms and only excepts a minimal number of barrels of skim oil generated from AGUA's operations. The GTP is a "tank only" facility, and is not permitted to dispose of surface waste of any kind. The location gate is locked to prevent vandalism, as well as for safety considerations. PTC employs a contract pumper who inspects the site daily. Pursuant to my personal inspection of the GTP site September 2, 1995, there are no present spills at the GTP, and the treating plant site is clean and dry.

Because the current GTP operation is very limited, PTC is agreeable to facilitate its closure, in accordance with OCD rule 312.A.13., and respectfully proposes to implement the following plan:

PTC will cause to have emptied GTP storage tanks numbers 101 through 110, and the North and South Treaters, and dispose of all fluids at SWD well E-31, or at another OCD approved site, and/or sell such fluids to a legitimate oil buyer within 6-

months from September 15, 1995, to be completed by approximately March 15, 1996, in accordance with OCD rule 312.A.13 [See Exhibit 1]. Presently most of these tanks are already empty, or have a few inches of produced water and/or residue oil in them. To our knowledge, all other GTP tanks are already empty except for redwood tanks numbers 111, 112, 114 and 121, and gunbarrel tank number 113, which contain heavy mud and BS&W [See Exhibit 1]. It will be necessary for the solid material in these tanks to be shoveled out, and hauled to an approved oil-field solids waste disposal site, such as Controlled Recovery, Inc., (CRI).

We believe that once all tanks are emptied, they will pose no future threat of contamination to the environment. Barring unforeseen circumstances, we would expect this action to take no longer than 6-months, but would request that an extension of time be granted by the Director, should it not be completed. Eventually, but not possibly within 6-months, PTC could cause all emptied tanks and vessels, to be sold to a third party and removed from location.

PTC will obtain prior OCD approval to dispose of all wastes, and the emptied tanks will be available for OCD inspection at any time until sold and removed. PTC will coordinate and supervise closure activities and will make arrangements with its contract pumper to meet OCD representatives at the GTP for inspection purposes.

To pay for these closure expenditures, it will be necessary for PTC to access and expend its $ 25,000 GTP cash bond. **PTC has no financial resources with which to pay for closure expenditures over and above $ 25,000, and could not in good faith, contract for any such services that it could not pay for.** Therefore, we believe that closure funds should be expended conservatively, with focus on emptying all tankage, which would effectively eliminate any future threat of contamination to the environment from leakage.

In a related matter, AGUA, the legal entity which operates SWD Well No. E-31, located in Unit E of Sec. 31, T. 18S, R. 37E, wishes to address item number 5 of your letter of September 1, 1995. AGUA's SWD operation, located at the Goodwin site [See Exhibit 1], includes Well No. E-31, tanks numbers 115 through 118 and emergency overflow pit, and is connected by pipeline to locations north of the well. For the past 6-months, water injection has averaged 6,000 barrels, and we do not expect any significant increase in the future. The mechanical integrity of the well is sound, as evidenced by our most recent Bradenhead Test dated November, 1994,

which was witnessed by the OCD. To our knowledge, AGUA is in compliance with OCD and UIC Rules and Regulations. However, pursuant to your letter, we contacted OCD representative Mr. Jerry Sexton September 14, 1995, who suggested that AGUA perform a tracer survey on the well to insure AGUA's continued compliance

with all applicable OCD regulations. We will make the necessary arrangements and notify Mr. Sexton's office so that an OCD representative may witness this procedure.

Please advise at your earliest convenience, so that we may proceed in resolving these issues. Our mailing address is P. O. Box 92090, Pasadena, CA 91109-2090. For field operations, our telephone number is (505) 393-6188. All other calls should be directed to (800) 336-3730.

Yours truly,

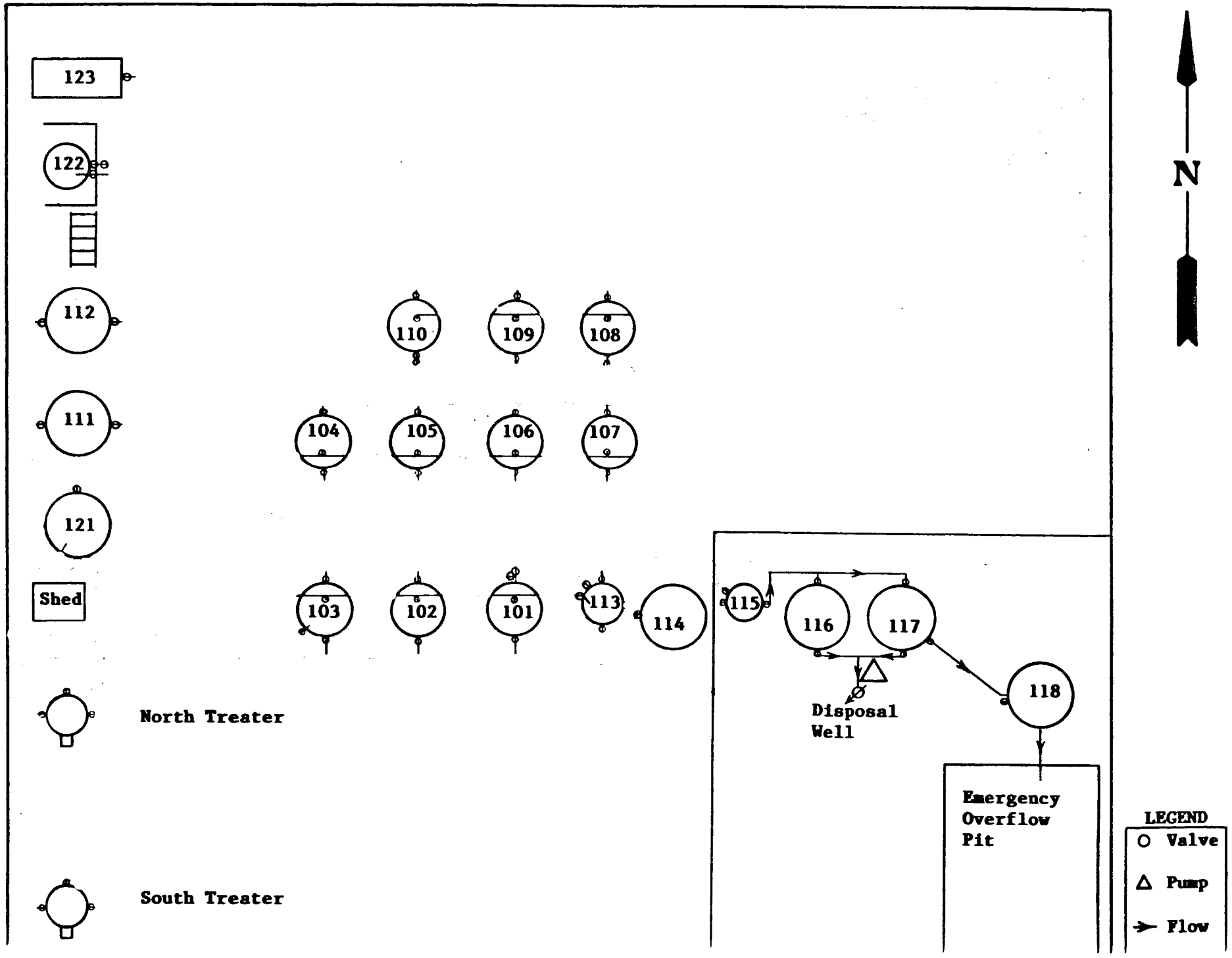
Petro-Thermo Corporation
AGUA, division of
PetroTran Corporation

Robert W. Abbott
President

Enclosure: Exhibit 1, GTP Site Map

GOODWIN TREATING PLANT

Exhibit 1



NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 S. Pacheco
Santa Fe, New Mexico 87505

September 1, 1995

CERTIFIED MAIL
RETURN RECEIPT NO. P-176-012-181

Mr. Jim Abbot, Manager
Petro-Thermo Corporation
PO Box 92090
Pasadena, California 91190

Re: PETRO-THERMO CORPORATION
GOODWIN TREATING PLANT
LEA COUNTY, NEW MEXICO

Dear Mr. Abbot:

New Mexico Oil Conservation Division (OCD) has received Petro-Thermo Corporation's (Petro-Thermo) request dated August 14, 1995 that the Goodwin Treating Plant, located in the SW/4 NW/4 of Section 31, Township 18 South, Range 37 East, NMPM, Lea County, New Mexico, be allowed to continue operating.

For the OCD to consider the request , Petro-Thermo must submit the following by September 15, 1995:

1. Petro-Thermo will submit a work plan to the OCD Santa Fe Office for approval that addresses the clean up of contaminated soils and the restoration of integrity of all storage tanks at the facility. The work plan must contain specific actions to be taken and dates for such action.

2. Petro-Thermo will submit a modification plan describing in detail the downsizing of the treating facility.

3. Petro-Thermo will obtain OCD approval prior to disposal of all wastes.

4. Petro-Thermo will submit a routine inspection and maintenance plan to ensure permit compliance.

5. Petro-Thermo will consult with the OCD Hobbs District Office to verify and demonstrate that the Goodwin Waste Water Well No. E-31, permitted for injection by Division Order No. SWD-68 and located in Unit E of Section 31, Township 18 South, Range 37 East, NMPM, is in compliance with current UIC Rules and Regulations and that its continued use does not pose a threat to any underground sources of drinking water.

If Petro-Thermo fails to provide any of the above requested information by the specified times, the Director of the OCD will order Petro-Thermo to close the facility pursuant to an OCD approved closure plan and properly plug and abandon the Goodwin Waste Water Well No. E-31. If Petro-Thermo fails to close the facility and plug the Goodwin Waste Water Well No. E-31 in accordance with such order, the OCD will initiate enforcement action including, but not limited to, forfeiting the $25,000 bond for the treating plant and the $50,000 blanket plugging bond for the injection well and seeking the imposition of civil and/or criminal penalties. Please note that Petro-Thermo is now subject to the new amended Rule 711 (enclosed) which incorporated former Rule 312. OCD Rule 711.D.2.c. states: "In the event forfeiture of the financial assurance is required by this rule, the Director shall proceed to collect the forfeited amount and use the funds collected from the forfeiture to complete the closure. In the event the amount forfeited is insufficient for closure, the permittee shall be liable for the deficiency". OCD Rule 101.M. has similar language regarding the $50,000 bond for the injection well.

If you have any questions regarding this letter, please call Chris Eustice at (505) 827-7153.

Sincerely,

William J. LeMay
Director

Enclosure

xc: Jerry Sexton, OCD Hobbs Office
David Catanach, UIC Director, OCD Santa Fe Office
Mark Schmidt, State Land Office (Santa Fe)
Eric Nelson, State Land Office (Hobbs)

AGUA
Division of Petro-Thermo Corp.
POST OFFICE BOX 92090
PASADENA, CALIFORNIA
91109-2090

TELEPHONE (505) 393-6188
(800) 336-3730

August 14, 1995

William J. LeMay
Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87505

RE: Petro-Thermo Goodwin Treating Plant
SW/4 NW/4 of Sec. 31-T18S-R37E, Lea County, NM

Dear Mr. LeMay:

In response to your letter dated 6-17-95, Petro-Thermo Corp. (PTC) wishes to continue operation of our Goodwin Treating Plant (GTP), but on a smaller scale. As you may know, we terminated our PTC trucking operations in July, 1994, but we still operate two small SWD systems that occasionally we treat oil from.

Accordingly, we plan to sell some oil before the end of this month. We will forward the C-117-A form when this takes place. We anticipate a sales transaction about once every six months, as the treatable volume of oil collected from the SWD operations takes several months to accumulate.

With this in mind, we feel the continued, but limited operation of the GTP is necessary, and closure plans are premature. As we have done without interruption in the past (since 1967), we will continue to have contract personnel taking care of the GTP daily operations.

If you have any further questions or comments I can be reached at phone numbers and address above.

RCA 8/15
a letter w/ OK signature
addressing problems to be rectified

Sincerely,

Jim Abbott
Manager

xc: Wayne Price, OCD Hobbs Office

STATE OF NEW MEXICO

OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☑ Telephone ☐ Personal | Time 930 AM | Date 6-27-95

Originating Party: Jim Abbot - Petro-Thermo(PT)

Other Parties: Chris Eustice - OCD

Subject: Goodwin Treating Plant

Discussion: Jim wanted to discuss the letter of 6-14-95 requiring PT submit a closure plan for the treating plant. Jim said the 312 fac was "attached" to the disposal well & that the SWD should qualify the treating plant as active

Conclusions or Agreements

I said that the 312 & SWD are seperate permits & that the letter would have to be responded to by submitting a closure plan.

Distribution: file

Signed: C. Eustice

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

June 17, 1995

CERTIFIED MAIL
RETURN RECEIPT NO. P-176-012-149

Mr. Jim Abbot, Manager
Petro-Thermo Corporation
PO Box 92090
Pasadena, California 91190

Re: PETRO-THERMO CORPORATION
GOODWIN TREATING PLANT
LEA COUNTY, NEW MEXICO

Dear Mr. Abbot:

New Mexico Oil Conservation Division (OCD) records indicate that the Petro-Thermo Corporation (Petro-Thermo) Goodwin Treating Plant, located in the SW/4 NW/4 of Section 31, Township 18 South, Range 37 East, NMPM, Lea County, New Mexico, has been inactive in excess of six (6) consecutive months.

Pursuant to OCD rule 312.A.13., you are required to submit closure plans detailing how Petro-Thermo plans to clean up and restore the facility site. Closure shall be in accordance with a plan acceptable to the Division Director and may include removal or demolition of buildings, removal of all tanks, vessels, equipment or hardware, containment and removal of fluids and chemicals, removal of contaminated soils, backfilling and grading of pits, and general reclamation of the plant site. Please submit a closure plan no later than August 14, 1995 or the OCD will take action to address Petro-Thermo's continuing violation of OCD rules.

To help you in preparing your closure plan, enclosed you will find the OCD's "GUIDLINES FOR REMEDIATION OF LEAKS, SPILLS AND RELEASES" which provides guidance for the remediation of contaminants resulting from leaks, spills and releases of oilfield wastes or products.

If you have any questions, please contact Chris Eustice at (505) 817-7153.

Sincerely,

by Bill LeMay - Deputy Director
William J. LeMay
Director

Enclosure

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

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

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

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

March 29, 1994

CERTIFIED MAIL
RETURN RECEIPT NO. P-111-334-308

Mr. John A. Miller
Environmental Remediation Manager
Dowell Schlumberger Inc.
P.O. Box 4378
Houston, Texas 77210-4378

RE: DISCHARGE PLAN (GW-73) VIOLATION
DOWELL SCHLUMBERGER HOBBS SERVICE FACILITY
LEA COUNTY, NEW MEXICO

Dear Mr. Miller:

On October 22, 1991, the ground water discharge plan, GW-73 for the Dowell Schlumberger (D/S) Incorporated Hobbs Service Facility 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 under the specific terms and conditions as stated in the plan. 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".

The discharge plan GW-73 specifies that wastewater generated at your Hobbs Service Facility will be disposed of offsite at Control Recovery Inc. (CRI), an OCD permitted disposal facility. During a recent inspection the OCD Hobbs Office discovered that D/S has been disposing of their non-exempt wastewater at a Class II injection well. In addition to being a violation of your discharge plan, this disposal activity is in violation of statues under the New Mexico Oil and Gas Act and federal regulations under Part C of the Safe Drinking Water Act.

The OCD requires D/S to cease disposal of wastewater generated at your Hobbs Service Facility at any Class II injection well immediately upon receipt of this letter and to resume disposal as

specified in your approved discharge plan. Please submit documentation by April 8, 1994 to the OCD confirming that the required actions have been performed.

If you have any questions concerning authorized disposal options, please contact Kathy M. Brown at (505) 827-5884.

Sincerely,

Roger C. Anderson
Environmental Bureau Chief

RCA/kmb

xc: Wayne Price, OCD Hobbs Office

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. John A. Miller
Dowell. Schlumberger Inc.
P.O. Box 4378
Houston, Texas 77210-4378

4a. Article Number
P-111-334-308

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
APR - 4 1994

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991 ☆U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

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

NMOCD Inter-Correspondence

To: Roger Anderson-Environmental Bureau Chief

From: Wayne Price-Environmental Engineer District I

Date: March 21, 1994

Reference: Schlumberger-Dowell Hobbs Yard GW-73

Subject: **1. Site inspection-follow up on acid neutralization system closure plan:**

2. Discharge Plan Violation of Permit Conditions:

Comments:

1. After reviewing the closure report and making an on-site inspection, I have the following recommendations.

   A. Due to the presence of the old unlined pit I think the delineation of the contamination should be verified by more soil borings or a monitor well. I recommend that an audit be preformed to reconcile which chemicals we should be looking for. My reasoning for this is that field sampling and testing revealed negative test on soil-water extraction using the PID, but the water has an olfactory smell of chemical contaminate possible from some water base chemical or water soluble chemical used previously in their process.

   B. This site is up-gradient of several water wells owned by the city of Hobbs; however the closest is about one mile, this one being up-gradient,

the others are approximately two miles.

I feel the close proximity to the city and to ground water should be a major concern. There is known ground water contamination due west about one mile, this is the old Oil Windmill Co. area and approximately one block to the southeast there is a known UST site (Shell gas station) that was leaking.

2. During my inspection it was discovered that Dowell-Schlumberger was disposing of their non-exempt waste from their operations at the Goodwin Treating Plant Disposal Well #31 operated by Petro-Thermo Corporation, which also provided the transportation for disposal.

After confirming with Dowell personnel that this waste is indeed non-exempt, I obtained copies of their disposal tickets and a copy of their discharge plan.

It appears that the discharge plan indicated that this waste is to be disposed of at CRI. After discussions with Bill Olson, I discovered that both Petro-Therm and Dowell had been warned verbally by your office to stop this activity. Therefore this district has issued a letter to Petro-therm to stop hauling and/or accepting this type of waste to the Goodwin disposal well. This letter is attached for your review.

I recommend that a letter be sent by your office or the Districts's under your direction to put Dowell on notice for such activity.

Please note, Dowell personnel have been extremely cooperative and have plans to correct the situation in the immediate future.

cc: Jerry Sexton-District I Supervisor

Attachments-1

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-
(505) 393-6161

Petro-Thermo Corporation
P.O. Box 2069
Hobbs, New Mexico 88241-2069
Attention: Mr. Robert W. Abbott

Reference: Goodwin Treating Plant and Agua, Inc. Salt Water Disposal Well #31 unit ltr E; SEC 31-T18S-R37E;

Dear Mr. Abbott,

Please be advised that certain disposal practices has been brought to the attention of the New Mexico Oil Conservation Division, that certain non-exempt waste waters are being delivered to your Goodwin Treating Plant and Salt Water Disposal (SWD) Well located as indicated in the above referenced note.

Therefore please be advised that you could be in violation of the New Mexico Oil and Gas Act NMSA 1978 Chapter 70 and the "Underground Injection Control" Program herein referred to as UIC Program promulgated under Part C of the "Safe Drinking Water Act" a Federal Law listed in part under the Federal Regulations 40 CFR Ch.1 (7-1-88 edition) Parts 144 thur 147.

You are hereby ordered to cease and desist in any and all activities that violate the above regulations.

Please find enclosed the following articles to aid you in your future operations:

1. Fed. Reg. vol 58 # 53 Monday March 22, 1993 Rules and Regulations - Clarification of the Regulatory Determination for Waste From the Exploration, Development and Production of Crude Oil, Natural Gas and Geothermal Energy-EPA;

2. Delegation of Authority Oilfield E & P Operations;

3. Pages 616,617,618,619,620,621,726, and 727 of the 40 CFR Parts 100-149 July 1, 1988. These articles are for your reference, please specifically note on page 617 144.6 (b) class II wells are defined:

(b) CLASS II. Wells which inject fluids:
(1) Which are brought to the surface in connection with natural gas storage operations, or conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection.
(2) For enhanced recovery of oil or natural gas; and
(3) For storage of hydrocarbons which are liquid at standard temperature and pressure.

If you have any question please don't hesitate to call or write this agency at the address or telephone number listed above.

Sincerely,

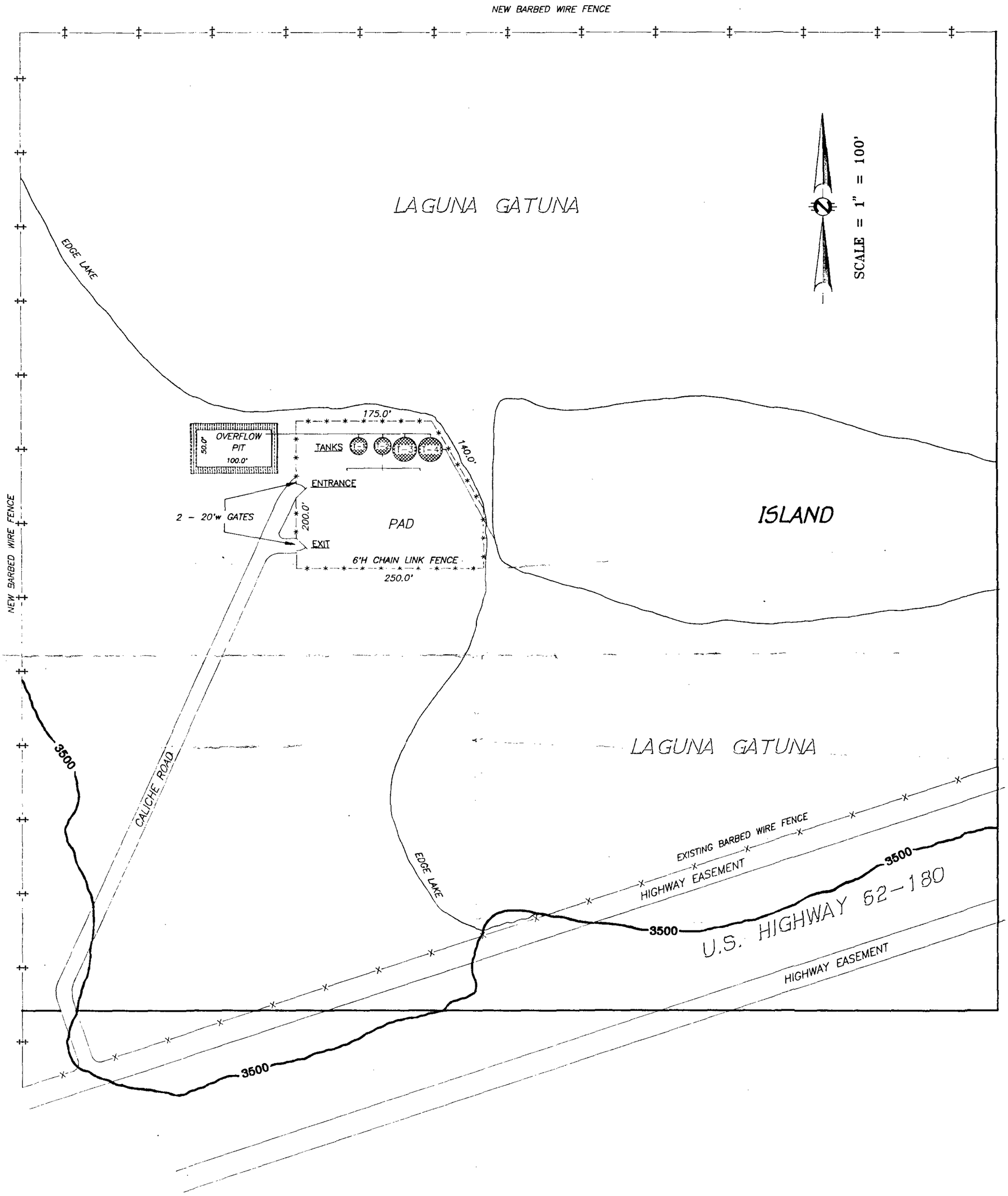
Jerry Sexton-New Mexico Oil Conservation Division
District I Supervisor

cc:LWP/JS Wayne Price-Environmental Engineer District I

Attachments-3

SECTION 19, TOWNSHIP 20 SOUTH, RANGE 33 EAST, N.M.P.M.,

LEA COUNTY, NEW MEXICO



LEGEND

—x—x—x— EXISTING BARDED WIRE FENCE

—‡—‡—‡— NEW BARBED WIRE FENCE

—*—*—*— 6'H CHAIN LINK FENCE

T-1 TANKS 1 - 4 (T1)

PLAYA DISPOSAL - AERIAL VIEW

PLAYA DISPOSAL AREA
BEING APPROX. 40 ACRES BEING THE
NORTHWEST QUARTER OF THE NORTHEAST QUARTER
SECTION 19, TOWNSHIP 20 SOUTH, RANGE 33 EAST,
N.M.P.M., LEA COUNTY, NEW MEXICO

JOHN WEST ENGINEERING CO.
CONSULTANTS
HOBBS NEW MEXICO

Surveyed By ------	Drawn By J HOLMES	Last Rev. Date	Drawing Number
Date Begin ------	Date 11-09-90	Disk JH #17	D-805-1
Date End ------	Checked By J ABBOTT	Sheet 1 of 1	
Project Number: 90-11-013	File Name: DRAWINGS\LUGUPLAY		

March 26, 1991

Mr. Jim Baca
Commissioner of Public Lands
State Land Office Building
Santa Fe, NM 87503

re: Use of Laguna Gatuna for Salt Water Disposal

Dear Mr. Baca:

I am responding to your letter of January 22, 1991 inquiring about the permit status of Laguna Gatuna, Inc., and Petro-Thermo Corp. for the use of tracts in sections 17 and 19, Township 20 South, Range 33 East, respectively for surface salt water disposal facilities. I understand that each of the companies has made the high bid to purchase from the State Land Office the respective tracts, but that the sale is contingent upon their having permits for such facilities.

The current status is that neither the SW/4SW/4 of section 17 nor the NW/4NE/4 of section 19 are permitted by the OCD for use as a surface disposal facility.

Laguna Gatuna, Inc., currently operates a surface disposal facility in the SW/4 of section 18, permitted under Division Order R-3725, which was issued prior to enactment of Division Rule 711, which regulates such facilities. That facility was subsequently brought into compliance with Rule 711. The tract in the SW/4SW/4 was used temporarily under an emergency authorization, but it has never been permitted for permanent use as a disposal facility. In order to be so permitted, a new application and separate reclamation bond would have to be filed with the OCD.

Petro-Thermo Corp. has applied for a surface disposal permit under Rule 711 for the tract in section 19. Several protests have been received against that permit, including one from Mr. Squires for Laguna Gatuna, Inc. It is our understanding that the Environmental Protection Agency may require Petro-Thermo to obtain an NPDES permit under the *Clean Water Act* prior to making any discharges into the Laguna Gatuna playa lake. EPA may also require Laguna Gatuna, Inc. to obtain a permit.

The Division has not yet evaluated Petro-Thermo's application, primarily because we are waiting for a determination from EPA as to whether or not an NPDES permit will be required. Therefore, we cannot address the question about the flooding of Highway 62. At the present time, only Laguna Gatuna is discharging in the playa lake, and presumably that

company will be responsible for any pollution in the lake. The Division is presently evaluating whether Laguna Gatuna, Inc. should continue to be allowed to use the lake for disposal.

The body of water is apparently on BLM, state and possibly fee land, and a determination of whether it is a waterway of the U.S. will be the determining factor on whether or not an NPDES permit is required. Many of the other issues, including OCD processing of the Petro-Thermo application and the inquiry of whether to continue to allow Laguna Gatuna, Inc. to continue discharging are dependent on that decision.

OCD will keep you informed if anything significant happens with these applications.

Sincerely,

William J. LeMay,
Director

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202-2733

'91 APR 4 AM 9 44

March 26, 1991

RECEIVED
APR 02 1991
SURFACE WATER
QUALITY BUREAU

Mr. Jim Piatt
Acting Bureau Chief
Surface Water Bureau
Environmental Improvement Division
New Mexico Health and Environment Department
Harold Runnels Building
1190 St. Francis Drive
Santa Fe, New Mexico 87503

Re: Jurisdictional Status of Laguna Gatuna under the Clean Water Act

Dear Mr. Piatt:

This responds to your March 11, 1991, inquiry on the jurisdictional status of Laguna Gatuna, a playa lake located in Lea County, New Mexico. As pointed out in your letter, EPA responded to an earlier request for jurisdictional advice on Laguna Gatuna on August 13, 1987, concluding that the information provided with that request did not indicate it a "water of the United States." Significantly, the information on which that conclusion was based included a statement that Laguna Gatuna "supports no wildlife...of any kind."

In essence, we regard your inquiry as a request for reconsideration of that advice on the basis of information recently provided by the Bureau of Land Management (BLM) and the U.S. Fish & Wildlife Service (USFWS). In contrast to the basis for EPA's August 13, 1987 advice, that information indicates Laguna Gatuna is in fact used as a feeding and loafing area by migratory birds during their spring and fall migrations and as a nesting area during the breeding season. Although neither BLM or USFWS specifically identifies the species using the playa, their letters suggest they may include listed threatened and endangered species, including the Aplomado Falcon and Snowy Plover, and clearly show Laguna Gatuna is susceptible to use by those migratory species.

EPA Region 6 has regarded use by migratory birds as a use in interstate commerce since at least 1979. See, e.g., "Lake Whalen -- 'Navigable Waters' Determination," 1 Gen. Couns. Ops. 165 (January 26, 1979). Under the Agency's current definition of "waters of the United States" at 40 CFR §122.2, even potential use by migratory birds is sufficient to show a specific surface water is subject to federal jurisdiction under the Clean Water Act. Accordingly, the information submitted by BLM and USFWS compels a conclusion that Laguna Gatuna is indeed a water of the United States. Section 301(a) of the Clean Water Act, 33 U.S.C. §1311(a), thus prohibits

discharges of pollutants to Laguna Gatuna in the absence of an authorizing National Discharge Elimination System (NPDES) Permit.

