GW-34

GENERAL CORRESPONDENCE

YEAR(S):

1988-1986

El Paso
Natural Gas Company

P. O. BOX 4990
FARMINGTON, NEW MEXICO 87499
PHONE: 505-325-2841

June 13,1988

Mr. Roger C. Anderson
New Mexico Oil Conservation Division
P.O. Box 2088
Sante Fe, New Mexico 87504 - 2088

Subject : Kutz Plant Leak Detection System

Dear Mr. Anderson:

Operators at El Paso Natural Gas Company's Kutz Plant recently detected water in the leak detection sump of the wastewater pond. From January of this year to June 1 the level has stabilized at around 10 inches of water.

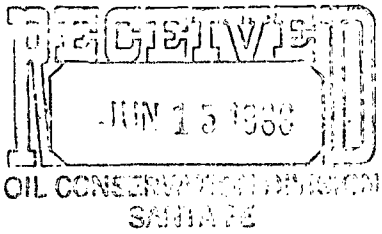
Since plant personnel had been informed by the leak detection system testing contractor to expect water to be pushed from between the liners as the pond filled, they did not report this condition immediately. They have been cautioned to inform supervision of changes in the sump level in the future.

EPNG took samples of the water from the sump and wastewater pond to see if the fluid in the sump might have orignated from the pond. The results of the analyses are listed in Table I and graphs comparing the concentrations are also enclosed.

The graphs show that there is an appreciable difference between the samples regarding hardness, sulfate ion concentration , pH, total dissolved solids, conductivity, chemical oxygen demand and total organic carbon.

Since the level of water in the sump did not rise for six months and the analysis showed a significant difference between samples, EPNG concludes that the wastewater pond is not leaking. The water in the sump appears to be residual water from testing of the liner during installation. This water will be pumped out of the sump to allow accurate level determination in the future.

If you have any questions are comments, please call me at 325-2841 Ext. 2176.

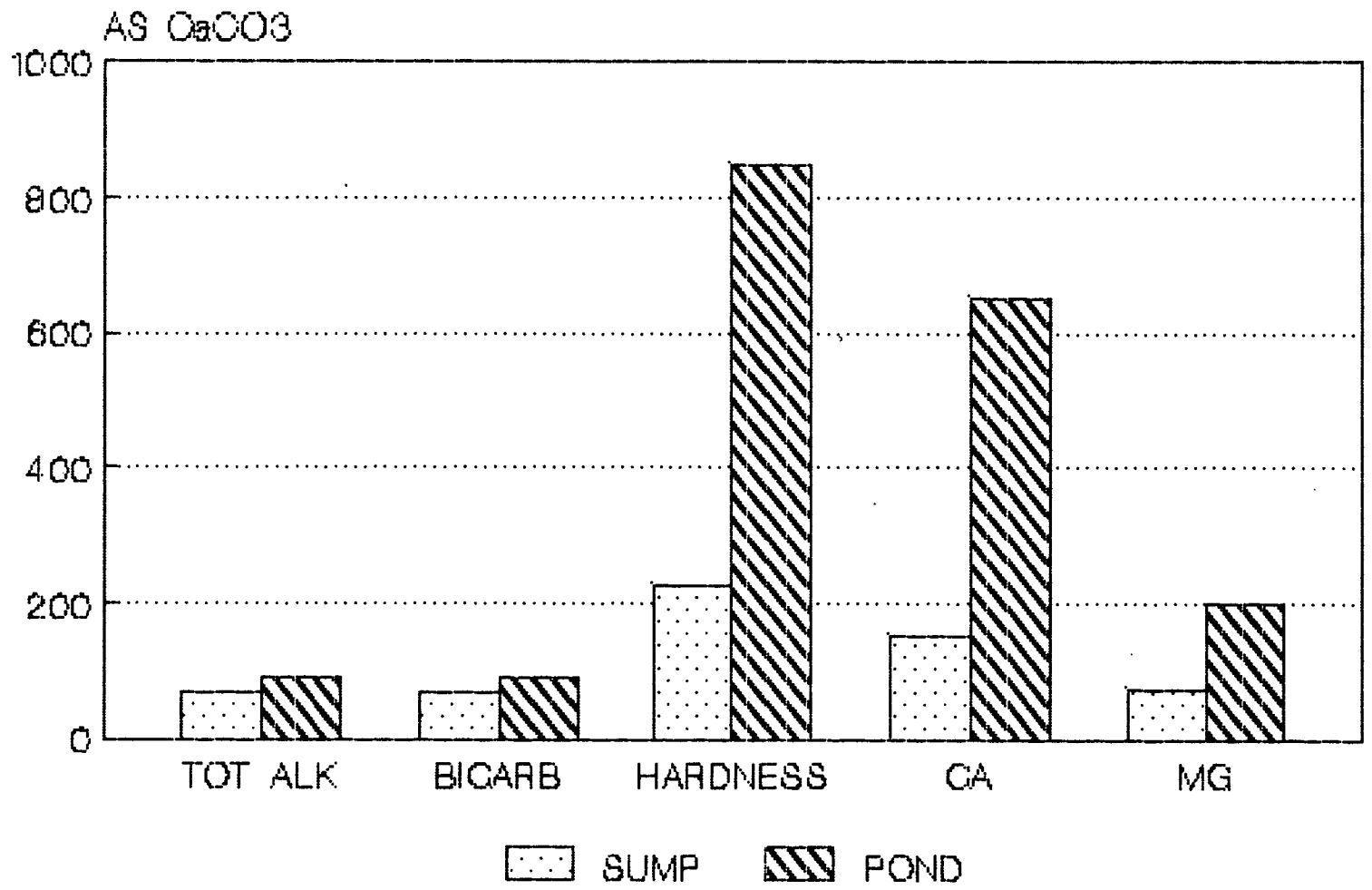


A. N. Pundari
A.N. Pundari

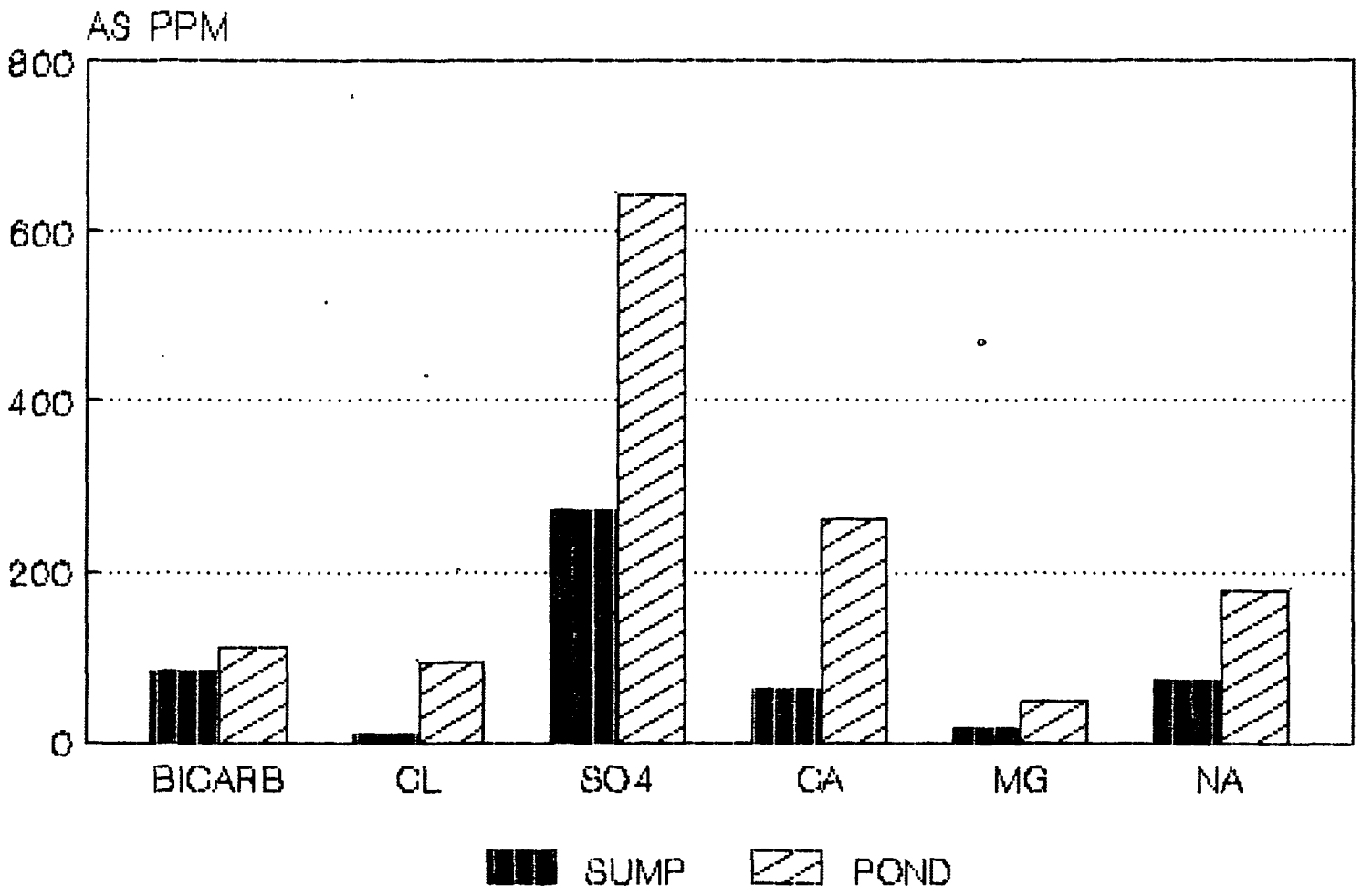
TABLE I - ANALYSES RESULTS

COMPONENT	SUMP CONCENTRATION (IN PPM UNLESS OTHERWISE NOTED)	SUMP AS CaCO3	POND CONCENTRATION (IN PPM UNLESS OTHERWISE NOTED)	POND AS CaCO3
TOTAL ALKALINITY		68		92
BICARBONATE	83	68	112	92
CHLORIDE	8		94	
SULFATE	273		645	
TOTAL HARDNESS		228		850
CALCIUM	62	154	260	650
MAGNESIUM	18	74	49	200
SODIUM	74		176	
TOTAL DISSOLVED SOLIDS	528		1904	
pH	7.2		5.8	
CONDUCTIVITY (MICROMHOS)	680		1960	
NITRATE + NITRITE NITROGEN AS "N"	<0.01		0.01	
COD (MG/L)	15.0		1900	
TOTAL ORGANIC CARBON (MG/L)	3.2		840	

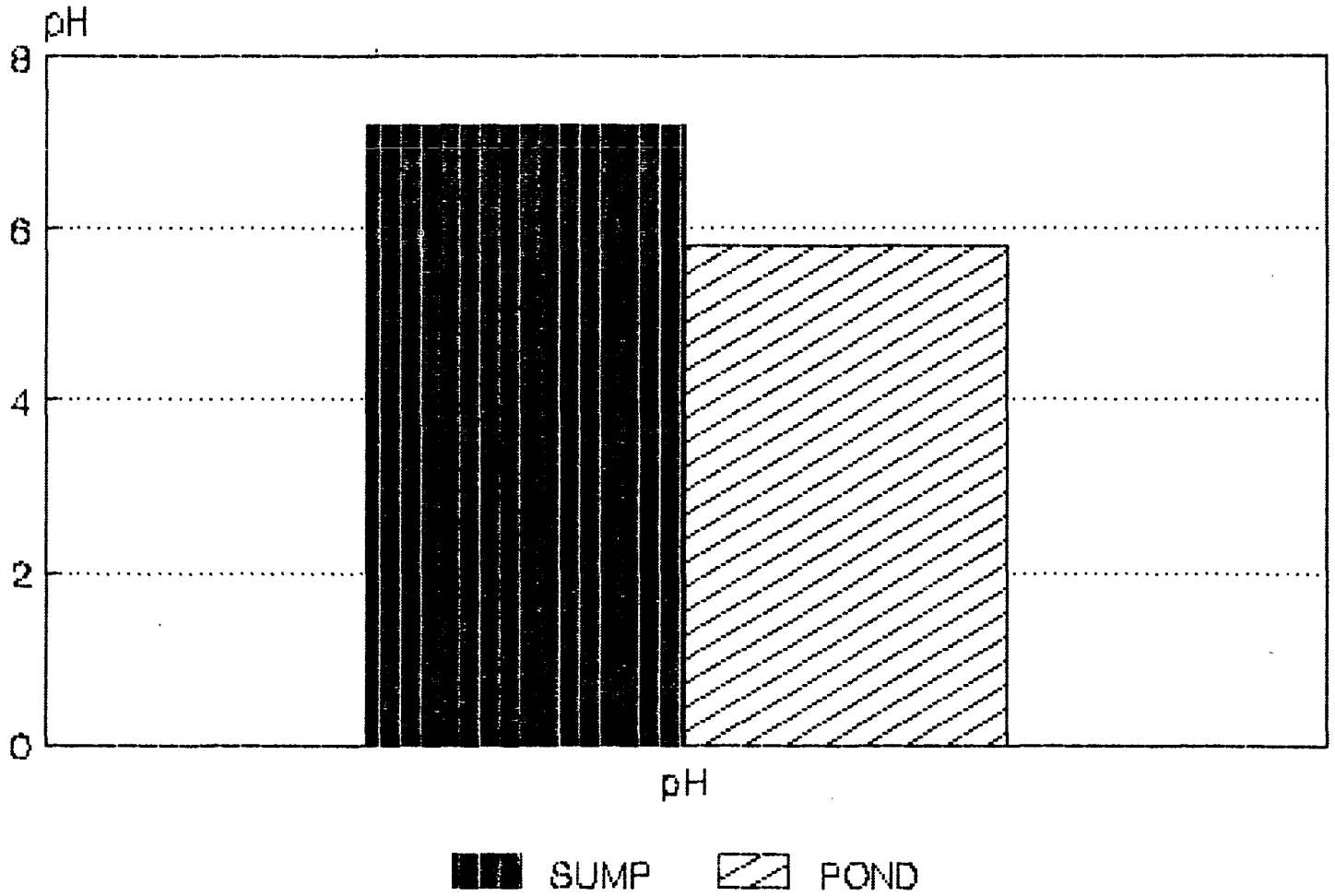
KUTZ WATER SAMPLE
COMPARISON OF SUMP AND POND



KUTZ WATER SAMPLE
COMPARISON OF SUMP AND POND



KUTZ WATER SAMPLE
COMPARISON OF SUMP AND POND



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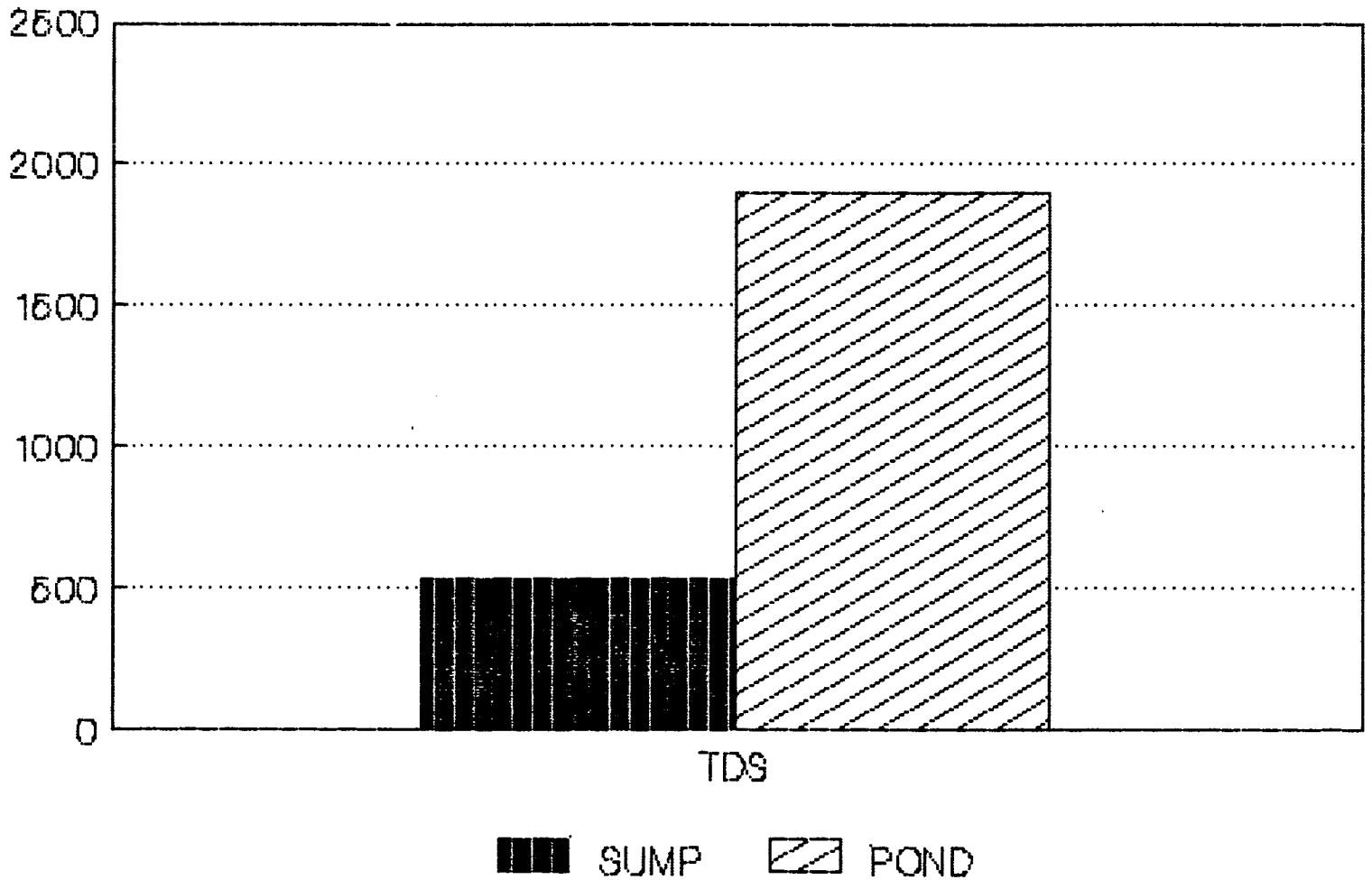
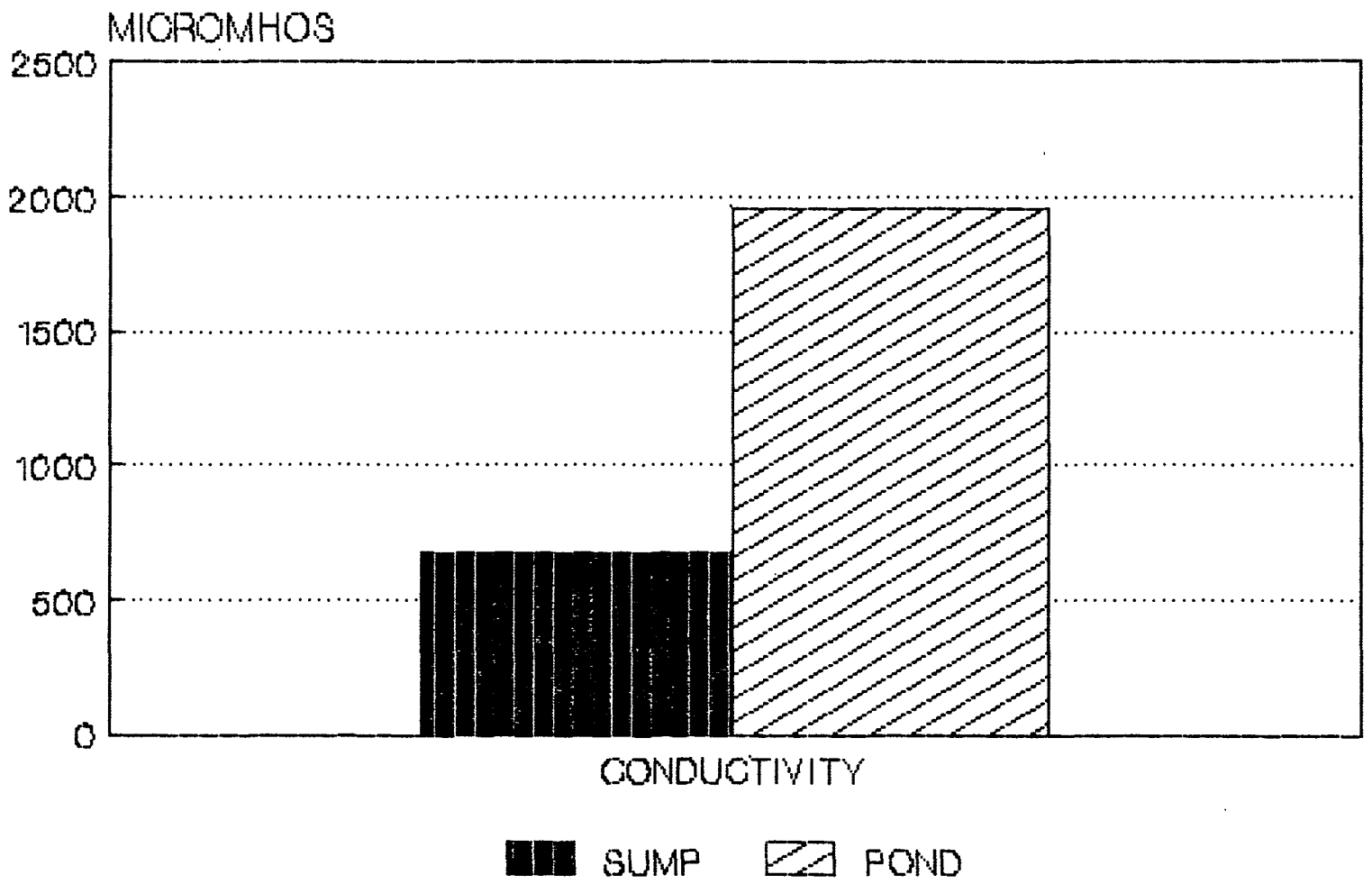