Your March 11 inquiry indicates your Agency is contemplating issuance of a State permit for a surface brine disposal facility proposed by Petro-Thermo Corporation. It did not, however, indicate the location or nature of the wells producing the brine or whether the contemplated permit would authorize its discharge to Laguna Gatuna. If any of the wells producing that brine fall within the Onshore Subcategory of the Oil and Gas Extraction Point Source, its discharge to Laguna Gatuna is presumably prohibited by NPDES General Permit NMG320000. See 56 Fed. Reg. 7698 (February 25, 1991). Moreover, Section 510 of the Clean Water Act, 33 U.S.C. §1370, preempts New Mexico's authority to authorize discharges of Onshore Subcategory produced water to any water of the United States, including Laguna Gatuna.

Please note that we do not here determine that Petro-Thermo's proposed discharge would necessarily be prohibited by NPDES Permit NMG320000. Possibly, it would be subject to another subcategory of the Oil and Gas Extraction Point Source Category and might thus be authorized to discharge through issuance of an individual NPDES permit with effluent limitations reflecting appropriate levels of control for that subcategory, New Mexico's water quality standards, and other applicable State and federal law. Making a decision on that issue would, however, require substantially more information on the proposed facility and discharge.

We are providing a copy of this letter to the attorneys which requested the 1987 jurisdictional advice and to Laguna Gatuna, Inc., which we understand may now be discharging wastewater to Laguna Gatuna without an NPDES permit. If there are further questions in this matter, please call Assistant Regional Counsel Pat Rankin at (214) 655-2106.

Sincerely yours,

Myron O. Knudson

Myron Knudson, P.E.
Director
Water Management Division

cc: Mr. Tom O'Brien
USFWLS

Mr. T. Kreager
BLM

Petro-Thermo Corporation

Laguna Gatuna, Inc.

Michael R. Comeau, Esq.
Stephenson, Carpenter, Crout & Olmsted

Paul Watler, Esq.
Jenkins & Gilchrist

Director
New Mexico Department of Fish and Game

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

Ecological Services
Suite D, 3530 Pan American Highway, NE
Albuquerque, New Mexico 87107

March 8, 1991

Certified Mail P 453 015 706

Mr. David Boyer
State of New Mexico Energy, Minerals
and Natural Resources Department
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Dear Mr. Boyer:

Per your request in a conversation with Scott Hamilton-McLean on March 7, 1991, we are providing you a copy of our February 27, 1991, letter to the Director regarding our comments on the Petro-Thermo Corporation's proposal to construct and operate a commercial surface disposal facility for brine water generated in conjunction with the production of oil and gas in Lea County, New Mexico.

If you have any questions or need additional information, please call Richard Roy or Thomas O'Brien at (505) 883-7877.

Sincerely,

Thomas O'Brien

Jennifer Fowler-Propst
Field Supervisor

for

Enclosure

cc: (wo/enc)
Regional Director, U.S. Fish and Wildlife Service, Fish and Wildlife Enhancement, Albuquerque, New Mexico

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

February 27, 1991

Cons. #2-22-91-I-081

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

Dear Mr. Lemay:

We have reviewed the public notice issued January 16, 1991, regarding the Petro-Thermo Corporation proposal to construct and operate a commercial surface disposal facility for brine water generated in conjunction with the production of oil and gas. The location of the proposed facility is the NW 1/4, NE 1/4 of Section 19, T20S, R33E, NMPM, Lea County, New Mexico. Produced water (brine) received at the facility for disposal will be processed in a mechanical oil/water separator to remove any incidental oil prior to final disposal into a natural playa, Laguna Gatuna.

The U.S. Fish and Wildlife Service (Service) objects to the issuance of this permit for the following reasons.

1. The U.S. Bureau of Land Management, Carlsbad Resource Area, has documented the occurrence of the endangered Aplomado falcon in the area near Laguna Gatuna. Nesting activity of the candidate Category II snowy plover in playas near Laguna Gatuna (Jesse Juen, Personal Communication, 1989) has also been documented. There is a possibility that organic and inorganic contaminants originating from this facility may accumulate in food chain organisms such as brine shrimp and brine flies. These organisms may then be consumed by migratory birds such as the snowy plover and other shorebirds. The Aplomado falcon may become exposed to and affected by contaminants present in its prey which is primarily small birds.

If migratory birds or endangered species become exposed to or accumulate harmful levels of contaminants, this may constitute "take" under the Migratory Bird Treaty Act (MBTA) (16 USC 701-708) or the Endangered Species Act (ESA) (16 USC 1531 et seq.). Section 703 of the MBTA makes it unlawful for anyone at anytime or in any manner to "kill" any migratory bird unless permitted by regulation promulgated under it. "Any person, association,

partnership, or corporation who shall violate any provision of the MBTA or Sections 703 to 711 of the Act . . . shall be deemed guilty of a misdemeanor and . . . shall be fined not more than $500 or imprisoned for not more than 6 months."

While the MBTA does not directly address the killing of migratory birds by resource contaminants, the courts have interpreted the MBTA as doing so. The courts have also stated that the MBTA can be constitutionally applied to impose criminal penalties on persons who did not intend to kill migratory birds (Legislative Authorities, U.S. Fish and Wildlife Service, 12 ESM 80, January 25, 1984). The term "take" under the ESA is defined as meaning to harm, harass, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct (Section 1532 (19)). The ESA also contains elaborate civil and criminal penalty sections in Section 11 (Section 1540). The civil penalties range from fines of $500-$10,000 for each violation of the ESA (Section 1540(a)). Criminal penalties range from $10,000 or 6 months imprisonment or both, to $20,000 or 1 year imprisonment or both (Section 1540(b)).

2. The Service asserts that Laguna Gatuna is a surface water of the United States. Under the Clean Water Act (CWA) (40 CFR Ch I, Part 122, Section 122.2(c) Definitions), waters of the United States means . . . "all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, 'wetlands,' sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction would affect or could affect interstate or foreign commerce . . . ." Laguna Gatuna is used by migratory birds for feeding and loafing areas during spring and fall migration and for nesting during the breeding season. Therefore, Petro-Thermo Corporation must apply for and be granted a National Pollution Discharge Elimination System (NPDES) permit prior to the commencement of disposal activities at the site. The NPDES program requires a permit for the discharge of "pollutants" from any "point source" into the "waters of the United States" (40 CFR Ch I, Part 122.1(A)(b)). The CWA does not make a distinction between saline and freshwater in the definition of "Surface Waters of the United States."

3. The permit application references geological and hydrological evidence intended to demonstrate that the disposal of oil field wastewater into Laguna Gatuna will not adversely impact freshwater. This information must be provided to the Service before a determination that aquatic life criteria for organisms under our jurisdiction are not exceeded. Furthermore, the Service believes that periodic monitoring for hydrogen sulfide and dissolved sulfides along the lakeshore is inadequate to protect surface water quality. There is no mention in the permit application regarding monitoring of the discharge for organic or

inorganic toxic pollutants, nor is evidence presented that the disposal of oil field wastewater will not adversely impact surface water resources of Laguna Gatuna.

4. The overflow pit located immediately west of the unloading pad that will be utilized to contain overflow from T-3 and T-4 should be lined to prevent hydrocarbon contamination to groundwater and netted to prevent migratory bird access.

Thank you for the opportunity to comment on this public notice. If there are any questions, please call Richard Roy or Thomas O'Brien at (505) 883-7877 or FTS 474-7877.

Sincerely,

for Michael J. Donahue

Jennifer Fowler-Propst
Field Supervisor

cc:
Mr. Glenn Saums, New Mexico Environmental Improvement Division, Santa Fe, New Mexico
Regional Administrator, U.S. Environmental Protection Agency, Dallas, Texas
Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico
District Manager, U.S. Bureau of Land Management, Roswell District, Roswell, New Mexico
Regional Director, U.S. Fish and Wildlife Service, Fish and Wildlife Enhancement, Albuquerque, New Mexico

New Mexico Health and Environment Department

Bruce King
Governor

DENNIS BOYD
Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

March 7, 1991

Mr. Myron O. Knudson, P.E.
Director
Water Management Division (6W)
USEPA
1445 Ross Avenue
Dallas, TX 75202-2733

Attention: Jane Fontenot

RE: Waters of the United States

Dear Mr. Knudson:

We would like to request the Environmental Protection Agency's review of its 1987 decision regarding the status of the Laguna Gatuna located in Lea County, New Mexico as a water of the United States. The EPA has previously gone on record that the Laguna Gatuna, a playa lake, was not a water of the U.S. (see attachment A). The New Mexico Oil Conservation Division (OCD) has been proceeding with a state permit for Petro-Thermo Corporation's proposal for a surface brine water disposal facility with consideration of the EPA's 1987 decision. In response to OCD's public notice, both the U.S. Fish and Wildlife Service and the U. S. Bureau of Land Management have indicated their opinions that: Laguna Gatuna should be a "water of the United States"; discharges to the lake should be regulated through an NPDES permit; and endangered species are involved. (See attachments B & C).

In order to resolve this issue, we request EPA's prompt consideration of this matter. If you have any questions, please contact Glenn Saums of my staff at 827-2827.

—ENVIRONMENTAL IMPROVEMENT DIVISION—
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

Sincerely,

for

Jim Piatt
Acting Bureau Chief
Surface Water Quality Bureau

JP:GES:lo

Attachments

xc: David Boyer, Oil Conservation Division
Jennifer Fowler-Propst, USF & WS, Albuquerque
T. Kreager, Bureau of Land Management, Roswell

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

February 27, 1991

Cons. #2-22-91-I-081

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

Dear Mr. Lemay:

We have reviewed the public notice issued January 16, 1991, regarding the Petro-Thermo Corporation proposal to construct and operate a commercial surface disposal facility for brine water generated in conjunction with the production of oil and gas. The location of the proposed facility is the NW 1/4, NE 1/4 of Section 19, T20S, R33E, NMPM, Lea County, New Mexico. Produced water (brine) received at the facility for disposal will be processed in a mechanical oil/water separator to remove any incidental oil prior to final disposal into a natural playa, Laguna Gatuna.

The U.S. Fish and Wildlife Service (Service) objects to the issuance of this permit for the following reasons.

1. The U.S. Bureau of Land Management, Carlsbad Resource Area, has documented the occurrence of the endangered Aplomado falcon in the area near Laguna Gatuna. Nesting activity of the candidate Category II snowy plover in playas near Laguna Gatuna (Jesse Juen, Personal Communication, 1989) has also been documented. There is a possibility that organic and inorganic contaminants originating from this facility may accumulate in food chain organisms such as brine shrimp and brine flies. These organisms may then be consumed by migratory birds such as the snowy plover and other shorebirds. The Aplomado falcon may become exposed to and affected by contaminants present in its prey which is primarily small birds.

If migratory birds or endangered species become exposed to or accumulate harmful levels of contaminants, this may constitute "take" under the Migratory Bird Treaty Act (MBTA) (16 USC 701-708) or the Endangered Species Act (ESA) (16 USC 1531 et seq.). Section 703 of the MBTA makes it unlawful for anyone at anytime or in any manner to "kill" any migratory bird unless permitted by regulation promulgated under it. "Any person, association,

partnership, or corporation who shall violate any provision of the MBTA or Sections 703 to 711 of the Act . . . shall be deemed guilty of a misdemeanor and . . . shall be fined not more than $500 or imprisoned for not more than 6 months."

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3. The permit application references geological and hydrological evidence intended to demonstrate that the disposal of oil field wastewater into Laguna Gatuna will not adversely impact freshwater. This information must be provided to the Service before a determination that aquatic life criteria for organisms under our jurisdiction are not exceeded. Furthermore, the Service believes that periodic monitoring for hydrogen sulfide and dissolved sulfides along the lakeshore is inadequate to protect surface water quality. There is no mention in the permit application regarding monitoring of the discharge for organic or

inorganic toxic pollutants, nor is evidence presented that the disposal of oil field wastewater will not adversely impact surface water resources of Laguna Gatuna.

4. The overflow pit located immediately west of the unloading pad that will be utilized to contain overflow from T-3 and T-4 should be lined to prevent hydrocarbon contamination to groundwater and netted to prevent migratory bird access.

Thank you for the opportunity to comment on this public notice. If there are any questions, please call Richard Roy or Thomas O'Brien at (505) 883-7877 or FTS 474-7877.

Sincerely,

for Richard J. Donaldson

Jennifer Fowler-Propst
Field Supervisor

cc:
Mr. Glenn Saums, New Mexico Environmental Improvement Division, Santa Fe, New Mexico
Regional Administrator, U.S. Environmental Protection Agency, Dallas, Texas
Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico
District Manager, U.S. Bureau of Land Management, Roswell District, Roswell, New Mexico
Regional Director, U.S. Fish and Wildlife Service, Fish and Wildlife Enhancement, Albuquerque, New Mexico

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
Roswell District Office
P.O. Box 1397
Roswell, New Mexico 88202-1397

TAKE PRIDE IN AMERICA

IN REPLY
REFER TO:
1703 (064)

FEB 26 199

William J. LeMay
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

Dear Mr. LeMay:

The Bureau of Land Management (BLM) wishes to bring to your attention environmental issues related to an application for construction and operation of a produced water disposal facility in Eddy County, New Mexico. We received notification from Petro-Thermo Corporation on January 4, 1991, regarding their intention to construct a surface waste disposal facility at Laguna Gatuna. Petro-Thermo's plan raises concern over the possible effect of their proposed activities on adjacent public land and the associated BLM administered resources.

Our major concern is with Petro-Thermo's plans to discharge produced water into Laguna Gatuna. The environmental impact of produced water disposal is a critical issue. The BLM is particularly concerned with the introduction of hazardous materials to the lake environment from this operation. We believe there is serious potential for contamination of public land and resources from this type of activity.

In addition to being highly saline, produced waters may contain petrogenic hydrocarbons, radionuclides, and volatile and semi-volatile organic hydrocarbon contaminants. Some of the EPA priority pollutants commonly found in produced waters include toluene, phenol, benzene, antimony, arsenic, zinc, and naphthalene. Produced waters also may contain acids. These include aromatic acids, aliphatic fatty acids, acetic acid, formic acid, hydrochloric acid, and ethylene diamine tetracide acid.

Discharge of these types of materials into Laguna Gatuna could have a negative impact on the lake, including that portion of the lake that is administered by the BLM. If the hydrologic conditions at Laguna Gatuna were changed, there is potential for adverse impact on several threatened and endangered species. The U.S. Fish and Wildlife Service lists the Aplomado Falcon, snowy plovers, and brine shrimp among the T&E species in this area.

According to the Clean Water Act (CWA) and 40 CFR 122, the National Pollutant Discharge Elimination System (NPDES) requires a permit for the discharge or proposed discharge of pollutants into any surface water of the United States. Any material added to water (or in some cases a change in the characteristics of water, such as a change in pH or temperature) constitutes a pollutant. Playa lakes such as Laguna Gatuna were included as surface waters of the United States in the July 1, 1987 amendments to the CWA (40 CFR 122.2). Based on these definitions, we believe a NPDES permit is required for this facility. Operation of the proposed facility without a NPDES permit would violate the Clean Water Act.

The BLM is also concerned with possible pollutant migration from unlined pits and potential groundwater contamination. These concerns are magnified by the potential for flooding. The proposed facility is located less than three feet above the lake bed. The BLM is not convinced Petro-Thermo's plans provide adequate protection during flood conditions.

The potential affect on wildlife in the area, including migratory waterfowl, is another BLM concern. To help define the problem, we have requested an opinion from the U.S. Fish and Wildlife Service on the subject.

The BLM feels a detailed environmental analysis is needed to address the potential for pollution of the area from this facility. This assessment would determine the capability of the site and adjacent lands to withstand the effects of the proposal. A review and analysis of the chemical constituents and relative hazards of the disposal product should be included in the assessment.

We understand that the OCD application requires geologic and hydrologic reports. We feel that this information should be reviewed by all affected parties before any decision is made authorizing construction of this project. We therefore request that you make copies of these reports available to interested parties.

Protection of the environment is a priority of the BLM. Every action that impacts or has the potential to impact public lands is examined by the BLM for compliance with environmental laws. These include the Comprehensive Emergency Response Compensation and Liability Act (CERCLA), the Migratory Bird Treaty Act, the Endangered Species Act, the Resource Conservation and Recovery Act (RCRA), and the Clean Water Act (CWA). It is important to point out that we are required by law to pursue action against Petro-Thermo Corporation should their operation adversely affect public lands or resources.

Please keep us informed of any further meetings and opportunities to review and comment on information regarding this project.

Sincerely Yours

T. R. Kuzaya

Acting District Manager

Kenneth M. Smith
Box 764
Carlsbad, New Mexico 88220
February 14, 1991

William J. LeMay, Director
Oil Conservation Division
Box 2088
Santa Fe, New Mexico 87501

Dear Mr. LeMay:

I have been informed the Petro-Thermo Corporation made application of a surface waste disposal facility using Laguna Gatuna playa salt lake. I ranch to the north and the east of this salt lake, but I have not been notified by Petro-Thermo Corporation.

One waste disposal facility already exists in this salt lake and I question whether the lake is large enough for waste water from two facilities to evaporate at a suitable rate in normal times. An enlargement of the lake could cause trespass on adjacent lands.

Petro-Thermo Corporation proposes to put its facilities very near the lake bottom. During heavy rain, there would be danger of a spill due to flooding and erosion, and pollute the entire lake and surrounding area.

It is my understanding a commercial waste water disposal facility has been approved near Halfway Bar. Is there need for three commercial waste water disposal facilities in an area of six miles?

Thank you for considering my protest of Petro-Thermo Corporation's application.

Kenneth Smith

Kenneth Smith

William C. Smith
Box 727
Lovington, New Mexico 88260
February 11, 1991

William J. LeMay, Director
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

Dear Mr. LeMay:

Concerning the application for a surface waste disposal facility by Petro-Thermo Corporation located in NW 1/4, NE 1/4 of Section 19, Township 20, Range 33 East, Lea County, New Mexico, I would like to protest on the following grounds.

1. I have grazing leases west and south of the proposed site. After heavy rains, water often backs up under Highway 62-180 onto my grazing lease to the south. The addition of another waste disposal facility could only add to the problem.

2. The proposed location of the facility is in a very low area and there is danger of pits washing out and polluting the entire lake and surrounding area.

3. Is there a need for another waste disposal facility in the vicinity? One commercial waste disposal facility exists in the same salt lake and another is only five miles west on Highway 62-180.

4. Petro-Thermo Corporation states that the facilities are to be placed on fee land. It is my understanding that at the time of application the land belonged to the State of New Mexico.

Thank you for your consideration.

Sincerely,

William C. Smith

William C. Smith

NEAL & NEAL, P.C.
Attorneys at Law
Neal Building, P.O. Box 278
Hobbs, New Mexico 88241-0278
Telephone 505-397-3614
Fax 505-393-7405

C. Melvin Neal (1907-1968)
J. W. Neal

January 25, 1991

Mr. William J. LeMay, Director
Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87504

Dear Mr. LeMay:

Please find Protest of Laguna Gatuna to the application of Petro-Thermo Corporation for a surface waste disposal facility.

Very truly yours,

NEAL & NEAL

By

J. W. Neal

JWN/sp
cc: Jerry Sexton
cc: Petro-Thermo
(Contact Person: James Abbott)

BEFORE THE ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION
OF PETRO-THERMO CORPORATION'S
APPLICATION FOR THE CONSTRUCTION
AND OPERATION OF A COMMERCIAL
SURFACE WASTE DISPOSAL FACILITY

PROTEST TO APPLICATION OF PETRO-THERMO CORPORATION FOR THE CONSTRUCTION AND OPERATION OF A COMMERCIAL SURFACE WASTE DISPOSAL FACILITY

COMES NOW LAGUNA GATUNA, a New Mexico Corporation, and files this Protest to the application filed by Petro-Thermo Corporation in accordance with Rule 711 of the Oil Conservation Division Rules and Regulations, and states:

1. Applicant has failed to give notice as required by the regulations to the adjoining land owners within one-half mile of the premises, to-wit: Kenny Smith, the fee land owner of property adjacent to Laguna Gatuna Playa, and applicant should be required to give notice to said owner.

2. Petro-Thermo Corporation has no standing to file this application as it is not the owner of the property, nor does it have any leasehold interest thereon upon which it proposes to dispose of produced water at the time of filing its application.

3. The property is not suitable for a commercial disposal facility due to its site limitations and the terrain and close proximity to public roads.

4. For the following reasons, the site location and the proposal as outlined in the application completely ignores the compelling reasons why the site is unsuitable for disposal of waste water:

(a) Without the installation of a sufficient and adequate retainer, any waters disposed upon the property by applicant will trespass upon lands belonging to the State of New Mexico, United States Government and Protester.

(b) That if a sufficient retainer is constructed to protect the properties of the State of New Mexico, United States Government and Protester, the state highway which crosses a portion of the application site can be flooded by water due to rainfall in the area. In addition to the possibility of flooding of the highway, the natural rainfall, together with the proposed quantities of water described will cause damage to property immediately south of the proposed location to the extent that it would destroy the natural grazing presently leased to William Smith and damages to the State or Federal land upon which the grazing leases have been issued.

(c) The proposed site and the specifications submitted by applicant has no provision for the law of Riparian rights and the construction of any retainer will interfere to the legal burden which is presently upon the land and rules in favor of Prostester in that the natural drainage from rainfall will be altered, all to the irreparable damage of the Protester and the adjoining land owners.

(d) That the proposed site and the description of the facilities to be constructed indicate that it would be less than 1½ to 2½ feet above the bottom of the lake bed, which would permit a flooding of its facilities, all to the irreparable damage of Protester and adjoining land owners.

(e) The disposed water would migrate from applicant's lands and property belonging to the Bureau of Land Management, State of New Mexico and Protester which would occur without the consent of any of the onwers thereon and constitute a trespass and would be subject to civil injunction to prohibit a trespass. That under the decision of Snyder Ranches, Inc. vs. Oil Conservation Division, et al, where the evidence is clear and convincing, the Oil Conservation Division should not authorize nor permit trespass upon State, Federal or private lands and require construction to adequately protect the properties of Protester, State of New Mexico and United

States Government.

5. The area sought to be used for the proposal is not of sufficient size to adequately permit evaporation in the quantities as set forth in the application from a monthly standpoint.

6. Applicant should be required to post bond in excess of at least $5,000,000.00 to protect any trespass upon properties owned and/or leased by Protester, the State of New Mexico and the United States Government. From the operations of application, an oil spill wwhich could occur upon the property without proper restraint, could create such an oil skim that the lake would be damaged, that the value of the facilities of Protester would be reduced. Such act would materially affect the State of New Mexico and United States Government in that the produced water now being disposed of in the lake is from oil and gas leases of the State and Federal Government.

7. Applicant does not show any history or sufficient character to show the knowledge or expertise necessary to safely construct and operate a facility and protect the environment.

WHEREFORE, it is prayed that the Application be denied or in the alternative that a public hearing be held in order

to permit the public and Protester to appear and present evidence or reasons that this application should be denied.

LAGUNA GATUNA

By _____
LARRY C. SQUIRES, President

State of New Mexico

Commissioner of Public Lands

JIM BACA
COMMISSIONER

P.O. BOX 1148
SANTA FE, NEW MEXICO 87504-1148

January 22, 1991

RECEIVED
JAN 22 1991
OIL CONSERVATION DIVISION

Mr. Bill LeMay, Director
New Mexico Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87504

Dear Mr. LeMay:

Please refer to the attached letter from Mr. Larry C. Squires of Laguna Gatuna, Inc. and confirm whether or not Mr. Squires d/b/a Laguna Gatuna, Inc. has a salt water disposal permit for the SW¼SW¼ of Section 17, Township 20 South, Range 33 East. The recent sale of this tract of State Trust land was based on the successful purchaser having or acquiring a permit if the site was to be used for salt water disposal.

Additionally, Mr. Robert Abbott d/b/a Petro-Thermo Corp. purchased NW¼NE¼ of Section 19, Township 20 South, Range 33 East at the same State Land Office land sale. The same permit requirements are in place if Mr. Abbott uses this tract for salt water disposal. Can you please address the status of Mr. Abbott's salt water permit.

Several issues have been raised concerning two different parties using this body of water as a salt water disposal area. Do you foresee any problems and will you address in your permitting process questions such as:

a) the potential flooding of U.S. Highway 62 from storm runoff if a salt water disposal facility is located in the NW¼NE¼ of Section 19, Township 20 South, Range 33 East.

b) the question of responsible party should the body of water become polluted.

c) control of, or ownership of the body of water and who is allowed, permitted to dispose of salt water in this body of water.

A timely response would be appreciated in order for me to determine the final disposition of these sale tracts.

Sincerely,

for Jim Baca
Commissioner of Public Lands

LAGUNA
GATUNA
INC.
Box 2158
Hobbs NM 88240
Telephone (505) 393-7544

January 14, 1991

State Land Office
Post Office Box 1148
Santa Fe, New Mexico 87501

Attention: Ms. Joanne Maestes

Re: State Land Sale 5875

Gentlemen:

We do not plan to make application to the New Mexico Oil Conservation Division for a salt water disposal permit for the SW/4 SW/4 of Section 17 (Tract I) which we purchased in land sale 5875. The reason being that we already hold a permit from the OCD for the use of total land area in the confines of the lake Laguna Gatuna. This permit was issued to us in 1969 and reaffirmed in 1984 with a full hearing which included an extensive geologic and hydro-geologic study to determine the environmental impact to the area, if any, from our use of the lake for disposal purposes. The results of this hearing and study were complete affirmation and documentation that no environmental harm had resulted from our business activities. This is the reason we feel it is completely unnecessary to make an application to the OCD.

As you are aware because of previous conversations with you and other Land Office personnel, we feel that the land in Section 19 (Tract II) is completely unsuitable for use as a salt water disposal site because of the major draw that comes across it to access the lake, and because of the comingled ownership of land in the lake itself. No one can use this land without trespassing on our property or the BLM property that we have leased. The BLM has told us that other businesses have asked them for a lease on the property that they own in the lake and they have refused because they have already committed to our use and that there is no need for another operator on the lake. The only way anyone could prevent trespass on our property (leased and fee) is to build a containment

LAGUNA
GATUNA
INC.
Box 2158
Hobbs NM 88240
Telephone (505) 393-7544

dike around the 40 acre plot in Section 19. The construction of such a dike would adversely affect the natural drainage into the lake itself. The result being that the highway could be flooded and certainly other adjacent grazing lands would be adversely affected. A major rain which is not uncommon in that area, could very easily cause a flooding situation on any facility built on the land and if the dike broke, it would contaminate the lake with hydrocarbons causing irreparable damage.

The land was advertised in a sales notice as suitable for a salt water disposal site. In spite of our objections, the State Land Office personnel insisted upon two sales, not realizing the operational environmental problems that this would create for two separate operators. Both tracts need to be operated as one unit by reason of the overall environmental acceptability of its present use for disposal. Unfortunately, State Land Office personnel informed prospective bidders that a new business could be started at a relatively low cost without realizing the nature of the terrain. For the envoronmental problems that are going to occur by reason of the sale of the land in Section 19, we request the Commissioner to consider cancelling the sale and reinstating the property into a business lease.

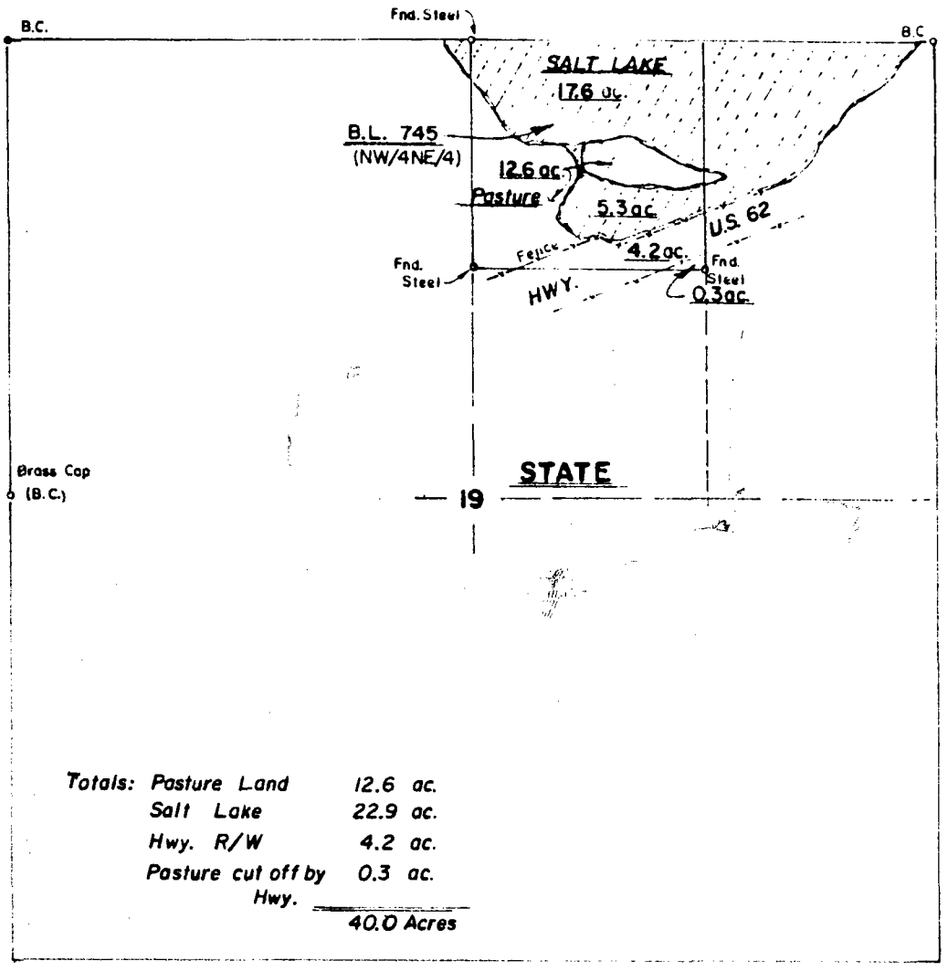
Very truly yours

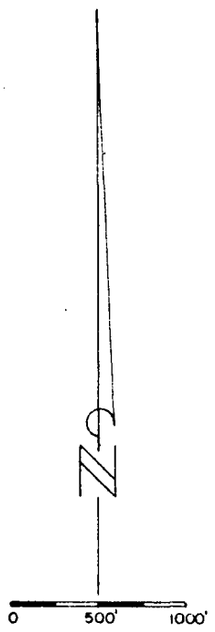
LAGUNA GATUNA, INC.