KUTZ WATER SAMPLE

COMPARISON OF SUMP AND POND



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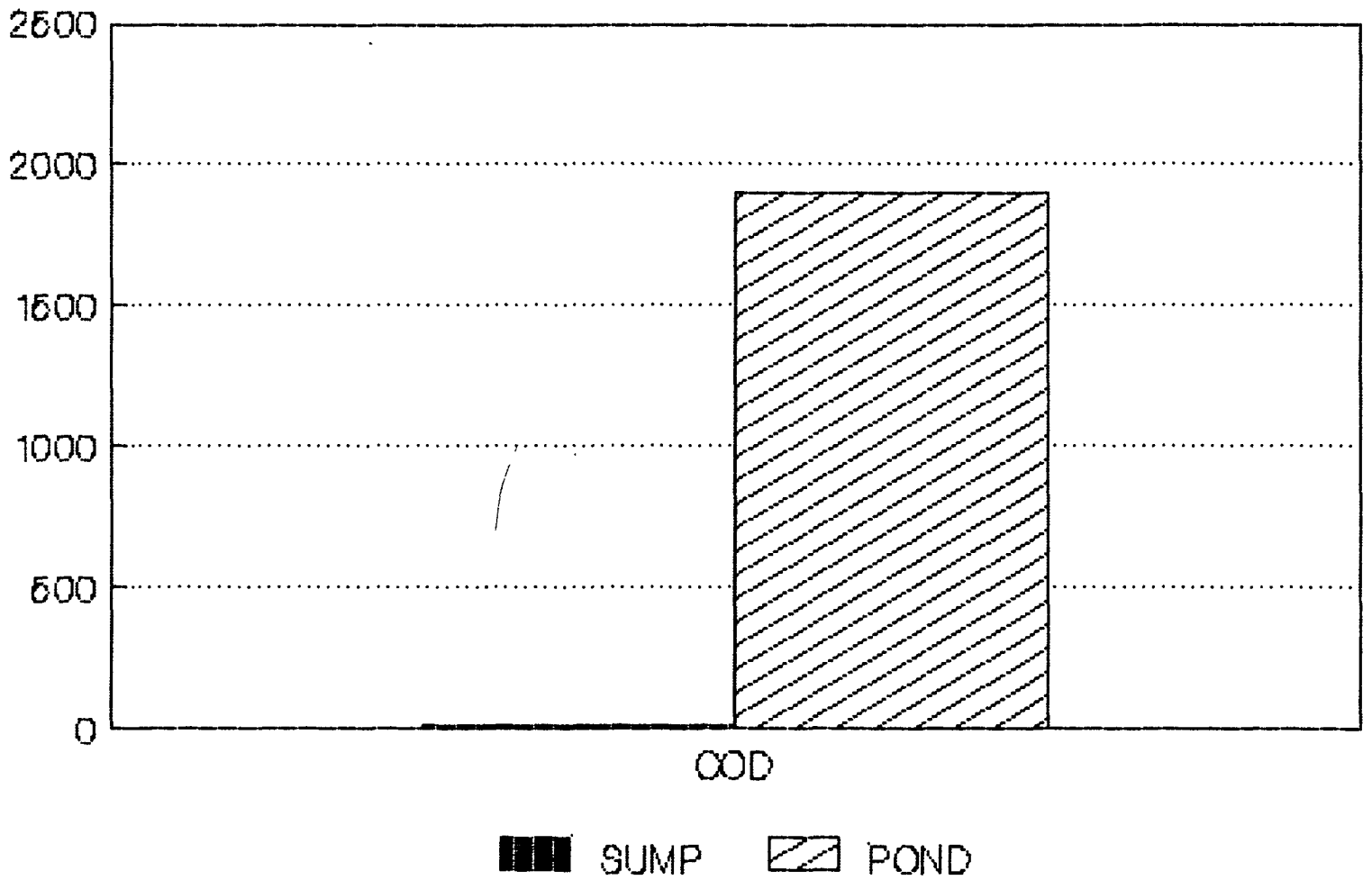
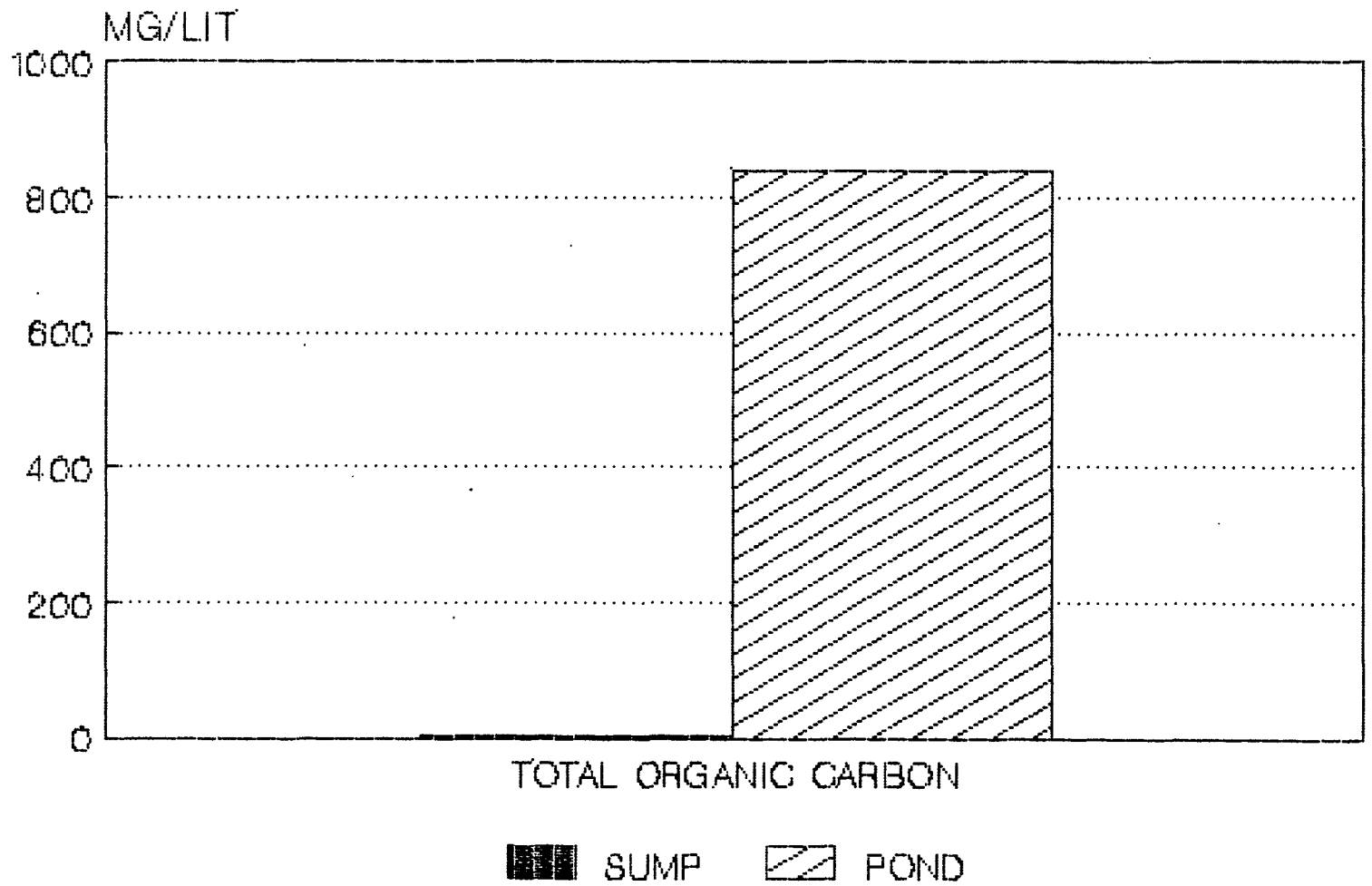


KUTZ WATER SAMPLE

COMPARISON OF SUMP AND POND



STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal	Time 5/26/87	Date 6/1/87
Originating Party		**Other Parties**
Ken Bradley -- EPNG		Jamie Bailey Dave Boyer

Subject Disposal of fluid from dehydrator - Kutz plant

Discussion Samples from dehy show that it needs to be cleaned out. They estimate about 3000 gal of fluid, including soap, need to be disposed of. Dave told him to take it to a pit at the EPNG Waco plant.

Conclusions or Agreements

Distribution file

Signed Jamie Bailey

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

May 14, 1987

Mr. Kenneth E. Beasley III
Compliance Engineer
El Paso Natural Gas Co.
P.O. Box 4990
Farmington, NM 87499

RE: Lined Surface Impoundment Design Kutz Plant (GW-34)

Dear Mr. Beasley:

The OCD has received the design drawings for the above referenced pond. The drawings and the accompanying water balance have been referred to me for review. Based on the drawings submitted, the committments contained in your letter of December 17, 1986, and the information and commitments contained in Section 4 of your original discharge plan application, the design is sufficient to protect ground water and is approved for installation.

Please be advised that this approval does not relieve you of liability should your operation result in actual pollution of surface or ground waters which may be actionable under other laws and/or regulations.

Monitoring will be as stated in your December 17, 1986 letter.

If you have any questions, please do not hesitate to call me at (505) 827-5885.

Sincerely,

Roger Anderson
Environmental Engineer

xc CCD-Aztec

El Paso
Natural Gas Company

P. O. BOX 4990
FARMINGTON, NEW MEXICO 87499
PHONE: 505-325-2841

May 5, 1987

Mr. David G. Boyer
Hydrogeologist/Environmental Bureau Chief
Energy and Minerals Department
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501-2088

Subject: Discharge Plan for El Paso Natural Gas Kutz Plant

Dear Mr. Boyer:

Enclosed are construction drawings for the lined surface impoundment to be installed at the Kutz Plant. In order to allow proper flow from drain piping in the plant it will be necessary to construct the new pond to the south of the existing pond. Space considerations have reduced the size of the installation slightly. A new water balance showing the pond's size to be adequate is attached. Since it is important that we begin material procurement, we would appreciate any comments on the design as soon as practicable. Please feel free to contact me if you require additional information or clarification.

Sincerely Yours,

Kenneth E. Beasley III
Compliance Engineer

KEB:cm

Enclosures

TABLE 4-2
WATER BALANCE FOR PROPOSED
0.60 ACRE EVAPORATION POND
KUTZ DISCHARGE PLAN

MONTH	INPUT (ACRE-FT)	EVAPORATION FEET	EVAPORATION (ACRE-FEET)	DIFFERENCE (ACRE-FEET)	STORAGE (ACRE-FEE
SEPTEMBER	0.19	0.4	0.24	-0.05	-0.05
OCTOBER	0.19	0.23	0.138	0.052	0.052
NOVEMBER	0.22	0.13	0.078	0.142	0.194
DECEMBER	0.22	0.03	0.018	0.202	0.396
JANUARY	0.21	0.04	0.024	0.186	0.582
FEBRUARY	0.21	0.08	0.048	0.162	0.744
MARCH	0.22	0.27	0.162	0.058	0.802
APRIL	0.22	0.48	0.288	-0.068	0.734
MAY	0.19	0.63	0.378	-0.188	0.546
JUNE	0.19	0.7	0.42	-0.23	0.316
JULY	0.19	0.65	0.39	-0.2	0.116
AUGUST	0.19	0.53	0.318	-0.128	-0.012
TOTAL	2.44	4.17	2.502	-0.062	

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

CAR.
Deputy

CERTIFIED MAIL NO. P-456-378-725
RETURN RECEIPT REQUESTED

January 13, 1987

Thomas L. Wright
Senior Attorney
El Paso Natural Gas Company
P.O. Box 1492
El Paso, Texas 79978

RE: Administrative Order #1004

Dear Mr. Wright:

This letter responds to your letter of September 19, 1986 which raised certain issues regarding the above-referenced Administrative Order (AO) and address certain other issues of concern to the Environmental Improvement Division (EID). These issues were subsequently discussed with Mssrs. John Eichelmann, John M. Craig, and Howard Requiam at an October 23, 1986 meeting held at the office in Santa Fe, New Mexico.

Your letter of September 19, 1986 expressed El Paso's opinion that NMEID's "general position" on requesting environmental audit data pursuant to NMEID's authority under §74-4-4.3.A of the New Mexico Hazardous Waste Act (the state equivalent to §3007 of RCRA) was ill-advised because such requests would cause the regulated community to forego the implementation of environmental audit programs.

First of all, as we discussed it is not the EID's "general position" to request environmental audit data from industrial operations. Indeed, this is the only time EID has ever requested such information. Secondly, the EID's request was made under very unique factual circumstances which necessitated that reques

Those factual circumstances are that there is an imminent and substantiated danger to public health and the environment at the Lee Acres landfill site in San Juan County, New Mexico, and that El Paso environmental audit data sheets on other similar sites contain information which was instrumental in classifying similar landfills as hazardous waste facilities. As we discussed, the EID is interested in bringing Lee Acres into the ambit of New Mexico Hazardous Waste Management Regulations in order to hasten the pace of clean up at that site. (As you are aware, BLM, the owner of the Lee Acres landfill is currently attempting to list that site under CERCLA.) It is anticipated that the information contained in El Paso's environmental audit data sheets will assist the EID in establishing regulatory jurisdiction over the Lee Acres site.

In our meeting with Mssrs. Eichelman et al, El Paso expressed its concern that the EID's request for environmental audit data, as contained in administrative order number 1004, was entirely too broad in scope. The EID indicated that submission of copies of the environmental audit data sheets themselves would be an acceptable response to EID's request. EID will agree to forego its requst for "all information and data generated as a result of such audits," provided El Paso submits the requested environmental audit sheets.

The EID is aware that EPA policy states that such data should be requested only under certain circumstances which necessitates receipt of such data. EID wholeheartedly agrees with this policy. However, given the circumstances of the Lee Acres case, the EID feels its request is more than justified in this case. Moreover, although El Paso has previously stated its position that environmental audit data are privileged from disclosure in its response to an earlier request for such information by the United States EPA. El Paso provided EPA with environmental audit data sheets for several of its natural gas plants in New Mexico because of El Paso's "desire to cooperate with EPA. . . " (See attached letter). Hopefully, El Paso will treat the State's request in a similar manner.

The EID has also found El Paso's responses to other EID requests for information to be incomplete in nature. The EID has the following comments and requests for clarification.

El Paso's response to request number 11 that neither methylene chloride nor trichloroethane were purchased or used at the Kutz plant cannot be substantiated on the basis of the data submitted by El Paso. It is unknown whether the commercial solvent, DC-50, contains either or both of these chemical compounds, and further information on the composition of solvents used by El Paso at the Kutz plant is hereby requested. Moreover, the EID's administrative order requested information on all other chlorinated solvents used at the Kutz plant. Please provide the EID with this information as well.

El Paso's response to request number 12 in the EID's administrative order is also incomplete and must be supplemented. In that response, El Paso contends that its wastes are below the ten percent spent solvent mixture threshold. However, the documentation submitted by El Paso in support of this contention is inadequate to support this contention. That documentation states that the solvent Varsol 1 contains eighteen percent aromatics (C_8 and higher). El Paso's analysis of this solvent were apparently limited to benzene (C_6) and toluene (C_7), and does not include the eight carbon solvents ethylbenzene and xylenes. Please submit all data necessary to correct this deficiency and support your claim.

El Paso's response to request number 15 is also inadequate in that it does not include purchase record information for DC-50, a chlorinated blend solvent used at the Kutz plant. Please submit this information to the EID within 30 days of your receipt of this letter.

In closing, the EID would like to thank El Paso for providing the EID with a copy of the Kutz plant ground water discharge plan. This document contains large amounts of useful information. However, it appears that monitoring wells were "jetted" for sampling purposes. If this was the case, El Paso's analyses for volatile organics are virtually meaningless since a vast majority of solvents were undobtedly volatilized by the jetting process. Please provide the EID with any other analytical results on these monitor wells that have been obtained using appropriate sampling methods.

Please contact me at your earliest convenience at (505) 827-2984 and inform me whether an agreeable arrangement for the provision of environmental audit data on El Paso's Kutz plant can be reached. Hopefully, this matter can be resolved amicably.