BY: Larry C. Squires, President

JOB No.

R. 33 E.





Totals:		
	Pasture Land	12.6 ac.
	Salt Lake	22.9 ac.
	Hwy. R/W	4.2 ac.
	Pasture cut off by Hwy.	0.3 ac.
		40.0 Acres

THE PREPARATION OF THIS PLAT AND THE PERFORMANCE OF THE SURVEY UPON WHICH IT IS BASED* WERE DONE UNDER MY DIRECTION AND THE PLAT ACCURATELY DEPICTS THE RESULTS OF SAID SURVEY AND MEETS THE REQUIREMENTS OF THE STANDARDS FOR LAND SURVEYS IN NEW MEXICO AS ADOPTED BY THE NEW MEXICO STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS.

HERSCHEL L. JONES R.L.S. No. 3640

STATE OF NEW MEXICO
HERSCHEL L JONES
3640
REGISTERED LAND SURVEYOR

NW¼, NE¼ of Section 19, Township 20 South, Range 33 East, N.M.P.M., Lea County, New Mexico.

P.O. Box 996 Lovington, New Mexico 88260

SCALE: 1" = 1000'	DRAWN BY: erb
DATE: 2/15/89	SHEET 2 OF 2

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

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

MEMORANDUM

TO: **Joan Maestas thru Zilla Porter Padilla**
State Land Office, Commercial Resources

FROM: **Bob Stovall** BS

SUBJECT: **Transferable Salt Water Disposal Permit**

DATE: **February 23, 1990**

I am responding to your request for an opinion from this agency regarding the possibility of the SLO obtaining a permit from OCD for a salt water disposal facility which could then be transferred to a purchaser of the property.

As I understand the situation, Larry Squires, who is the owner of Laguna Gatuna, Inc., currently operates a disposal facility on lands which he has leased from the SLO. He wishes to purchase the land, and SLO is willing to sell, but under state law SLO cannot negotiate a private sale with Mr. Squires. The land has to be publicly offered and sold to the highest bidder. SLO would like to offer as part of the package a disposal facility permit.

Under our rule 711, SLO could apply for a facility permit by following all the application requirements in that rule. Those permits are issued to a specific operator for a specific facility, and the OCD looks at the qualifications of the operator as well as the design of the facility. In addition, there is a bonding requirement, and it is not clear whether that can be waived for another state agency.

Once a permit has been issued, it can be transferred upon application of the transferee. The new operator would have to post a new bond to replace that of the transferor, and the OCD would have to approve the new operator and any proposed changes to the facility.

The situation in the case is somewhat different. According to the OCD Environmental Bureau, Mr. Squires currently has three different facilities at Laguna Gatuna. One is a permitted treating plant facility in section 18 in the name of Laguna Gatuna which is no longer being used and which is in need of major cleanup and restoration. The second is a salt water disposal facility in section 18 permitted in the name of Laguna Gatuna which is currently being used. Both facilities appear to be covered by a bond which covers all of section 18. The third is a facility in section 17 which Squires has filed some information on but has not yet actually applied for a permit; that facility

should not be in use at this time.

It is unclear from your request whether SLO would be seeking to permit the existing facility in the name of SLO or whether it would be applying for a new facility yet to be designed and built. In the former case, SLO could apply for a transfer of the permit which Mr. Squires currently holds. He would have to agree to that. In the latter case SLO would have to provide all of the information required under Rule 711 (attached). Upon the sale of the property, there will probably be some concerns about who is responsible for clean up of the two existing sites.

In summation, the answer to your question is a very definite: it depends. If you wish to pursue the possibilities, either I or our environmental people would be more than happy to talk to you and trying to come up with a workable solution.

slopermt.mem

STEPHENSON, CARPENTER, CROUT & OLMSTED
Attorneys at Law
Post Office Box 669
Santa Fe, New Mexico 87504-0669

Date: May 19, 1988

To: Ms. Jami Bailey
Oil Conservation Division

Re: Pollution Control, Inc.

COMMENT:

1. For your information.
2. Other:

Dear Ms. Bailey:

Larry Squires asked that I deliver copies of the following correspondence:

1. Letter to K. Huffman dated July 29, 1987, from myself; and

2. Letter to me dated August 13, 1987, from James L. Collins.

Michael R. Comeau ©

MRC:cyc
Enclosures

STEPHENSON, CARPENTER, CROUT & OLMSTED
Attorneys at Law
Coronado Building, 141 E. Palace Avenue
Post Office Box 669
Santa Fe, New Mexico 87504-0669

Telephone (505) 982-4611
Telecopier (505) 988-7987

Donnan Stephenson
Of Counsel

Richard N. Carpenter
G. Stanley Crout
Charles D. Olmsted
Michael R. Comeau
Larry D. Maldegen
Michael W. Brennan
Sunny J. Nixon
William P. Templeman
C. Mott Woolley
Jon J. Indall
Stephen J. Lauer

Michael S. Yesley
Lindsay A. Lovejoy, Jr.
Patricia J. Turner
Richard S. Mackenzie
Joseph E. Manges
Candace Kern
Rebecca Dempsey
Paula A. Johnson
Nicholas F. Persampieri
Grey W. Handy

July 29, 1987

Mr. Ken Huffman
Chief, Industrial Permits Section
Region VI
United States Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202-2733

Re: Pollution Control, Inc.
Brine Disposal Project in Lea County, New Mexico

Dear Mr. Huffman:

This letter is in response to your suggestion at our meeting on July 16, 1987, that Pollution Control, Inc. ("Pollution Control"), submit a letter with appropriate documentation setting forth the reasons why we believe the playa in which Pollution Control proposes to dispose produced oil well brine is not a "water of the United States" as that term is used in the Clean Water Act ("CWA") and applicable regulations. At the outset, we would like to express our appreciation for the opportunity to discuss this matter with you and to submit this letter. We hope that a prompt resolution of the issue will be achieved.

Pollution Control is a New Mexico corporation owned and operated by Larry Squires, a resident of Lea County, New Mexico. Mr. Squires is also the owner and operator of Snyder Ranches, a large cattle ranching property located in Lea County. The Snyder Ranches operation consists of fee land and land leased from the State of New Mexico and the Bureau of Land Management. The operations of Pollution Control are confined to Snyder Ranch property and property leased from the State and the BLM.

For approximately fifteen years, Pollution Control has operated a surface salt water disposal facility at a playa known as "Laguna Gatuna" located on Sections 17 and 18, Township 20 South, Range 32 East, N.M.P.M., under orders issued by the Oil Conservation Division of the New Mexico Energy and Minerals Department. The most recent Order of the Division (*In the Matter of the Hearing Called by the Oil Conservation Division for the Purpose of Considering: Application of Pollution Control, Inc. for an Amendment to Division Order No. R3725, Lea County, New Mexico* ("1984 Order"), Case No. 8292, Order of the Division (August 20, 1984)) is

attached to the enclosed "Hydrologic Assessment of the Salt Lakes Area, Western Lea County, New Mexico" prepared by Geohydrology Associates, Inc. in 1984 ("Hydrologic Assessment").*

In its 1984 Order, which authorized an expansion of Pollution Control's disposal facilities, the Oil Conservation Division made the following findings:

> (5) That the geohydrologic evidence presented in this case reaffirms or establishes that:
>
> (a) Laguna Gatuna is sited within the confines of a collapse structure;
>
> (b) naturally occurring highly mineralized springs are located on the periphery of Laguna Gatuna;
>
> (c) the water in Laguna Gatuna is not fresh water;
>
> (d) that portion of the Triassic red beds underlying said Laguna Gatuna is virtually impermeable and therefore prevents seepage from said lake into the sand stringers within said red beds which may contain fresh water;
>
> (e) as to sands that are in communication with said lake, the major flow of surface and subsurface water within the boundaries of said collapse structure is towards Laguna Gatuna;
>
> (f) the evidence indicates that there is no leakage of water from Laguna Gatuna into the adjoining formations containing fresh waters;
>
> (g) the salt springs and brine associated with Laguna Gatuna are more highly mineralized than water collected from oil wells in the immediate area;

---

* We have also enclosed the Business Lease between the State of New Mexico and Pollution Control, dated October 28, 1984; the Decision, dated October 19, 1979, of the Bureau of Land Management, United States Department of the Interior, to grant a right-of-way to Pollution Control for the operation of the salt water disposal facility; and a detailed map of Laguna Gatuna showing the land ownership and leases in the vicinity of Pollution Control's facilities.

> (h) Laguna Gatuna is a suitable disposal site for as much as 30,000 barrels of brine per day;
>
> (i) there is no evidence that the fifteen years of operation by Pollution Control Inc [sic] has adversely impacted the hydrological system in the vicinity of Laguna Gatuna and that continued operations as proposed will not endanger the pre-1969 conditions;
>
> (j) Laguna Gatuna is a satisfactory repository for solid oil-field waste products; and,
>
> (k) the utilization of Laguna Gatuna for the disposal of water produced in conjunction with the production of oil or gas, or both, and oil field waste products, including drill cuttings and drilling muds will not constitute a hazard to fresh water supplies that may exist in the vicinity of said lake.

1984 Order, page 37.

The evidence on which the Oil Conservation Division based these findings included the Hydrologic Assessment, which concluded *inter alia* that

> There is no evidence to show that 15 years of operation by Pollution Control, Inc., has adversely impacted the hydrologic system in the vicinity of Laguna Gatuna. Continued operation of the existing facilities will not endanger the pre-1969 conditions.

Hydrologic Assessment, page 33.

Although Pollution Control's disposal activities are authorized by the Oil Conservation Division, the question has recently been raised whether those activities constitute disposal into "waters of the United States" for the purposes of the CWA. Section 502(7) of the Federal Water Pollution Control Act ("FWPCA"), 33 U.S.C.A. § 1362(7), defines "navigable waters" as "the waters of the United States, including the territorial seas." To implement the FWPCA, EPA has adopted a detailed definition of "waters of the United States" in 40 C.F.R. § 122.2. We believe that a careful examination of EPA's definition demonstrates that Pollution Control's activities do not involve the "waters of the United States."

EPA's definition of "waters of the United States" must of course be read in the light of the many cases that have determined the constitutional limits of federal jurisdiction under the CWA. Those cases make it clear that the particular conditions of a disposal property govern the application of the definition, and so we turn next to a description of the property involved.

Pollution Control proposes to dispose of oil-field brines entirely on property that is owned or leased by Pollution Control or Mr. Squires or to which a right-of-way has been granted by the BLM for the purpose of the disposal activities. The produced water that will be disposed of is not considered a "hazardous waste" by EPA and contains no hazardous waste constituents regulated by the EPA. *See* letter dated June 3, 1987, from Jami Bailey, Oil Conservation Division, to Larry Squires (attached to Hydrologic Assessment), page 39A. The property is a playa that remains dry except during periods of heavy rainfall. The area is a collapse structure that drains less than two square miles. Through two precipitation tributaries, about 8000 gallons of precipitation runoff are entrapped annually. *See* Hydrologic Assessment, pages 27-30.

The playa is a natural groundwater discharge point, with naturally occurring, highly mineralized, intermittent springs on the periphery of Laguna Gatuna. *Id.* at page 26. The stratum underlying the area is virtually impermeable and therefore prevents seepage. There is no evidence that previous operation of the facility for fifteen years has had any adverse impact on the hydrological system in the vicinity. To the contrary, the evidence indicates no leakage of water into adjoining formations. 1984 Order at page 37.

The water of Laguna Gatuna is not fresh, *id.*, and it supports no wildlife or agriculture of any kind. (Fresh water needs in the area are supplied by pipeline.) No recreation of any sort -- hunting, hiking, boating or fishing -- occurs in the area; its natural conditions do not attract visitors. There is no evidence of use by migratory waterfowl.

Essentially, the playa is a natural depression with water that, when intermittently present, is not fresh and does not flow to or reach any other body of water on the surface or underground, regularly or intermittently. There is no use of the water by interstate travelers or for interstate commercial purposes, since it has no recreational value of any kind and is unsuited for agricultural production. Finally, the discharge is entirely contained on property that is owned or leased by Pollution Control.

Under EPA's definition, a property is a "water of the United States" if it is included in any one of several categories. We believe that none of the categories applies to the playa proposed to be used by Pollution Control. The first category is "all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce." As noted above, the playa is unsuitable for any recreational or agricultural use and supports no wildlife. Thus, the playa has no attraction for visitors in interstate commerce and supports no agricultural or other production that might go into interstate commerce.

The second category -- "all interstate waters, including interstate wetlands" -- is inapplicable because the playa is located entirely within Lea County, New Mexico.

The third category of EPA's definition is:

> All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands," sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters
>
> (1) Which are or could be used by interstate or foreign travelers for recreational or other purposes;
>
> (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
>
> (3) Which are used or could be used for industrial purposes by industries in interstate commerce[.]

The area used by Pollution Control for disposal of brine is clearly a "playa lake," but its use has no effect, and can have no effect, on interstate or foreign commerce. Taking the subcategories in order, the playa has no attraction for travelers since it is devoid of any recreational possibilities, it does not support any fish or shellfish, and the waters that collect occasionally after heavy precipitation are not suitable for any industrial use. Further, there is no agricultural or other use that might affect interstate or foreign commerce, and no way in which the degradation or destruction of the playa could affect interstate or foreign commerce.

The fourth category -- "impoundments of waters otherwise defined as waters of the United States" -- is inapplicable because the playa does not impound any "waters of the United States." The only waters present are precipitation after a heavy rainfall. The fifth category -- "tributaries" of waters of the United States -- is inapplicable because the playa has no flow to any other water system, either on the surface or in groundwater. The next category -- "the territorial sea" -- is obviously inapplicable. The final category -- "wetlands" adjacent to waters of the United States -- is inapplicable because there are no waters of the United States in the vicinity of the playa.

We note that Laguna Gatuna might be considered a "waste treatment system," which EPA's definition specifically excludes from "waters of the United States." The provision that limits this exclusion to man-made bodies of water is currently under suspension. *See* 45 *Federal Register* 48620 (July 21, 1980); 48 *Federal Register* 14146 (April 1, 1983). If EPA does not fully agree with our position

that the playa is not a "water of the United States," we request that the agency determine whether this exclusion is applicable.

The case law relating to the definition of "waters of the United States" supports our position that the playa is not covered by the CWA. The federal courts have upheld CWA coverage for discharges that are not directly into navigable waterways, but in no case has a court approved coverage of a discharge that does not have a tributary relationship to a navigable-in-fact waterway or to a water with a significant effect on interstate commerce.

In *U.S. v. City of Fort Pierre, S.D.*, 747 F.2d 464, 21 ERC 2054 (8th Cir. 1984), the Eight Circuit concluded that the Fort Pierre Slough is not a wetland as contemplated by Congress in passing the Clean Water Act. The court noted that the Slough is located in a privately owned area and has no hydrological connection with the nearby Missouri River. Any standing water in the Slough resulted only from rains and runoff, until certain actions by the Corps of Engineers trapped the surface water in the Slough. The Slough "is now devoid of wildlife, supports no fish or fowl, and is not conducive to recreation or other significant use by the public." 747 F.2d at 467. The quoted language is an accurate description of the playa used by Pollution Control for brine disposal. Although the court in *City of Fort Pierre* limited its holding to the situation resulting from the Corps' intervention, the characteristics of the site which the court found persuasive in determining that the Slough was not a "water of the United States" would lead to the same result in the case of Laguna Gatuna.

The cases that have upheld coverage under the CWA are easily distinguishable on their facts. CWA coverage has been found by the Tenth Circuit in cases involving tributaries -- regular or intermittent -- of waters of the United States, *see Ward v. Coleman*, 598 F.2d 1187 (10th Cir. 1979), *reversed on other grounds*, 448 U.S. 242 (1980), and *U.S. v. Texas Pipe Line Co.*, 611 F.2d 345 (10th Cir. 1979); a non-navigable stream, located entirely within one county, which supported trout and beaver and was used for agricultural irrigation, *see U.S. v. Earth Sciences, Inc.*, 599 F.2d 368 (10th Cir. 1979); and an arroyo which might connect with navigable-in-fact streams during times of intense rainfall and through underground acquifers, *see Quivira Min. Co. v. U.S.E.P.A.*, 765 F.2d 126 (10th Cir. 1985). Other courts have upheld coverage under the CWA in cases where discharges to normally dry arroyos could reasonably end up in a body of water in which there is some public interest, *U.S. v. Phelps Dodge Corp.*, 391 F. Supp. 1181 (D. Ariz. 1975); and where destruction of wetlands surrounding a lake would reduce the lake's attraction to the many out-of-state visitors who came for recreation, *see U.S. v. Byrd*, 609 F.2d 1204 (7th Cir. 1979).

None of these factual situations which have supported findings of CWA coverage is present at the playa. No water flows from the playa -- as a tributary or through underground acquifers -- to any other

body of water. The playa does not support any wildlife or agriculture, and it has no attraction for visitors.

Arbuckle *et al.*, *Environmental Law Handbook* (8th Ed. 1985), state at page 271 that the few exclusions to the definition of "waters of the United States" which have been recognized to date "seem to be limited to situations where the waterway in question is wholly confined on the property of the discharger, does not result in any flow beyond the property line, and is not available for significant public use." The playa where Pollution Control proposes to dispose brine presents all of these elements of an exclusion from the definition of "waters of the United States."

For the reasons set forth above, we submit that Laguna Gatuna is not a "water of the United States." Please advise us if any further information is required to assist your determination.

Very truly yours,

Michael R. Comeau

MRC/jrb
Enclosures:
- Hydrologic Assessment of the Salt Lakes Area, Western Lea County, New Mexico prepared by Geohydrology Associates, Inc. in 1984
- Business Lease between the State of New Mexico and Pollution Control, dated October 28, 1984
- The Decision, dated October 19, 1979, of the Bureau of Land Management, United States Department of the Interior, to grant a right-of-way to Pollution Control for the operation of the salt water disposal facility
- A detailed map of Laguna Gatuna showing the land ownership and leases in the vicinity of Pollution Control's facilities

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
ALLIED BANK TOWER AT FOUNTAIN PLACE
1445 ROSS AVENUE
DALLAS, TEXAS 75202

August 13, 1987

Michael R. Comeau, Esq.
Stephenson, Carpenter, Crout & Olmsted
P. O. Box 669
Santa Fe, New Mexico 87504-0669

Re: Pollution Control, Inc.
Brine Disposal Project in Lea County, New Mexico

Dear Mr. Comeau:

This is in response to your letter dated July 29, 1987, in which you submit documentation that Laguna Gatuna, a playa lake, is not "waters of the United States."

Based on the information you submitted, EPA would not consider the referenced playa lake to be "waters of the United States" as that term is defined at 40 CFR § 122.2. Playa lakes may be considered "waters of the United States" if they "would affect or could affect interstate or foreign commerce." You indicate in your letter that there are no recreational, industrial, or other uses that could affect interstate commerce, and that the playa lake is not hydrologically connected to "waters of the United States." Based on this understanding of the facts, EPA agrees that Laguna Gatuna would not be considered "waters of the United States." If you have any further questions, please contact me.

Sincerely,

James L. Collins

James L. Collins
Associate Regional Counsel

cc: Paul Watler, Esq.
Jenkins & Gilchrist
3200 Allied Bank Tower
Dallas, Texas 75202

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

January 25, 19 91

and ending with the issue of

January 25, 19 91

And that the cost of publishing said notice is the sum of $ 24.61

which sum has been (Paid) as Court Costs

Joyce Clemens

Subscribed and sworn to before me this 28th day of January, 19 91

Notary Public, Lea County, New Mexico

My Commission Expires Sept. 28, 19 94

1000364

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

Notice is hereby given that pursuant to New Mexico Oil Conservation Division Regulations, the following permit to construct and operate a commercial surface waste disposal facility has been submitted for approval 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:

Petro-Thermo Corporation, James T. Abbott, Vice President, P. O. Box 2069, Hobbs, New Mexico 88241-2069, has submitted for approval an application to construct and operate a commercial surface disposal facility for brine water generated in conjunction with the production of oil and gas. The proposed location of the facility is the NW/4 NE/4, Section 19, Township 20 South, Range 33 East, NMPM, Lea County, New Mexico. Produced water received at the facility for disposal will be processed in a mechanical oil/water separator to remove any incidental oil prior to final disposal into a natural playa lake, Laguna Gatuna. The permit application addresses the construction, operation, spill/leak prevention and monitoring procedures to be utilized at the facility. The uppermost groundwater is at the surface and has a total dissolved solids concentration in excess of 100,000 mg/l.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Consenation Division at the address given above. Prior to ruling on any proposed permit 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 16th day of January, 1991. To be published on or before January 25, 1991.

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

S E A L

Published in the Lovington Daily Leader January 25, 1991.

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 applications and 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:

Petrol-Therme Corporation, James T. Abbot, Vice President, P.O. Box 2069, Hobbs, New Mexico 88241-2069, has submitted for approval an application to construct and operate a commercial surface disposal facility for brine water generated in conjunction with the production of oil and gas. The proposed location of the facility is the NW/4 NE/4, Section 19, Township 20 South, Range 33 East, NMPM, Lea County, New Mexico. Produced water received at the facility for disposal will be processed in a mechanical oil/water seperator to remove any incidental oil prior to final disposal into a natural playa lake, Laguna Gatuna. The permit application addresses the construction, operation, spill leak prevention and monitoringprocedures to be utilized at the facility. The uppermost groundwater is at the surface and has a total dissolved solids concentration in excess of 100,000 mg/l.

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 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 disapporve 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 7th day of January, 1991.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
s/William J. LeMay
Director

Journal: January 23, 1991

STATE OF NEW MEXICO
County of Bernalillo ss

Thomas J. Smithson being duly sworn declares and says that he is National Advertising manager of the **Albuquerque Journal**, and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chaper 167, Session Laws of 1937, and that payment therefore has been made or assessed as court costs; that the notice, a copy of which is hereto attached, was published in said paper in the regular daily edition,

for 1 times, the first publication being on the 23 day

of Jan., 1991, and the subsequent consecutive

publications on ....., 1991.

Thomas J. Smithson

Sworn and subscribed to before me, a Notary Public in and for the County of Bernalillo and State of New Mexico, this 23 day of Jan., 1991.

OFFICIAL SEAL
Bernadette Ortiz
BERNADETTE ORTIZ
NOTARY PUBLIC-NEW MEXICO
COUNTY OF SECRETARY OF STATE
My commission expires 12-19-93

PRICE $22.56

Statement to come at end of month.

CLA-22-A (R-12/91) ACCOUNT NUMBER C81184

PETRO-THERMO CORPORATION
P.O. BOX 2069 PHONES (505) 393-2417 — 397-3557
HOBBS, NEW MEXICO 88241-2069

January 4, 1991

William J. LeMay, Director
Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87501

Dear Mr. LeMay:

Please find the enclosed Application For Surface Waste Disposal Facility and attachments.

The proposed facility is to be constructed on fee land purchased by Petro-Thermo Corporation from the State of New Mexico. The land is located in the NW¼, NE¼ of Section 19, Township 20 South, Range 33 East, Lea County, New Mexico.

Should you have any questions or comments, please call me at (505) 397-3557.

Sincerely,

Petro-Thermo Corporation

James T. Abbott

XC:Jerry Sexton, Hobbs Division

10/90

State of New Mexico
Energy, Minerals and Natural Resources Department
OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, NM 87501

APPLICATION FOR SURFACE WASTE DISPOSAL FACILITY

(Refer to OCD Guidelines for assistance in completing the application.)

I. Type: ☒ Produced Water ☐ Drilling Muds ☐ Treating Fluids
☐ Solids ☐ Other _____

II. OPERATOR: Petro-Thermo Corporation
ADDRESS: P.O. Box 2069 Hobbs, NM 88241
CONTACT PERSON: James Abbott PHONE: (505) 397-3557

III. LOCATION: NW 1/4 NE 1/4 Section 19 Township 20S Range 33E
Submit large scale topographic map showing exact location.

IV. IS THIS AN EXPANSION OF AN EXISTING FACILITY? ☐ Yes ☒ No

V. Attach the name and address of the landowner of the disposal facility site and landowners of record within one-half mile of the site.

VI. Attach discription of the facility with a diagram indicating location of fences, pits, dikes, and tanks on the facility.

VII. Attach detailed engineering designs with diagrams prepared in accordance with Division guidelines for the construction/installation of the following: pits or ponds; leak-detection systems; aerations sytems; enhanced evaporation (spray) systems; waste treating systems and security systems.

VIII. Attach a contingency plan for reporting and clean-up of spills or releases.

IX. Attach a routine inspection and maintenance plan to ensure permit compliance.

X. Attach a closure plan.

XI. Attach geological/hydrological evidence demonstrating that disposal of oil field wastes will not adversely impact fresh water.

XII. Attach proof that the notice requirements of OCD Rule 711 have been met. (Commericial facilities only.)

XIII. Attach a contingency plan in the event of a release of H_2S.

XIV. Attach such other information as is necessary to demonstrate compliance with any other OCD rules, regulations and/or orders.

XV. CERTIFICATION

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: James T. Abbott Title: Vice President
Signature: J T Abbott Date: January 4, 1991

DISTRIBUTION: Original and one copy to Santa Fe with one copy to appropriate Division District Office.

ATTACHMENTS - V Through XIII

Application For Surface Waste Disposal Facility

V. The name and address of the landowner of the disposal facility site is Petro-Thermo Corporation, P. O. Box 2069, Hobbs, New Mexico 88241-2069. The names and addresses of the landowners of record within one-half mile of the site are:

A. United States of America
c/o Mr. Larry L. Woodard, State Director
Bureau of Land Management
P. O. Box 1449
Santa Fe, New Mexico 87504-1449

B. State Of New Mexico
c/o Jim Baca, Commissioner of Public Lands
P. O. Box 1148
Santa Fe, New Mexico 87504-1448

C. Snyder Ranches, Inc.
P. O. Box 2158
Hobbs, New Mexico 88241

D. Laguna Gatuna, Inc.
P. O. Box 2158
Hobbs, New Mexico 88241

E. J. W. Neal
P. O. Box 278
Hobbs, New Mexico 88241

F. Mr. William C. Smith (Grazing Lessee)
P. O. Box 727
Lovington, New Mexico 88260

VI. Description of Facility

General

Petro-Thermo Corporation proposes to improve approximately 40 acres of its fee land, located in the NW1/4, NE1/4 of Section 19, Township 20 South, Range 33 East, Lea County, New Mexico, for the purpose of operating a commercial surface waste disposal site, to facilitate the disposal of water produced in conjunction with oil and gas. All disposal operations will be in accordance with applicable rules and regulations set forth by the New Mexico Oil Conservation Division (NMOCD). The proposed site is located approximately 33 miles west of Hobbs, New Mexico, on U. S. Highway 62-180. The property is adjacent to, and encompasses the southwest portion of Laguna Gatuna playa salt lake.

The proposed name of the facility is Playa Disposal.

Road Improvements

Travel north of the highway to the site will be facilitated by the construction of a new caliche road, beginning at the southwest corner of the property, continuing northeast 625' to the location pad.

Unloading Area

To facilitate the unloading of tanker trucks, a caliche pad will be constructed to the approximate dimensions of 200' wide by 250' long. Trucks will unload through a 4" steel line connected to a 750 barrel tank at the site.

Tank Battery

A tank battery will be utilized consisting of one 750 barrel separating gunbarrel tank (T-2), [See attached Playa Disposal Site Plan], two 1000 barrel water tanks (T-3 and T-4) and one 500 barrel oil collection tank (T-1).

Overflow Pit

An emergency overflow pit will be constructed and located west of the tank battery.

Fencing

The perimeter of the caliche pad will be enclosed with a 6' chain-link style fence. Two 20' gates will be installed, one at both the entrance and exit to the unloading area. Five-strand barbed wire fencing will be erected to extend along the west and north boundaries of the NW1/4, NE1/4 of Section 19, T-20S, R-33E. Since the east boundary of the property is actually located in the Laguna Gatuna lake water, it requires no fencing. The south boundary of the disposal site is bordered by U. S. Highway 62-180 and presently fenced with barbed wire fencing.

VII. Disposal Design Plan

Upon initial unloading at the site, oil-field waste water will be mechanically separated by the 750 barrel unloading tank (T-2). Waste oil accumulating at the top of T-2 will be transferred into the 500 barrel tank (T-1) for storage. Water will then pass into the west 1000 barrel tank (T-3), and equalize into the east 1000 barrel tank (T-4).

Oil-free water will then discharge into Laguna Gatuna lake from a 4" diameter steel pipeline connected to T-4.

The projected discharge volume into the lake is 6000 to 30,000 barrels per month. We expect to receive two to ten 120-barrel truckloads of water per day. This volume is substantially lower than the average evaporation rate of the 23 acres of Laguna Gatuna lake-bed surface area to be utilized at the site. The surface evaporation rate for 23 acres is the equivalent of 2142 barrels per day, or 64,260 barrels per month, based upon an average evaporation rate of 4.4 acre-feet per year.

Security for the disposal site will be provided by 6' chain-link fencing and two locking 20' gates, which will completely enclose the unloading area. Daily routine inspection of the disposal premises will be conducted by company employees.