Sincerely,

DUFF H. WESTBROOK
Division Attorney

Encls.

cc: Carlos Castillo, EPA Region VI
Dennis McQuillan, EID Ground Water Bureau

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501-2088
(505) 827-5800

December 29, 1986

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. John M. Craig, Vice President
El Paso Natural Gas Company
P. O. Box 4990
Farmington, New Mexico 87499

RE: DISCHARGE PLAN GW-34
EL PASO NATURAL GAS COMPANY
KUTZ GAS PLANT

Dear Mr. Craig:

The ground water discharge plan (GW-34) for the El Paso Natural Gas Company's Kutz Gas Plant located in Section 15, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico, is hereby approved.

The approved discharge plan consists of the plan dated October, 1986, and the materials dated December 12, 1986, and December 17, 1986, submitted as supplements to the discharge plan.

The discharge plan was submitted pursuant to Section 3-106 of the New Mexico Water Quality Control Commission Regulations. It is approved pursuant to Section 3-109.F., which provides for possible future amendment of the plan. Please be advised that the approval of this plan does not relieve you of liability should your operation result in actual pollution of surface or ground waters which may be actionable under other laws and/or regulations.

There will be no routine monitoring or reporting requirements other than those specified in the discharge plan.

Please note that Section 3-104 of the regulations requires that "When a plan has been approved, discharges must be consistent with the terms and conditions of the plan." Pursuant to Section 3-107.C. you are required to notify the director of the facility expansion production increase, or process modification that would result in any significant modification in the discharge of water contaminants.

Pursuant to Subsection 3-109.G.4., this plan approval is for a period of five years. This approval will expire December 29, 1991, and you should submit an application for new approval in ample time before that date.

On behalf of the state of the Oil Conservation Division, I wish to thank you (and your staff and/or consultants) for your cooperation during this discharge plan review.

Sincerely,

R. L. STAMETS
Director

RLS:RCA:dp

cc: OCD, Aztec
Ken Beasley, EPNG, Farmington
Henry Van, EPNG, El Paso

El Paso
Natural Gas Company

P. O. BOX 4990
FARMINGTON, NEW MEXICO 87499
PHONE: 505-325-2841

December 17, 1986

Mr. David G. Boyer
Hydrogeologist/Environmental Bureau Chief
Energy and Minerals Department
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501-2088

Subject: Discharge Plan for El Paso Natural Gas Company
Kutz Plant

Dear Mr. Boyer:

This letter contains additional information or changes to items in the Discharge Plan for Kutz Plant which were requested by NMOCD staff members Jamie Bailey and Roger Anderson in telephone conversations on December 16, 1986.

1. The proposed lined pond for the Kutz plant is designed for a normal freeboard of at least 2 feet.

2. Final design of the facility should require approximately 60 days. Bidding and material procurement should require approximately 30 days and construction should require 90 days. Thus, implementation of the Plan should require a total of 180 days from the date of Plan approval.

3. El Paso Natural Gas agrees to inspect the waste disposal facilities monthly. These inspections will include monitoring and recording pond levels, inspection of the pond berms and liners, and checking the leak detection system. Should fluids be detected in the leak detection sump, NMOCD will be notified and the fluids analyzed to ascertain whether the integrity of the upper or lower liner is affected. NMOCD will then be notified of the analytical results and corrective action to be taken.

Please feel free to contact this office should you require additional information or clarification.

Sincerely yours,

Kenneth E. Beasley III
Compliance Engineer

El Paso
Natural Gas Company

P. O. BOX 4990
FARMINGTON, NEW MEXICO 87499
PHONE: 505-325-2841

December 12, 1986

Mr. David G. Boyer
Hydrogeologist/Environmental Bureau Chief
Energy and Minerals Department
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501-2088

Subject: Discharge Plan for El Paso Natural Gas Company
Kutz Plant

Dear Mr. Boyer:

This letter summarizes the piezometer sampling which was conducted at the Kutz Plant on August 9, 1986. These piezometers were sampled to obtain local groundwater data for the Discharge Plan which was submitted to NMOCD on October 21, 1986.

First a SOILTEST Model DR-762A Water Level indicator was used to determine the water level in each casing. The volume of water in the casing was then calculated. The instrument probe and cable was rinsed and wiped after each use to prevent sample contamination.

Water was removed from the casing using a 1-1/4" O.D. X 36" long bailer constructed of type 304 stainless steel with a glass ball check valve and teflon seat. Three casing volumes were evacuated prior to sample collection.

Water was drawn for organic samples first and carefully transferred to standard 25 ml. vials with teflon-lined septa. Approximately 4 additional liters were collected for additional analyses. The bailer was carefully cleaned and rinsed after each use to preclude cross-contamination. The samples were immediately transferred to an ice chest for transport to the Division laboratory in Farmington where they were filtered (the VOA vials were, of course, left unopened and unfiltered). The portion to be

analysed for heavy metals was preserved with HNO_3 to pH<2. The samples were then iced and transported overnight to a contract laboratory for analysis.

Please feel free to contact this office should you require additional information or clarification.

Sincerely yours,

Kenneth E. Beasley III
Compliance Engineer

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

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

(GW-33) El Paso Natural Gas Company, San Juan Gas Processing Plant, John Craig, Vice President, P.O.Box 4990, Farmington, New Mexico 87499, has submitted for approval a ground water discharge plan for its facility located in Section 1, Township 29 North, Range 15 West, NMPM, San Juan County, New Mexico. Approximately 4000 gallons per day of contact process wastewater with a total dissolved solids content of approximately 2700 mg/1 will be discharged to a lined wastewater evaporation pond equipped with a leak detection system. Discharges of non-contact wastewater effluent will be addressed in a different ground water discharge plan. The present discharge plan addresses how spills, leaks, and other discharges to ground water at the plant site will be managed. The ground water most likely to be affected by any discharge to the surface is at a depth ranging from 15 feet to 110 feet, with a total dissolved solids concentration averaging 17500 mg/1.

(GW-34) El Paso Natural Gas Company, Kutz Gas Plant, John Craig, Vice President, P.O. Box 4990, Farmington, New Mexico 87499, has submitted for approval a ground water discharge plan for its facility located in Section 15, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. Approximately 2,178 gallons per day of process and cooling tower water with a total dissolved solids content of approximately 1060 mg/1 will be discharged to a line wastewater evaporation pond equipped with a leak detection system. The discharge plan addresses how spills, leaks and other discharges to ground water at the plant site will be managed. Protectable ground water most likely to be affected by any discharge to the surface is at a depth ranging from 33 feet to 50 feet, with total dissolved solids concentrations ranging from 774 to 3270 mg/1.

(GW-38) New Mexico State University, C.D. Black, Director of Physical Plant Department, Box 3545, Las Cruces, New Mexico 88002, proposes to discharge cooled geothermal water to an unlined pit at its greenhouse facility located in Section 23, Township 23 South, Range 2 East, NMPM, Dona Ana County, New Mexico. Approximately 49,000 gallons per day of cooled geothermal water with a total dissolved solids content of 1775 mg/1 will be discharged. The disposed geothermal water will percolate into the ground and will re-enter the geothermal reservoir. Uppermost ground water is geothermal and is found with a TDS of 1636 at a depth of 284 feet.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and a public hearing may be requested by an 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 the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 12th day of November, 1986. To be

STATE OF NEW MEXICO } ss
County of Bernalillo

THOMAS J. SMITHSON

..... being duly sworn declares and says that he is **NATL ADV. MGR.** of the **Albuquerque Journal**, and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 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 20 day of November, 198 6, and the subsequent consecutive publications on ....., 198.....

Thomas J. Smithson

ICIAL SEAL
NNIE MONTOYA
ARY PUBLIC - STATE OF NEW MEXICO
y Public Filed with Secretary of State
ommission Expires 4-18-90
Annie Montoya

Sworn and subscribed to before me, a Notary Public in and for the County of Bernalillo and State of New Mexico, this 20 day of November, 198 6

PRICE 35.11

Statement to come at end of month.

ACCOUNT NUMBER C 80932

EDJ-15 (R-2/86)

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

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GIVEN Under the Seal of the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 12th day of November, 1986. To be published on or before November 21, 1986.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

R. L. STAMETS
Director

S E A L

El Paso
Natural Gas Company

P. O. BOX 4990
FARMINGTON, NEW MEXICO 87499
PHONE: 505-325-2841

October 21, 1986

Mr. Richard L. Stamets, Director
Energy and Minerals Department
Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87501

RE: Discharge Plan for El Paso Natural Gas Company - Kutz Plant

Dear Mr. Stamets:

Enclosed for your review is the completed Discharge Plan for the El Paso Natural Gas Company Kutz Plant. The plan details proposed methods and techniques to ensure compliance with the New Mexico Water Quality Act and New Mexico Water Quality Control Commission Regulations.

El Paso respectfully requests approval of this plan and will meet with agency personnel whenever necessary should clarification or further information be required. Information requests should be directed to Kenneth E. Beasley, the Compliance Engineer for San Juan Division at (505) 325-2841, extension 2175.

Thank you for your consideration in this matter.

Very truly yours,

EL PASO NATURAL GAS COMPANY

John M. Craig
Vice President

JMC:cm

Enclosure

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

50 YEARS
1935 - 1985

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

June 30, 1986

CERTIFIED MAIL
RETURNED RECEIPT REQUESTED

John C. Bridges
Manager, Environmental Engineering
El Paso Natural Gas Company
P. O. Box 1492
El Paso, Texas 79978

Re: Discharge Plan
El Paso Natural Gas Company
Kutz Plant

Dear Mr. Bridges:

We have received your letter dated June 24, 1986, requesting an extension to October 24, 1986 for the submission of the above referenced discharge plan. The notification for request of a discharge plan is dated March 26, 1986.

Pursuant to Section 3-106 of the New Mexico Water Quality Control Commission Regulations and for good cause shown, El Paso Natural Gas Company is hereby granted an extension until October 24, 1986 for submission of a discharge plan. This extension is granted to allow El Paso to receive and analyze their analytical data, complete site specific investigations and formulate a comprehensive plan.

If you have any questions or comments, please feel free to contact Dave Boyer at (505) 827-5812 or Roger Anderson at (505) 827-5885.

Sincerely,

R. L. STAMETS
Director

RLS/RA/et

xc: Oil Conservation Division - Aztec
Dr. Howard Reiguam - EPNG, El Paso
J. F. Eichelmann Jr, EPNG, Santa Fe

P 612 458 032

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to EL PASO NATURAL GAS COMPANY JOHN C. BRIDGES	
Street and No. P. O. BOX 1492	
P.O., State and ZIP Code EL PASO, TEXAS 79978	
Postage	$
Certified Fee	
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	$
Postmark or Date	

PS Form 3800, Feb. 1982 ★ U.S.G.P.O. 1983-403-517

El Paso
Natural Gas Company

P. O. BOX 1492
EL PASO, TEXAS 79978
PHONE: 915-541-2600

June 24, 1986

Mr. R. L. Stamets
Director
State of New Mexico
Energy and Minerals Department
Oil Conservation Division
P. O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87501

Subject: Discharge Plan for El Paso Natural Gas Company Kutz Plant Request for Extension of Time.

Dear Mr. Stamets:

On March 26, 1986, El Paso Natural Gas Company (El Paso) received a notification from your office requesting a discharge plan for the subject El Paso plant. Since that time, El Paso has been gathering all the necessary information required for the submittal of a plan to demonstrate compliance with the applicable New Mexico Water Quality Control Commission regulations. To date, Mr. David Boyer of your staff has been contacted regularly to apprise him of the status of the Kutz Discharge Plan and to discuss numerous questions that have arisen during the collection of available information.

Currently, El Paso has completed the necessary wastewater sampling; the analytical data characterizing the wastewater are expected by early July. During the rather lengthy process of gathering data required for the plan, several gaps have been identified which cannot be filled with existing information. This is particularly true for the site specific hydrogeology and groundwater quality in the vicinity of the Kutz Plant. Therefore, El Paso must generate these data.

El Paso expects to have completed any drilling to gather these data before the July 26 deadline; however, the analytical data will not be available until sometime after the current due date. Moreover, our San Juan Division Engineering Department is committed to acting on engineering details which evolve as the San Juan River Plant Discharge Plan moves through the approval process. This has directly impacted the preparation of the Kutz Plant Discharge Plan.

Therefore, it is respectfully requested that an extension be granted until October 24, 1986. It remains El Paso's intention to submit a comprehensive plan that demonstrates compliance with the regulations. This requested extension will allow us the opportunity to meet that commitment; should laboratory response time and other work demands allow, we expect to submit the plan well ahead of this deadline.

Thank you for considering this matter.

Very truly yours,

John C. Bridges

John C. Bridges
Manager, Environmental Engineering
Environmental Affairs Department

mts

CERTIFIED/RETURN RECEIPT REQUESTED

El Paso
Natural Gas Company

P. O. BOX 1492
EL PASO, TEXAS 79978
PHONE: 915-541-2600

May 5, 1986

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

Reference: Underground Storage Tank Notifications

Dear Sirs:

Enclosed please find copies of completed underground storage tank (UST) notifications for those tanks located at El Paso Natural Gas (El Paso) locations in New Mexico. Only those forms containing information on tanks related to activities associated with the exploration, development, or production of oil, gas or geothermal resources are included.

As you are well aware, one of the categories of tanks which are not required to be registered and are excluded according to specific statutory language are those at pipeline facilities (including gathring lines) regulated under the Natural Gas Pipeline Safety Act of 1968.

On the advice of El Paso's Legal Counsel, notification forms have been completed for all tanks which might otherwise be subject to the notification requirements and have been sent to the appropriate office of the Department of Transportation (DOT). DOT regulates all facilities which are used in the transportation of gas. All the above mentioned tanks meet the definition of equipment used in the transportation of gas. As a courtesy, copies of the completed forms being sent to DOT are enclosed.

Please note that each form includes the following disclaimer:

> "The tank for which this registration is made is excluded from the registration requirement because it is a pipeline facility regulated under the Natural Gas Pipeline Safety Act of 1968. El Paso Natural Gas Company is providing this form to DOT as a courtesy with copies to the appropriate state agency."

Should you need further information please contact Howard Reiquam, Director of Environmental Affairs Department or myself at (915)541-3292 or 541-2869, respectively.

Very truly yours,

V.E. Dearhart for JCB

John C. Bridges
Manager, Environmental Engineering
Environmental Affairs Department

JCB:gb

Notification for Underground Storage Tanks

FORM APPROVED
OMB NO. 2050-0049
APPROVAL EXPIRES 8-30-88

FOR TANKS IN NM

RETURN COMPLETED FORM TO

New Mexico Environmental Improvement Division
Ground Water/Hazardous Waste Bureau
P.O. Box 968 (505) 827-2933
Santa Fe, NM 87504 (505) 827-2918

STATE USE ONLY

I.D. Number

Date Received

GENERAL INFORMATION

Notification is required by Federal law for all underground tanks that have been used to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1986, or that are brought into use after May 8, 1986. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act, (RCRA), as amended.

The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records, or, in the absence of such records, your knowledge, belief, or recollection.

Who Must Notify? Section 9002 of RCRA, as amended, requires that, unless exempted, owners of underground tanks that store regulated substances must notify designated State or local agencies of the existence of their tanks. Owner means—

(a) in the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances, and

(b) in the case of any underground storage tank in use before November 8, 1984, but no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use.

What Tanks Are Included? Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 10% or more beneath the ground. Some examples are underground tanks storing: 1. gasoline, used oil, or diesel fuel, and 2. industrial solvents, pesticides, herbicides or fumigants.

What Tanks Are Excluded? Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are:

1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;
2. tanks used for storing heating oil for consumptive use on the premises where stored;
3. septic tanks;
4. pipeline facilities (including gathering lines) regulated under the Natural Gas Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1979, or which is an intrastate pipeline facility regulated under State laws;
5. surface impoundments, pits, ponds, or lagoons;
6. storm water or waste water collection systems;
7. flow-through process tanks;
8. liquid traps or associated gathering lines directly related to oil or gas production and gathering operations;
9. storage tanks situated in an underground area (such as a basement, cellar, mineworking, drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

What Substances Are Covered? The notification requirements apply to underground storage tanks that contain regulated substances. This includes any substance defined as hazardous in section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute).

Where To Notify? Completed notification forms should be sent to the address given at the top of this page.

When To Notify? 1. Owners of underground storage tanks in use or that have been taken out of operation after January 1, 1974, but still in the ground, must notify by May 8, 1986. **2.** Owners who bring underground storage tanks into use after May 8, 1986, must notify within 30 days of bringing the tanks into use.

Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed $10,000 for each tank for which notification is not given or for which false information is submitted.

INSTRUCTIONS

Please type or print in ink all items except "signature" in Section V. **This form must by completed for each location containing underground storage tanks.** If more than 5 tanks are owned at this location, photocopy the reverse side, and staple continuation sheets to this form.

Indicate number of continuation sheets attached: 1 *

I. OWNERSHIP OF TANK(S)

Owner Name (Corporation, Individual, Public Agency, or Other Entity)
El Paso Natural Gas Company

Street Address
P. O. Box 1492

County
El Paso

City: El Paso | State: Texas | ZIP Code: 79978

Area Code: 915 | Phone Number: 541-2879

Type of Owner (*Mark all that apply* ☒)

☐ Current ☐ State or Local Gov't ☒ Private or Corporate
☐ Former ☐ Federal Gov't (GSA facility I.D. no. _____) ☐ Ownership uncertain

II. LOCATION OF TANK(S)

(If same as Section 1, mark box here ☐)

Facility Name or Company Site Identifier, as applicable
Kutz Field Plant

Street Address or State Road, as applicable
9 mi E of Farmington; 1 1/4 mi N SH17

County
San Juan

City (nearest): Farmington | State: N M | ZIP Code: 87499

Indicate number of tanks at this location: 1

Mark box here if tank(s) are located on land within an Indian reservation or on other Indian trust lands ☐

III. CONTACT PERSON AT TANK LOCATION

Name (If same as Section I, mark box here ☒) | Job Title | Area Code | Phone Number

IV. TYPE OF NOTIFICATION

☐ Mark box here only if this is an amended or subsequent notification for this location.

V. CERTIFICATION (Read and sign after completing Section VI.)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner or owner's authorized representative	Signature	Date Signed
John C. Bridges	John C Bridges	5/13/86

CONTINUE ON REVERSE SIDE

Owner Name (from Section I) El Paso Natural Gas Location (from Section II) Kutz Field Pit Page No. 2 of 3 Pages

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS *(Complete for each tank at this location.)*

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)		Tank No. 5201-1 *	Tank No.	Tank No.	Tank No.	Tank No.
A. Status of Tank *(Mark all that apply ☒)*	Currently in Use	X				
	Temporarily Out of Use					
	Permanently Out of Use					
	Brought into Use after 5/8/86					
B. Estimated Age (Years)		2				
C. Estimated Total Capacity (Gallons)		2310				
D. Material of Construction *(Mark one ☒)*	Steel					
	Concrete					
	Fiberglass Reinforced Plastic	X				
	Unknown					
	Other, Please Specify					
E. Internal Protection *(Mark all that apply ☒)*	Cathodic Protection					
	Interior Lining (e.g., epoxy resins)	X				
	None					
	Unknown					
	Other, Please Specify					
F. External Protection *(Mark all that apply ☒)*	Cathodic Protection					
	Painted (e.g., asphaltic)					
	Fiberglass Reinforced Plastic Coated					
	None	X				
	Unknown					
	Other, Please Specify					
G. Piping *(Mark all that apply ☒)*	Bare Steel	X				
	Galvanized Steel					
	Fiberglass Reinforced Plastic					
	Cathodically Protected					
	Unknown					
	Other, Please Specify					
H. Substance Currently or Last Stored in Greatest Quantity by Volume *(Mark all that apply ☒)*	**a. Empty**					
	b. Petroleum					
	Diesel					
	Kerosene					
	Gasoline (including alcohol blends)					
	Used Oil					
	Other, Please Specify	Scrubber Liq				
	c. Hazardous Substance					
	Please Indicate Name of Principal CERCLA Substance					
	OR Chemical Abstract Service (CAS) No.					
	Mark box ☒ if tank stores a mixture of substances					
	d. Unknown					
I. Additional Information (for tanks permanently taken out of service)	**a.** Estimated date last used (mo/yr)	/	/	/	/	/
	b. Estimated quantity of substance remaining (gal.)					
	c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)					

EPA Form 7530-1 (11-85) Reverse

* See Attached pg 3 of 3

Kutz Field Plant

*Disclaimer

The tank for which this registration is made is excluded from the registration requirement because it is a pipeline facility regulated under the Natural Gas Pipeline Safety Act of 1968. El Paso Natural Gas Company is providing this form to DOT as a courtesy with copies to the appropriate state agency.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

50 YEARS
1935 - 1985

TONEY ANAYA
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

March 26, 1986

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dr. Howard Reiquam
Director, Environmental Affairs
El Paso Natural Gas Co.
P. O. Box 1492
El Paso, Texas 79978

Dear Dr. Reiquam:

Under the provisions of the Water Quality Control Commission (WQCC), you are hereby notified that the filing of a discharge plan is required for your existing Kutz Compressor Station located in the SW/4 of Section 15, Township 29 North, Range 12 West, in San Juan County, New Mexico.

This notification of discharge plan requirement is pursuant to Sections 3-104 and 3-106 of the WQCC regulations. The discharge plan defined in Section 1-101.P of the WQCC Regulations, should cover all discharges of effluent or leachate at the plant site or adjacent to the plant site. A copy of the regulations is enclosed for your convenience. Also enclosed is a copy of an OCD guide to the preparation of discharge plans for gas processing plants. Three copies of your discharge plan should be submitted for review purposes.

Section 3-106.A. of the regulations requires a submittal of the discharge plan within 120 days of receipt of this notice unless an extension of this time period is sought and approved for good cause. Section 3-106.A. also allows the discharge to continue without an approved discharge plan until 240 days after written notification by the director that a discharge plan is required. An extension of this time may be sought and approved for good cause.

If there are any questions on this matter, please feel free to call David Boyer at (505) 827-5812 as he and his staff have the assigned responsibility for review of all discharge plans.

Sincerely,

R. L STAMETS
Director

RLS:DGB:dp

Enclosures

cc: F. Chavez, OCD, Aztec
J. Eichelmann, Jr., EPNG, Santa Fe

Sec. 15 - 12W

Date 8-6-85 BAILEY/BACA
Plant Visit: EPNG Kutz Station
Operation: Compression & dehydration (30-40 MMCF/D)
Wastewater Effluent Sources:
- Cooling Tower
- Boiler (Winter only)
- Dehydrator (Some vented off as vapor)
- Office Septic Tank

Note: River Water Supply
H_2SO_4 Cooling Tower pH Control
phosphates, toxemes

Disposal of water to pit via underground steel pipes.

6" open drain

Pit approx 20' x 60'

1 people around the clock (lala)

Pit has liquid no where near capacity
Very Silty around pit

Low flowrate to pit but not blowing down at the time

Scrubber hydrocarbons go to steel tank. Water is vacuumed from this tank every 2-3 mos. Don't know where it is disposed. EPNG hauls the water. The water goes from steel tank to below grade fiberglass tank. From this tank the fluid is vacuumed off. Fiberglass tank has approx 55 BBL Capacity 8' dia. X 6' Long.

Potential for surface drainage to plant.

Solid waste to county landfill
EPNG hauls to landfill.

DISCHARGE PLAN FOR EL PASO NATURAL GAS COMPANY'S KUTZ PLANT

SAN JUAN COUNTY, NEW MEXICO

GW-034

CLOSED OUT

2-19-96

El Paso Natural Gas Company

OCTOBER, 1986

El Paso
Natural Gas Company

P. O. BOX 4990
FARMINGTON, NEW MEXICO 87499
PHONE: 505-325-2841

October 21, 1986

Mr. Richard L. Stamets, Director
Energy and Minerals Department
Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87501

RE: Discharge Plan for El Paso Natural Gas Company - Kutz Plant

Dear Mr. Stamets:

Enclosed for your review is the completed Discharge Plan for the El Paso Natural Gas Company Kutz Plant. The plan details proposed methods and techniques to ensure compliance with the New Mexico Water Quality Act and New Mexico Water Quality Control Commission Regulations.

El Paso respectfully requests approval of this plan and will meet with agency personnel whenever necessary should clarification or further information be required. Information requests should be directed to Kenneth E. Beasley, the Compliance Engineer for San Juan Division at (505) 325-2841, extension 2175.

Thank you for your consideration in this matter.

Very truly yours,

EL PASO NATURAL GAS COMPANY

John M. Craig
Vice President

JMC:cm

Enclosure

DISCHARGE PLAN APPLICATION

FOR

EL PASO NATURAL GAS COMPANY

KUTZ PLANT

October, 1986

Submitted to:

NEW MEXICO OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87501

AFFIRMATION:

"I hereby certify that I am familiar with the information contained on and submitted with this application and that such information is true, accurate and complete to the best of my knowledge and belief."

Signature
John M. Craig
Vice President

October 16, 1986
Date

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF PLATES

1.0 EXECUTIVE SUMMARY

El Paso Natural Gas Company, P.O. Box 4990, Farmington, New Mexico 87499, proposes to discharge approximately 795,000 gallons per year of wastewater to an evaporation pond. The wastewater is generated at the Kutz Plant which is located in Section 15, T-29-N, R-12-W, San Juan County, New Mexico. Approximately 90% of the wastewater is blowdown from the Plant's cooling towers, boilers, water treatment facility and domestic sewage (non-contact wastewaters). Non-contact wastewater results from process which do not contact hydrocarbons. Wastewater in the evaporation pond contains a TDS concentration of approximately 1,060 mg/l.

Presently, the Kutz Plant discharges commingled contact/non-contact wastewater into an unlined evaporation pond. EPNG proposes to modify its existing wastewater management system to provide additional environmental protection by installing a lined wastewater evaporation pond. The pond will be equipped with a leak-detection/leachate collection system to detect and locate potential leaks and control accumulation of leachate which might cause structural damage to the impoundment.

An on-site sampling and analysis program was conducted to chemically characterize wastestreams for all appropriate WQCC parameters. Three piezometers were installed to obtain site hydrogeologic and local groundwater quality data. The average TDS and sulfate content of the natural groundwater is 2,048 mg/l and 1,115 mg/l, respectively. This indicates that this groundwater is not suitable for domestic, industrial or irrigation uses.

EPNG is wholly committed to carrying out sound disposal practices and to this end submits the plan outlining the proposed procedures. Likewise, EPNG is committed to cooperating fully with NMOCD in honoring requests for additional information or clarification of existing information related to the Discharge Plan.

2.0 GENERAL INFORMATION

2.1 NAME OF DISCHARGER/LEGALLY RESPONSIBLE PARTY

All correspondence regarding this discharge plan should be sent to EPNG San Juan Division headquarters at the address below:

John M. Craig
Vice President
San Juan Division
El Paso Natural Gas Company
P. O. Box 4990
Farmington, NM 87499
(505) 325-2841

2.2 LOCAL REPRESENTATIVE OR CONTACT

A copy of all correspondence and all questions should be directed to the San Juan Division Compliance Engineer:

Kenneth E. Beasley
El Paso Natural Gas Company
San Juan Division
P. O. Box 4990
Farmington, NM 87499
(505) 325-2841

EPNG requests that copies of correspondence also be sent to:

Environmental Affairs
El Paso Natural Gas Company
P. O. Box 1492
El Paso, TX 79978
ATTN: H. Van
(915) 541-2832

2.3 LOCATION OF DISCHARGE

The Kutz Plant is located in the E/2 SW/4, Section 15, T-29-N, R-12-W, San Juan County, New Mexico, approximately 9 miles east of Farmington, New Mexico, and 1-1/4 miles north of U.S. Highway No. 64 (Figure 2-1). An aerial photographic base map of the facility is included as Plate 1 (all plates are found in map pockets in Appendix E).

2.4 LOCAL LAND USE

The Kutz Plant is bounded by public lands on the east and west in Section 15 and on the south in Section 29, T-29- N, R-12-W. Six tracts of privately-owned land have been identified north and northeast of the plant property in Section 15.

2.5 DESCRIPTION OF OPERATIONS

El Paso Natural Gas Company's Kutz Plant is engaged in the compression and dehydration of natural gas. The plant has a design capacity of approximately 46 million cubic feet per day.

Low pressure raw inlet gas can enter Kutz Plant from south of the San Juan River through the 20-inch Trunk 3A at an inlet pressure ranging from 70 to 100 psia, from northeast of the plant through the 16-inch Trunk 3B also at a pressure less than 100 psia and from the north through the 4-inch Trunk 3B-59 at pressures between 70-100 psia. Gas compression facilities consist of four Cooper-Bessemer GMV-8-TF engines of 733 HP each ("A" plant) and one 550 HP Ingersoll-Rand 10-SVGA-2 engine ("B" plant). All engines drive two-stage natural gas compressors.

Compressed gas is first cooled in heat exchangers with cooling tower water as the cooling medium, routed through scrubbers to remove condensed liquids and dehydrated to remove water vapor in a triethylene glycol dehydrator. The plant treated gas discharge enters El Paso's "Blanco Fruitland" pipeline at approximately 250-300 psia and flows to the suction of El Paso's Blanco, Chaco or San Juan River Plants.

EL PASO NATURAL GAS
KUTZ FIELD PLANT

TO FARMINGTON

TO BLOOMFIELD

SAN JUAN

DITCH

CITIZENS

Substation

Drill Hole

Gas Wells

Gas Well

Oil Well

Oil Wells

Fairground

Riverside Ch

Desert Hills Ch

BM 5411

BM 5478

NORTH

13°

0 2000

FEET

Sec. 15, T-29-N, R-12-W

El Paso NATURAL GAS COMPANY

LOCATION MAP OF EPNG
KUTZ FIELD PLANT

SCALE	DWG. NO.	REV.
CGC NO. KUT1	FIGURE 2-1	

Additional facilities at Kutz consist of a standby 100 KW generator and one 15 psia boiler which is used for space heating during the winter months. Raw water for domestic and industrial use is supplied by a 4-inch pipeline from El Paso's Blanco Plant.

Based on operating data for 1985, Kutz Plant discharged a daily average volume of 37.5 MMCF/day, approximately 82% of capacity. An additional 0.55 MMCF/day was consumed on-site as compressor, dehydration and space-heating fuel. The block flow diagram (Plate 2) summarizes the typical plant material balance.

2.6 REGULATORY INDEX

Table 2-1 presents the regulatory index. This table provides a cross reference between WQCC Regulations and this discharge plan.

3.0 EFFLUENT SOURCES, CHARACTERISTICS AND DISPOSAL

3.1 WASTE SOURCES, QUANTITY AND FLOW CHARACTERISTICS

The Kutz Plant produces approximately 795,000 gallons of process wastewater per year. Wastewater volumes in 1987 will be reduced by about 3% due to the closing of the camp in August of 1986. This wastewater is presently discharged to one unlined evaporation pond with a surface area of 0.26 acres. Sewage effluent characterization from the camp pond is not part of this discharge plan since it was not comingled with other plant wastewaters. A materials balance for the plant based on 1985 operating data is shown in Plate 2. Wastewater sources for process and non-process waste streams are shown in Figure 2-2. Note that the domestic water consumption, as well as the total water input to the plant, have been reduced to reflect camp closure. Thus, the two input figures will not agree with the balance on Plate 2.

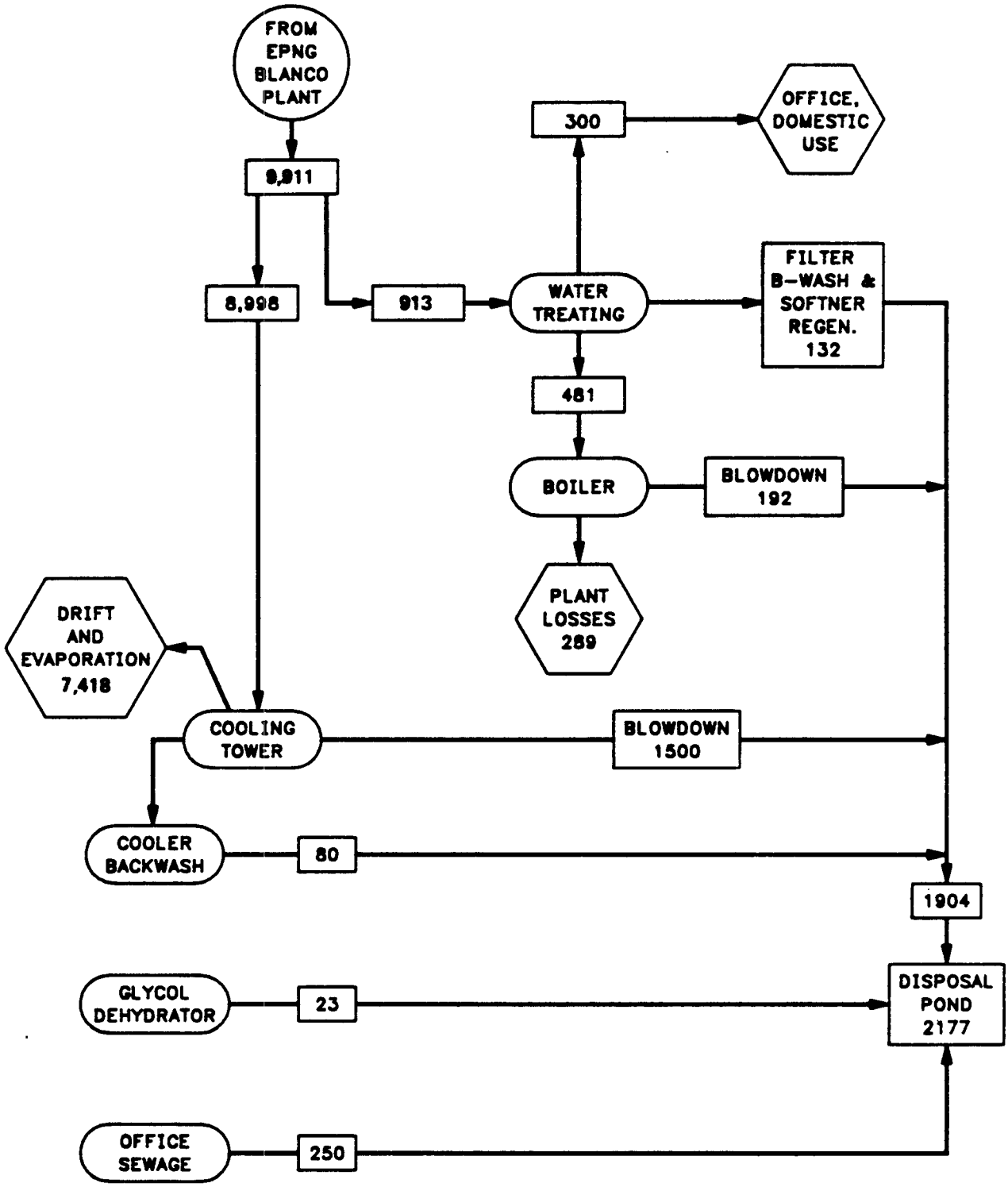
In the following subsections, unit processes are classified according to wastewater production. Average daily flow rates for these processes are given in gallons per day (gpd). However, some of them generate wastewater only on an intermittent basis. The approximate frequency of discharge will be noted for these processes.

Processes which produce no wastewater are considered "dry" (D). A process which produces wastewater due to contact with hydrocarbons is a "contact" process (C), and those processes which do not contact hydrocarbons are "non-contact" (NC) waste streams.

TABLE 2-1
REGULATORY INDEX

WQCC REGULATION REQUIRED IN DISCHARGE PLAN	SECTION IN DISCHARGE PLAN
1-201	1.0 , 2.0
1-202	3.1.6
1-203	3.3.4
3-106 C.1	3.2
3-106 C.2	2.3, FIG. 2-1, 5.3.2
3-106 C.3	1.0, 5.3
3-106 C.4	5.4
3-106 C.5	4.3
3-106 C.6	5.1
3-106 C.7	7.0
3-107	6.0
3-108 B	1.0

NMOCD REGULATION REQUIRED IN DISCHARGE PLAN	SECTION IN DISCHARGE PLAN
116	3.3.4



El Paso Natural Gas Company

FIGURE 2–2

SOURCES AND QUANTITIES
OF WASTEWATERS
KUTZ FIELD PLANT

No wastewater is generated by compression.

Contact wastewater is generated by:

PROCESS	SUBSECTION
Glycol Dehydration (C)	3.1.2

Non-Contact wastewater is generated by:

PROCESS	SUBSECTION
Water Treatment	3.1.3
Boiler	3.1.4
Cooling Tower	3.1.5
Domestic Sewage	3.1.6
Storm Water	3.1.7
Gas Coolers	3.1.8

3.1.1 COMPRESSORS (D)

Gas is compressed by reciprocating compressors. As previously stated no wastewater is produced by these units.

3.1.2 GLYCOL DEHYDRATION (C)

In order to meet contractual water content requirements, glycol dehydration is used to remove any remaining water vapor before gas enters the transmission line. This unit produces an average of 23 gpd of wastewater which is discharged to the disposal pond.

3.1.3 WATER TREATMENT (NC)

Water for the Kutz Compressor Station is received from the Blanco Plant reservoir and treated by the addition of Cat Floc T and filtration for domestic and cooling tower use and ion exchange "softening" to produce boiler feedwater and makeup for oil and jacket cooling water. Wastewater is produced by filter backwash, approximately 130 gpd, and ion exchange regeneration, approximately 1.5 gpd, and is discharged through the 6-inch plant drain to the disposal pond. Filters are backwashed once per week and the softener is regenerated twice per year.

3.1.4 BOILER (NC)

The boiler produces steam for space heating and is operated only during the winter months, generally November through March or April. In order to maintain proper boiler operation, some boiler water is blown down and replaced with boiler make up water. This process prevents an increase in the total dissolved solids (TDS) of the boiler water, which could lead to scale deposition on/or corrosion of the internal boiler components. Approximately 192 gpd of boiler blowdown water is produced and discharged through a 2-inch line to the evaporation pond during the winter months.