VIII. Contingency Plan For Spills And Releases

The overflow pit located immediately west of the unloading pad will be utilized to contain an emergency overflow from T-3 and T-4. The volume of the pit will be approximately 8900 barrels, and its dimensions will be 100' by 50' by 10' deep, and be earthen and unlined. Two 4" diameter steel overflow lines, located approximately one foot below the tops of T-3 and T-4, will manifold at ground level into a single above-ground 4" diameter steel pipeline to facilitate diversion of overflow water westward to the overflow pit. In the event an overflow occurs causing the pit to receive water, a circulating pump or vacuum truck will be utilized to pump the pit water into T-2.

A containment berm will be constructed around the entire tank battery to contain spillage caused by tank leakage or tank overflow. In the event a spill occurs within the containment berm, a vacuum truck will be utilized to pick up the spill and unload into T-2.

Other spills, or releases will be picked up utilizing vacuum trucks and unloaded into T-2. If the disposal is dysfunctional, the water will be transported to another N.M.O.C.D. approved disposal site.

At the earliest possible opportunity after learning of a spill or other release of water, and after taking all appropriate steps to contain the spill or release, Petro-Thermo Corporation will advise the N.M.O.C.D., Hobbs District Office of the spill or release circumstances and inform of the corrective action taken.

IX. Routine Inspection And Maintenance Plan

The following routine inspection and maintenance plan will be implemented at the Playa Disposal facility:

1. Daily, a Petro-Thermo Corporation employee will inspect all equipment including, but not limited to, the tank battery and all conduits, connections and fixtures.

2. Daily, a Petro-Thermo Corporation employee will walk the perimeter of the berms and will examine every containment device to insure its integrity.

3. Petro-Thermo Corporation employees at the Playa Disposal facility will note in the location log and will report to their immediate supervisor any defect in any item of equipment or any lack of integrity in any berm or other containment device.

X. Closure Plan

The following closure plan will be implemented in the event of a cessation of operations at the Playa Disposal facility:

1. Upon closure, all tankage, as well as the emergency overflow pit, will be emptied, and the contents will be disposed of at an N.M.O.C.D. approved site. Additionally, all equipment will be removed from the site by Petro-Thermo Corporation.

2. Any soils that may have been contaminated by a spill or other release of water will be removed and transported to the nearest facility approved by the N.M.O.C.D., or other appropriate authority, for the disposal of such material.

3. The emergency overflow pit sides will be pushed into the center of the pit and turned under, similar to clean-up operations currently performed at drilling rig sites after completion of drilling. Clean native soil obtained from the site will be used to cover up the remainder of the pit.

XI. Geological and Hydrological Evidence

The N.M.O.C.D. presently has on file division orders which approve the disposal of oil-field waste water into Laguna Gatuna lake for Larry C. Squires and Laguna Gatuna, Inc,. dated April, 1969 and August, 1988 respectively.

Attached is geological and hydrological evidence demonstrating that the disposal of oil-field waste water into Laguna Gatuna lake will not adversely impact fresh water.

1. Hydrogeologic conditions near Laguna Plata, New Mexico, relevant to the Application to the Oil Conservation Division to Dispose Oil-field Waste by Petro-Thermo Corporation, prepared for Petro-Thermo Corporation by Daniel B. Stephens and Associates, 600 Neel Avenue, Socorro, New Mexico, December, 1985.

2. Hydrologic Assessment of the Salt Lakes Area, Western Lea County, Western New Mexico for Pollution Control, Inc., Lovington, New Mexico by T. E. Kelly, Geohydrology Associates, Inc., Albuquerque, New Mexico, July, 1984.

XII. Notice Requirements of N.M.O.C.D. Rule 711

Attached are photocopies of validated Certified R. R. R., U. S. Mail receipts for notices mailed to landowners owning land located within one-half mile radius of the Playa Disposal site.

XIII. H2S Release Contingency Plan

The following contingency plan will be implemented in the event of an H2S release:

1. Upon learning of a release, Petro-Thermo Corporation will immediately close the surface waste disposal facility to all users and will direct all users to alternative facilities operated by the Applicant, i.e. injection wells.

2. Petro-Thermo Corporation will maintain wind-direction devices and appropriate individual protective equipment on-site.

3. Before any Petro-Thermo Corporation employee assumes duties at the Playa Disposal waste facility, that employee will have completed Certified H2S training, as appropriate, and will be prepared to advise employees of, or any user regarding the necessary steps to be taken to avoid injury.

4. At the earliest possible opportunity after learning of a release of H2S, and after taking all appropriate steps to avoid personal injury, Petro-Thermo Corporation employees on-site will advise the N.M.O.C.D., Hobbs, N.M., District Office of the release.

NOTE: Periodically, Petro-Thermo Corporation will measure the concentrations of H2S and of dissolved sulfides at the shoreline of Laguna Gatuna lake. Should the concentrations of H2S exceed 10 ppm (air) or the concentrations of dissolved sulfides exceed 15 ppm (water), Petro-Thermo Corporation will inform the N.M.O.C.D., Hobbs, N.M., District Office and will initiate hourly monitoring.

P 117 389 794

RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to Snyder Ranches, Inc.	
Street and No.	
P.O., State and ZIP Code P.O. Box 2158 NM 88241	
Postage	$ .25
Certified Fee	.85
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$ 1.10
Postmark or Date	JAN 4 1991

PS Form 3800, June 1985

P 117 389 793

RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to State of New Mexico %Jim Baca, Commissioner of	
Street and No. Public Lands	
P.O., State and ZIP Code P.O. Box 1148 NM 87504-1448	
Postage	$ .25
Certified Fee	.85
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$ 1.10
Postmark or Date	JAN 4 1991

PS Form 3800, June 1985

P 117 389 792

RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to United State of America %Mr. Larry L. Woodard,	
Street and No. State Director Bureau of Land Management	
P.O., State and ZIP Code P.O. Box 1449 NM 87504-1449	
Postage	$ .25
Certified Fee	.85
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$ 1.10
Postmark or Date	JAN 4 1991

PS Form 3800, June 1985

P 117 389 797

RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to Mr. William C. Smith	
Street and No. (Grazing Lease)	
P.O., State and ZIP Code P.O. Box 727 NM 88260	
Postage	$ .25
Certified Fee	.85
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$ 1.10
Postmark or Date	JAN 4 1991

PS Form 3800, June 1985

P 117 389 796

RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to J.W. Neal	
Street and No.	
P.O., State and ZIP Code P.O. Box 278 NM 88241	
Postage	$ .25
Certified Fee	.85
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$ 1.10
Postmark or Date	JAN 4 1991

PS Form 3800, June 1985

P 117 389 795

RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to Laguna Gatuna, Inc.	
Street and No.	
P.O., State and ZIP Code P.O. Box 2158 NM 88241	
Postage	$ .25
Certified Fee	.85
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$ 1.10
Postmark or Date	JAN 4 1991

PS Form 3800, June 1985

NOTICE OF PUBLICATION

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

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Petro-Thermo Corporation, James T. Abbott, Vice President, P. O. Box 2069, Hobbs, New Mexico 88241-2069, has submitted for approval an application to construct and operate a commercial surface disposal facility for brine water generated in conjunction with the production of oil and gas. The proposed location of the facility is the NW/4 NE/4, Section 19, Township 20 South, Range 33 East, NMPM, Lea County, New Mexico. Produced water received at the facility for disposal will be processed in a mechanical oil/water separator to remove any incidental oil prior to final disposal into a natural playa lake, Laguna Gatuna. The permit application addresses the construction, operation, spill/leak prevention and monitoring procedures to be utilized at the facility. The uppermost groundwater is at the surface and has a total dissolved solids concentration in excess of 100,000 mg/l.

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 permit 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 16th day of January, 1991. To be published on or before January 25, 1991.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY, Director

S E A L

HYDROLOGIC ASSESSMENT OF THE SALT LAKES AREA

WESTERN LEA COUNTY, NEW MEXICO

for

Pollution Control, Inc.
Lovington, New Mexico

by

Geohydrology Associates, Inc.
Albuquerque, New Mexico.

T. E. Kelly

July 1984

CONTENTS

ILLUSTRATIONS

PLATE

TABLES

HYDROLOGIC ASSESSMENT OF THE SALT LAKES AREA, WESTERN LEA COUNTY, NEW MEXICO

by

Geohydrology Associates, Inc.

In February 1969, Pollution Control, Inc., of Hobbs, New Mexico, requested that a hydrologic study be conducted in the vicinity of the salt lakes in western Lea County, New Mexico. The study was conducted by Ed L. Reed of Midland, Texas. The purpose of this study was to determine the suitability of Laguna Gatuna, Laguna Plata, and Laguna Tonto as sites for disposal of oil-field brine. The results of the work by Mr. Reed were presented on a single illustration (Plate 1), and his interpretations were largely contained in his testimony before the New Mexico Oil Conservation Commission. This testimony and cross examination were presented at the March 19, 1969, regular hearing of the Commission, Case No. 4047.

Approval of the application was granted by the Commission on April 16, 1969, as Order No. R-3725 (Appendix A).

In December 1983, Pollution Control, Inc., requested that Geohydrology Associates, Inc., of Albuquerque, New Mexico, review that original work of Mr. Reed and prepare an update of that work. The purpose of this study was (1) to provide documentation for expansion of the original disposal system, and (2) to request a variance in order to dispose of other oil field waste products in addition to brine.

The present study was based on a thorough literature and file search of existing data; it also drew heavily from earlier reports by Geohydrology Associates, Inc. (GAI) which were prepared for the Bureau of Land Management, the Sandia Corporation, and other clients. A field reconnaissance was made which included a visual inspection of the area of Ts. 19 and 20 S., Rs. 32 and 33 E. Well data was collected for a somewhat larger area (fig. 1). An analysis of these data and the resulting conclusions are presented in this report.

GEOLOGY OF THE PROJECT AREA

A number of studies of the geology of western Lea County have been made. These include the work by King (1942), Vine (1963), and Brokaw and others (1972). Studies related to water resources in the area include Hendrickson and Jones (1952), Nicholson and Clebsch (1961), and Geohydrology Associates, Inc. (1978, 1978a, 1979). Mercer and Gonzalez (1981) and Mercer (1983) evaluated the hydrologic conditions in the vicinity of the Waste Isolation Pilot Plant (WIPP) which is located only a few miles south of the project area.

There are three formations in the vicinity of the salt lakes and Laguna Gatuna that are directly concerned by this study. These are the Dewey Lake Redbeds, the Triassic deposits, and the surficial alluvial material (fig. 2). In addition, imported water from the Ogallala Formation is widely used in the project area.

Logs of test holes drilled in the area are included in Table 1.

Geologic Structure

The basic tectonic structure of the salt lakes area is a simple homoclinal dip of about 2^{o} to the east which developed mainly in pre-Pliocene

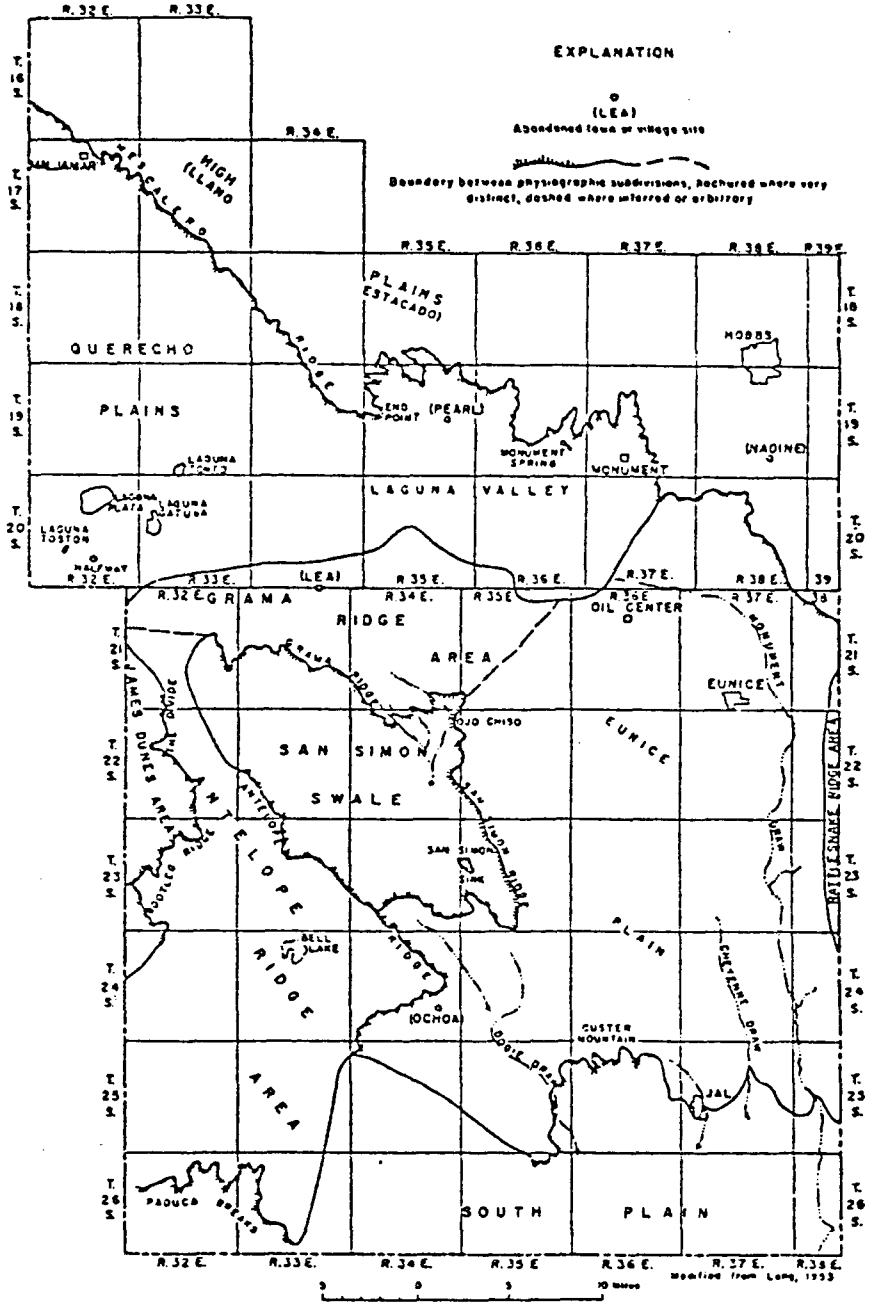
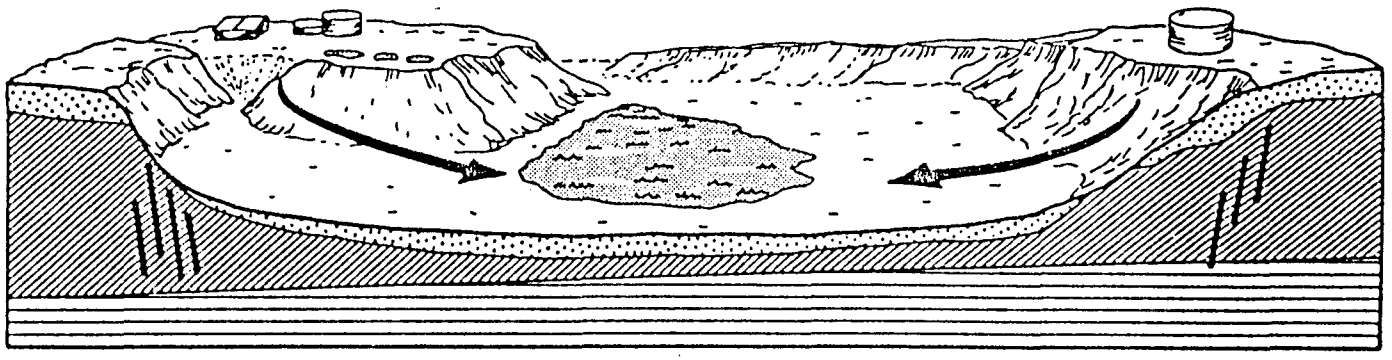


Figure 1.--Map of southern Lea County showing location of project area (Nicholson and Clebsch, 1961, p. 8).



Alluvium and playa deposits

Dockum Group undifferentiated

Dewey Lake Redbeds

Fault zone (?)

Figure 2.--Diagrammatic section of Laguna Gatuna showing geologic features.

Table 1.--Sample logs and descriptions of test holes in project area.

Top and Thickness figures are given in feet.

Well 19.21.29.32; drilled November 8, 1978.

Top	Thickness	Description
0	11	caliche, white, moderate to strong formation
11	19	sand, brown-buff, unconsolidated aeolian, medium to fine texture
30	10	sand, buff, fine texture, weakly consolidated
40	10	as above, but lighter in color and has some silty laminae, small caliche nodules
50	10	shale, maroon, clayey, has greenish gray inclusions (elongated), concentrated along bedding, slightly moist
60	10	as above, but fewer greenish inclusions and contains rounded limestone fragments (aphanitic, red)
70	10	shale, variqated red-buff, very clayey, also has limestone fragments mentioned above
80	10	limestone, crystalline (fine), mottled maroon to gray, has a few laminae of grayish-green, silty shale
90	10	limestone, fine crystalline, silty, maroon, has some greenish gray silty shale laminae and some minor clayey shale (red) laminae

Total Depth - 100'

Wet sediments encountered at 50'
Bailing test - dry ?
Casing perforated - 80-100' below LSD
Footage subtotal - 2,610'
Footage subtotal - 2,510'
Dry, March 15, 1979

Table 1, continued.

Well 20.31.2.34; drilled November 13, 1978.

Top	Thickness	Description
0	6	sand, buff, medium-fine texture (aeolian)
6	6	caliche, white medium formation
12	8	sand, brownish-buff medium-fine texture, secondary carbonate cement
20	10	shale, reddish brown, clayey
30	10	shale, brown, silty, has a bed of green silty shale
40	10	shale, reddish brown, silty
50	10	shale, brown,silty, has greenish gray inclusions
60	10	shale, maroon, silty, has clayey laminae, greenish gray laminae
70	10	shale, brown, silty
80	15	shale, maroon-brown, silty
95	8	limestone, mottled gray-white, red, fine crystalline
103	7	shale, brown, clayey-silty greenish gray inclusions
110	20	shale, brown, clayey
130	10	as above, but with minor laminae of green silty shale
140	10	shale, reddish brown, silty-sandy, has a bed of green silty shale, slightly moist
150	10	sandstone, brown, medium-fine texture, calcareous cement

Total Depth - 160'

Bailing test - estimates less than 1 gpm
Encountered moist sediments - 145' below LSD
Water level - 150' below LSD
Measurement: January 19, 1979: Water level - 137.0' below LSD

Table 1, continued.

Well 20.31.17.33; drilled November 14, 1978.

Top	Thickness	Description
0	12	caliche, white-gray medium to strong formation
12	9	sand, brown, medium-fine texture, calcareous cement
21	11	shale, reddish brown silty
32	8	shale, brown, silty with clayey laminae
40	9	shale, brownish red, clayey, with silty laminae and greenish gray silty laminae
49	11	shale, brown, clayey, has greenish gray laminae and is fissile with micaceous partings
60	10	shale, reddish brown, clayey
70	18	shale, dark brown, very clayey, has chloritic partings, has laminae of green clayey shale
88	20	shale, brown, silty, has greenish gray inclusions
108	20	as above, but more clay
128	20	as above, but has laminae of greenish-gray silty-clayey shale
148	12	shale, reddish brown, silty, has clayey laminae
160	10	as above, but no clay
170	10	shale, brown, silty, has clayey laminae, has green clayey laminae, has fine crystalline gray anhydrite laminae
180	10	shale, reddish brown, silty has some green inclusions has some laminae of clear satin spar gypsum
190	10	shale, reddish brown, clayey, has some fine crystalline gray anhydrite
200	10	shale, reddish brown, silty, has greenish gray inclusions, has some thin clear satin spar gypsum
210	20	as above, but has some gray fine crystalline anhydrite
230	10	as above, but has some greenish gray inclusions and some clayey laminae

Total Depth - 240'

Bailing results - estimates ½ gpm
Casing perforations - 220-240' below LSD

Measurement: March 1, 1979: Water level - 227.0' below LSD

Table 1, continued.

Well 20.31.27.24; drilled November 1, 1978.

Top	Thickness	Description
0	4	sand, brownish-buff, fine to medium
4	8	strong caliche formation forms thick continuous bed
12	16	sand, dark brown, medium texture, slightly calcareous from overlying carbonate mineralization
28	12	as above, but less calcareous and finer texture
40	11	shale, dark reddish brown, very clayey
51	10	sandstone, greenish gray, fine to medium texture, with a lens of very clayey green shale
61	10	as above, but with lenses of mottled brown and green fine sandstone
71	9	shale, reddish brown, texture mostly coarse silt but with lenses of very clayey brown shale
80	10	as above, but with no clayey lenses
90	20	shale, silty, reddish brown, minor clayey laminae
110	14	shale, brownish red, silty with clayey laminae
124	7	shale, reddish brown, clayey, slightly silty
131	10	shale, reddish brown, silty
141	9	shale, reddish brown, silty with some clayey laminae and some greenish gray silty laminae

Total Depth - 150'

Casing perforated - 130-150' below LSD
Bailing test - 3-4' water in hole after casing placement-bailer removed it in 4 trips (producing less than 1 gpm)
Measurement: February 28, 1979: Water level - 114' below LSD

Table 1. continued.

Well 20.31.30.44; drilled October 31, 1978.

Top	Thickness	Description
0	10	sand, caliche, very strong, constituting major volume of sample, buff
10	10	sandstone, reddish brown, calcareous, calcite cement from strong caliche profile above
20	7	sandstone, fine to medium texture, mottled brownish red to gray (gray grains inside red) non- calcareous
27	21	as above, but containing minor lenses of red silty shale and greenish-white siltstone
48	3	shale, silty, bluish-green
51	8	resumes characteristics of silty sandstone, see above
59	11	dolomitic sandstone, silty, mottled brown to greenish gray; thin lenses show vigorous effervescense
70	10	silt, reddish brown, unconsolidated except minor lenses which have some clay and are darker in color, slightly calcareous
80	20	siltstone, reddish brown, slightly calcareous, moderate consolidation
100	10	shale, red, silty, with some minor laminae of greenish gray shale (silty)
110	8	shale, mottled brown to gray, silty with notable laminae of dark reddish brown zones of very clayey composition
118	17	silt, reddish brown, very loosely consolidated
135	8	shale, brown, very clayey
143	7	shale grayish, green, clayey, loosely consolidated in silt strata
150	50	shale, reddish brown, very clayey
200	10	shale, dark brown subequal amounts of silt and clay with some thin layers of green claystone
210	10	shale, brown, silty
220	10	as above, but containing minor lenses of green siltstone
230	10	shale, brown, silty
240	10	as above, but with minor lenses of green siltstone
250	20	shale reddish brown, clayey thin lenses of green siltstone, traces of satin spar gypsum concentrated in bedding (white to clear)
270	10	as above, but with traces of selinite gypsum (clear)
280	20	shale, reddish brown, clayey, laminae of satin spar gypsum, has a small number of limestone fragments (white)
300	8	shale, red, silty has thickish laminae of satin spar gypsum and minor amounts of greenish gray anhydrite, fine crystalline
308	12	shale, brownish red, clayey small amounts of greenish gray anhydrite

Total Depth - 320'

Casing perforated - 300-320' below LSD
Water standing in well upon completion - 3-4' (316' below LSD)
Bailing test - negligible
Measurement: February 27, 1979: Water level - 228' below LSD

Table 1, continued.

Well 20.32.17.13; drilled November 8, 1978.

Top	Thickness	Description
0	3	sand, fine buff-brown aeolian, 3" organics
3	10	calcareous ooze, white (lacustrine)
13	7	as above, but with sand laminae, calcified (caliche)
20	15	sandstone, brown, fine texture, loosely consolidated
35	5	shale, brown, sandy, silty, has gypsum, selenite and fine crystalline (gray)
40	10	shale, reddish brown, clayey with silt, has green clayey laminae
50	10	shale, reddish brown, silty with clay, has green silty laminae
60	23	as above, but reddish color
83	7	shale, brown, silty, has greenish-gray silty laminae
90	10	shale, brown, sand (fine)

Total Depth - 100'

Casing perforated - 20-40' below LSD
Bailing test - estimates 15 gpm
Encountered water at 18' below LSD
Water very salty (maybe with potassium)

Measurement: February 28, 1979; Water level - 9' below LSD

Table 1, continued.

Well 20.32.22.33; drilled November 8, 1978.

Top	Thickness	Description
0	3	sand, brownish-buff, medium-fine texture (aeolian) 6" organic profile
3	9	caliche, white, medium to strong formation
12	18	sand, pinkish buff, medium-fine texture, calcareous cement
30	10	shale, brown, clayey with laminae of greenish-gray medium crystalline, anhydrite
40	20	shale, brown, silty
60	10	shale, red-brown, silty, clayey, has minor amount thin laminae of green silty shale
70	10	as above, but no green shale
80	20	shale, red-brown, clayey with laminae of green clayey-silty shale
100	10	as above, but no green shale
110	30	shale, brown, silty
140	10	shale, brown-silty, clayey, has laminae of gray silty shale
150	10	shale, brown, clayey, has laminae of greenish gray silty shale
160	10	shale, reddish brown, silty-clayey, has greenish gray inclusions, has small nodules of maroon limestone

Total Depth - 170'

Driller encountered water at 35' (probably perched brine from Laguna Toston)
Casing perforated - 150-179' below LSD
Bailing results - estimates 12-15 gpm
Tastes fresh

Measurement: February 28, 1979: Water level - 30' below LSD

Table 1. continued.

Well 20.32.31.13: drilled November 8, 1978

Top	Thickness	Description
0	10	sand, buff medium to fine texture, moderate caliche formation
10	13	sand, brown-buff, fine to medium texture, leached carbonate
23	13	shale, reddish brown, silty with clayey laminae
36	4	shale, greenish gray, silty, sandy
40	30	shale, brown, silty-clayey shale, reddish brown
70	10	silty-clayey, has a bed of greenish-gray siltstone
80	20	shale, brown, clayey
100	20	as above, but more silt
120	30	shale, brown, clayey, interbedded with limestone, brown, fine crystalline
150	10	shale, brown, clayey-silty
160	10	as above, but reddish brown
170	10	shale, brown, silty-clayey, has zones of superior cementation along bedding, probably calcite
180	10	shale, brown, clayey, fairly cohesive from cementation
190	10	shale, brown, varigated clayey to silty, has greenish gray inclusions
200	20	shale, greenish to gray, silty, interbedded with brown silty shale
220	20	shale, reddish brown silty zones of calcite cementation along bedding
240	10	shale, reddish brown, clayey

Total Depth - 250'

Water level-drilled dry, never encountered moist sediments
Casing perforated - 230-250' below LSD
Bailing results - bailing showed about 8' water in hole (probably residual from drilling) - dry ; DTW 135.12' March 15, 1979

Table 1, continued.

Well 21.29.2.14; drilled November 16, 1978.

Top	Thickness	Description
0	5	sand, brown-buff, medium-fine texture (aeolian) has 3-6" of organics
5	15	caliche, white, formed in sand, medium formation
20	10	sand, brownish buff, medium-fine texture, sub-angular to rounded quartz grains
30	10	as above, but has some pebbles (quartz) 6 mm in diameter
40	20	as above, but pebbles increase in size to 1.5 cm
60	10	sand, reddish brown medium-fine small quartz pebbles
70	10	shale, red clayey
80	20	shale, red, clayey-silty, has laminae of greenish gray clayey shale and greenish gray inclusions
100	20	as above, but no inclusions green-gray laminae
120	10	shale, red, silty with clayey laminae
130	20	as above, but has greenish gray inclusions
150	10	shale, brownish-red, silty, clayey
160	10	shale, reddish brown, clayey, has greenish gray inclusions
170	10	as above, but silty
180	10	shale, brown, clayey, has greenish gray inclusions
190	20	as above, but reddish brown and silty
210	10	shale, brown, silty, has same greenish gray inclusions
220	10	as above, but very loosely consolidated
230	10	shale, red, silty
240	20	as above, but has some clay, has greenish gray inclusions
260	34	gypsum, light gray, fine crystalline
294	21	shale, red, silty-clayey, has greenish gray inclusions
315	25	gypsum, white, aphanitic, has laminae of silty red shale
340	10	as above, but gypsum is light gray
350	16	above, but no shale
366	24	shale, light red, silty, has laminae of gypsum, light gray to white, fine crystalline, gypsum in small rounded fragments, well mixed
390	40	as above, but redder in color (mixture of red clayey shale and gypsum)
430	30	mixture of red shale, silty-clayey, gypsum, soft dark gray, fine crystalline, also has selenite gypsum in small amounts

Total Depth - 460'

Bailing results - estimates more than 20 gpm
Casing perforated - 420-460' below LSD
Water level - 350' below LSD
Water tastes salty

Measurement: March 1, 1979: Water level 273.0' below LSD

Table 1, concluded.

Well 21.31.3.22; drilled November 9, 1978.

Top	Thickness	Description
0	18	caliche, white, moderate to strong formation
18	12	sand, brown-buff, medium-fine texture, calcareous cement
30	10	shale, buff-red, silty, calcareous laminae
40	10	shale, red, clayey with some silt
50	10	shale, mottled red, greenish gray, has sandy laminae but mostly silt
60	10	shale, brown, silty, with clayey laminae, has greenish gray inclusions
70	10	shale, reddish, brown, silty, has good cement, some laminae (calcite) (these laminae are gray-red)
80	10	as above, but subequal amounts of silt and clay
90	10	shale, red, silty, ahs clayey laminae
100	20	shale, brownish red, silty, has laminae with calcite cement
120	10	as above, but more calcite zones (mineralized with crystalline calcite)
130	10	shale, brownish red, silty
140	10	as above, but has clayey laminae
150	10	shale, brownish red, silty, has calcite mineralized laminae
160	10	shale, red, clayey, has laminae of silty greenish gray shale
170	10	shale, reddish brown, silty
180	10	as above, but has laminae of greenish gray shale
190	10	shale, brownish red, subequal amounts of silt and clay, has greenish gray laminae, silty

Total Depth - 200'

Driller encountered water at 150' below LSD
Casing perforated 140-160' below LSD
Bailing results - estimates 8 gpm
Water level on completion - 128' below LSD
Measurement: February 28, 1979: Water level - 142' below LSD

time. It is superimposed on Permian and Delaware basins. The more comp surficial structure near Nash Draw exerts a more immediate effect on the ... drology of the area. This area is typified by collapse of the Rustler Formation and overlying beds due to solution within the Rustler and at the top of the Salado Formation. Beds of the Rustler generally dip toward the larger depressions (Vine, 1963). In addition, hydration of anhydrite to gpysum causes localized doming. Sinkholes and domes influence the direction of ground-water movement, which in turn controls the development of collapse structures.