3.1.5 COOLING TOWER (NC)

Evaporative cooling tower water is used to cool compressed pipeline gas for transportation, and for other general cooling of process units. Cooling tower water is recycled as much as possible, but some is blown down and replaced to prevent TDS buildup. Of the 8,998 gpd of make up, 1,500 gallons are blown down to the wastewater system and 7,498 gallons are lost daily to evaporation. The cooling tower blowdown flows through a 2-inch steel underground line to the 6-inch plant drain and then to the disposal pond.

3.1.6 DOMESTIC SEWAGE (NC)

About 250 gpd generated from the office restroom is discharged to a septic tank and 6-inch vitrous tile sewer line leading to the disposal pond. As previously stated, sewage from the camp is handled in a separate collection and disposal system which is not within the provisions required by an NMOCD discharge plan.

3.1.7 STORM WATER (NC)

The Kutz Plant does not have a storm runoff collection system. Storm water runoff travels over the Station's property surface toward the southeast (Plate 1).

3.1.8. GAS COOLERS (NC)

Wastewater from the weekly backwash of the two gas coolers flows through a 4-inch steel line which connects to the 6-inch plant drain discharging to the disposal pond. Cooler backwash produces approximately 80 gpd of wastewater.

3.1.9 WASTEWATER ANALYSIS

Waste streams and the disposal pond at the Kutz Plant were sampled in June, 1986. The analyses are shown in Table 3-1. Since the boiler was not in operation at the time of sampling, no data was collected for the boiler blowdown. It is anticipated that a sample will be collected during the next period of opera tion.

3.1.10 SEASONAL VARIATIONS IN WASTEWATER QUANTITY

Cooling tower makeup requirements at Kutz are seasonal, with demand peaking in the summer months and falling off during the winter. Accordingly, cooling tower blowdown is also seasonal. Since blowdown from the cooling tower produces approximately 547,500 gallons per year or 68% of total wastewater, seasonal variations in operation of the cooling tower have a significant impact on wastewater production. Monthly cooling tower makeup rates are summarized in Table 3-2.

As indicated previously, operation of the space-heating boiler is also seasonal. The boiler is normally placed into operation at the beginning of November and runs until March or early April, depending on the weather. Impact of boiler operation on total wastewater production, however, is negligible since boiler blow-down represents less than 9.0% on the average of the total ef-fluent.

Dehydrator and scrubber blowdowns will vary somewhat with the season but are mostly a function of gas throughput. During 1985, natural gas volumes discharged from Kutz Plant ranged from a low in April of 34.0 MMCF/day to a high in December of 41.2 MMCF/day. The monthly average for 1985 was 37.5 MMCF/day.

3.2 SCRUBBER/SEPARATORS

The inlet gas is treated by scrubber/separator units which dis-charge approximately 56 gallons per day (gpd) of liquids through a pressurized drain to the scrubber liquids tank where the water is separated from the hydrocarbons . The hydrocarbons are collec ted and trucked to the EPNG Blanco Plant for fractionation. The water and some oil is collected in a below-grade fiberglass tank. When this tank is full the fluids (water and traces of hydrocarbons) are taken to Blanco Plant for final recovery of hydrocarbons.

TABLE 3-1
KUTZ PLANT WASTEWATER ANALYSES

PARAMETERS	FILTER BACKWASH WATER J86-059 6/14/86	COOLER BACKWASH WATER J86-060 6/14/86	DEHYDRATOR WATER J86-061 6/14/86	SOFTENER REGENERATION WATER J86-062 6/14/86	DISPOSAL POND WATER J86-065 6/14/86	COOLING TWR. BASIN WATER J86-066 6/14/86
COD	10.4	47.0	74,900	20,700	214	49.7
NITRATE-N	0.17	<0.01	0.1	0.1	1.74	<0.1
OIL AND GREASE	<1.0	<1.0	1,320	<1.0	<1.0	<1.0
TOC	3	22.0	3,880	--	62	20
O-PHOSPHATE	<0.1	0.04	<0.1	<0.1	<0.1	0.38
CYANIDE (TOTAL)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
PHENOLICS	<0.05	<0.05	1.87	<0.05	<0.05	<0.05
ARSENIC	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
BARIUM	<0.5	<0.05	<0.5	4.79	<0.5	<0.5
CADMIUM	<0.01	<0.01	<0.01	0.27	<0.01	<0.01
CALCIUM	41.4	219	2.05	5,870	114	212
CHROMIUM (TOTAL)	<0.01	0.02	<0.01	0.14	0.06	0.03
COPPER	<0.01	0.05	0.01	0.28	0.01	0.05
HARDNESS (AS CACO3)	130	719	6.56	16,800	352	694
IRON	--	--	--	--	--	0.40
LEAD	0.06	0.08	<0.05	1.50	0.08	0.07
MAGNESIUM	6.34	41.8	0.35	513	16.2	40
MANGANESE	0.01	0.06	0.15	0.48	0.10	0.05
MERCURY	<0.001	<0.001	0.001	<0.001	<0.001	<0.001
POTASSIUM	1.62	32.5	0.33	61.2	17.4	33
SELENIUM	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SILVER	<0.01	<0.01	<0.01	0.20	<0.01	<0.01
SODIUM	10.3	128	1.56	37,000	128	121
ZINC	0.07	8.44	0.47	7.07	0.20	8.02
T. ALKALINITY (AS CACO3)	81.0	54.0	9.0	58.5	94.5	76.5
BICARBONATE ALKTY.(AS HCO3)	98.8	65.9	11.0	71.4	115	93.3
CHLORIDE	3.83	23.1	<0.1	73,600	151	27.7
FLUORIDE	<0.1	2.13	2.9	<0.1	20.9	1.70
TDS	214	1,370	194	114,000	1,060	--
TOTAL RESIDUE	--	--	--	--	--	1,150
SULFATE	50.5	809	<0.1	97.2	376	904
PCB'S	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
PH	7.6	7.5	5.4	7.3	--	7.7
ETHYLENE DIBROMIDE	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
NAPHTHALENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MONOMETHYLNAPHTHALENE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
ANION/CATION BALANCE (in meq)	2.8 / 3.08	18.6 /20.8	0.18 / 0.21	1910 /1946	14.1 / 13.0	21.1 / 20.0
VOLATILE ORGANICS						
BENZENE	N.D.	N.D.	24,600	N.D.	9.73	N.D.
TOLUENE	N.D.	N.D.	55,100	N.D.	N.D.	N.D.
CHLOROBENZENE	N.D.	N.D.	N.D.	N.D.	10.1	N.D.
ETHYLBENZENE	N.D.	N.D.	3,620	N.D.	N.D.	N.D.
XYLENES	N.D.	N.D.	1,990	N.D.	N.D.	N.D.

NOTE:
- All values in mg/l unless otherwise stated.
- All samples showed VOC's not detected (N.D.) except those shown above. VOC constituent levels are in ug/l.
- Samples were tested for all contaminants listed under Section 3-103 of NMWQCC regulations.

TABLE 3-2
KUTZ PLANT MONTHLY COOLING TOWER MAKEUP FOR 1985

MONTH	COOLING TOWER MAKEUP GALLONS/MONTH (THOUSAND)	PERCENTAGE OF TOTAL ANNUAL MAKEUP
JANUARY	179.8	5.5
FEBRUARY	188.4	5.7
MARCH	179.1	5.5
APRIL	201.7	6.1
MAY	248.8	7.6
JUNE	387.8	11.8
JULY	413.8	12.6
AUGUST	432.0	13.2
SEPTEMBER	386.7	11.8
OCTOBER	278.8	8.5
NOVEMBER	234.4	7.1
DECEMBER	153.0	4.7
TOTAL (1985)	3284.3	100.0
TOTAL (OCTOBER-MARCH)	1213.5	36.9
TOTAL (APRIL-SEPTEMBER)	2070.8	63.1

3.3 SPILL/LEAK PREVENTION AND HOUSEKEEPING PRACTICES

3.3.1 OPERATING AND MAINTENANCE PROCEDURES

The Kutz Compressor Station is operated in a manner to prevent and mitigate any unplanned releases to the environment. Plant processes and storage tanks are regularly observed by a number of personnel during daily operations, and any evidence or sign of spills or leaks are routinely reported to supervisory personnel so that repairs or cleanup can be promptly effected. Routine maintenance procedures conducted at the Kutz Plant also help to assure that equipment remains functional and minimize the possibility of spills or leaks.

3.3.2 CHEMICAL AND ENVIRONMENTAL HAZARDS

Process and non-process chemicals or additives (Table 3-3) used at the Kutz Plant could present a threat to the environment only in the event of a major spill or release. The majority of the chemicals are used in very small quantities (1 gallon to 1,659 gallons per year). Hence any spills or leaks would be very small in volume and easily contained in the immediate area.

3.3.3 CLEANUP PROCEDURES

Cleanup procedures would obviously vary with the nature and extent of any unplanned release. Spills of acids are relatively easy to control and general procedures would include neutralization of the material in-place before a final evaluation is made on its ultimate disposal. Once neutralization is confirmed by sampling and pH determination, it is quite probable that no further actions would be required to ensure protection of human health and the environment.

Spills or leaks of hydrocarbons could potentially occur from the lube oil, waste oil or hydrocarbon storage tanks. Lube oils are stored in three 65 bbl. tanks located on the west side of the plant yard and used oil is stored in a 275 gallon tank north of the compressor building. The location of these tanks and the structures in the area would preclude any releases from reaching natural drainage. A leak in the hydrocarbon storage tank would be contained in the bermed area surrounding the tank.

TABLE 3-3
CHEMICALS USED AT KUTZ PLANT
(AVERAGE ANNUAL AMOUNTS)

WATER TREATING		
LIQUI - CHLOR*	(SODIUM HYPOCHLORITE)	60 GAL.
SALT		110 LBS.
CAT FLOC T		5 GAL.
COOLING TOWERS		
ANTIPOL - 662		96 GAL.
SULFURIC ACID		117 GAL.
TOXENE 35		25 GAL.
TOXENE 37		34 GAL.
TOXENE 39		23 GAL.
BOILER FEEDWATER CHEMICALS		
CAUSTIC SODA		5 LBS.
CORLESS 130		1 GAL.
DEOX 21		3 LBS.
HYMOL 82		1 GAL.
CLOSED JACKET AND OIL COOLING WATER SYSTEM		
CHROMINE T		9 GAL.
QUEST 40		4 GAL.
GLYCOL - ANTIFREEZE		55 GAL.
GAS TREATING		
TRIETHYLENE GLYCOL		1659 GAL.
LUBE OIL		
SHELL OIL		295 GAL.
MOBIL OIL PEGASUS 490		7512 GAL.
DEGREASER		
VARSOL		125 GAL.

* Domestic use

Glycol used at the Station is stored in a 1,857 gallon tank directly west of the compressor building. Anti-freeze is stored in a 1,400 gallon tank. Any releases would be attenuated by the natural earth material in the immediate vicinity of these tanks and would not reach natural drainage.

3.3.4 REPORTING

Should a release of materials occur, EPNG will provide verbal notification to NMOCD as soon as possible after discovery as required by NMOCD and WQCC Regulation 116 and 1-203, respectively.

3.3.5 GENERAL HOUSEKEEPING PROCEDURES

EPNG strives to reduce the potential for spills and leaks in all areas. Existing records and interviews with plant personnel indicate that no reportable spills have occurred at Kutz Plant.

Non-process chemicals are used in relatively small quantities at the Plant and are managed in a manner to prevent discharges to the environment. Any chemical spills which might occur would be immediately contained and disposed of according to proper guidelines.

Chemicals such as cleaning solvents are collected and recycled. EPNG currently uses a non-halogenated solvent, Varsol, for degreasing operations. The spent solvent which contains various aromatic compounds is combined with other hydrocarbon fractions and is shipped off-site to the EPNG Blanco Plant for recycling. No solvent is disposed of on-site.

4.0 EFFLUENT DISPOSAL

4.1 EXISTING OPERATIONS

EPNG disposes of all industrial aqueous wastes in an on-site evaporation pond (Plate 2). A septic tank receives the sewage produced in the Plant's office and its effluent is also discharged into the industrial evaporation pond. Until August, 1986 a second septic tank collected the sewage from the camp (now closed) and discharged its effluent into the former sewage evaporation pond. Used lube oils are collected and recycled.

4.1.1 EVAPORATION PONDS

Figure 2-2 and Plate 3 show the sources, transport and disposal of aqueous wastes. All wastewater flows by gravity to the disposal pond. The evaporation pond was constructed by EPNG in the 1950's. No detailed plans or specifications were prepared and therefore none are currently available.

The 0.26 acre pond has a capacity (at 2.0 feet of freeboard) of approximately 340,000 gallons. This is 48.3 % of the calculated 1986 annual wastewater production of 703,355 gallons.

The evaporation pond was constructed using native soils of the Blancot-Notal association which have a permeability ranging from .2 to 6 inches/hour under natural conditions. A reduction in this rate could be expected due to compaction of the material during construction and settling of fine silt and clay on the pond bottoms.

4.2 OFF-SITE DISPOSAL

Industrial and domestic refuse generated in the Plant and employee housing was shipped off-site to the Lee Acres County Landfill until March 1986. The industrial solid waste was comprised of used oil filters from compressor engines and vehicles as well as glycol filters. The domestic solid waste consisted of household garbage, septic-tank solids and junked items from the camp. The disposal of solid waste to the Lee Acres landfill began approximately in 1978 and stopped in March 1986. Since April 1986, equal numbers of filters have been shipped off site to Chaco or Blanco Plants for disposal. The camp is being closed so no domestic refuse has been generated. Office trash is taken to Farmington. The above refuse has been shipped off-site to Blanco Plant for disposal. Used oils are transported to the EPNG Blanco Plant where they are recycled.

4.3 PROPOSED MODIFICATIONS

EPNG proposes to modify the wastewater management system at the Kutz Plant by installing a lined surface impoundment to replace the existing unlined disposal pond (Section 4.3.2). No phase separation will be required since free oil does not appear in any of the waste streams. Once the revisions to the system have been implemented, the existing pond will be idled and closed in an environmentally acceptable manner. Detailed plans and specifications for the proposed modficiations will be presented to NMOCD in a separate submission as required by WQCC Regulation 1-202 B and C.

4.3.1 Design Considerations

Wastewater currently flows by gravity to the disposal pond. The new lined pond will be constructed to the south of the existing pond and only minor piping changes will be required to allow the wastewater to continue to flow in this manner.

A total wastewater flow of 795,000 per year has been estimated based on calculated process flows and flow measurements taken at the plant in June of 1986. Average floating-pan evaporation is 4.17 feet per year, indicating that an evaporative surface area of approximately .6 acres would be sufficient for total evaporation of wastewater. A pond with a surface area of approximately .7 acres is proposed to ensure that some reserve capacity exists. A water balance for the .7 acre surface impoundment is included as Table 4-1.

4.3.2 Conceptual Design

The proposed pond will be constructed by excavating material as necessary and compacting the berms, sides and bottom. A leak detection system will be installed to enable monitoring of the pond liner and control the accumulation of leachate (see Figure 4-1).

The upper liner will be resistant to hardening, microbiological attack and degradation by ultraviolet radiation or hydrocarbons. El Paso has employed 60 mil Gundle High Density Polyethelene, 30 mil HP 6 Hypalon, 30 mil CP 6 Flexseal Reinforced Liner and other materials with considerable success in this type of application. Oil resistent PVC with a minimum thickness of 20 mils or equal will be used for the bottom liner. The intermediate layers will consist of a Mirafi 140 Drainage Fabric and Fibertex Grade "600" Geotextile 190 mil or equivalent material.

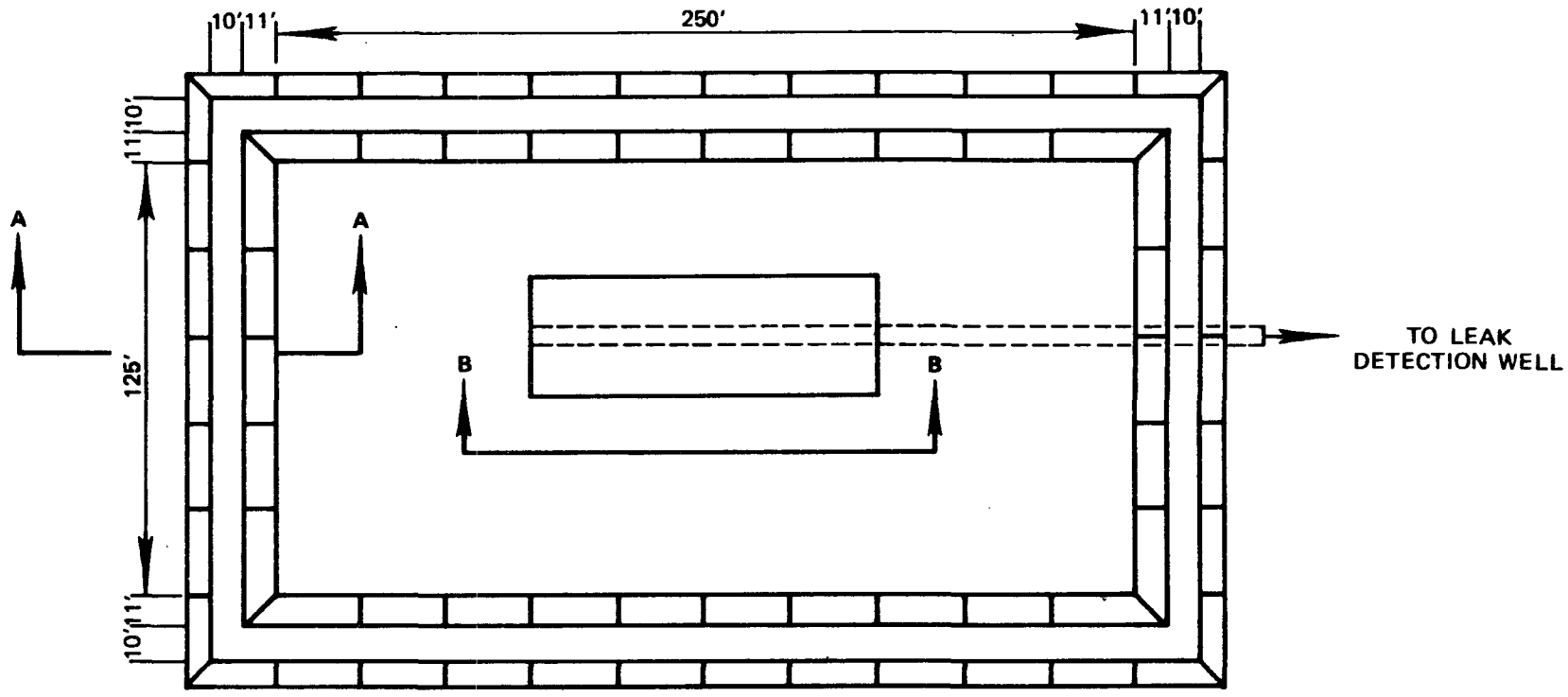
The pond bottom will be sloped at a rate of approximately 1/2% along the entire length of the pond toward the center where a perforated PVC pipe will be installed between the top and bottom layers for leachate collection. This pipe will be sloped at approximately the same rate to ensure the flow of leachate toward the leak detection well located outside of the pond berm.

4.3 Closure Plan

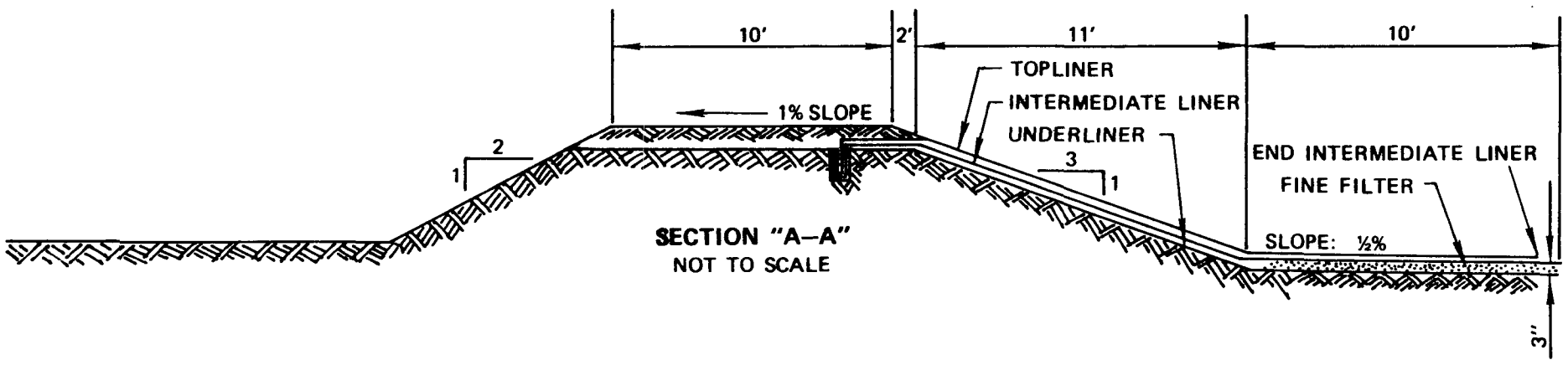
After construction of the proposed modifications, all discharges to the unlined pond will be discontinued and the piping disconnected to prevent accumulation of other liquid wastes. Stormwater will be directed away from the pond to allow for drying. Before closure activities commence, samples will be col-

TABLE 4-1
WATER BALANCE FOR PROPOSED
0.7 ACRE EVAPORATION POND

MONTH	INPUT (ACRE-FT)	EVAPORATION (FEET)	EVAPORATION (ACRE-FEET)	DIFFERENCE (ACRE-FEET)	STORAGE (ACRE-FEET)
SEPTEMBER	0.19	0.40	0.28	-0.09	0.00
OCTOBER	0.19	0.23	0.16	0.03	0.03
NOVEMBER	0.22	0.13	0.09	0.13	0.16
DECEMBER	0.22	0.03	0.02	0.20	0.36
JANUARY	0.22	0.04	0.03	0.19	0.55
FEBRUARY	0.22	0.08	0.06	0.16	0.71
MARCH	0.22	0.27	0.19	0.03	0.74
APRIL	0.22	0.48	0.34	-0.12	0.62
MAY	0.19	0.63	0.44	-0.25	0.37
JUNE	0.19	0.70	0.49	-0.30	0.07
JULY	0.19	0.65	0.46	-0.27	0.00
AUGUST	0.19	0.53	0.37	-0.15	0.00
TOTAL	2.46	4.17	2.93		



KUTZ PLANT EVAPORATION POND



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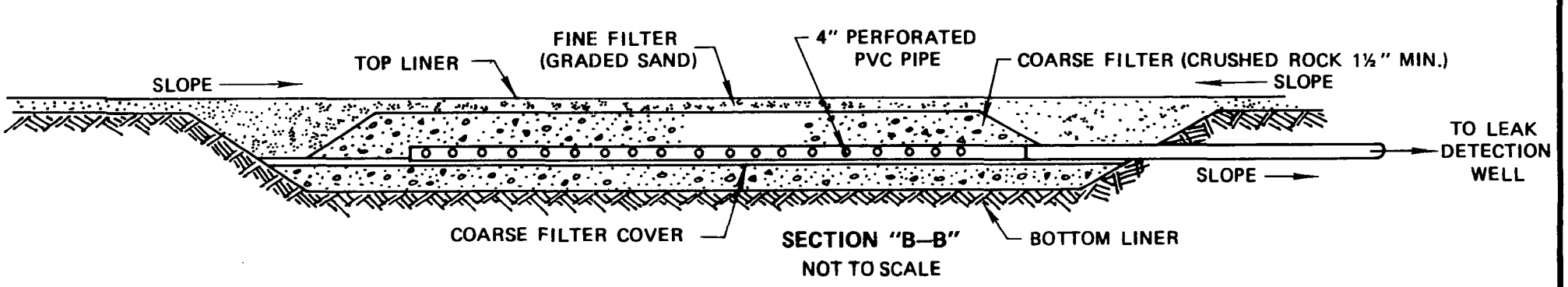

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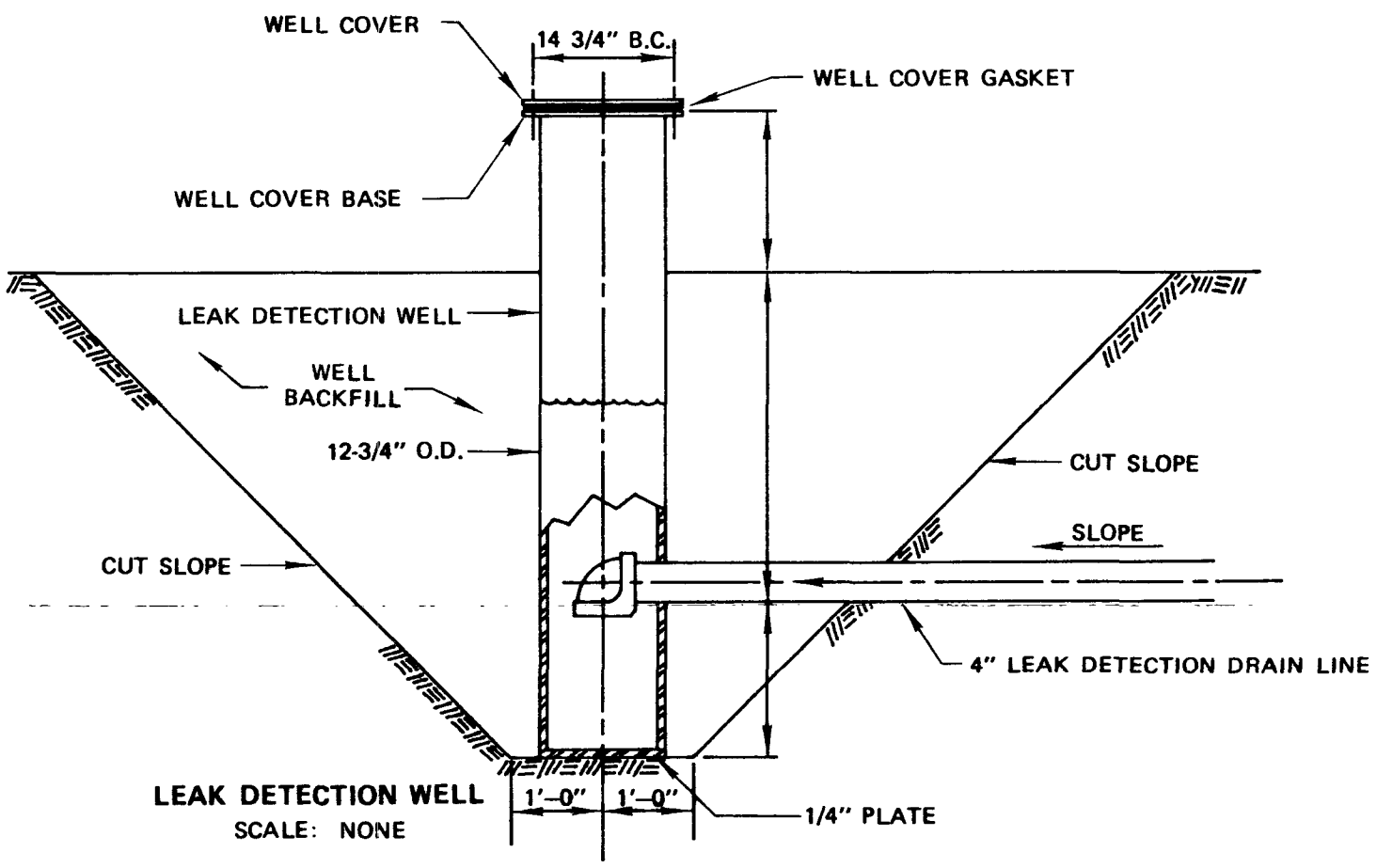


KUTZ PLANT EVAPORATION POND

El Paso Natural Gas Company

FIGURE 4–1

CONCEPTUAL DESIGN OF MODIFICATION
TO WASTEWATER MANAGEMENT SYSTEM–
KUTZ PLANT

lected from the sludge layer and analyzed. Closure will begin when sludges have dried sufficiently to support earth-moving equipment. Fill material consisting of soil in the existing berms will be mixed with the material in the pond bottom to enhance drying and biodegradation. Additional fill will then be deposited in the depression and graded so that the finished surface will be slightly convex. The elevation at the center should be approximately 1/2 to 1 feet above natural grade at the center. This will provide for natural subsidence and preclude ponding above the former surface impoundment. If subsequent inspections reveal any erosion, or subsidence which might affect the integrity of the cap, repairs will be made as soon as possible.

5.0 SITE CHARACTERISTICS

The plant is located within the west-central part of the San Juan Basin (Figure 5-1); a large asymmetric structural depression that contains up to 15,000 feet of Paleozoic and Mesozoic sediments (Fassett and Hinds, 1971). Topographic relief within 1 mile of EPNG's plant is about 200 feet with elevations ranging from 5,444 to 5,800 feet above sea level (Figure 2-1). The area is characterized by mesas and hillslopes in which banded, unctuous clays of the Paleocene-age Nacimiento Formation are exposed; within the clays are buff, gray and white sandstone channel-fill deposits. These form strongly lenticular and irregular units which may extend for several miles. The nearly flat-lying Nacimiento beds are dissected by steep-walled arroyos. Drainage is southwesterly via an un-named arroyo into the westerly flowing San Juan River. Average annual precipitation in the area is 8 to 10 inches. Vegetation is characterized by desert brush that covers approximately 40% of the surface.

EPNG conducted an investigation of the site hydrogeology. Three boreholes were drilled on the site, and piezometers were installed in them. Plate 4 shows the location of each borehole and piezometer. Appendix C contains transcriptions of the lithologic logs for each borehole and the completion details of a typical piezometer. Samples were obtained from the piezometers to determine the general water chemistry of the groundwater under the site.

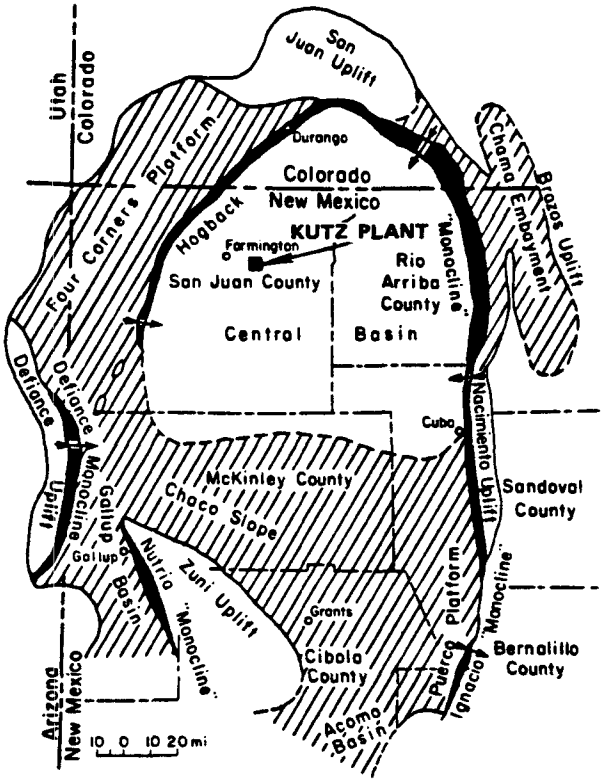


Diagram of the San Juan Basin showing structural components and location of the El Paso Natural Gas Plant (Stone and others, 1983)

El Paso Natural Gas Company

FIGURE 5–1

SAN JUAN BASIN STRUCTURAL COMPONENTS

5.1 REGIONAL GEOLOGY

The stratigraphy of the San Juan Basin is comprised of sedimentary rocks ranging in age from Cambrian to Holocene. Figure 5-2 shows the stratigraphy of rocks that crop out near the plant. The greatest recorded stratigraphic thickness in the basin is 14,423 feet in an oil well located in Section 7, T. 29 N., R. 5 W. near the structural center of the basin (Fassett and Hinds, 1971). During Late Cretaceous time, three basin-wide cycles of transgression and regression resulted in intertonguing lithology (sandstone, shale, siltstone, and coal) found throughout Cretaceous rocks in the basin. Most of the central basin is covered by Tertiary-age sediments of fluvial and alluvial origin. The sequence of Late Cretaceous to present age rocks which crop out in the northwest section of central basin include numerous sandstone aquifers, which are the source of many domestic and non-domestic water supplies in northwest New Mexico.

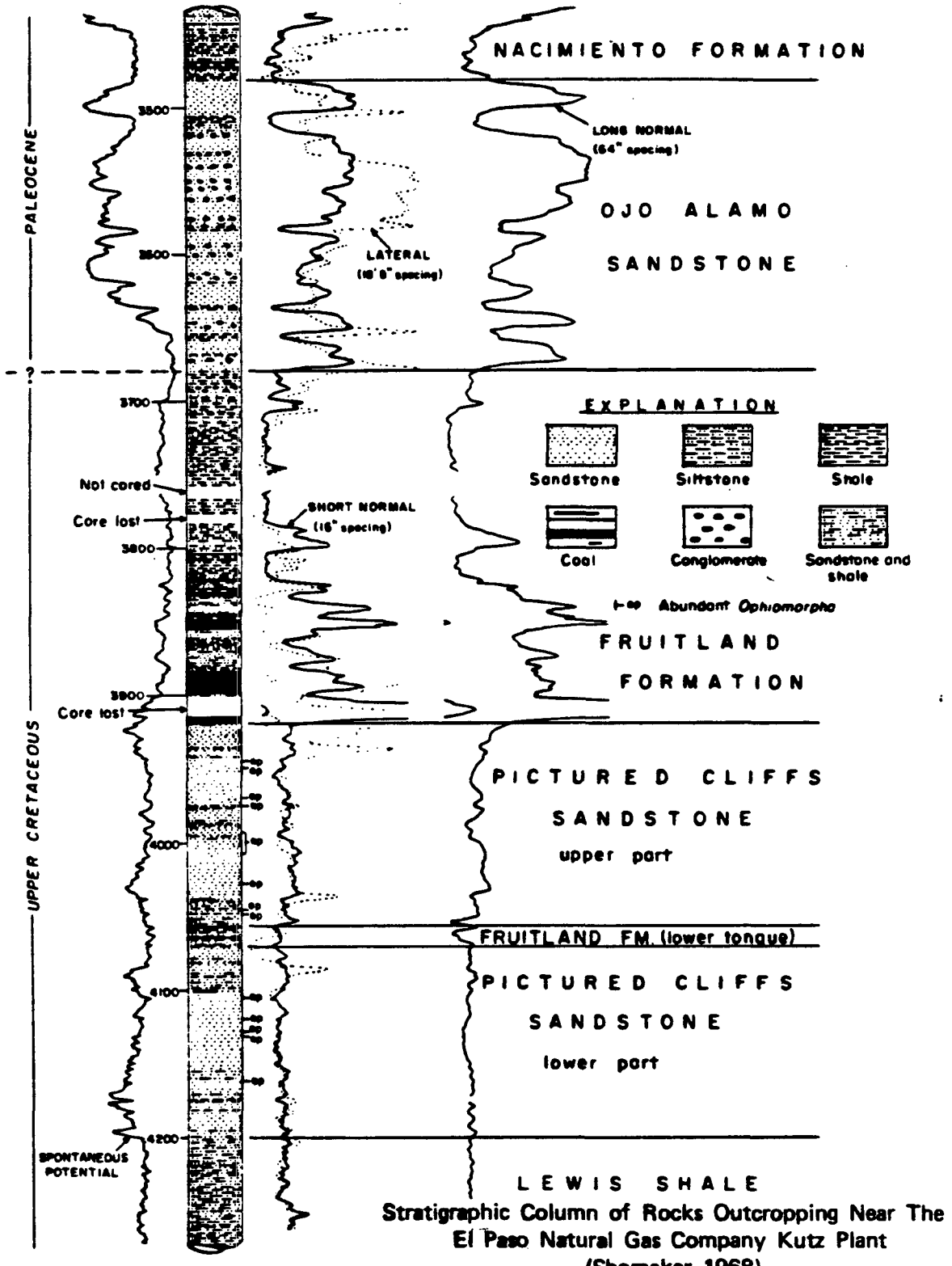
Thick Quaternary deposits are restricted to the San Juan, Animas and La Plata Valleys. Extensive terrace deposits are found along the valleys of the San Juan River and its major tributaries.

The plant site is underlain by mudstones and sandstones of the Tertiary Nacimiento Formation that were deposited in the coastal-swamp, flood plain, and river-and-flood plain environments that succeeded the final regression of the Pictured Cliffs Sea (Figure 5-3).

The Nacimiento Formation consists primarily of a series, about 400 to 800 feet in thickness, of banded unctuous clays, usually in various shades of gray to yellowish, with some red or wine-colored beds. In these clays are numerous buff, gray, or white sandstone beds, occasionally persistent for several miles as local strongly lenticular channel fillings. Most of the more definitive sediments are somber clays, pale gray to black, generally carbonaceous and often crowded with impressions of leaves and plant stems. Some thin and local seams of impure coal occur. This formation is traceable almost continuously with striking scarp or badlands exposures, from near the Colorado-New Mexico border in the Animas Valley, southward across the San Juan River and then southeastward and eastward to the point of Cuba Mesa and finally northward to the upper Rio Puerco valley north of Cuba.