It is possible that the salt lakes of Laguna Gatuna, Laguna Plata, Laguna Tonto, and Laguna Toston occupy collapse structures associated with a northeastward extension of the "brine aquifer". Robinson and Lang (1938) described the "brine aquifer" as an important conduit of natural brine beneath Nash Draw. However, recent work at the WIPP site has shown that ". . . along the eastern side, the boundary is very irregular and in places extends farther east than previously indicated by Robinson and Lang " (Mercer, 1983, p. 50). Likewise, these depressions are located in a geographic location very similar to other depressions, sinks, and collapse structures in southeastern New Mexico and west Texas (Anderson, 1981, fig. 2). A hydraulic connection between the "brine aquifer" and the salt lakes would explain the origin of the depressions and the presence of highly mineralized spring discharge along the boundary of Laguna Gatuna and Laguna Plata.

Dewey Lake Redbeds

The Dewey Lake Redbeds underlie all of the project area (Brokaw and others, 1972), but they have not been identified in surface exposures. These deposits consist entirely of siltstone and fine-grained sandstone. The reddish-orange

to reddish-brown sandstone and siltstone are thinly laminated with very small scale cross-laminae. Ripple marks are present in the upper part of the formation. No evaporite deposits have been reported in the Dewey Lake sequence which is locally 500 feet thick. Although the Redbeds are not generally considered to be an aquifer, it is possible that some wells located north and east of the salt lakes may produce small quantities of water from these deposits.

Dockum Group, Undifferentiated (Triassic)

The Dockum Group unconformably overlies the Dewey Lake Redbeds (Brokaw and others, 1972). In some areas this Group is divisible into the Santa Rosa Sandstone and the Chinle Formation; however, the distinction cannot be made in western Lea County because of lithologic similarities and poor exposures (Nicholson and Clebsch, 1961, p. 35). Reed simply referred to these deposits as "Triassic" (plate 1).

Coarse-grained clastic deposits in the Dockum Group are generally fine to coarse-grained sandstone with minor shale layers. Locally these deposits range from siltstone to conglomerate. Although red is the predominant color, white, gray, and greenish-gray sands are present. Red and green claystone may be present in the eastern part of the project area.

The Dockum Group is exposed at several locations around the perimeter of Laguna Gatuna. Some of these were originally mapped by Reed; others have subsequently been exposed by highway construction, particularly on the south and east sides of the playa.

According to Hendrickson and Jones (1952, p. 75), the Dockum Group and underlying Dewey Lake Redbeds produce water to wells in eastern Eddy County. Also, Reed (1969) assumed that most of the wells in the vicinity of the salt lakes produce from the Triassic rocks.

Alluvium and Playa Deposits

The surficial deposits are composed mostly of locally derived sediments, including reworked Dockum and fragments of caliche and gypsum. Dune sands are common in the northern part of the project area and along the boundaries of the salt lakes. The sand is fine to medium grained and unconsolidated; it is present throughout the area, but in most areas has been stabilized by mesquite and other vegetation.

Playa deposits generally consist of fine sand, silt, and clay that has been reworked by intermittent lakes that are present after heavy rainfall. The interior of Laguna Gatuna and Laguna Plata contain abundant gypsum crystals and other salt deposits.

There is no evidence that the alluvium or playa deposits are water bearing. According to Nicholson and Clebsch (1961, p. 59), ". . . there does not seem to be a continuous saturated zone in the thin cover of alluvium. . ." of western Lea County. They attribute this to the limited precipitation in the area, and to the permeability of the Dockum Group which underlies the alluvium.

Ogallala Formation

The Ogallala is the principal water-bearing formation in southeastern New Mexico and much of eastern Lea County. The western edge of the formation is locally known as The Caprock or Mescalero Ridge which is approximately 11 miles northeast of Laguna Gatuna (fig. 1). Although the Ogallala Formation is not present in the vicinity of salt lakes, water from the Formation is piped across the area by potash refineries located in Nash Draw.

As a concession for right-of-way for the pipelines, most ranch owners obtained the right to tap these water lines for normal ranching operations. The

Snyder Ranches have made extensive use of this water source north of Highway 62-180. According to Mr. Smith at the Bingham Ranch, all of the water used south of the highway is obtained from the Kerr-McGee pipeline. Consequently, many of the windmills in the area are no longer in use and have fallen into disrepair. Some of the wells in use during Reed's 1969 study are no longer serviceable.

Potable water was reported by Reed near Halfway in section 23, T. 20 S., R. 32 E., and also from two wells located in sections 17 and 18, T. 19 S., R. 33 E. However it should be noted that the wells at Halfway have been abandoned since the Reed report has been completed. The two wells in sections 17 and 18 are used only for stock watering.

In his testimony before the Oil Conservation Division, Case No. 4047 on March 19, 1969, Mr. Larry C. Squires stated that there was no fresh water in the vicinity of the salt lakes.

Although somewhat brackish water can be used for stock watering, most of the water near Laguna Gatuna would be classified as brine. Spring samples collected by Reed contained sulfate concentrations greater than 11,000 ppm (parts per million) and chloride concentrations greater than 7,400 ppm. One spring at Laguna Gatuna (Reed's No. 55) contained 37,979 ppm sulfate and 27,657 ppm chloride. A 1969 sample from the bed of the playa contained 125,000 ppm sulfate and 158,000 ppm chloride.

The origin of these brines in Laguna Gatuna are difficult to explain. Although potash refiners dispose of saturated brines in Williams' Sink, Laguna Plata, and Laguna Toston, the direction of ground-water flow would carry the potash waste away from Laguna Gatuna. Laguna Gatuna is more than 20 feet higher than Laguna Toston and at least 60 feet higher than Laguna Plata and Williams' Sink.

Laguna Gatuna about or some as was Toston.

The regional flow systems in Nash Draw, west of the project area, have been described by numerous workers, including Robinson and Lang (1938), Cooper and Glanzman (1971), Brokaw and others (1972), and Geohydrology Assoc., Inc. (1978, 1982), and Mercer (1983). Most of these studies conclude that, with some local variation, the ground-water flow in the shallow aquifers is from north toward the south. Nash Draw is one of the major flow paths. Recharge areas are the sand dunes of Chaves and Lea Counties; ground-water discharges into the Pecos River along most of its length (Geohydrology Assoc., Inc., 1978, p. 16).

Data were collected from a variety of sources in order to determine the local flow systems in Ts. 19-20 S., Rs. 32-33 E. A number of test-hole logs and water levels were obtained from an earlier study (Geohydrology Assoc., Inc., 1979) and are included in Tables 1 and 2 of this report. Land-surfacing elevations were used at well-documented springs located at Laguna Gatuna and Laguna Plata. These data were used to construct the water-level contours shown in Figure 3. Existing contour maps from outside the area were used for control where appropriate.

Most of the water-level data in T. 20 S, which includes Laguna Gatuna and other playas, shows a well defined flow system. The highest water-level elevations are present south to Highway 62-180 and in the vicinity of Laguna Tonto. The 3425-foot contour defines this area. Ground-water movement away from this contour would be west-northwest towards Laguna Plata and Williams' Sink.

This flow system is within the Dockum Group. The alluvial sediments are quite thin, as described in the preceeding section of this report. The

Table 2.--Records of wells in vicinity of Laguna Gatuna.

Explanation: Location-See Introduction for explanation of well-numbering system.
Depth of Well and Depth to Water-Reported depths are given to nearest foot; measured depths are given to nearest tenth or hundredth of a foot.
Aquifer-Qtal=Quaternary; Ogll=Ogallala; Trsc=Triassic; Rslr=Rustler; Dckm=Dockum; Trcl=Tertiary; Cplm=Capitan lime.
Remarks-S.C.=Specific Conductance; est=estimated; gpm=gallons per minute

Location	Well Status	Altitude (feet)	Depth of Well (feet)	Depth to Water(ft)	Aquifer	Date of Measurement	Remarks
18.31. 1.44432	Windmill	3797		460.42	Trcl	04/07/71	
12.223	Stock	3795	480+	453.39		10/18/77	
12.23144	Stock	3775	600	435.34	Trcl	04/07/71	
14.22133	Open cased hole	3731	400	377.30	Trcl	04/06/71	
35.31324	Domestic	3631	300	261.08	Trcl	04/05/71	
18.32.16.22433	Uncased open hole	3793	100	84.18	Ogll	03/18/68	
20.13311	Domestic	3470	270.0	179.35	Trcl	02/23/71	
22.32322	Oil test	3763		434.41	Trcl	04/06/71	
34.22241	Windmill	3721		117.46	Trcl	04/06/71	
18.33. 3.34133	Open cased hole	4015		60.10	Qtal	04/05/66	
3.343	Domestic/Stock	4012	64	59.18	Qtal	02/19/71	
10.23244	Domestic	4005	75	41.64	Qtal	02/09/71	
10.44211	Stock	3985	60	41.64	Ogll	02/09/71	
11.4433	Irrigation	3986		42.40	Qtal	02/09/71	
12.44211	Windmill	4089		137.48	Qtal	02/05/71	
13.13144	Open cased hole	3968		31.85	Qtal	02/08/71	
13.44244	Open cased hole	3973		46.66	Qtal	02/08/71	
14.111	None	3965	40.0	35.8	Qtal	06/03/54	
14.1114	Windmill	3976		35.20	Qtal	02/09/71	
14.11140	Stock	3976	46.0	35.84	Qtal	03/06/68	
19.142	Stock	3820		140+	Trsc?	12/09/58	
23.23140	Open cased hole	3881	58	45.65	Qtal	02/09/71	
34.133	None	3760	200.0	177.4	Trsc	12/09/58	

Table 2, continued.

Location	Well Status	Altitude (feet)	Depth of Well (feet)	Depth to Water (ft)	Aquifer	Date of Measurement	Remarks
18.34. 1.12222	Industrial	3991		79.70	Ogll	03/06/61	
2.223333	Industrial	4009		98.03	Ogll	02/04/71	
4.11124	Open cased hole	4064		126.78	Ogll	02/04/71	
8.23213	Windmill	4042		104.20	Ogll	02/04/71	
11.43212	Industrial	4000	211.0	110.78	Ogll	02/23/71	
12.42333	Industrial	3982	204.0	111.01	Ogll	02/19/71	
15.24130	Windmill	4015		103.28	Ogll	02/05/71	
18.413212	Open cased hole	4076		143.30	Ogll	02/05/71	
20.323323	Windmill	4015		98.92	Ogll	02/05/61	
20.323333	Domestic/Stock	4020	111.0	100.19	Ogll	03/06/68	
22.343				109.92	Ogll	01/08/75	
25.13111	Uncased shot hole	3977		94.88	Qtal	03/09/61	
25.133232	Uncased shot hole	3947		97.16	Qtal	03/09/66	
27.33311	Windmill	3994		110.42	Ogll	02/05/71	
29.112.13	Open cased hole	3972		60.40	Qtal	02/05/71	
30.211224	Open cased hole	3955		44.03	Ogll	02/05/71	
19.31.27.21144	Open cased hole	3573		142.71	Trsc	02/01/71	
27.23344	Oil test	3573		143		02/01/71	Abandoned
28.330	Domestic	3480		180	Dckm	11/29/48	
28.333		3442		110.07		12/14/77	
28.3332	Domestic/Stock	3483	200.0	186.87		12/15/77	S.C. 2200
28.33433	Stock	3442	180	108.21	Trsc	02/01/71	Abandoned
31.132		3397	4103	632.55	Cplm	05/ /73	
33.110	Abandoned	3450	160	100.7	Dckm	11/29/48	North well of 3
33.142	Domestic/Stock	3455	250	140		09/30/59	
19.32. 8.200	Stock	3650		365.3	Trsc	12/09/58	
31.110		3518	4190	651.25	Cplm	09/ /74	
34.421424	Community	3960	575	252.49	Trsc	01/28/71	
34.42322	Community	3959	575	252.27	Trsc	01/28/71	
36.100	Domestic/Stock	3565	485		Trsc		

Table 2, continued.

Location	Well Status	Altitude (feet)	Depth of Well (feet)	Depth to Water (ft)	Aquifer	Date of Measurement	Remarks
19.33. 5.12322	Stock	3710		299+	Trsc	12/09/58	
17.11224	Stock	3650	131.0	117.67	Trcl	01/28/71	Abandoned
18.133223	Oil test	3635	800	211.86	Trsc	01/28/71	
26.244	Stock/Domestic	3600	101	92.9	Qtal	07/01/54	
19.34. 6.34143	Stock windmill	37777		234.71		03/18/68	Abandoned
9.114	Stock	3790	33	28.6	Trsc?	06/03/54	
16.33410	Oil test	3755		243.91		03/19/68	Abandoned
31.131	Stock	3625	66	58.6	Qtal	11/17/65	Yield-6gpm est; Reported dry 01/12/71
20.31.13.42	Stock;abandoned	3427	32.5	1.1		10/05/77	S.C. >8000; 70°F
13.440	Stock	3450		203.8	Dckm?	12/22/48	
15.130	Stock	3450	70 ?	63.1	Dckm?	12/22/48	
16.24	Stock	3458	110.0	61.0	Dckm?	10/05/77	Abandoned
20.32. 1.322	Stock	3510	30	21.8	Qtal	01/25/84	Water not potable
18.233	Industrial	3450	400	89.2	Trsc	03/24/54	
23.43312	Commercial	3551	78	38.03	Trsc	01/25/84	Abandoned
24.33333	Windmill	3555	65	38.72	Ogll	01/25/84	
25.111	Windmill	3555	67.5	35.07		12/16/77	Abandoned
27.144	None	3543	25	12.3	Qtal	06/11/54	
27.32322	Stock	3530		15.30	Ogll	03/29/65	
27.32411	Stock	3530	75	16.55	Ogll	02/02/71	Unused
30.142	None	3530		9.9	Qtal	06/11/54	
36.214	Domestic	3588	60	46.6	Qtal	06/06/55	Abandoned
36.21424	Windmill	3586	65	48.46	Qtal	01/25/84	
36.221	Windmill	3588	53.7	45.31		12/16/77	Abandoned; S.C. 2000

Table 2, continued.

Location	Well Status	Altitude (feet)	Depth of Well (feet)	Depth to Water (ft)	Aquifer	Date of Measurement	Remarks
20.33. 4.43211	Used windmill	3556	58	33.19	Ogll	03/19/68	Plugged 1/25/84
5.34321	Oil test	3550	680	278.57	Trsc	02/02/71	
18.12322	Open hole	3520		249.88	Trsc	03/19/68	Abandoned
21.111	Windmill	3536	47.5	35.42	Trsc	01/25/84	Inoperative
24.122	Stock	3630	700+	300+	Trsc		
24.124113	Stock	3633	676	413.55	Trsc	02/03/71	Used
20.34. 4.44434	Stock	3635	200+	172.19	Trsc	02/03/71	
17.334	Stock	3635	200	140	Trsc	07/01/54	
22.222333	Stock	3656	250	214.98	Trsc	02/03/71	
22.223	Stock	3655	235		Trsc		
21.31. 2.221	Abandoned	3569	31.87	30.15		10/19/77	
7.331		3350	367.0	192.1	Rslr	09/14/72	S.C. 3500
18.411	Windmill	3310		158+	Rslr	03/17/76	S.C. 3200
21.32. 6.11131	Stock	3597	55	44.04	Ogll	02/03/71	Used windmill
21.33. 2.231	Domestic	3810	1150		Trsc		
2.24141	Domestic	3792	120	104.54	Trsc	11/16/65	Abandoned
2.24233	Open hole	3791	120	104.01	Trsc	11/16/65	Abandoned
2.42214	Open cased hole	3785	150	85.32	Trsc	02/04/71	
2.422334	Used windmill	3768	100	79.13	Trsc	11/16/65	
2.42233	Stock/Domestic	3768	102	83.20	Trsc	02/04/71	
2.442	Stock	3800		72.9	Ogll	06/28/54	
11.11144	Stock	3820	195	144.52	Ogll	02/04/71	
18.112	Stock	3900		143	Ogll	06/21/54	
18.11410	Used windmill	3892	160	148.43	Ogll	11/16/65	
18.12314	Used windmill	3855	123	117.50	Ogll	02/04/71	

Table 2, concluded.

Location	Well Status	Altitude (feet)	Depth of Well (feet)	Depth to Water (ft)	Aquifer	Date of Measurement	Remarks
21.33.25.42322	Used windmill	3666		58.95	Ogll	02/04/71	
28.12443	Used windmill	3688	224	178.62	Trsc	02/04/71	
21.34. 1.24122	Used windmill	3662		68.92	Trsc	02/10/71	
8.422	Stock	3705	120	105.8	Ogll	06/30/54	
8.42341	Stock	3706		105.64	Ogll	02/10/71	Used windmill
13.324	Domestic	3655	335	200	Trsc	1943	
21.13141	Open cased hole	3677	196	99.61	Trsc	02/10/71	
23.223	Industrial/Domestic	3660	220	150	Ogll	1954	
23.310		3717		1151.96	Cplm	09/ /74	
24.222	Domestic	3655	125		Trsc?	02/10/71	
25.13141	Open cased hole	3677	196	99.61	Trsc	02/19/71	
33.233441	Used windmill	3641	92	64.45	Ogll	02/04/71	

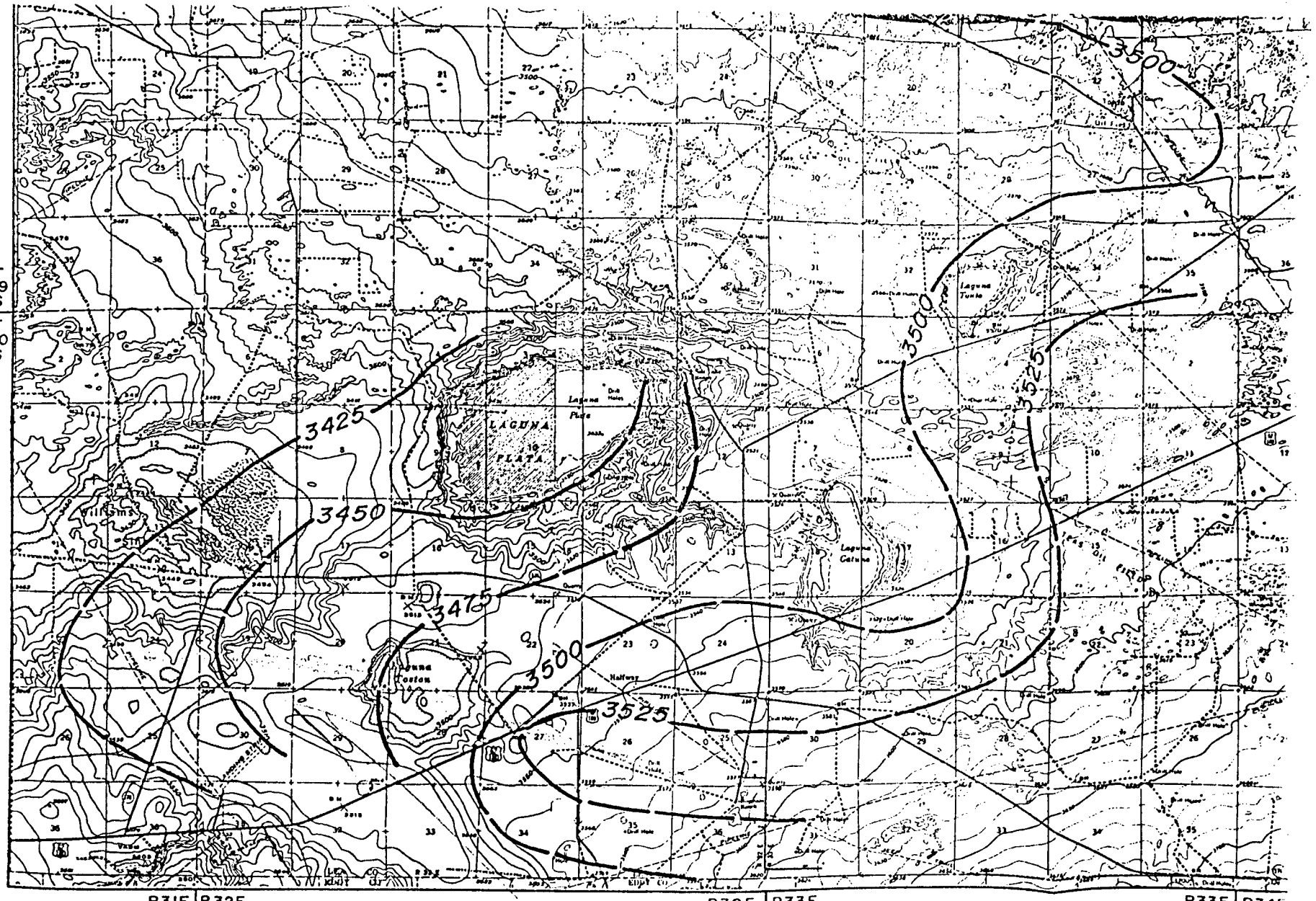


Figure 3.--Water-table contour map of Laguna Gatuna and other salt lakes.

ground-water movement would occur through the more permeable zones in the Dockum deposits, and in particular through the Santa Rosa sandstone.

Laguna Gatuna and Laguna Plata are natural ground-water discharge areas. Both lakes have intermittent springs along their borders, indicating that the bed of each lake is below the natural water table. No springs have been found at Laguna Tonto.

A second flow system is indicated by some of the water levels in the area north of Laguna Plata in T. 19 S. These water levels seem to be associated with a deeper flow system, perhaps in the Rustler Formation. Anomalous depths also were reported for wells in section 24, T. 20 S., R. 33 E. and section 3, T. 21 S., R. 32 E.

Water-quality data indicate that a deep, brine flow system exists also. This is discussed in the following section of this report.

WATER-QUALITY DATA

Reed (1969) collected chemical data at 14 different sites (Appendix B). These included samples from wells, springs, and soil samples from playas. The electrical conductivity was measured at several sites also. From these data, Reed concluded that there was very little potable water in the region.

The concentration of brine cannot be attributed to contamination from oil wells located near Laguna Gatuna. Work by Reed has shown that a water sample from a nearby oil well contained only 2,250 ppm sulfate and 5,900 ppm chloride, considerably less than found in springs and the lake itself. Evaporation of fresh water runoff into the playa would result in an increase in salt concentration, however this could not explain the high mineralization in the springs at higher elevations than the lake bottom. Also, there is no known source of brine up-gradient (or southeast) of Laguna Gatuna.

In the preceding section describing Geologic Structure, the similarity of Laguna Gatuna with other collapse structures in the region was pointed out. If Laguna Gatuna and the other playas in the area are the result of collapsing strata, normal faulting would be a consequence. These fault zones would serve as conduits for highly mineralized water in the brine aquifer. This seems to be the most plausible explanation for brine in Laguna Tonto. Inasmuch as there are no springs discharging into that lake, and it has a relatively small drainage area from which surface drainage would enter, a deep-seated brine source with movement along fault zones could account for brine on the lake surface.

SITE SUITABILITY

As shown in Appendix A (page 4), the original authorization for disposal of oil-field brines was granted to Mr. Larry C. Squires for the use of Laguna Plata and Laguna Gatuna. The application to utilize Laguna Tonto was denied. Since that time Pollution Control, Inc., has operated at a facility constructed on the northwest side of Laguna Gatuna in the north half of section 18, T. 20 S., R. 32 E. (fig. 4). Mr. Squires is President of Pollution Control, Inc. An additional facility has now been proposed for the SW¼, SW¼ of section 17, T. 20 S., R. 32 E. on land currently held by the Snyder Ranches under Bureau of Land Management lease BL-745.

Laguna Gatuna is a natural playa which has a surface area of approximately 383 acres within the lowest closing contour. The elevation of the bed is about 3,495 feet above mean sea level; the upper perimeter of the playa is generally defined by the 3,510-foot contour. The total drainage area for Laguna Gatuna is less than two square miles. One tributary channel enters the playa from the west directly south of the Pollution Control facility. A shorter tributary

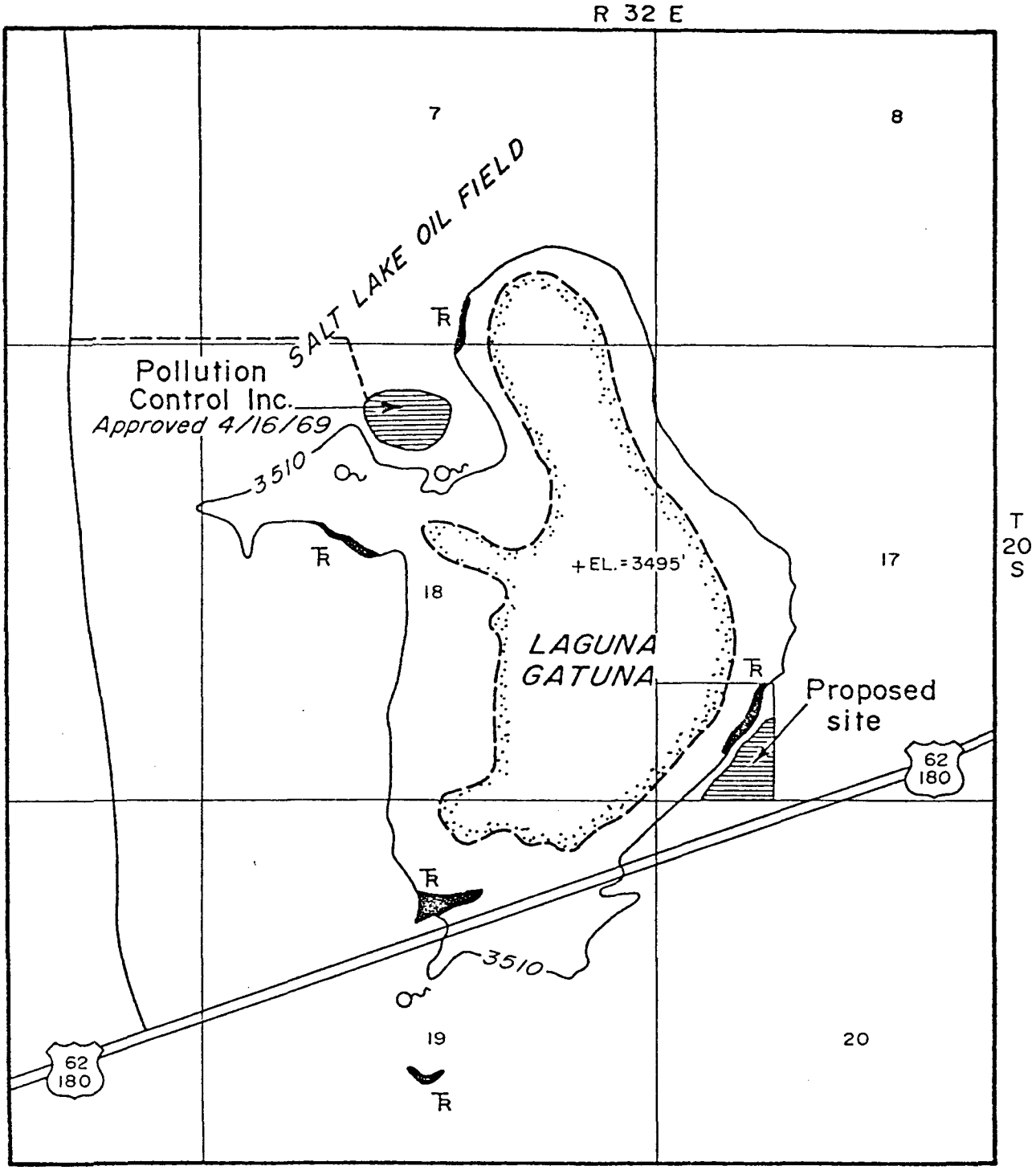


Figure 4.--Detailed map of Laguna Gatuna showing location of Pollution Control, Inc., facilities.

enters from the south in section 19. Assuming that only 10 percent of the annual precipitation enters the playa as runoff, Laguna Gatuna would entrap about 8,000 gallons of precipitation annually.

In most areas the steep-sided walls are covered by unconsolidated alluvium and slope wash; however there are at least five exposures of the Dockum Group. These unconsolidated sediments are composed primarily of hard reddish-brown shale and siltstone; thin laminae of very fine grained sandstone is locally present. Two exposures in sections 17 and 19 were developed by roadwork associated with Highway 62-180. These exposures show that the alluvial material is very thin; around the perimeter of the playa, the alluvial cover probably does not exceed five feet in thickness. Figure 2 is a generalized cross section of Laguna Gatuna.

The presence of well-defined springs and seeps on the rim of the playa established that Laguna Gatuna is a natural ground-water discharge point. However the springs probably fluctuate with seasonal temperatures. According to Mr. Steve Foster, Vice President of Pollution Control, Inc., the playa remains dry except during periods of heavy rainfall and runoff.

Evaporation studies have been conducted in Nash Draw to determine the loss of water from a brine solution exposed on a free water surface (Geohydrology Assoc., Inc., 1979, p. 71). These studies showed that the summer evaporation rate was 6.69 gpm (gallons per minute) per acre or 229 barrels per acre per day. The winter loss was 0.37 gpm per acre or about 13 barrels per acre per day. Inasmuch as Laguna Gatuna has a minimum surface area of 383 acres, the seasonal evaporation from the playa would be about 87,700 barrels per day during the summer and about 5,000 barrels per day during the winter.

These evaporation rates support the original estimate by Reed (1969, p. 30) that Laguna Gatuna has a disposal rate of 30,000 barrels per day. During the

winter of 1983-1984, Pollution Control, Inc., disposed of an average of about 50,000 barrels per month, and the playa remained totally dry throughout the period, according to Mr. Steve Foster. Also, the maximum disposal to date occurred in 1981 when disposal of 150,000 barrels per month was not uncommon (fig. 5, Table 3). This is less than 20 percent of the recommended maximum suggested by Reed and approved by the Oil Conservation Division.

During the recent field investigations conducted for this study, several wells measured in 1969 were again measured. A well located in the northwest corner of section 21, T. 20 S., R. 33 E., has shown a decline of 0.82 feet between 1969 and 1984. This well is located about one mile east of Laguna Gatuna. The water level in a well located in the northwest corner of section 25, T. 20 S., R. 32 E., declined 0.12 feet during the same period. This second well is located about one and a half miles southwest of the lake. The elevation of these water levels is higher than the elevation of Laguna Gatuna; nevertheless, this indicated that 15 years of operation by Pollution Control, Inc., has not affected the water table in the immediate vicinity of the disposal site.

CONCLUSIONS

1. Laguna Gatuna is a natural ground-water discharge point. The playa probably occupies a collapse structure associated with Nash Draw and others in the region. There is a thin blanket of alluvium covering the less permeable Dockum Group below.

2. The salt springs and brine associated with Laguna Gatuna are more highly mineralized than water collected from oil wells in the immediate area. There are no known salt deposits in the Dockum Group or in shallow deposits up-gradient from the playa. It is possible that the brine originates in the Rustler Formation at depth with the fault zones associated with collapse

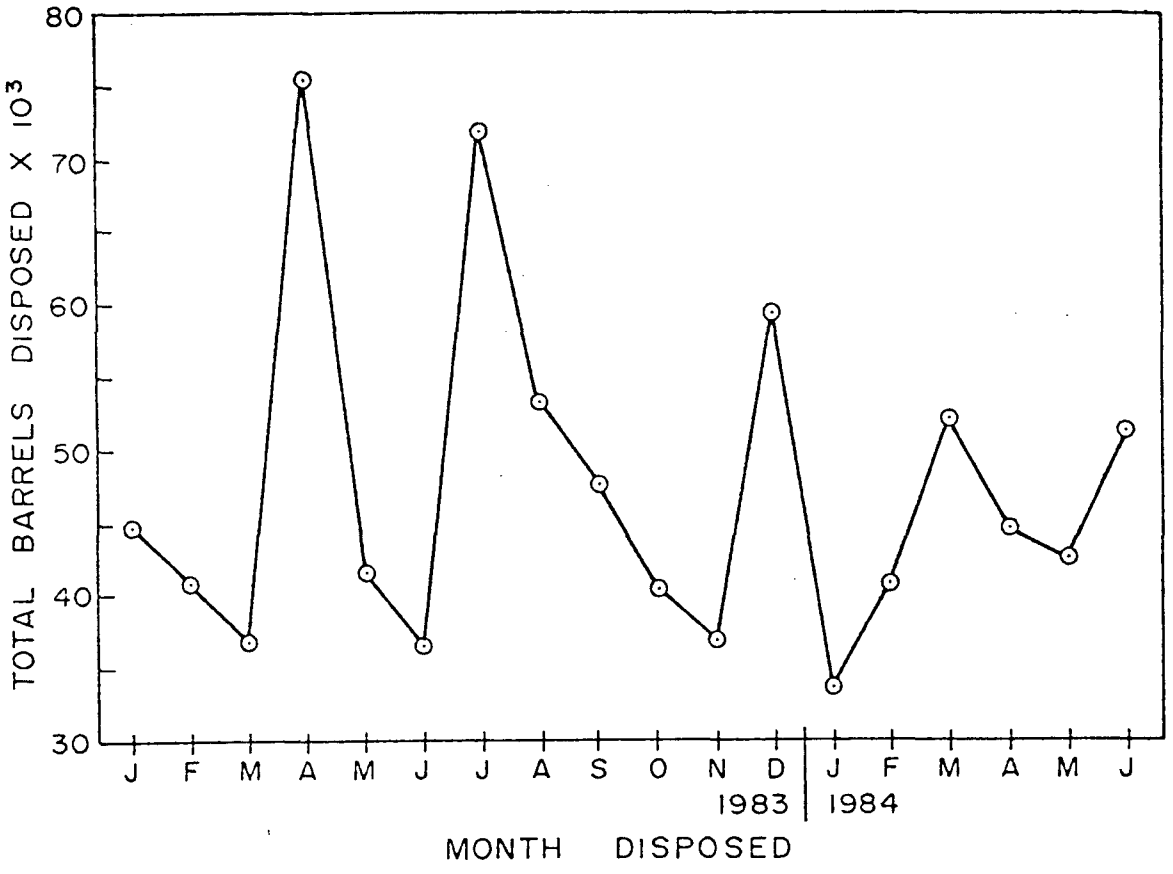


Figure 5.--Plot of monthly disposal volumes at Laguna Gatuna during 1983-1984.

Table 3.--Monthly discharges for 1983-1984 at Laguna Gatuna.

Month	Total Cumulative
January 1983	44,963 barrels
February	40,967
March	36,851
April	76,634
May	41,615
June	36,499
July	72,058
August	53,279
September	47,788
October	40,572
November	36,924
December	59,401
January 1984	33,521
February	40,777
March	52,119
April	44,720
May	42,623
June	51,200

structures acting as the conduit to the surface.

3. Laguna Gatuna is a suitable disposal site for as much as 30,000 barrels of brine per day.

4. There is no evidence to show that 15 years of operation by Pollution Control, Inc., has adversely impacted the hydrologic system in the vicinity of Laguna Gatuna. Continued operation of the existing facilities will not endanger the pre-1969 conditions.

5. Laguna Gatuna is a satisfactory repository for solid oil-field waste products, such as drill cuttings and drilling mud. Oil-contaminated waste products should be contained by earthern structures in order to maintain the aesthetic quality of the playa.

6. The proposed facility in the SW¼, SW¼ of section 17, T. 20 S., R. 32 E. will not adversely impact the hydrologic conditions in Laguna Gatuna provided that the combined discharge from both sites does not exceed 30,000 barrels of brine per day.

REFERENCES

Anderson, R. Y., 1981, Deep-seated salt dissolution in the Delaware Basin, Texas and New Mexico: New Mexico Geological Society Special Publication No. 10, p. 133-146.

Brokaw, A. L., Jones, C. L., Cooley, M. E., and Hays, W. H., 1972, Geology and hydrology of the Carlsbad potash area, Eddy and Lea Counties, New Mexico: U. S. Geological Survey Open-File Report 4339-1.

Geohydrology Associates, Inc., 1978, Collection of hydrologic data, Eastside Roswell Range EIS Area, New Mexico: consultant report prepared for the Bureau of Land Management, 97 p.

_____, 1978a, Ground-water study related to proposed expansion of potash mining near Carlsbad, New Mexico: consultant report prepared for the Bureau of Land Management, 127 p.

_____, 1979, Water-resources study of the Carlsbad potash area, New Mexico: consultant report prepared for the Bureau of Land Management, 91 p.

_____, 1982, Hydrologic assessment, Laguna Tres area, Eddy County, New Mexico: consultant report prepared for B&E, Inc., Carlsbad, New Mexico, 11 p.

Hendrickson, G. E. and Jones, R. S., 1952, Geology and ground-water resources of Eddy County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Ground-Water Report 3, 169 p.

King, P. B., 1942, Permian of west Texas and southeastern New Mexico, American Association of Petroleum Geologists Bulletin, v. 26, no. 4, p. 535-763.

Mercer, J. W., 1983, Geohydrology of the proposed Waste Isolation Pilot Plant site, Los Medaños area, southeastern New Mexico: U. S. Geological Survey Water-Resources Investigative Report 83-4016, 113 p.

Mercer, J. W. and Gonzalez, D. D., 1981, Geohydrology of the proposed Waste Isoloation Pilot Plant in southeastern New Mexico: New Mexico Geological Society Special Publication No. 10, p. 123-131.

Nicholson, Alexander, Jr. and Clebsch, Alfred, Jr., 1961, Geology and ground-water conditions in southern Lea County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Ground-Water Report 6, 123 p.

Reed, E. L., 1969, Transcript of testimony in Case No. 4047 presented bofore the New Mexico Oil Conservation Commission on March 19, 1969, 99 p.

Robinson, T. W. and Lang, W. B., 1938, Geology and ground-water conditions of the Pecos River valley in the vicinity of Laguna Grande de la Sal, New Mexico: New Mexico State Engineer 12th and 13th Biennial Report, 1934-1938, p. 77-100.

Vine, J. D., 1963, Surface geology of the Nash Draw quadrangle, Eddy County, New Mexico: U. S. Geological Survey Bulletin 1141-B, p. B1-B46.

SOUTHWESTERN LABORATORIES
FORT WORTH DALLAS HOUSTON MIDLAND BEAUMONT TEXARKANA
CONSULTING, ANALYTICAL CHEMISTS
AND TESTING ENGINEERS

Midland, Texas 2-13-69 File No. C-1902-R1

ort of tests on Water

Mr. Ed L. Reed

ived from Mr. Ed L. Reed Date Rec'd. 2-12-69

tification Marks Lea County, New Mexico, Larry Squires, by Joe Reed, Spring #3, just North of #2, 200 ft., at head water.

	Mg/L
Chloride	7446
Sulfate	11755
Conductivity	10,000 ± Micromhos/cm @ 25° C.

ies: 3cc Mr. Ed L. Reed

SOUTHWESTERN LABORATORIES

Jack H Ba[illegible]

No. C-5124

30-B

SOUTHWESTERN LABORATORIES
FORT WORTH DALLAS HOUSTON MIDLAND BEAUMONT TEXARKANA
CONSULTING, ANALYTICAL CHEMISTS
AND TESTING ENGINEERS

Midland, Texas 2-13-69 File No. C-1902-R1

Report of tests on Water

To Mr. Ed L. Reed Date Rec'd. 2-12-69

Received from Mr. Ed L. Reed

Identification Marks Lea County, New Mexico, Larry Squires, sampled by Joe Reed, Spring #1, SE end of Laguna Plata at head water.

	Mg/L
Chloride	8864
Sulfate	11930
Conductivity	10,000 ± Micromhos/cm @ 25° C.

Copies: 3cc Mr. Ed L. Reed

SOUTHWESTERN LABORATORIES
Jack A Barker

Lab. No. C-5122

SOUTHWESTERN LABORATORIES
FORT WORTH DALLAS HOUSTON MIDLAND BEAUMONT TEXARKANA
CONSULTING, ANALYTICAL CHEMISTS
AND TESTING ENGINEERS

Midland, Texas 2-13-69 File No. C-1902-R1

port of tests on Water

Mr. Ed L. Reed Date Rec'd. 2-12-69

ceived from Mr. Ed L. Reed

ntification Marks Lea County, New Mexico, Larry Squires, sampled by Joe Reed, Spring #2, due East of Laguna Plata at head water.

	Mg/L
Chloride	7446
Sulfate	12743
Conductivity	10,000 ± Micromhos/cm @ 25° C.

Copies: 3cc Mr. Ed L. Reed

SOUTHWESTERN LABORATORIES
Jack H Barton

b. No. C-5123

SOUTHWESTERN LABORATORIES
FORT WORTH DALLAS HOUSTON MIDLAND BEAUMONT TEXARKANA
CONSULTING, ANALYTICAL CHEMISTS
AND TESTING ENGINEERS

Midland, Texas 2-25-69 File No. C-1902-R1

Report of tests on Water

To Mr. Ed L. Reed Date Rec'd. 2-18-69

Received from Mr. Ed L. Reed

Identification Marks As Shown

Lab. No.	Sample Description	Mg/L Chloride	Mg/L Sulfate
5151	No. 1-A, Soil sample, N end of Tonto (1:1 extract)	48931	37698
5152	No. 2, Spring, SW Gatuna, S of Highway	163105	24594
5153	No. 3, South side of Gatuna	66660	29728
5154	No. 4, Gatuna, in draw N of Highway	72333	24273
5155	No. 5, Gatuna, NW end at oil well, NW of well in Ravine	27657	37979
5156	No. 6, Gatuna, NW end, NE of oil well, ravine flowing South	10992	13771
5157	No. 7, Spring No. 4, Plata	7978	12643
5158	No. 1, Salt crystals, Tonto (Moist): Chloride (Cl) 4.20% by weight Sulfate (SO_4) 29.23% by weight		
----	No. 1-A --- No Sulfide or Sulfite detected.		

Copies: 3cc Mr. Ed L. Reed

SOUTHWESTERN LABORATORIES

Jack H Barton

Lab. No. ----

FORM NO. 130-B

HYDROGEOLOGIC CONDITIONS NEAR LAGUNA PLATA, NEW MEXICO, RELEVANT TO THE APPLICATION TO THE OIL CONSERVATION DIVISION TO DISPOSE OILFIELD WASTE BY PETRO-THERMO CORPORATION

Prepared for:

Petro-Thermo Corporation
P.O. Box 1978
Hobbs, New Mexico

By:

Daniel B. Stephens and Associates
600 Neel Avenue
Socorro, New Mexico

December 1985

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APPENDIX

SUMMARY

Petro-Thermo Corporation is proposing to discharge oil field wastes at a site adjacent to Laguna Plata in southwestern Lea County. On the basis of available hydrologic data, an exemption to Oil Conservation Commission Order No. 3221 is requested.

At the site, ground water occurs at shallow depths in redbeds and possibly in alluvium. The direction of flow is northward toward Laguna Plata, a salt lake located within a collapse structure. Springs indicate that ground water discharges to Laguna Plata. The thickness of the very low-permeable redbeds beneath the site is about 750 feet.

After separation in a gunbarrel, brine and oilfield fluids will be diverted to unlined pits where additional free oil will be skimmed for recovery. Much of the waste water will seep into the subsurface and migrate toward Laguna Plata. The concentration of dissolved solids in the waste water is expected to be less than that of the native water in Laguna Plata. The average evaporation of Laguna Plata is more than 60 times the estimated average sustained rate of fluid waste disposal. Thus, seepage from the disposal operation will evaporate from Laguna Plata.

INTRODUCTION

This report was prepared at the request of Mr. Robert W. Abbott, Vice President of AGUA Inc., a division of Petro-Thermo Corporation. Petro-Thermo Corporation is applying to the NM Oil Conservation Division for a permit to discharge ground water from proposed oilfield waste disposal ponds to be constructed near Laguna Plata, New Mexico.

The purpose of this report is to evaluate present hydrogeologic conditions in this vicinity of the proposed waste disposal site. The scope of work of this report includes a brief review of available literature, survey of existing well records, compilation of existing chemical analyses of water samples, and a field reconnaissance of the site.

SITE DESCRIPTION

The proposed oilfield waste ponds comprise approximately 4 acres located in the SW 1/4 of the SE 1/4 of the NE 1/4 of Section 16, Township 20 South, Range 32 East, Lea County, New Mexico. This site is approximately 2.5 miles northwest of Halfway, New Mexico, which is about 37 miles west of Hobbs, NM on US Highway 180 (Figure 1). The site is about 0.15 miles south of Laguna Plata, a natural salt lake.

The land surface topography at the site slopes to the northeast with a gradient of approximately 230 feet per mile, toward Laguna Plata. Vegetation at the site is very sparse, consisting mostly of grasses and mesquite.

Mean annual precipitation in the area is about 9 inches per year, much of which falls in the summer months during intense thunderstorms. Average annual temperature for the nearby towns of Maljamar and Pearl is approximately 61 degrees Fahrenheit.

The average rate of evaporation from open bodies of fresh water is about 6.1 feet per year (Hunter, 1985); these rates are enhanced during the spring when the winds are strongest. A study in the potash mining district to the southwest of the site found that the evaporation rate from a brine pond ranged from about 10.9 feet per year in the summer to about 2.9 feet per year in the winter (Geohydrology Associates, Inc, 1979). In a previous study in the same area, the average evaporation rate from a brine lake was determined to be about 4.4 feet per year (Geohydrology Associates, Inc., 1978). The evaporation rate from brine is less than that for fresh water, owing to the lower vapor pressure of the brine. The annual rate of evaporation from Laguna Plata is

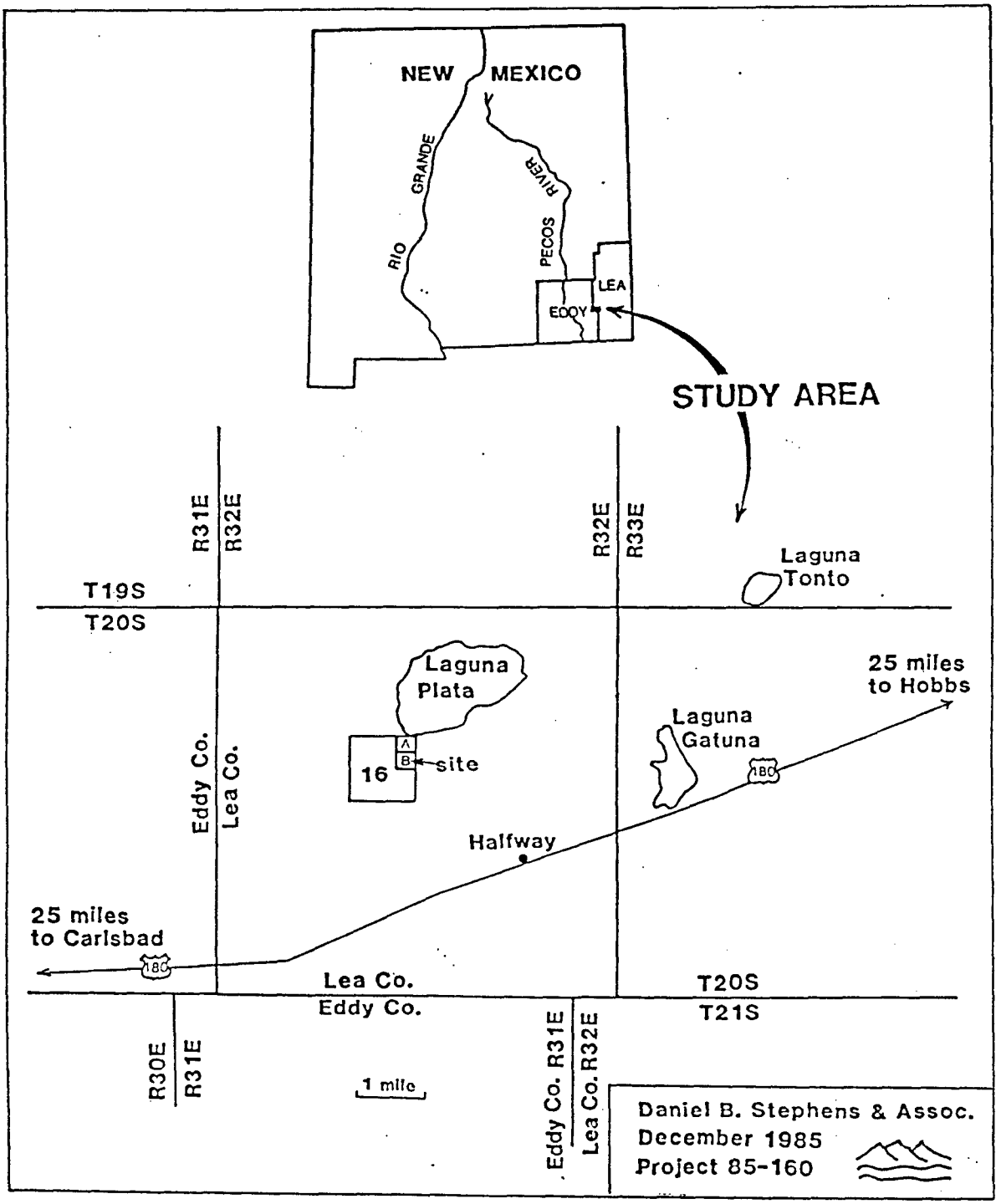

Figure 1 - Location Map

Daniel B. Stephens and Associates

approximately 5630 acre-feet per year (3490 gallons per minute), based on a lake surface area of 2 square miles (1280 acres) shown on topographic maps and the 4.4 feet per year estimate of evaporation rate.

The area is very sparsely populated. The dwellings which comprise Halfway, New Mexico are abandoned. Except for Halfway, the only dwelling within two miles of the proposed discharge site is a ranch on the east side of Laguna Plata.

HYDROGEOLOGIC CONDITIONS

Geology

The site lies within the Permian basin, a subsurface structural feature, which has been a target of oil and gas exploration. The rocks within the basin include Precambrian to Recent age strata. The units which have hydrologic significance are of Triassic age and younger, inasmuch as no potable water is known to occur in older rocks anywhere in the basin.

The Paleozoic section which overlies the Precambrian basement is reported to be as much as 16,800 feet thick on the west side of Lea Co. (Nicholson and Clebsch, 1961). The geologic units in this section include mostly limestone and dolomite, however evaporite deposits of Permian age, such as salt and anhydrite, occur in the upper parts of the section. The youngest Paleozoic unit beneath the site is the Rustler formation, chiefly anhydrite with salt and "redbeds". Drill logs in T20S.R32E.Sec 16. (Appendix 1) indicate the depth to the top of the Permian section is approximately 800 feet below land surface.

The Dewey Lake red-beds, a Triassic or Permian age siltstone, shale and sandstone overlies the Rustler formation. Its thickness may range from 40 to 400 feet (Nicholson and Clebsch, 1961).

The Dockum group, which overlies the Dewey Lake formation, includes the Santa Rosa sandstone in the lower part of the section and the Chinle shale in the upper part. These two units comprise the "Triassic redbeds". The Santa Rosa sandstone is reported to include some shale, and the unit ranges in thickness from 140 to 300 feet (Nicholson and Clebsch, 1961). The Chinle formation consists of claystone and fine-grained sandstone. Gypsum is reported to be a common secondary mineral associated with the redbeds. At the site, the thickness of the Santa Rosa and Chinle is difficult to determine from drillers logs, owing to the interbedded nature of the shale and sandstone which occur within each formation. However, the available logs (Appendix 1)

show that the combined thickness of redbeds is about 750 feet, consisting mostly of shale and sandstone.

The regional dip of the Triassic redbeds is approximately one to two degrees to the east or southeast. The Santa Rosa formation outcrops south of the Laguna Plata. A shale, assumed to be the Chinle, outcrops just north of the Laguna Plata, and the redbed surface is exposed in arroyos at the southwest end of the Laguna Plata at an estimated elevation of 3460 feet, about 30 feet above the lake surface. Drill holes in Laguna Plata indicate that the redbed surface is 20 to 41 feet below the surface of Laguna Plata (Nicholson and Clebsch, 1961). The surface of the redbeds is depressed in the vicinity of Laguna Plata, as well as near Laguna Gatuna, Laguna Tonto, and Laguna Toston. This structural feature is attributed to localized dissolution of the underlying Permian halite and anhydrite, with subsequent collapse of the overlying redbeds into the depression. Thus, the dip of the redbeds is locally reversed near the collapse depressions. The dip of the redbeds is northeast at the site.

In many parts of the region the Ogallala formation overlies the Triassic units. However, in the vicinity of the site this formation has been removed by erosion. Quaternary alluvium was deposited in the topographic depressions where the Ogallala was removed (Nicholson and Clebsch, 1961). The alluvium consists of poorly-sorted, unconsolidated sand with some clay. In places caliche occurs within the alluvium; the escarpment at the south edge of the site is underlain by a thick caliche layer. The thickness of the alluvium ranges from 15 to 130 feet in the northeast quarter of T20S.R32E.Sec.16 (Table 1), based on drillers logs. Exposures in arroyos just north of the site suggest that the alluvial cover may be less than 10 feet thick beneath the site. There is also a thin veneer of dune sand and small stabilized dunes at the site.

Principal Water-Bearing Units

Potable ground water is reported to occur in Triassic and younger units in parts of southern Lea County. However, there are only scattered occurrences of potable ground water in areas surrounding the proposed site of waste disposal (Tables 2 and 3). Regionally, the Santa Rosa sandstone is the principal water-bearing unit. Ground water may also occur in sandstone layers within the Chinle. Well yields are typically very low, owing to the low permeability of the formation. Nicholson and Clebsch (1961) report that well 20.32.18.233 which tapped the Santa Rosa had a specific capacity of 0.2 gallons per minute per foot of drawdown. Some of the well logs in Appendix 1 show the occur-

TABLE 1. Thickness of Geologic Units Determined from Well Logs

Well Number	Thickness of Alluvium (ft)	Thickness of Redbeds (ft)
20.32.6.22	40	826
20.32.8.44	12	828
20.32.12.44	25	1020
20.32.16.33	40	835
.16.144	15	860
.16.124	44	808
.16.411	30	835
.16.243	130	700
.16.213	130	710
.16.341	50	813
.16.233	50	815
.16.134	20	850
.16.31	35	840
.16.32	45	828
.16.244	15	765
20.32.18.32	35	760

TABLE 2. Well Inventory Data

Location No.	Owner	Aquifer	Depth of Well	Altitude of Well	WT Depth Below LS	Date of Measurement
19.32.34.42322	Halfway Water Co.	TRS	575	3559.0	247.38	12/14/76
19.33.17.11224	-----	QAL	131	3650.0	116.84	2/05/84
19.33.26.42221	Mark Smith	QAL	100	3608.0	92.97	1/29/81
10.32.01.314114	W. N. Snyder	QAL	30	3452.0	89.2	3/24/54
20.32.17.13	-----	QAL	90	3449.0	9.0	2/28/79
20.32.18.233	Freeport Sulfur	TRS	400	3452.0	89.2	3/24/54
20.32.22.33	-----	TRC	160	3513.0	30.0	2/28/79
20.32.23.33132	-----	QAL	-----	3541.0	39.83	2/19/81
.23.43312	B. Stanford	TRC	78	3551.0	36.78	2/19/81
.24.3333	T. Bingham	QAL	65	3555.0	37.69	2/19/81
.27.14332	J. Frey	QAL	25	3539.0	23.32	2/19/81
.27.32322	T. Bingham	QAL	-----	3530.0	15.33	2/19/81
20.32.30.142	-----	QAL	-----	3505.0	9.94	6/11/54
20.32.31.13	-----	TRC	240	3550.0	135.12	3/15/79
.36.21442	B. Smith	QAL	50	3581.0	43.88	9/18/72
.36.22311	B. Smith	QAL	65	3586.0	45.82	2/19/81
20.33.04.43211	-----	QAL	58	3556.0	33.19	3/19/68
.05.34321	Pan Amer. Petr. Co.	TRS	680	3552.0	277.52	2/19/81
.15.22143	-----	TRS	-----	3582.0	335.10	4/20/55
.18.12322	-----	TRS	-----	3521.0	245.58	7/25/72
.20.22224	-----	QAL	52	3536.0	35.0	2/19/81
21.32.6.11	I. A. Allred	QAL	55	3597.0	46.21	3/10/81

TABLE 3. Chloride Concentrations
(Source: N.M. State Engineer's Office, Roswell, NM, and Geohydrology Associates, Inc., 1979, 1984)

Well Number	Geologic Formation	Chloride Concentration* (ppm)	Date Sampled	Use
19.32.08.22411	TRS	16	3/13/85	Stock
19.33.18.133223	TRS	312	2/15/83	OWD
.26.42221	QAL	326	1/16/78	Stock
.26.42221	QAL	306	10/08/76	Stock
20.31.13.412433	QAL	635	12/22/48	Stock
.13.414	Williams Lake	110,750	2/27/84	Lake
.13.414411	QAL	6,660	2/27/84	----
.16.234441	TRS	785	12/22/48	Stock
.16.24331	TRC	673	11/30/65	Stock
.16.421111	TRC	355	11/30/65	Stock
20.32.	Laguna Plata	196,012	12/13/85	Lake
20.32.17.13	QAL	172,828	12/22/78	----
.22.33	TRC	5,136	12/19/78	----
.23.43312	TRC	362	2/69	Commercial
.24.333	QAL	85	2/69	Windmill
.24.333	QAL	42	9/11/72	Stock
.36.21442	QAL	290	9/18/72	Stock
20.33.	Laguna Gatuna	158,000	2/69	----
20.33.04.43211	QAL	12,978	10/24/68	Stock
.21.22224	QAL	3,518	----	----
20.31.01.13143	QAL	57	8/18/72	Domestic
Spring #1	SE end of Laguna Plata	8,864	2/12/69	
Spring #2	E end of Laguna Plata	7,446	2/12/69	
Spring #3	E end of Laguna Plata	7,446	2/12/69	
Spring #4	E end of Laguna Plata	7,978	2/18/69	
Spring #5	S end of Laguna Gatuna	163,105	2/18/69	
Sample #6	Gatuna, in draw North of Highway	72,333	2/18/69	
Sample #7	Gatuna, NW end at oil well, NW of well in ravine	27,657	2/18/69	

TABLE 3 - continued

Well Number	Geologic Formation	Chloride Concentration* (ppm)	Date Sampled	Use
Sample #8	Gatuna, NW end at oil well NE of well in ravine	10,992	2/18/69	

Explanation: Aquifer - QAL = Quaternary Alluvium; TRS = Triassic Santa Rosa; TRC = Triassic Chinle.
Use - OWD = Oil Well Drilling Well

* Recommended drinking water standard is 250 ppm.

rence of ground water within sandstones of the redbeds. Where it is saturated, the alluvium also may yield water to wells. However, the areal extent of the saturated portions is limited as a result of the irregular nature of the redbed surface. Thus ground water in the alluvium near the site is not sufficient in volume to comprise a laterally extensive aquifer which has potential for development, except locally for domestic and stock watering uses. At the north end of the site and along the southwest side of Laguna Plata, there are a few seeps which occur at the contact between a dense red shale within the Chinle and an overlying sandstone member. This shale horizon apparently serves as a barrier to water which infiltrates the sandy surficial deposits. There is no evidence of an alluvial aquifer beneath the site, based on field reconnaissance. Any significant water-bearing unit beneath the site is expected to occur in the Triassic redbeds.