5.2 LOCAL GEOLOGY

The Plant is situated on the flank of an arroyo with outcrops of the Nacimiento Formation made up of shales, siltstones and

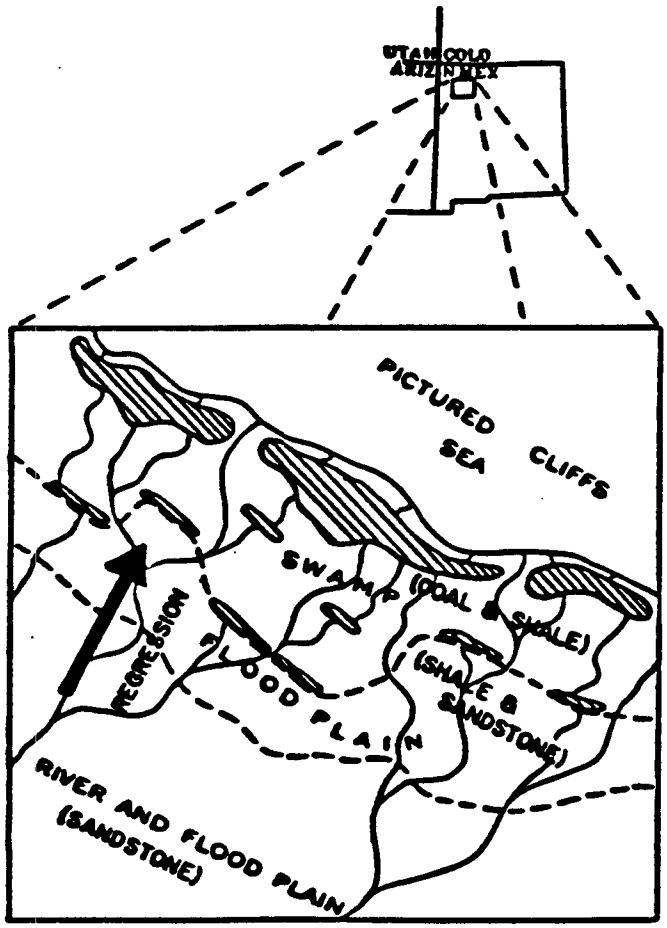


Stratigraphic Column of Rocks Outcropping Near The El Paso Natural Gas Company Kutz Plant (Shomaker 1968)

El Paso Natural Gas Company

FIGURE 5–2

STRATIGRAPHIC COLUMN



Paleographic diagram showing the depositional environments of rocks that now compose the Kirtland Shale and Fruitland Formations (Fassett and Hinds, 1971)

El Paso Natural Gas Company

FIGURE 5–3

PALEOGRAPHIC DIAGRAM
OF
KIRTLAND SHALE AND FRUITLAND
FORMATIONS

sandstones. The arroyo along the eastern and southern property limits has intermittent flow toward the San Juan River to the south. The alluvium in the arroyo is made up of sand, silt, clay and gravel to a known depth, within the plant property, of 80 feet at one point near the northeast corner. Figure 5-4 shows a geologic cross-section of the Plant area.

5.3 REGIONAL AND LOCAL HYDROLOGY AND GROUNDWATER QUALITY

5.3.1 REGIONAL GROUNDWATER HYDROLOGY AND WATER QUALITY

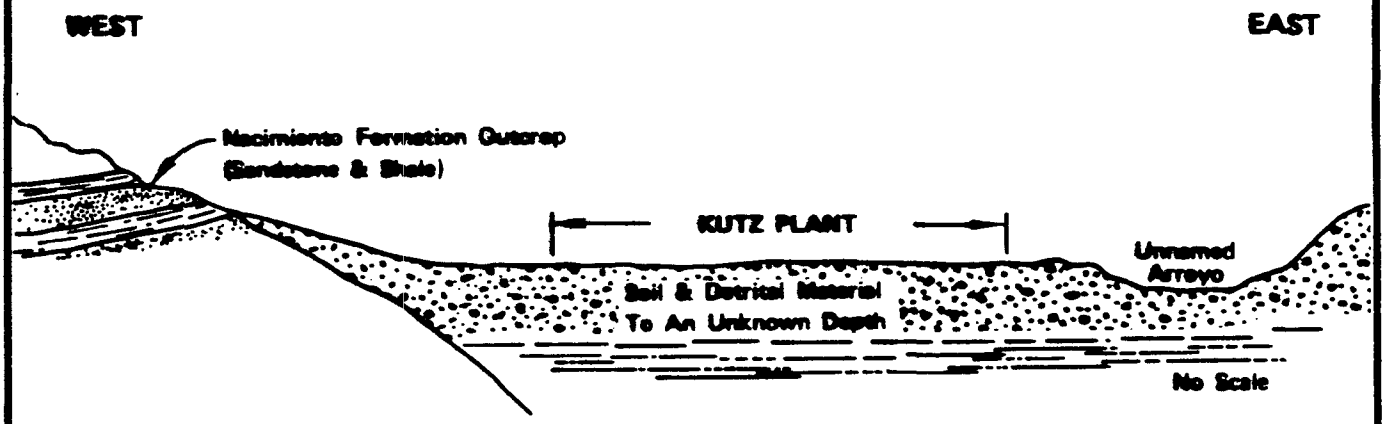
Three major groundwater systems are present in the Cretaceous and younger-age sedimentary deposits of this area of the San Juan Basin:

- Confined aquifers within Cretaceous and Tertiary sandstone units;
- Water-table aquifers in Cretaceous and Tertiary sandstone units near their outcrop areas;
- Water-table aquifers in Quaternary alluvium in river valleys and tributaries.

The Cretaceous sandstone aquifers of the San Juan Basin were deposited along strand plain beaches or at wave-dominated delta fronts in various coastal environments. The complexity of these intertonguing fluvial and marine deposits is a result of alternating transgressive/regressive pulses of the epicontinental sea present at that time. Occurrence of groundwater resources that are associated with these sandstone aquifers is a function of their distribution within the units containing them. Recharge of the aquifers in Cretaceous sandstones is dependent upon outcrop distribution, elevation, climate of outcrop areas, lithologic characteristics of the unit and leakage from other units. Outcrops generally occur as narrow, sinuous belts, few of which lie in areas of high precipitation. Most recharge is a result of the limited infiltration, although leakage from adjacent units occurs locally. Hydraulic conductivity is usually low due to the fine-grained textures characteristic of these sediments.

Groundwater quality in Cretaceous sandstone aquifers is controlled by several factors. Total dissolved solids (TDS) concentrations increase as a function of increasing groundwater residence time and reduced transmissivity of aquifer materials.

KUTZ PLANT
EL PASO NATURAL GAS COMPANY



EAST–WEST CROSS SECTION

El Paso Natural Gas Company

FIGURE 5–4

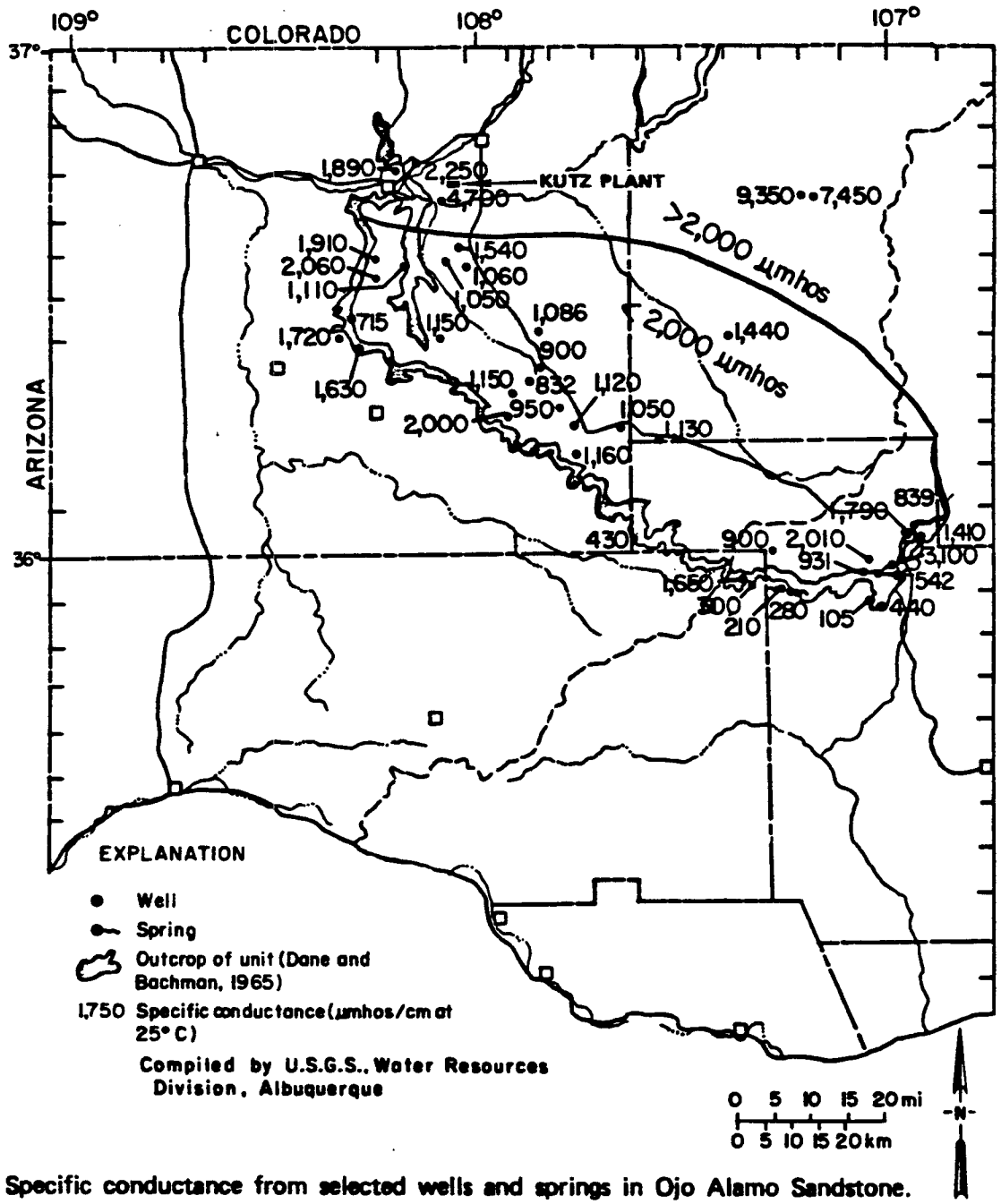
GEOLOGIC CROSS SECTION
FOR AREA AROUND
EL PASO NATURAL GAS KUTZ PLANT

Figures 5-5 through 5-8 show the specific conductance (which is related to TDS concentration) of water from wells completed in the Ojo Alamo Sandstone, Cretaceous, and Nacimiento/Animas aquifers, respectively. Fresh water is associated with high-transmissivity zones while saline water is associated with low transmissivity zones. Groundwater moving along the sandstone-shale interfaces that are common to these rocks tends to exhibit increased TDS concentrations (Stone, et. al. 1983). Water from these confined aquifers is suitable for stock and domestic use in some areas, although in most cases it is not considered a major source.

The Tertiary sandstone aquifers of the basin were deposited in fluvial or alluvial environments. Recharge to groundwater is by infiltration through formation exposures along the flanks of the Nacimiento Uplift and on the broad plateaus that occur in the central part of the basin. The amount of recharge to Tertiary aquifers is higher than that of Cretaceous aquifers due to broader exposures in areas of high precipitation. Groundwater in these aquifers flows from upland recharge areas to discharge areas along canyon floors. Springs and seeps result due to regional topographic and geomorphic controls. The hydraulic conductivity of the Tertiary sandstones varies significantly, as a function of grain size, sorting and cementation. The hydraulic gradient is controlled by topography but the structural attitude of the formations can alter the flow direction. Erosion has removed these units from much of the basin flanks.

Tertiary-sandstone aquifers have generally lower TDS concentrations than Cretaceous aquifers, and commonly provide major sources of water for domestic and agricultural usage. The complex intertonguing of sandstone and shale units is the primary influence on specific conductance which can be as high as 10,500 um/cm. Tertiary rocks which crop out around the plant are stratigraphically above the site.

Quaternary age aquifers occur primarily as valley fill in the major river valleys and consist of gravel, sand, silt and clay. Groundwater recharge is due to drainage from irrigated lands, infiltration of surface runoff and leakage from bedrock aquifers. Flow directions are concurrent with topographic slope and river-flow directions, and hydraulic conductivity can be extremely high.

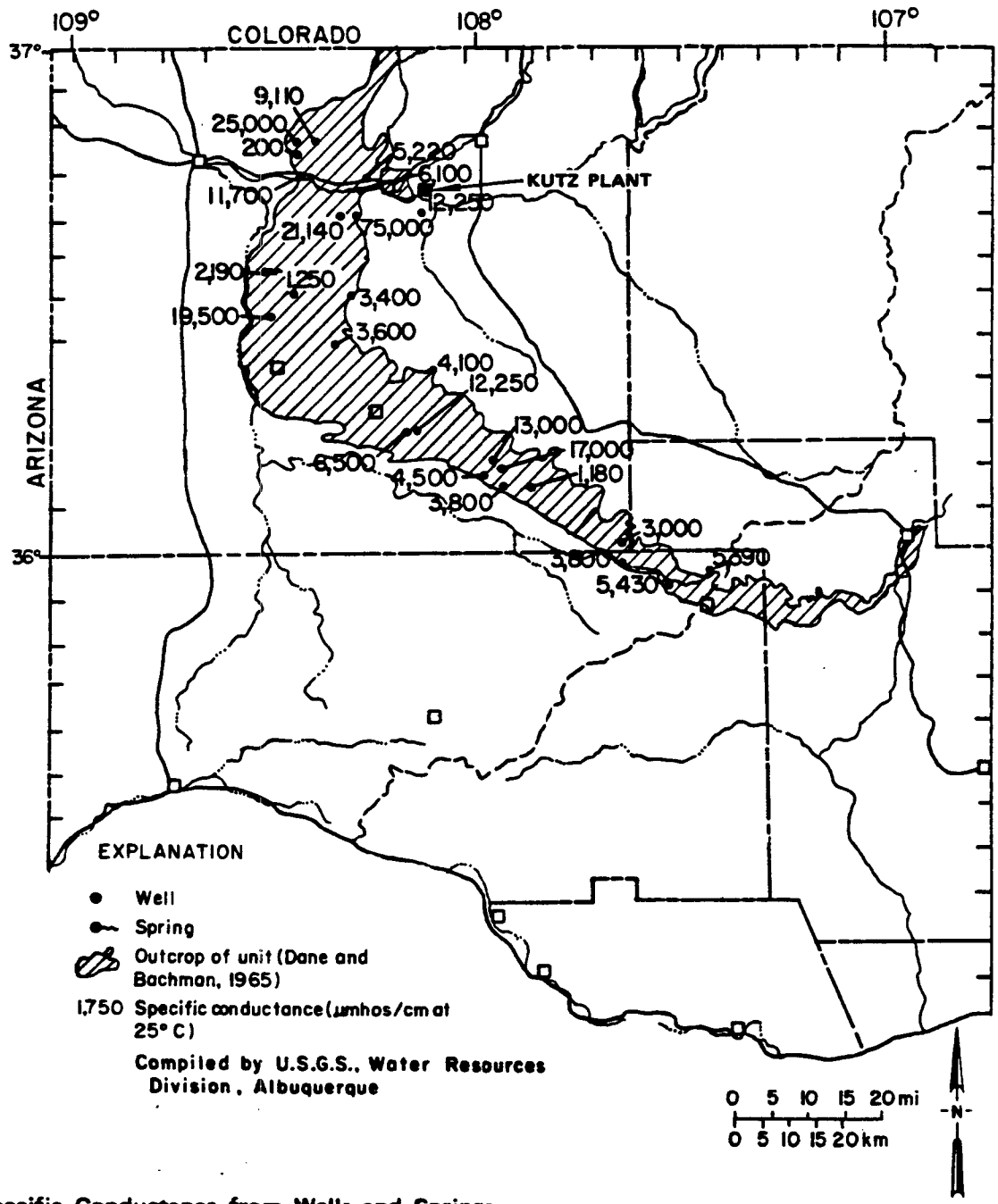


Specific conductance from selected wells and springs in Ojo Alamo Sandstone.

El Paso Natural Gas Company

FIGURE 5–5

SPECIFIC CONDUCTANCE
OJO ALAMO SANDSTONE

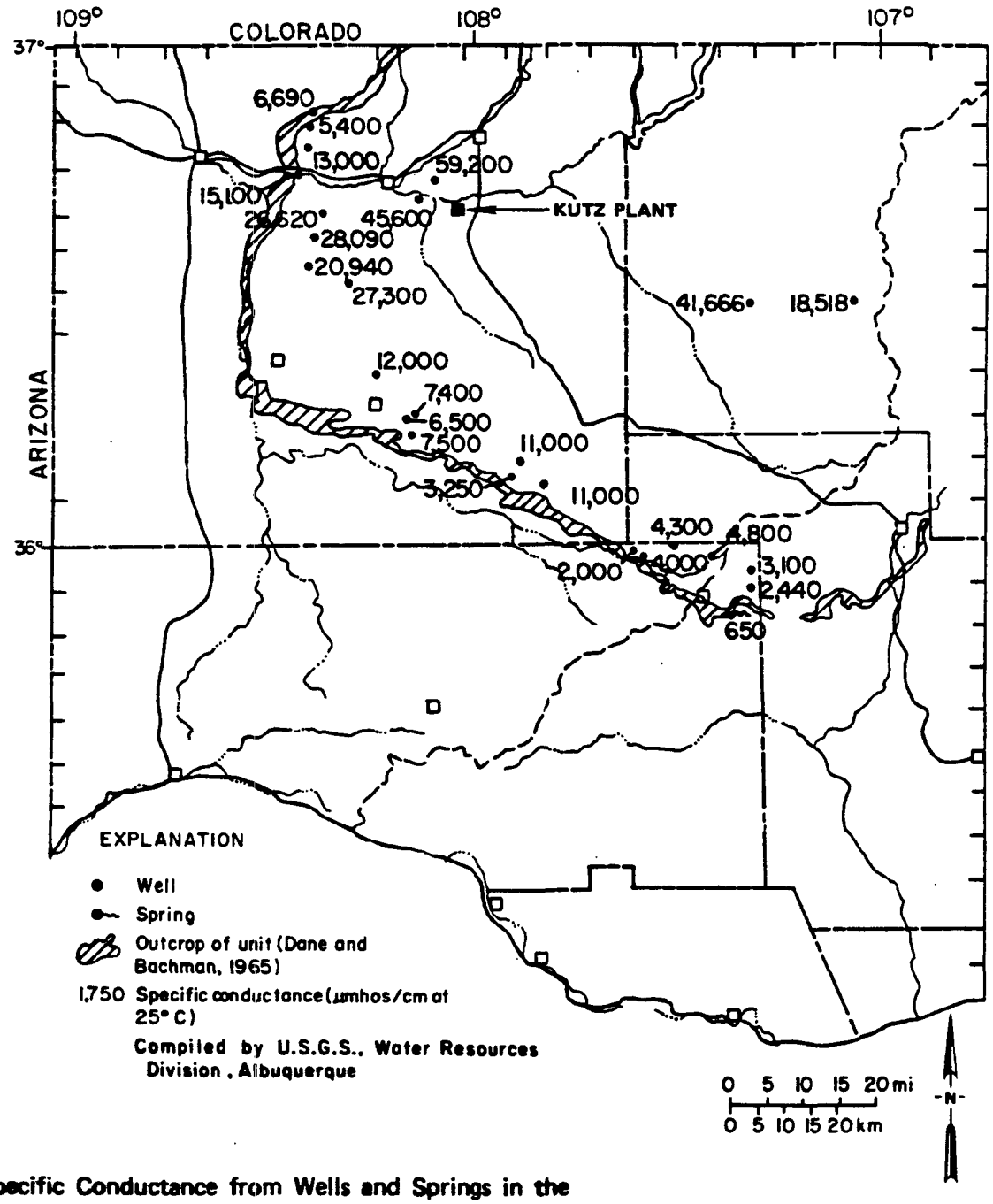


Specific Conductance from Wells and Springs in the Cretaceous Pictured Cliffs Sandstone (Stone and Others, 1983)