The depth to the water table is about 37 feet near Halfway and about 22 feet at the ranch one mile east of Laguna Plata. The depth to water decreases toward Laguna Plata. Topographic maps show that there are numerous springs on the east side of Laguna Plata which mark the intersection of the water table with the land surface. These springs also mark the locations of points of groundwater discharge to the Laguna Plata. This discharge presumably originates, in part, from seepage from Laguna Gatuna, which is about 60 feet higher in elevation. There are few available data on the chemical quality of ground water (Tables 3 and 4). No wells are known to produce potable ground water within approximately three miles of the site. A well in the alluvium (20.32.1.322) at the ranch northeast of Laguna Plata produces water which is not potable. East of Halfway, an alluvial well (20.32.18.32) yields potable water having chloride concentrations of 42 ppm (parts per million) (Table 2). This well is reported to be used to water stock. In the Triassic redbeds the chemical quality of ground water in wells is also variable, ranging from 21 to 785 ppm (Table 4 and Figure 2). Well 20.32.23.433, completed in the Chinle at Halfway, has a chloride concentration of 200 ppm.

Groundwater Movement

Based on available water level elevation data, shallow ground water in alluvium and upper redbed formations flows toward Laguna Plata (Figure 3). The springs also suggest that ground water moves toward this topographically low area. In the deeper Triassic units, ground water also moves toward the area containing the salt lakes (Nicholson and Clebsch, 1961). There is a vertical component of hydraulic gradient downward from the

TABLE 4. Chemical Analyses of Selected Wells Near The Site. Values in parts per million except pH and E (micromhos). (Source: Nicholson and Clebsch, 1961.)

Well #	Date	Depth (ft)	SiO_2	Ca	Mg	Na+K	HCO_3	SO_4	Cl	F	NO_3	TDS	E.C.	pH
Laguna Plata														
	12/13/85	0	----	940	3,317	124,644	71	10,124	192,012	__	___	335,108	----	7.34
Alluvium														
230.32.1.322	7/1/54	----	----	---	---	----	---	---	--	--	---	---	----	---*
Triassic Redbeds														
19.32.8.224	12/9/58	----	19	10	13	131	306	74	21	1.2	6.4	426	682	8.0
19.34.9.114	12/9/58	33	41	430	65	675	189	1,680	560	0.3	139	3,680	4,660	7.1
20.32.23.433	12/13/85	78	----	51.3	48.6	123	292	54	200	---	---	770	----	7.94
21.33.2.231	9/4/58	1150	----	----	----	---	336	95	20	---	---	---	3,370	----

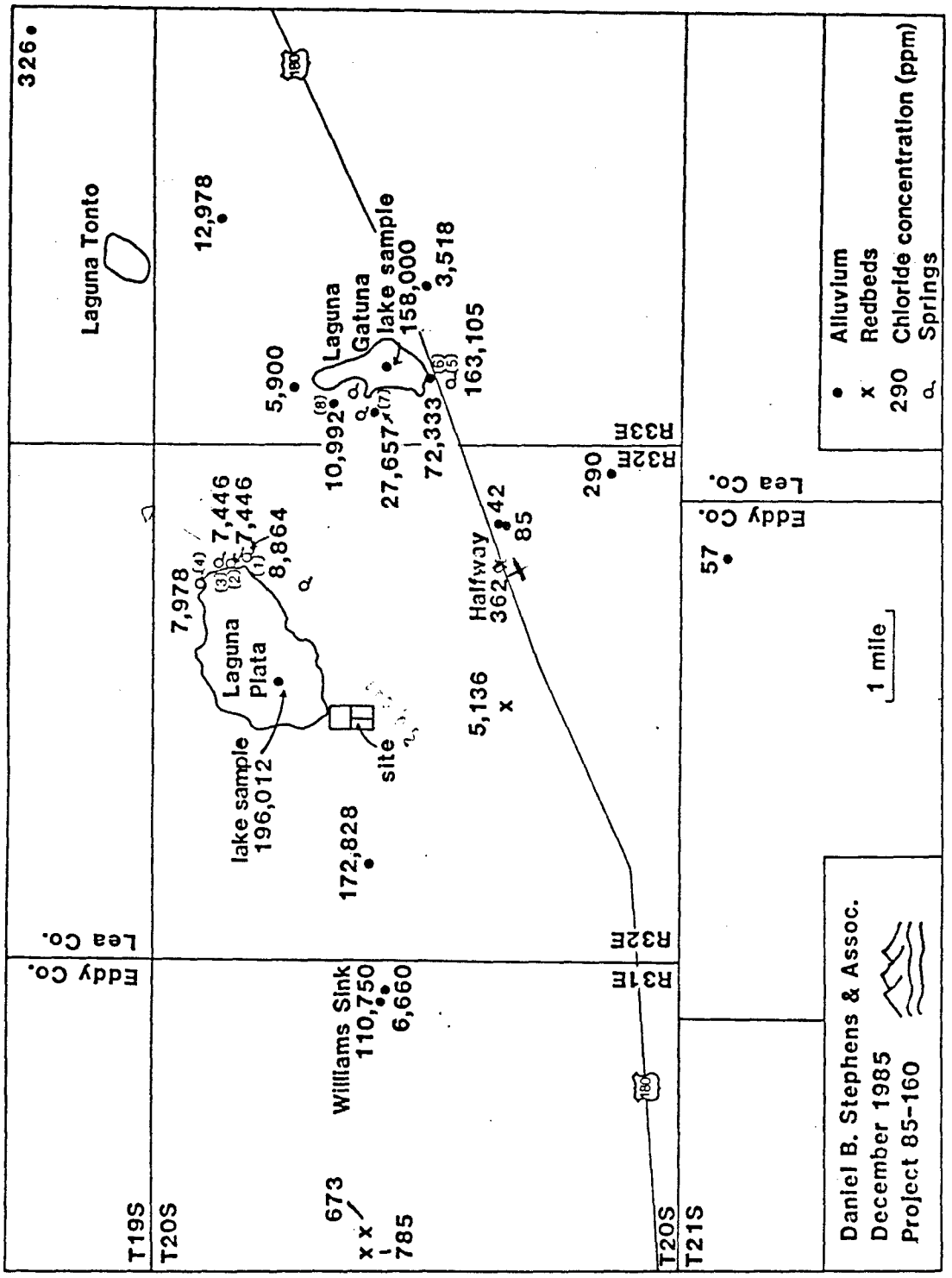

Figure 2 - Chloride Concentrations

Daniel B. Stephens and Associates

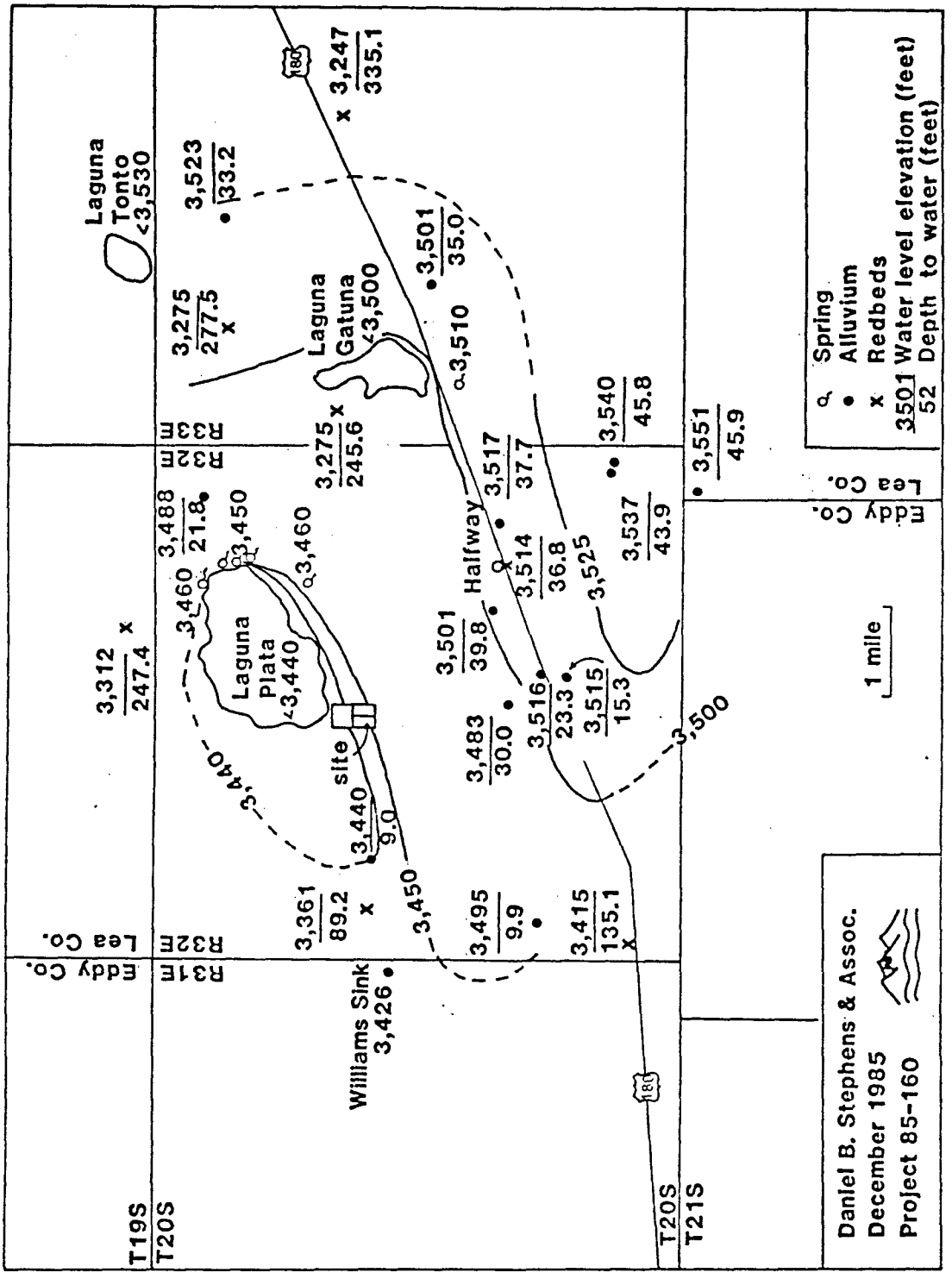

Figure 3 - Water Level Elevations and Depths to Water

shallow aquifer and Laguna Plata toward the deeper Triassic water-bearing units. If there were downward movement across the low-permeable shales, the quality of groundwater in the water-bearing Triassic sandstones would be poor, owing to the high salinity of Laguna Plata.

The proposed waste disposal site is situated within about 0.15 miles of the south shore of Laguna Plata. Seepage from the impoundments is expected to infiltrate through the underlying dune veneer, alluvium, and shallow sandstone toward the water table. The depth to the water table beneath the site is expected to be approximately 20 to 30 feet. Shallow ground water which may occur at present beneath the site may be perched on the Chinle shale layer observed in arroyos in the field reconnaissance. This layer would cause a ground water mound to develop beneath the waste pits and divert seepage northward and down-dip toward Laguna Plata or to an arroyo draining toward the lake.

The time for seepage to reach the Laguna Plata is difficult to estimate, owing to the absence of aquifer properties and water level data. However, the rate of ground water movement is likely to be on the order of not more than 100 feet per year; thus, the time for seepage to reach Laguna Plata would be on the order of 8 years. The shallow depth to the water table and the relatively permeable nature of the surficial materials will result in relatively rapid transport of seepage through the vadose zone.

There are no water users downgradient from the disposal site. After the seepage reaches the Laguna Plata, practically all of the seepage will evaporate. A minor amount of seepage may move downward toward the lower Triassic water-bearing units. However, regional ground water flow in these units also converges toward the salt lakes. There are no known sources of potable groundwater in sediments underlying the Triassic redbeds at Laguna Plata.

SUMMARY OF WASTE DISPOSAL PLAN

The disposal plan includes wastes which fall into three general groups. Group I includes brine, salt water, and water contained in drilling mud and cement. Group II wastes include oil and basic sediment (low quality oil which separates from gun barrels). Group III includes solid wastes. The estimated maximum possible volumes of wastes from these three groups are 26,500, 2250, and 1100 bpd (barrels per day), respectively, for a total of 30,000 bpd. However, on a sustained basis, under normal operating conditions, the total rate of waste disposal for all three groups is anticipated to be only about 2250 bpd (106 acre-feet per year) from all three waste types.

The wastes will be separated mechanically in a gunbarrel upon arrival at the site. The liquids from the separation, Group I, will be diverted to a series of five shallow ponds, 60 x 100 feet each. Their depths will range from about 7 to 10 feet. Oil which was not separated in the gunbarrel will be skimmed from the surface of the ponds and pumped to tanks. There is an additional pit downstream of the Group I and II waste pits to contain unexpected overflow.

A significant portion of seepage from the Group I pits will infiltrate the soil and migrate to the Laguna Plata. The salinity of the seepage is not likely to exceed that of Laguna Plata, inasmuch as produced oilfield fluids are expected to have total dissolved solids concentrations in the range of 25,000 to 75,000 ppm. The total dissolved solids at Laguna Plata is 335,100 ppm (Table 3). Thus, the seepage will dilute the concentration of the total dissolved solids in Laguna Plata. The total annual rate of evaporation from Laguna Plata is about 5360 acre-feet per year. Under anticipated normal operating conditions, the total rate of Group I waste disposal will be only about 93 acre-feet per year. Therefore, there is ample storage and evaporation potential in Laguna Plata to accommodate the waste seepage. No significant change in the hydrologic regime is expected as a result of the proposed discharge.

Group II wastes will be stored in tanks and removed from the site for reprocessing and recovery.

Group III solid wastes will be spread into a series of four shallow pits, each about 24 x 100 feet and ranging in depth from 6 to 8 feet. The solids will be alternately dried during the filling of the pits. The dried materials will be excavated and spread on a caliche caprock pad for long-term storage.

REFERENCES

Geohydrology Associates Inc., 1978, Ground-water study related to proposed expansion of potash mining near Carlsbad, New Mexico, prepared for U.S. Bureau of Land Management, 127 pp.

Geohydrology Associates Inc., 1979, Water-Resources Study of the Carlsbad Potash Area, New Mexico, prepared for U.S. Bureau of Land Management, 90 pp.

Geohydrology Associates Inc., 1984, Hydrologic Assessment of the Salt Lakes Area Western Lea County, New Mexico, prepared for Pollution Control, Inc., Lovington, New Mexico, 48 pp.

Hunter, R., 1985, A preliminary regional water balance for the WIPP site and surrounding area, Sandia National Laboratory, SAND84-2233, 98 pp.

Nicholson A. and A. Clebsch, 1961, Geology and Ground-Water Conditions in southern Lea County, New Mexico, NM Bur. Mines and Mineral Resources, Ground-Water Report 6, 120 pp.

APPENDIX 1 - Well Logs

Statement 164

NEW MEXICO SCHOOL OF MINES
STATE BUREAU OF MINES AND MINERAL RESOURCES
SOCORRO, NEW MEXICO

NEW MEXICO WELL LOG DIVISION

Casing Record:
8¼" 1132'

I. P. Abandoned

New Mexico
Lea County
Argo Royalty Co.
Burner Well #1
Sec. 6 T.20S R.32E
750 N. L. - 990 E. L.
Elevation: 3513
Commenced: 1-31-35
Completed: 3-12-35

Formation	Bottom
Red sand	40
Red beds	100
Red sand	115
Red beds	125
Red sand & shale	190
Red beds	235
R. sand	280
R. water sand	290
Red sandy shale	335
Water sand	340
Red sandy shale	350
Red sandy shale	385
Red rock & red beds	730
Red rock and red beds	866
Anhydrite	890
Anhydrite	945
Gr. shale	955
Anhydrite	1005
Salt	1040
Salt and anhy.	1065
Shale, red	1075
Anhy.	1090
Gr. lime	1105
Anhydrite	1112
Brown shale	1117
Red beds	1128
Salt and anhy.	1130
Shale	1175
Salt	1190
Shale	1245
Salt	1255
Skip in Log	
Salt	1625
Salt	1870
Salt and anhy.	1880
Salt	2330
Anhy.	2510
Br. Lime	2534
Gray lime	2611
Hard gray lime	2639
Brown lime	2653
Broken gray lime	2664
Gray sand	2679
Gray sand	2700
Shale breaks	2704
Hard gray lime	2718
Lime and shale breaks	2727
Hard brown sandy lime	2754
White lime	2785
Sand	2805
TD	2725'

Note: Last report T. D. 2810
Lime fishing bit.

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NEW MEXICO SCHOOL OF MINES

STATE BUREAU OF MINES AND MINERAL RESOURCES

SOCORRO, NEW MEXICO

NEW MEXICO WELL LOG DIVISION

COUNTY Lea
FIELD Wildcat
COMPANY Argo Royalty Company
LEASE Burner permit No. 2 Well
LOCATION (¼) C SE SE
SEC. 8 T. 20S R. 32E
660 feet from south line and
660 feet from east line of Section

CASING RECORD

Diam., in.	Bottom
10-3/4"	433'
8¼"	1155'

ELEVATION 3484 (L&S) FEET
INITIAL DAILY PRODUCTION:
Open bbls. Oil
Open cu. ft. Gas
Tbg. bbls. Oil
Tbg. cu. ft. Gas

COMMENCED 6-13-35
COMPLETED 7-23-35
ABANDONED
REMARKS: D&A.

FORMATION	BOTTOM, FEET
Rock	12
Red rock	195
Water sand	205
Red rock, sand, wtr.	230
Red rock	235
Red sand and shale, 10 BWPH	280
Red bed	315
Red bed and red rock	350
Red rock and sand	390
Red sand and rock	420
Red bed	515
Hard sand	545
Red rock	590
Hard sand	625
Red rock	670
Sand and red shale	710
Red rock and red shale	750
Red rock and gyp	795
Red rock	880
Anhydrite	915
Red rock and salt	935
Anhydrite	955
Blue shale	973
Anhydrite and lime	995
Anhydrite	1025
Salt	1065
Anhydrite and potash	1070
Potash	1075
Brown shale	1080
Anhydrite and lime	1085
Anhydrite	1118
Blue shale	1123
Red rock	1142
Salt	1155
Anhydrite	1160
Blue and red shale	1180
Red rock and salt	1200
Red rock, salt and anhydrite	1235
Salt and red rock	1290
Salt and potash	1330
Salt and red rock	1360
Hard anhydrite	1370
Salt and potash	1550
Salt	2060
Salt and potash	2080
Salt	2130
Salt and potash	2170
Salt	2215
Anhydrite and salt	2245
Salt	2330
Anhydrite and salt	2345
Anhydrite	2385
Lime	2417
Lime and red sand	2426
Hard lime	2517
Hard lime and blue shale	2527
Broken lime and sand	2540
Lime and red sand	2549
Red lime and red sand	2588
Lime	2610
Broken lime and blue shale	2618
Red and white lime, hard	2624
Hard white lime	2645
[illegible]	37
Blue shale and lime	2676
Hard white lime and green shale breaks	2685
Lime	2798
Sand T. D.	2803

Log. No. 128

NEW MEXICO SCHOOL OF MINES
STATE BUREAU OF MINES AND MINERAL RESOURCES
SOCORRO, NEW MEXICO

WELL LOG DIVISION

CASING RECORD	
Diam., in	Bottom
8¼	1117

ELEVATION FEET

INITIAL DAILY PRODUCTION:

Open		bbls. Oil
Open	P. & A.	cu. ft. Gas
Tbg.		bbls. Oil
Tbg.		cu. ft. Gas

COUNTY Lea
FIELD Halfway
COMPANY Brewer Drilling Co.
LEASE Monroe Well No. 1
LOCATION (¼) SE SE
SEC. 12 T. 20 S , R. 32 E
660 feet from South line and
660 feet from East line of Section
COMMENCED 6-8-43
COMPLETED 7-16-43
ABANDONED
REMARKS:

FORMATION	BOTTOM, FEET
Lime	10
Red sand	25
Red bed	250
Red shale	300
Red rock	340
Red rock	415
Red shale	425
Sand	440
Red shale	465
Red bed	475
Sand	487
Red rock	500
Red bed	515
Red sand - water	535
Red rock	665
Shale, red	730
Red rock	1045
Anhydrite	1121
Red rock and shale	1135
Anhydrite and red rock3	1150
Shale	1180
Anhydrite	1210
Salt	1280
Anhydrite	1295
Salt and shale	1305
Anhydrite	1320
Gray lime	1340
Red shale	1350
Salt	1380
Anhydrite	1386
Salt and shale	1510
Salt	1715
Anhydrite	1725
Anhydrite and salt	1740
Salt	1805
Salt and potash	2330
Salt and anhydrite	2410
Salt and potash	2485
Anhydrite	2520
Salt and anhydrite	2560
Salt	2610
Anhydrite	2620
Salt and potash	2650
Anhydrite	2690
Lime	2705
Pink lime	2720
White lime	2770
Lime	2815
Brown lime	2830
Gray lime	2845
Gray shale	2865
Lime	2870
Red bed	2875
Red shale and lime shells	2885
Lime	2910
Lime	2925
Shale and gypsum	2935
Lime and red shale	2945
Lime and shale breaks	2960
Lime	2992
Sandy lime	3022
Lime	3055
Lime, showing oil and gas	3056
Sandy lime	3120
Water sand	3126 T.

Red beds 10 to 1045 ft

Log. No. 4633

NEW MEXICO SCHOOL OF MINES
STATE BUREAU OF MINES AND MINERAL RESOURCES
SOCORRO, NEW MEXICO

WELL LOG DIVISION

CASING RECORD

Diam., in	Bottom
10 3/4"	459
8 5/8"	940

ELEVATION FEET

INITIAL DAILY PRODUCTION:

Open	D&A	bbls. Oil
Open		cu. ft. Gas
Tbg.		bbls. Oil
Tbg.		cu. ft. Gas

COUNTY Lea
FIELD Halfway
COMPANY Argo Oil Corp.
LEASE Texas-State "A" Well No. 2
LOCATION (¼) SW SW
SEC. 16 T. 20S , R. 32E
660 feet from South line and
660 feet from West line of Section
COMMENCED 6-11-41
COMPLETED 7-12-41
ABANDONED D&A
REMARKS:

FORMATION	BOTTOM, FEET
Cellar	8
Caliche	40
RedBed and Sand	70
Sandy shale	80
Red Rock	120
Sandy shale	125
Red Rock	155
Red Shale	182
Sand, Red	220
Sandy Shale, Red	250
Red Rock	295
Sand	305
Red Rock	355
Sandy Shale, Red	385
Sand, Red	405
Shale, Red	430
Red Rock	470
Shale, Red	505
Red Rock	545
Shale, Red	640
Red Rock	745
Shale, Red	810
Red Shale	875
Anhydrite	900
Red Rock	915
Salt	930
Anhydrite-hard	1020
Salt	1070
Anhydrite	1130
Red Rock	1140
Salt	1170
Anhydrite	1190
Salt and Potash	1250
Anhydrite	1265
Salt and Shale	1290
Salt and Potash	1380
Anhydrite	1398
Slat and Potash	1520
Salt	2105
Anhydrite	2120
Salt	2182
Anhydrite	2205
Slat	2270
Salt and Potash	2290
Salt	2292
Anhydrite	2332
Lime-medium	2370
Red Rock-Soft	2372
Lime-hard-gray	2468
Lime-Meduim-brown	2505
Lime-gray-hard	2520
Lime-Sandy-Red-Medium	2525
Lime-hard-gray-show oil at 2530	2535
Shale-soft-red	2545
Lime-hard-gray	2577
Lime,brown	2581
Lime,gray,hard	2590
Lime & sand-gray, meduim	2600
Lime, brown & gray-soft	2609
Lime, gray-hard	2646
Lime, gray-medium	2666
Lime, gay-soft gray	2674
Sand-gray-soft	2676
Lime, gray-medium	2694
Sand, gray medium T.D.	2696

Log. No. 4574

NEW MEXICO SCHOOL OF MINES
STATE BUREAU OF MINES AND MINERAL RESOURCES
SOCORRO, NEW MEXICO

WELL LOG DIVISION

CASING RECORD

Diam., in	Bottom
10-3/4	450
8-5/8	946
7	2613

ELEVATION 3510 FEET

INITIAL DAILY PRODUCTION:

Open 25 per hr. bbls. Oil
Open cu. ft. Gas
Tbg. bbls. Oil
Tbg. cu. ft. Gas

COUNTY Lea
FIELD Halfway
COMPANY Argo Oil Corp.
LEASE State Well No. 1
LOCATION (¼) S/2 E/2 NW/4
SEC. 16 T. 20S , R. 32E
2310 feet from North line and
1980 feet from West line of Section
COMMENCED 1-7-40
COMPLETED 2- -40
ABANDONED
REMARKS:

FORMATION	BOTTOM, FEET
Caliche	15
Sandy shale, red	75
Red rock	145
Red shale	215
Sand	225
Red rock	235
Red shale	245
Water sand	260
Red shale	285
Red rock, sandy	330
Red sahle, sandy	400
Red rock	455
Red shale	610
Red rock	630
Red shale, hard	685
Red rock	755
Red shale	800
Red rock	845
Red shale	875
Anhydrite	910
Red shale	920
Anhydrite	1020
Salt	1070
Potash, hard, red	1080
Red rock	1090
Anhydrite	1125
Red rock	1140
Salt	1160
Anhydrite	1177
Salt	1180
Salt and red rock	1235
Salt	1275
Salt and potash	1325
Salt	1380
Anhydrite	1395
Salt	1500
Anhydrite	1517
Salt	1990
Anhydrite	2002
Salt	2017
Anh ydrite	2030
Salt	2175
Anhydrite, hard	2195
Salt	2300
Anhydrite, hard	2325
Lime, hard, gray	2366
Red rock	23699
Limer, hard gray	2426
Lime, hard, brown	2450
Sandy lime	2478
Lime, hard, brown	2486
Lime, hard, gray	2497
Lime, hard, brown	2507
Lime, hard, gray	2519
Lime, hard, gray	2546
Lime, hard, gray	2583
Soft sand, Show GAS	2625
Gray lime, hard	2625
Lime, soft, OIL T.D.	2627

Log. No. 4555

NEW MEXICO SCHOOL OF MINES
STATE BUREAU OF MINES AND MINERAL RESOURCES
SOCORRO, NEW MEXICO

WELL LOG DIVISION

COUNTY Lea
FIELD Halfway
COMPANY Argo Oil Corp.
LEASE State Well No. 3
LOCATION (¼) NE NW
SEC. 16 T. 20S R. 32E
990 feet from North line and
2310 feet from West line of Section
COMMENCED 2-9-41
COMPLETED 3-15-41
ABANDONED
REMARKS:

CASING RECORD

Diam., in	Bottom
10-3/4	431
8-5/8	920
7"	2547

ELEVATION 3489 FEET

INITIAL DAILY PRODUCTION:

Open	400	bbls. Oil
Open		cu. ft. Gas
Tbg.		bbls. Oil
Tbg.		cu. ft. Gas

FORMATION	BOTTOM, FEET
Cellar	8
Caliche	15
Red sand	44
Red shale	100
Red rock	183
Sand 5 BWPH @ 205'	214
Red shale	220
Red sandy shale	300
Red rock 12 BWPH	335
Red sandy shale 18 BWPH	375
Red sandy shale	435
Red rock	520
Red shale	565
Red rock	640
Red shale	685
Red rock	740
Red rock and shale	760
Red rock	810
Red shale	852
Anhydrite	875
Red shale	880
Anhydrite	955
Anhydrite, white	985
Salt, white	1050
Anhydrite	1098
Red and blue shale	1105
Red shale and salt	1115
Salt and red shale	1135
White anhydrite	1150
Salt and red shale	1155
Salt and red rock	1255
Salt and potash	1315
Salt and anhydrite	1355
Salt and potash	1475
Anhydrite	1490
Salt	1510
Salt and potash	1560
Salt	1575
Salt and potash	1805
Salt	1850
Salt and potash	1980
Anhydrite	1990
Salt and potash	2172
Anhydrite	2193
Salt	2220
Salt and potash	2265
Salt, white	2295
Anhydrite	2330
Hard gray lime	2340
Lime	2355
Gray lime	2366
Red shale	2370
Gray lime	2382
Blue shale	2385
Gray lime	2387
Hard gray lime	2397
Gray lime	2423
Hard gray lime	2430
Gray lime	2450
Broken lime	2478
Lime	2485
Red lime	2494
Gray lime	2547
Brown lime	2550
Gray lime	2584
Broken brown lime	2593
Gray lime	2630
Hard gray lime	2635
Broken lime	2650
Lime	2683
Total depth	2681

Stencil cut

Log. No. 4528

NEW MEXICO SCHOOL OF MINES
STATE BUREAU OF MINES AND MINERAL RESOURCES
SOCORRO, NEW MEXICO

WELL LOG DIVISION

CASING RECORD

Diam., in	Bottom
10-3/4	456
8-5/8	932
7	2477

ELEVATION 3511 FEET

INITIAL DAILY PRODUCTION:

Open In 8 hr. 85 bbl bbls. Oil
Open cu. ft. Gas
Tbg. bbls. Oil
Tbg. cu. ft. Gas

COUNTY Lea
FIELD Halfway
COMPANY Argo Oil Corp.
LEASE Texas-State "B" Well No. 3
LOCATION (¼) NW NW SE
SEC. 16 T. 20S R. 32E
2310 feet from South line and
2310 feet from East line of Section
COMMENCED 1-3-41
COMPLETED 2-2-41
ABANDONED
REMARKS:

FORMATION	BOTTOM, FEET
Caliche	30
Red shale	45
Gravel	65
Red rock	105
Red rock sandy 1/2 bailer w.p.h,	125
Red rock	180
Sand	190
Red rock	200
Water sand	230
Red rock sandy	280
Sandy shale	345
Red rock	365
Sand with water	370
Red rock	390
Sand with 25 bailers water per hr.-	395
Red rock	459
Shale	485
Red rock	600
Shale shale	615
Red rock	745
Shale	795
Red rock	865
Anhydrite	895
Shale, red	905
Anhydrite	939
Salt	945
Anhydrite	1012
Salt	1080
Anhydrite	1125
Salt and red rock	1155
Anhydrite	1170
Salt and red rock	1175
Anhydrite, salt and potash	1230
Red rock and salt	1275
Salt and potash	1365
Anhydrite	1400
Salt and potash	1425
Salt	1485
Salt and potash	1540
Salt	1630
Salt and potash	1700
Anhydrite	1710
Salt and potash	1820
Salt	1870
Salt and potash	1995
Anhydrite and potash	2010
Salt	2085
Anhydrite	2135
Salt	2170
Anhydrite	2190
Salt---Base of salt	2285
Anhydrite	2322
Anhydrite	2322
Lime, gray	2445
Lime, broken, sandy	2462
Lime, brown	2497
Lime, gray	2516
Shale, gray	2519
Lime, broken sandy	2525
Lime, brown	2541
Lime, gray	2597
Lime, sandy - hole full OIL	T.D. 2604

Log No. 4483

NEW MEXICO SCHOOL OF MINES
STATE BUREAU OF MINES AND MINERAL RESOURCES
SOCORRO, NEW MEXICO

WELL LOG DIVISION

CASING RECORD	
Diam., in	Bottom
12	420
10	930
8	2400

ELEVATION 3496 FEET

INITIAL DAILY PRODUCTION:

Open	Dry	bbls. Oil
Open		cu. ft. Gas
Tbg.		bbls. Oil
Tbg.		cu. ft. Gas

COUNTY Lea
FIELD Halfway
COMPANY North Shore Corp.
LEASE Texas-State "B" Well No. 1
LOCATION (¼) SW SE NE
SEC. 16 T. 20-S R. 32-E
2310 feet from North line and
990 feet from East line of Section
COMMENCED 10-7-40
COMPLETED 11-6-40
ABANDONED
REMARKS:

FORMATION	BOTTOM, FEET	FORMATION	BOTTOM, FEET
Caliche	100		
Sand	130		
Red bed	400		
Sand and shale	770		
Sand and red bed	830		
Anhydite	870		
Anhy. sand and salt	892		
Anhydrite	900		
Lime	925		
Anhydrite	982		
Salt	1035		
Anhy. salt and sand	1065		
Lime	1100		
Anhy. salt and sand	1175		
Salt	1270		
Anhy. salt sand and potash	1355		
Salt	1445		
Anhy. salt and potash	1460		
Salt	1575		
Anhy. salt and potash	1725		
Salt	1785		
Anhy. salt and potash	1820		
Salt	1860		
Salt anhy. and potash	2020		
Salt	2180		
Anhydrite	2210		
Salt	2330		
Anhydrite	2371		
Lime	2410		
Lime and sand	2420		
Lime	2485		
Limeand sand	2535		
Sand	2585		
Sand and lime	2648		
Lime sand and benite	2700		
Lime	2705		
Limeand sand	2715		
Lime	T.D. 2728		

Log No. 4459

NEW MEXICO SCHOOL OF MINES
STATE BUREAU OF MINES AND MINERAL RESOURCES
SOCORRO, NEW MEXICO

WELL LOG DIVISION

CASING RECORD	
Diam., in	Bottom
10"	420
8-5/8	901' 9"
5½	2494

ELEVATION 3481 FEET

INITIAL DAILY PRODUCTION:

Open	480	bbls. Oil
Open		cu. ft. Gas
Tbg.		bbls. Oil
Tbg.		cu. ft. Gas

COUNTY Lea
FIELD Halfway
COMPANY North Shore Corporation
LEASE Texas-State "A" Well No. 1
LOCATION (¼) SW NW NE
SEC. 16 T. 20-S , R. 32-E
990 feet from North line and
2310 feet from East line of Section
COMMENCED Sept. 1, 1940
COMPLETED Sept. 28, 1940
ABANDONED
REMARKS:

FORMATION	BOTTOM, FEET	FORMATION	BOTTOM, FEET
Sand & Caly.	110		
Water Sand	130		
Red Beds	250		
Sand & red shale	800		
Sand	840		
Anhydrite	875		
Sand & salt	890		
Anhydrite	910		
Anhydrite & lime	925		
Anhydrite	975		
Salt	1040		
Anhydrite Shale & salt	1070		
Lime	1100		
Potash	1110		
Sand & Anhydrite	1120		
Anhydrite	1140		
Sand & anhydrite	1170		
Anhydrite & salt	1200		
Salt	1275		
Salt & Potash	1330		
Anhydrite	1345		
Salt & Potash	1470		
Salt	1540		
Salt & Potash	1765		
Anhydrite	1785		
Salt & Potash	1930		
Anhydrite Potash & Salt	1980		
Salt	2035		
Anhydrite	2065		
Salt & Anhydrite	2130		
Anhydrite	2160		
Salt	2245		
Anhydrite	2290		
Lime & Anhydrite	2310		
Brown Lime & sand	2342		
Brown lime & grey	2388		
Sand & lime	2430		
Sand Brown & grey Lime	2467		
Sand	2490		
Lime	T.D. 2505		

stencil made
Log No. 4407

NEW MEXICO SCHOOL OF MINES
STATE BUREAU OF MINES AND MINERAL RESOURCES
SOCORRO, NEW MEXICO

WELL LOG DIVISION

CASING RECORD	
Diam., in	Bottom
10-3/4	450
8-5/8	883
7	2606

ELEVATION 3511 FEET

INITIAL DAILY PRODUCTION:

Open	bbls. Oil
Open	cu. ft. Gas
Tbg.	bbls. Oil
Tbg.	cu. ft. Gas

COUNTY Lea
FIELD Halfway
COMPANY Argo Oil Corporation
LEASE Texas-State "D" Well No. 2
LOCATION (¼) [illegible] S.
SEC. 16 T. 20 S., R. 32
990 feet from South line and
1650 feet from West line of Section
COMMENCED 3-13-40
COMPLETED 7-8-40
ABANDONED
REMARKS: Swabbed only water.

FORMATION	BOTTOM, FEET
Caliche	6
Anhydrite & Red Rock	50
Red Shale	115
Red Rock	205
Red Sand	215
Red Rock	255
Red Sand - water	280
Red Shale	325
Red Rock	390
Sand - water	400
Red Rock	410
Red Shale	480
Red Rock	550
Sandy Shale	700
Red Rock	570
Red Rock & Shale	827
Red Shale	890
Red Rock	920
Red Shale	963
Anhydrite	969
Red Shale	977
Anhydrite	915
Anhydrite & Salt Shells	985
Anhydrite	970
Gray Anhydrite	1020
Salt	1090
Anhydrite (gray)	1135
Anhydrite & Potash	1145
Anhydrite & Salt	1170
Anhydrite	1175
Red Rock Broken	1225
Salt - Potash	1295
Salt & Red Shale	1310
Salt	1380
Anhydrite	1400
Salt-potash & blue shells	1455
Anhydrite, salt & potash	1535
Anhydrite Salt & Salt s	1795
Salt & potash	1890
Salt	1845
Salt & potash	1920
Salt & potash	2010
Anhydrite salt & potash	2050
Salt & Potash	2120
Salt & Anhydrite Shells	2150
Anhydrite	2210
Salt & Potash	2270
Salt	2275
Anhydrite	2325
Lime	2422
Lime	2460
Lime and Sandy	2476
Lime	2491
Red Lime	2512
Sand-Show dead Oil 2518	2518
Lime	2521
Broken Sandy Lime	2533
Lime	2579
Red Sandy Lime	2586
Lime -show oil 2620	2640
Lime & bentonite	2662
Lime - show oil 2685 T.D.	2688

/ stencil ma

Log No. 4408

NEW MEXICO SCHOOL OF MINES
STATE BUREAU OF MINES AND MINERAL RESOURCES
SOCORRO, NEW MEXICO

WELL LOG DIVISION

COUNTY Lea
FIELD Halfway
COMPANY San [illegible]einer
LEASE Wentz State Well No. 1
LOCATION (¼) S[illegible]
SEC. 16 T. 20 R. 32
2310 feet from North line and
2310 feet from East line of Section
COMMENCED 5-30-40
COMPLETED 7-11-40
ABANDONED
REMARKS:

CASING RECORD	
Diam., in	Bottom
8-5/8	926
7	2367

ELEVATION FEET

INITIAL DAILY PRODUCTION:

Open	360	bbls. Oil
Open		cu. ft. Gas
Tbg.		bbls. Oil
Tbg.		cu. ft. Gas

FORMATION	BOTTOM, FEET	FORMATION	BOTTOM, FEET
Caliche	15		
Red Sand	40		
Sand & Gravel	50		
Red Bed	200		
Sand	240		
Red Bed & Sand	360		
Sandy Shale	400		
Red Bed	500		
Shale & Gyp	530		
Red Rock & Red Bed	905		
Anhydrite	910		
Shale & Salt	920		
Salt & Anhydrite	1010		
Anhydrite & Potash	1110		
Salt & Anhydrite	2294		
Anhydrite	2332		
Lime (Show of Gas at 2328)	2304		
Brown Lime	2405		
Lime	2441		
Grey Sandy Lime	2467		
Brown Lime	2482		
Brown & Grey Lime	2495		
Lime - Show of Oil	2520		
Broken Lime	2530		
Hard Grey Lime	2553		
Soft Lime - Hole filled with Oil	2559	T.D.	

Log No. 4276

NEW MEXICO SCHOOL OF MINES
STATE BUREAU OF MINES AND MINERAL RESOURCES
SOCORRO, NEW MEXICO

WELL LOG DIVISION

CASING RECORD	
Diam., in	Bottom
10-3/4"	450
8-5/8"	950
7"	2626

ELEVATION 3510 FEET

INITIAL DAILY PRODUCTION:

Open	460	bbls. Oil
Open		cu. ft. Gas
Tbg.		bbls. Oil
Tbg.		cu. ft. Gas

COUNTY Lea
FIELD Halfway
COMPANY Argo Oil Corporation
LEASE State Well No. 2
LOCATION (¼) S½W½ NW
SEC. 16 T. 20-S. R. 32-E
2310 feet from North line and
4290 feet from East line of Section
COMMENCED 2-2-40
COMPLETED 3-17-40
ABANDONED
REMARKS:

FORMATION	BOTTOM, FEET
Caliche	20
Shale Soft Red	115
Red Rock	170
Sandy Shale Red	330
Red Rock	365
Sand	385
Sandy Red Shale	425
Shale Red	475
Red Rock	525
Red Shale	580
Sandy Shale Red	710
Red Rock	725
Anhydrite	735
Sandy Shale Red	805
Red Rock	870
Anhydrite	910
Shale Soft Red	915
Anhydrite & Shale	935
Anhydrite Hard	1018
Salt	1075
Potash	1080
Shale Blue Soft	1085
Anhydrite Hard	1125
Red Rock	1135
Salt	1160
Anhydrite Hard	1175
Salt & Potash	1260
Salt & Red Rock	1315
Salt	1375
Anhydrite Hard	1390
Salt	1500
Anhydrite Hard	1520
Salt	1900
Salt & Potash	1940
Salt	2000
Anhydrite	2010
Salt	2030
Anhydrite	2038
Salt & Potash	2070
Salt	2175
Anhydrite	2205
Salt	2300

FORMATION	BOTTOM, FEET
Anhydrite	2315
Anhydrite & Brown Lime Hard	2353
Lime Hard Gray	2385
Shale Soft Blue	2388
Lime Hard Gray	2438
Lime Hard Brown	2449
Lime Hard Gray	2475
Lime HardBrown	2502
Lime Hard Gray	2509
Lime Hard Brown	2545
Lime Hard Gray	2589
Sand	2599
Lime Hard Brown	2610
Lime Hard Gray	2677
Lime Hard Brown	2689'9"
Lime Soft Gray	2682
Lime Hard Gray	2688
Lime Med. Gray T.D.	2689'6"

Log No 4018

NEW MEXICO SCHOOL OF MINES
STATE BUREAU OF MINES AND MINERAL RESOURCES
SOCORRO, NEW MEXICO

WELL LOG DIVISION

COUNTY Lea
FIELD Halfway
COMPANY Argo Oil Coporation
LEASE Texas-State Well No. 1
LOCATION (¼) NW SW
SEC. 16 T. 20-S R. 32-E
1980 feet from Sth line and
660 feet from West line of Section
COMMENCED 10/17/39
COMPLETED 11/14/39
ABANDONED
REMARKS: Texas Co. farm-out

CASING RECORD

Diam., in	Bottom
10-3/4	420
8-5/8	931
7"	

ELEVATION 3510 FEET

INITIAL DAILY PRODUCTION:

Open	240 bbls. Oil
Open	cu. ft. Gas
Tbg.	bbls. Oil
Tbg.	cu. ft. Gas

FORMATION	BOTTOM, FEET	FORMATION	BOTTOM, FEET
Caliche	35		
Red Rock Red Shale & Sand	165		
Red Shale & Sandy	454		
Red Rock and Shale	875		
Anhyd. & Red Rock	1025		
Salt Potash & Red Rock	1095		
Anhyd. & Salt	1185		
Red Rock & Salt	1230		
Salt & Anhyd.	2330		
Lime hard Gray	2450		
Lime Red Gray	2475		
Lime Hard Gray	2527		
Soft Lime	2610		
Lime	2657	TD	

Log. No. 3924

NEW MEXICO SCHOOL OF MINES
STATE BUREAU OF MINES AND MINERAL RESOURCES
SOCORRO, NEW MEXICO

WELL LOG DIVISION

CASING RECORD

Diam., in	Bottom
10 3/4"	421'
8 5/8"	1000'
7"	2590'

ELEVATION 3512 FEET

INITIAL DAILY PRODUCTION:

Open — bbls. Oil
Open P. & A. — cu. ft. Gas
Tbg. — bbls. Oil
Tbg. — cu. ft. Gas

COUNTY Lea
FIELD Halfway
COMPANY Argo Oil Corporation *
LEASE Texas-State "B" Well No. 1 **
LOCATION (¼) NE SW
SEC. 16 T. 20S R. 32E
1980 feet from South line and
1980 feet from West line of Section
COMMENCED 9-13-39 - Deepened 5-25-
COMPLETED 2-21-40 - Deepened 8-19-
ABANDONED *Formerly West Lea Oil C
REMARKS: *Formerly F. M. Farley.
**Formerly Tex-State No. 1

FORMATION	BOTTOM, FEET
Lime	10
Caliche	25
Yellow sandy shale	45
Red shale	85
Red shale and sand	190
Lime	200
Red shale and sand	215
Lime, sand and shale	265
Red sand; water	270
Red mud	290
Red sand	325
d bed	355
ed shale	420
Red rock	421
Red rock and shells	455
Red shale and shells	530
Lime and red rock	670
Red rock and shells	760
Red shale and shells	873
Anhydrite	910
Red rock and salt shells	920
Anhydrite	938
Anhydrite and lime	1020
Anhydrite and salt	1040
Salt	1085
Red shale	1090
Anhydrite	1105
Lime	1135
Red rock	1140
Red rock, salt and shells	1250
Anhydrite, salt and red rock	1315
Salt	1390
Anhydrite	1405
Salt	1460
Salt and shells	1525
Salt	2000
Salt and anhydrite	2030
alt, white	2090
Anhydrite, salt and potash	2105
Salt and shells	2160
Anhydrite	2200
Anhydrite and salt	2225
Salt and shells	2285
Anhydrite	2320
Lime, brown	2360
Lime, gray	2380
Lime, brown	2452
Shale and shells	2470
Lime, red	2512
Shale and shells	2525
Lime	2575
Sandy lime	2595
Gray lime	2615
Gray lime	2629
Lime	2719
Sandy lime, sharp	2733
Lime, hard, gray	2765
Lime and gypsum	2780
Lime	3032
Sand, soft	3036
Lime; HFW	3763 T.

Log No. 1129

NEW MEXICO SCHOOL OF MINES
STATE BUREAU OF MINES AND MINERAL RESOURCES
SOCORRO, NEW MEXICO

WELL LOG DIVISION

COUNTY Lea
FIELD
COMPANY Western Drilling Co.
LEASE State Well No. 1
LOCATION (¼) SE NE NE
SEC. 16 T. 20S. R. 32E
feet from line and feet from line of Section
COMMENCED 1-29-31
COMPLETED 9-10-31
ABANDONED
REMARKS:

Abandoned and Plugged.

CASING RECORD

Diam., in.	Bottom
15½	455'
12½	935'
8¼	2459'
6 5/8	3213

ELEVATION 3460 FEET
INITIAL DAILY PRODUCTION:

Open		bbls. Oil
Open		cu. ft. Gas
Tbg.		bbls. Oil
Tbg.		cu. ft. Gas

FORMATION	BOTTOM, FEET
Light gyp	15
Red beds	160
Water	165
Red rock	230
Water	235
Red rock	425
Water sand	430
Red rock	455
Red beds	505
Red rock	535
Red rock and gyp	615
Red rock	720
Red rock and red beds	755
Red rock	780
Anhydrite	925
Red beds	930
Salt	935
Anhydrite	940
Salt	950
Anhydrite	980
White salt	985
Anhydrite and salt	1020
Anhydrite	1035
Anhydrite and lime shells	1050
Red mud	1060
Salt and anhydrite	1125
Red shale	1135
Salt and anhydrite	1265
Salt	1285
Anhydrite	1295
Salt	1325
Salt and anhydrite	1390
Anhydrite and slat	1460
Salt and anhydrite	1705
Salt	1855
Salt and anhydrite	1975
Salt	1995
Anhydrite air pocket	2000
Salt	2105
Anhydrite and salt	2145
Salt	2170
White salt and anhydrite	2185
Salt	2190
Anhydrite	2210
Salt and anhydrite	2260
Salt	2300
Salt and anhydrite	2315
Anhydrite	2360
Gray sandy lime	2375
Gray hard lime S.G. 2390	2385
Gray lime	2405
Broken lime with red and brown shale	2410
Anhydrite	2425
Gray lime	2435
Gray lime and anhydrite	2445
Gray lime	2448
SLM	2459
Gray lime	2500
Gray lime and blue shale	2505
Lime and shale	2515
Red and green shale	2520
Hard lime and shale	2530
Lime shells and brown shale	2545
Gray lime	2555
Shelly lime and shale	2575
Gray sand S.dead O at 2575-80	2580
Hard white lime	2600
White lime	2625
Brown sandy lime and blue shale	2645
White lime	2655
White lime and bentonite	2705
White lime	2740
Gray lime 400' sulphur water in 1½ hours from 2745'	2750
White water sand and lime	2760
White lime	2780
Dark lime increase water	2790
Gray lime	2810
Dark gray lime	2820
Gray lime	2830
Blue sandy lime	2845
Gray sandy lime	2865
Gray lime	2880

NEW MEXICO SCHOOL OF MINES
STATE BUREAU OF MINES AND MINERAL RESOURCES
SOCORRO, NEW MEXICO

WELL LOG DIVISION

COUNTY Lea
FIELD
COMPANY Western Drilling Co.
LEASE State Well No. 1
LOCATION (¼)
SEC. 16 T. 20 R. 32
feet from line and
feet from line of Section
COMMENCED
COMPLETED
ABANDONED
REMARKS:

CASING RECORD

Diam., in.	Bottom

ELEVATION FEET
INITIAL DAILY PRODUCTION:
Open bbls. Oil
Open cu. ft. Gas
Tbg. bbls. Oil
Tbg. cu. ft. Gas

FORMATION	BOTTOM, FEET
White lime	2895
Gray lime	2910
White lime	2925
Gray lime	2975
White lime	2990
Hard white lime	3010
White lime	3020
Gray sandy lime	3035
Gray lime	3045
White lime	3120
White lime	3166
Gray lime	3175
White lime	3184
Gray lime	3192
White lime	3200
SLM	3209
Gray lime	3213
White lime	3225
Gray lime	3248
White lime	3265
White lime	3275
Anhydrite	3282
Anhydrite and white lime	3303
Gray and white lime	3324
Brown lime	3411
Brown and hard gray lime	3431
White lime	3474
Gray lime	3505
White sandy lime salt water	3520
White lime	3638
White lime 1730' water	3705
White sandy lime increase water	3718
White lime and sand	3723
White sandy lime	3747
Gray sandy lime	3760
White lime	3769
Gray sandy lime and bentonite	3776
Gray lime	3857
Gray lime	3865
Gray sandy lime	3889
Gray sand	3900
Gray sandy lime	3905
Gray lime	3922
White lime	3945
Hard white lime	3955
White lime	3983
White lime	4013
SLM TD	4005

NEW MEXICO SCHOOL OF MINES

STATE BUREAU OF MINES AND MINERAL RESOURCES

SOCORRO, NEW MEXICO

NEW MEXICO WELL LOG DIVISION

943

COUNTY Lea

FIELD S. E. Lea

COMPANY The Texas Company

LEASE Humphreys No. 1 Well

LOCATION (¼) NE NE SW

SEC. 18 T. 20 S R. 32 E

2310 feet from S line and

2310 feet from W line of Section

COMMENCED 4-26-29

COMPLETED & 7-11-29

ABANDONED

REMARKS:

3465 SW

ELEVATION 3475 Approx FEET

INITIAL DAILY PRODUCTION:

Open P. & A. bbls. Oil

Open cu. ft. Gas

Tbg. bbls. Oil

Tbg. cu. ft. Gas

CASING RECORD

Diam., in.	Bottom
24	18
15½	434
12½	798
8¼	2540

FORMATION	BOTTOM, FEET
Gypsum and caliche	35
Red sandy shale	130
Red sand	210
Red Sandy shale	795
White and gray anhydrite	820
Red shale and salt	845
Gray and white anhydrite	865
Brown dolomite	875
Brown dolomite, little anhydrite	885
Gray and white anhydrite	945
Pure white salt	1005
Salt, anhydrite and gray shale	1015
Salty, red shale	1025
Pink salt	1035
Gray and white anhydrite	1055
Brown dolomite	1075
Salty red shale	1085
Pink salt	1105
Pink and white anhydrite	1115
Pink salt	1125
Pink salt; some red shale	1135
Red shaly sand	1155
Pink and white salt	1185
Pink salt	1305
Pink and white salt; some gray shale	1330
White salt	1350
Salt and red and gray shale	1360
Pink salt	1580
Red shale and salt	1590
Pink salt	1740
Pink salt, little red polyhalite	1850
White salt	1870
Brown dolomite and anhydrite	1900
Pink salt and polyhalite	2140
White salt	2200
Pink salt	2300
White salt; little anhydrite	2330
White salt; trace of brown shale	2425
White salt	2445
White salt and brown shale	2455
Brown and gray anhydrite	2470
White and gray anhydrite	2525
Tan and brown dolomite	2575
Gray sand, little lime	2585
Gray sand and green sandy shale	2595
Buff lime and bentonitic shale	2615
Light and buff lime	2630
Light and buff lime and green sandy shale	2640
Light and buff lime and black sandy shale	2660
Brown lime, some red and green sandy shale	2670
Gray and tan lime	2690
Red and green sand	2700
Red and green sand, little red shale, some gray lime	2710
White lime and dolomite, some red lime and red sandy shale	2770
White and red sandy shale	2795
Red sandy lime, little white lime	2816
White and pink dolomite	2840
Grayish white dolomite	2850
White dolomite, trace red shale	2885
White and red dolomite and red sand	2905
White dolomite	2910
Red and white dolomite	2919
White dolomite	2960
White dolomite and bulish gray bentonite shale	2985
White and red dolomite and bluish gray bentonitic shale	2995
Red sandy dolomite, white dolomite and green bentonitic shale	3000
Green bentonitic shale, red sandy dolomite and little white dolomite	3005

NEW MEXICO SCHOOL OF MINES

E BUREAU OF MINES AND MINERAL RESOURCES

SOCORRO, NEW MEXICO

NEW MEXICO WELL LOG DIVISION

743

COUNTY Lea

FIELD

COMPANY The Texas Company

LEASE Humphreys No. 1 Well

LOCATION (¼) NE NE SW

SEC. 18 T. 20 S R. 32 E

3210 feet from S line and

3210 feet from W line of Section

COMMENCED 4-26-29

COMPLETED 7-11-29

ABANDONED

REMARKS:

CASING RECORD

Diam., in.	Bottom
24	18
15½	434
12½	798
8¼	2540

ELEVATION 3475 Approx FEET

INITIAL DAILY PRODUCTION:

Open bbls. Oil

Open cu. ft. Gas

Tbg. bbls. Oil

Tbg. cu. ft. Gas

FORMATION	BOTTOM, FEET
White dolomite, little green bentontic shale	3020
White dolomite and green bentonitic shale	3028
Green bentonitic shale, trace white sand	3031
White dolomite, some green bentonite and little sand	3036
White dolomite	3100
White dolomite, porous and showing dead oil, hole full of sulphur water. Plugged and abandoned 7-10-28	3105

01-2[illegible]1991

SECTION 19 TOWNSHIP 20 South RANGE 33 East

D Not State – – Acreage	C Not State – – Acreage	B BASS ENTERPRISE UNK 05 61 E5231-6	A Not State – – Acreage
E Not State – – Acreage	F Not State – – Acreage	G BASS ENTERPRISE UNK 05 61 E5231-6	H Not State – – Acreage
L Not State – – Acreage	K Not State – – Acreage	J Not State – – Acreage	I Not State – – Acreage
M Not State – – Acreage	N Not State – – Acreage	O Not State – – Acreage	P Not State – – Acreage

REMARKS

A –
B
G
H –
C –
D –
E –
F –
K –
L –
M –
N –
I –
J –
O –
P –

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

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

September 19, 1990

CERTIFIED MAIL
RETURN RECEIPT NO. P-918-402-425

Petro Thermo Corporation
P. O. Box 176
Hobbs, New Mexico 88240 PO 2069 88241

RE: Regulatory Notification, New Federal Requirements for Oil Reclamation Facilities

Dear Sir:

This letter is to advise you of a forthcoming federal requirement that may affect operation of your facility.

As you know, only the New Mexico Oil Conservation Division (OCD) currently regulates your facility. However, on September 25, 1990, a US Environmental Protection Agency (EPA) regulation directing use of the Toxicity Characteristic Leaching Procedure (TCLP) and adding toxicity constituent regulatory levels becomes effective. On that date waste material containing benzene, a natural component of crude oil, will be regulated as federal "hazardous waste" if benzene levels exceed the promulgated level of 500 parts per billion (ppb). Certain waste materials are excluded from this regulation including wastes from crude oil and natural gas exploration and production activities. However, liquid and solid wastes and sludges generated by crude oil and tank bottom reclaimers may not be exempted. Permitting under OCD rules does not necessarily mean your facility is EPA exempt.

If the waste stream from treating crude oil and tank bottoms by your facility contains benzene concentrations of greater than 500 ppb and if that waste is not exempted under EPA interpretation of the oil and gas exclusion, EPA will require that the waste stream be permitted and handled as hazardous waste. Additionally, if any portion of a common facility handling exempt exploration and production wastes is also considered to be treating, storing, or disposing of hazardous waste, then the entire common facility may be subject to EPA regulations which include provisions for substantial hydrogeologic investigations, corrective actions, and post-closure monitoring. There are civil and criminal penalties for failure to comply with "hazardous waste" regulations.

Therefore the OCD strongly recommends that you contact and review your operations with a private consultant or attorney familiar with this new federal rule prior to September 25 to determine the impact of the new regulation at your facility, and for advice as to technical permitting requirements and your potential liability.

Currently, the State of New Mexico is taking action to notify President Bush, the USEPA, and the Department of Energy of the impact of this new rule, and is requesting implementation be delayed for at least six months while the issue is reexamined. However, the outcome of this appeal is far from certain. Enclosed with this letter is a copy of the letter to President Bush. You may also wish to contact members of the New Mexico Congressional delegation regarding this important matter.

If you have any questions you are urged to contact either myself at (505) 827-5812 or Roger Anderson of this office at 827-5884.

Sincerely,

David G. Boyer, Hydrogeologist
Environmental Bureau Chief

DGB/sl

Enclosure

cc: NMOCD District Office

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

January 13, 1988

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

Petro-Thermo Corp.
P. O. Box 2069
Hobbs, New Mexico 88240

Re: $10,000 Treating Plant Bond
Petro-Thermo Corporation, Principal
Bond No. 3896615

Gentlemen:

In checking our records, I note that you have a $10,000 Treating Plant Bond on file in this office. I am enclosing a copy of our Order No. R-8284 which states that all treating plant bonds must be replaced with $25,000 bonds by January 1, 1988. To date, we have not received your replacement bond.

Since this is a violation of the Oil Conservation Division Rules and Regulations, we would appreciate your taking care of this matter immediately. Please advise me no later than January 28th as to when I may expect to receive your replacement bond.

Thank you.

Sincerely,

DIANA RICHARDSON
Administrator
Bonding Department

enclosure

OCD - Hobbs - Artesia

10/11/78

Petro-Thorm
Goodwin Treating Plant
SW/4 NW/4 31-18-37

Posted
11/3/78

Harbor Station
Electric Plant

N

½ mile

SWD & Brine
Trucked Water Station

W

E

Mineral Cryogenic
Plant

½ mile

½ mile

(1) Petro Thorm - Goodwin Treating plant
Unit E 31-18-37
(2) area in nasty condition water and BS over area.
pit area nasty.
(3) Pit caliche.
(4) 60 x 75 x 3 BS & D.I
(5)

Caliche Hwy

S