El Paso Natural Gas Company

FIGURE 5–6

SPECIFIC CONDUCTANCE CRETACEOUS PICTURE CLIFFS SANDSTONE

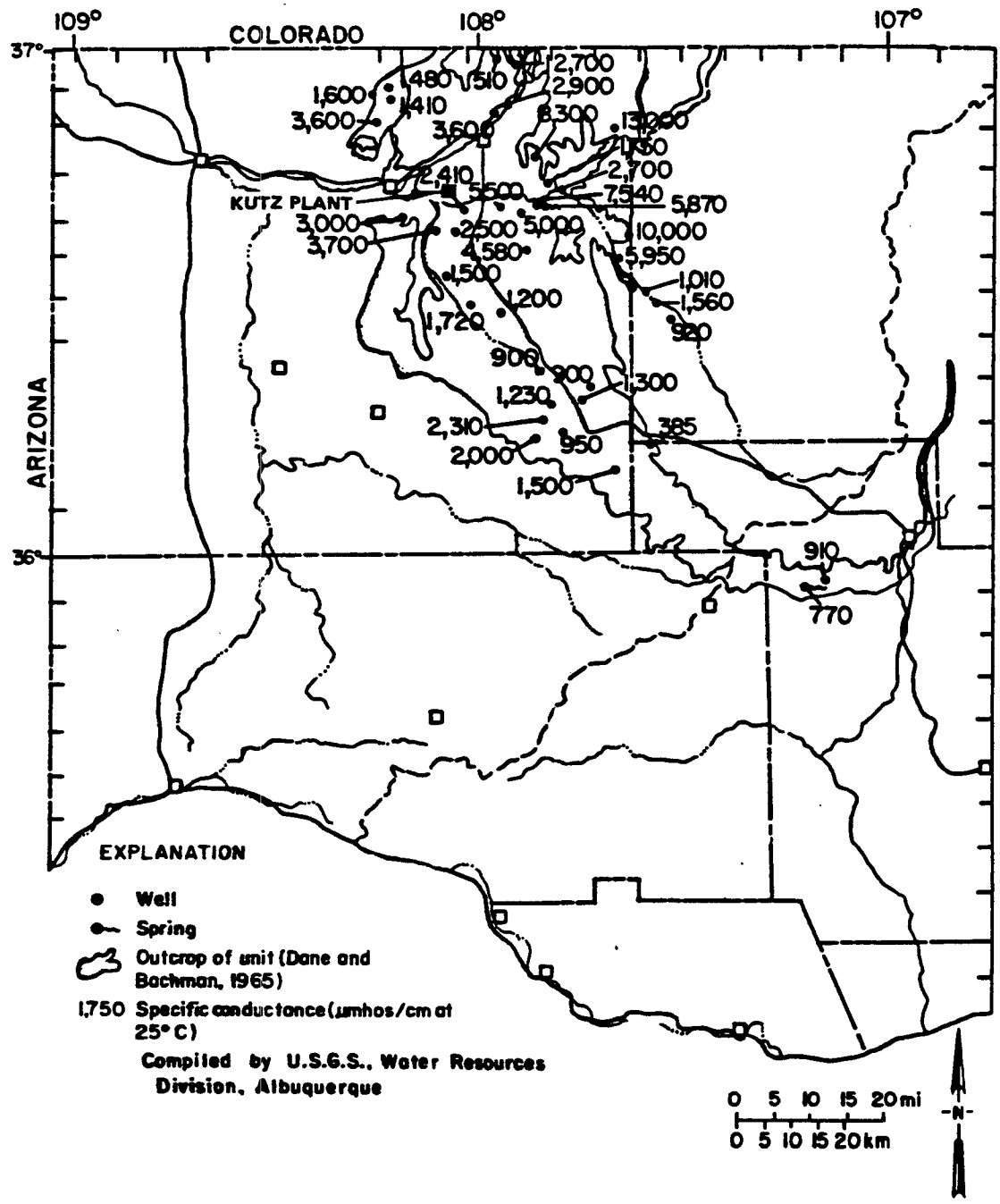


Specific Conductance from Wells and Springs in the Cretaceous Kirtland Shale—Fruitland Formation (Stone and others, 1983)

El Paso Natural Gas Company

FIGURE 5–7

SPECIFIC CONDUCTANCE KIRTLAND SHALE & FRUITLAND FORMATION



Specific Conductance from Selected Wells and Springs in Nacimiento/Animas Formations.

El Paso Natural Gas Company

FIGURE 5–8

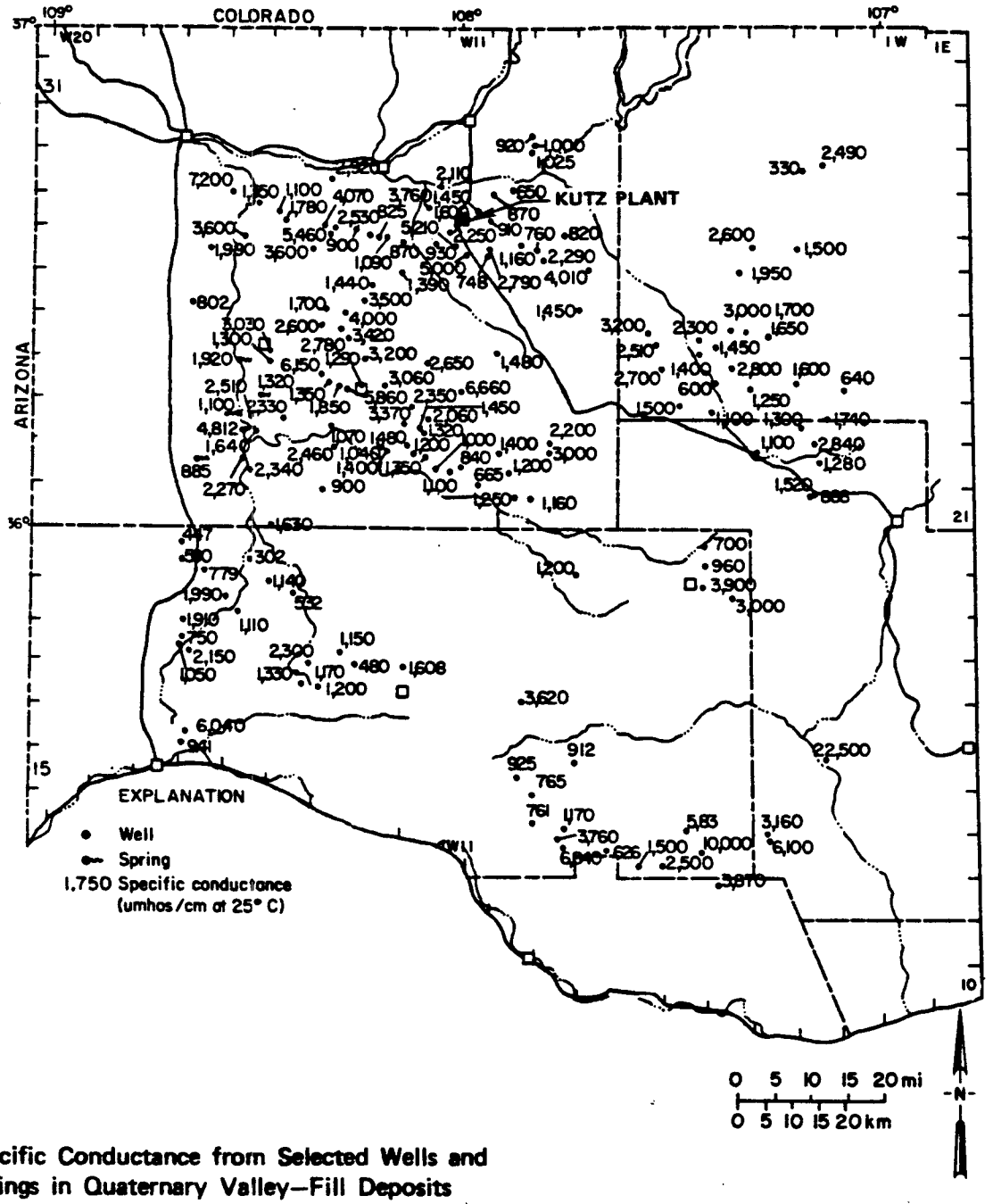
SPECIFIC CONDUCTANCE
NACIMIENTO/ANIMAS FORMATIONS

As Figure 5-9 shows, the quality of groundwater (in terms of specific conductance) in Quaternary River Valley alluvium is highly variable and specific conductance may range from less than 1,500 to 6,000 um/cm (Stone, et. al. 1983). Water from this source is used for stock, irrigation and domestic purposes. In arroyos and tributaries of the major rivers the groundwater quality is also highly variable and specific conductance can be significantly higher than 6,000 um/cm.

5.3.2 LOCAL GROUNDWATER HYDROLOGY AND QUALITY

The Plant is located on an outwash of gravel and sands. Groundwater exists in the uppermost aquifer, the "alluvial gravel valley aquifer", and is located at depths at 30 to 75 feet. There may be a basic fresh-water aquifer associated with the area that apparently belongs to the Quaternary age. This aquifer is comprised of an alluvium (40-80 feet thick) with unconsolidated sands, gravels, silts, and clays, such as an alluvium valley aquifer (BLM, 1986).

According to Wilson (1981) the alluvial valley-fill aquifer water table is shallow (30-40 feet) with pervious materials that are receptive to surface infiltration. Based on groundwater movement studies in the State, regional groundwaters move toward river valleys, that is, they flow from high ground recharge (mountainous) areas towards natural discharge zones (rivers). Local flow characteristics are dictated by the size of recharge zones and the hydraulic gradient between the recharge zones and the discharge areas. For the Kutz Plant area, the discharge area coincides with the San Juan River. Considering the above, the shallow alluvial groundwater aquifer near the area may originate north of and upgradient from the Plant and flow along the unnamed arroyo in a southerly direction toward the San Juan River. Bedrock existing in the area may be fractured; and intercommunication between the shallow unconsolidated and the bedrock aquifers may exist (BLM 1986).



Specific Conductance from Selected Wells and Springs in Quaternary Valley–Fill Deposits (Stone and other, 1983)

El Paso Natural Gas Company

FIGURE 5–9

SPECIFIC CONDUCTANCE QUATERNARY VALLEY–FILL DEPOSITS

5.3.3 CHARACTERISTICS OF THE UPPERMOST WATER-BEARING UNIT

Section 5.3.2 identified a shallow alluvial groundwater aquifer in the area that could potentially be impacted by surface discharges. Analyses of groundwater samples from this unit are shown in Table 5-1 and the laboratory reports are included in Appendix B. Total dissolved solids content of groundwater in exploratory piezometers (Plate 4) range from 774 to 3,270 mg/l. Analyses of water samples taken from the piezometers do not show concentrations above WQCC standards.

5.4 SURFACE WATER HYDROLOGY AND FLOODING POTENTIAL

The San Juan River, which drains the site area, is a tributary to the Colorado River. Water from the San Juan-Colorado River system is used mostly for irrigation and power generation which cause variable stream discharge patterns. Surface flow in the San Juan River is controlled by Navajo Dam, which forms a reservoir with a 1,700,000 acre-foot capacity (Stone, et. al., 1983). Downstream from the dam and from the plant the Animas and La Plata Rivers contribute substantial flow to the San Juan River. Flooding potential is negligible because the plant is well outside the floodplain of the San Juan River.

The major local drainage is an unnamed arroyo. This ephemeral drainage flows north to south and cuts across the eastern corner of EPNG property approximately 1/8 mile from the plant facilities. The volume of water produced by a 100 year flood event is about 5,520 cubic feet per second (Appendix D). The elevation difference between the waste impoundment and the arroyo (approx. 4 feet) presents a potential for flooding from this source (Hejl, 1980). However, the new lined evaporation pond will be constructed with adequate flood protection berms and will be located above elevation 5,502 to avoid the flood plain.

Although the pond is located in a broad, shallow swale, no distinct drainage patterns cut across the impoundment. Sheet runoff is the only potential for run-on to the waste pond. The new proposed pond will be constructed such as to be protected against the 100-year flood (Linsley et. al., 1982).

TABLE 5-1
CHEMICAL ANALYSIS OF GROUNDWATER

P A R A M E T E R	PIEZO-METER NO. 1	PIEZO-METER NO. 2	PIEZO-METER NO. 3
COD	--	--	--
NITRATE - N	<0.1	1.87	<0.1
OIL AND GREASE	--	--	--
TOC	--	--	--
O - PHOSPHATE	--	--	--
CYANIDE (TOTAL)	<0.01	<0.01	<0.01
PHENOLICS	<0.05	<0.05	<0.05
ARSENIC	<0.01	<0.01	<0.01
BARIUM	<0.25	<0.25	<0.25
CADMIUM	<0.01	<0.01	<0.01
CALCIUM	132	269	357
CHROMIUM (TOTAL)	<0.01	0.02	0.02
COPPER	<0.01	<0.01	<0.01
HARDNESS (AS CACO3)	375	853	991
IRON	--	--	--
LEAD	<0.05	<0.05	<0.05
MAGNESIUM	11.1	44.1	24.1
MANGANESE	0.17	0.03	0.09
MERCURY	<0.001	<0.001	<0.001
POTASSIUM	17.4	28.1	8.58
SELENIUM	<0.02	<0.02	<0.02
SILVER	<0.01	<0.01	<0.01
SODIUM	61.6	53.5	436
ZINC	--	--	--
ALKALINITY (TOTAL, AS CACO3)	192	125	115
ALKALINITY (BICARBONATE, AS HCO3)	234	152	140
CHLORIDE	25.8	45.5	6.18
FLUORIDE	1.28	1.93	<0.1
TDS	774	2100	3270
TOTAL RESIDUE	--	--	--
SULFATE	356	1030	1960
PCB'S	<0.0005	<0.0005	<0.0005
PH	7.0	7.2	7.3
ETHYLENE DIBROMIDE	<0.005	<0.005	<0.005
NAPHTHALENE	<0.001	<0.001	<0.001
MONOMETHYLNAPHTHALENE	<0.001	<0.001	<0.001
ANION/CATION BALANCE (in meq)	11.5/10.6	22.5/20.1	41.6/39.0
VOLATILE ORGANICS	N.D	N.D.	N.D.

NOTE:
- All values in mg/l unless otherwise stated.
- Samples were tested for all contaminants listed under Section 3-103 of NMWQCC regulations.
- All samples showed VOC's not detected (N.D.).

6.0 MONITORING AND REPORTING

On a quarterly basis and following major storms, the pond will be inspected and the level determined from staff gauges. Samples of the wastewater will be obtained annually and analyzed for all WQCC 3-103 parameters except radioactive species. Any records related to waste characterization or pond integrity will be retained by El Paso for at least five years.

Because the evaporation pond will have a double liner equipped with leak detection system, no groundwater monitoring is required or proposed. Any changes, anticipated or otherwise, to the disposal system will be reported to NMOCD.

7.0 BASIS FOR APPROVAL

The existing site conditions and proposed modifications to the wastewater management system at El Paso's Kutz Plant act together to ensure that there will be no present or future adverse effects to groundwater as a result of discharges to proposed wastewater management units. No present or future users of groundwater in the Kutz Plant area would be affected by the Plant's waste management practices for the following reasons.

- El Paso has proposed to cease discharges of wastewater to the existing unlined evaporation pond and instead discharge to a lined wastewater evaporation pond with leak detection system (Section 4.3.2).

- There is no significant potential for wastewater release due to flooding by a 100-year storm (Section 5.4).

EPNG is wholly committed to continuing sound disposal practices and to this end submits the plan outlining the proposed procedures. Likewise, EPNG is committed to cooperating fully with NMOCD in honoring requests for additional information or clarification of existing information related to the Discharge Plan.

8.0 SUMMARY OF DISCHARGE PLAN REQUIREMENTS

1. Annual analysis of samples taken from the wastewater evaporation pond
2. Quarterly monitoring of pond levels
3. Quarterly inspection of ponds
4. Reporting of all significant leaks or spills to NMOCD within 10 days, and notification within 30 days of any

corrective action taken.

5. Maintain records of pond integrity and wastewater characterization for at least five years

9.0 REFERENCES CITED

Fasset, J.E. and Hinds, J.S., 1971, Geology and Fuel Resources of the Fruitland Formation and Kirtland Shale of the San Juan Basin, New Mexico and Colorado, U.S.G.S. Professional Paper 676.

Stone, W.J., Lyford, F.P., Frenzel, P.F., Mizell, N.H., Padgett, E.T., 1983, Hydrology and Water Resources of San Juan Basin, New Mexico, New Mexico Bureau of Mines and Mineral Resources, Hydrologic Report 6.

BLM, "Site Investigation Report for Lee Acres Site, Farmington, San Juan County, New Mexico," Final Report 30 May, 1986, pp. 3-3 thru 3-8.

Wilson, L., 1981. Potential for Groundwater Pollution in New Mexico. New Mexico Geological Society, Special Report No. 10, pp. 47-54.

Hejl, R.H., Jr., Preliminary Appraisal of Ephemeral-Streamflow Characteristics Related to Drainage Area, Active-Channel Width, and Soils in Northwestern New Mexico, U.S.G.S. Open-File Report 81-64, Albuquerque, New Mexico, December 1980, p. 10.

Linsley K.R., Jr., et. al., "Hydrology for Engineers," McGraw-Hill, 1982.

DISCHARGE PLAN

FOR

EL PASO NATURAL GAS COMPANY

KUTZ PLANT

SAN JUAN COUNTY, NEW MEXICO

Appendices A through E

October, 1986

A

APPENDIX A

MATERIAL SAFETY DATA SHEETS

Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

12-85

SECTION I

MANUFACTURER'S NAME: Georgia-Pacific Corporation	EMERGENCY TELEPHONE NO.: 817/531-3941
ADDRESS (Number, Street, City, State, and ZIP Code): 5703 Crawford Lane, Fort Worth, Texas 76119	
CHEMICAL NAME AND SYNONYMS: Sodium Hypochlorite (liquid bleach)	TRADE NAME AND SYNONYMS: Industrial 10%
CHEMICAL FAMILY: Hypochlorite	FORMULA: NaOCl

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
NaOCl	10	
Sodium Hydroxide	0.5	

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	decomposes	SPECIFIC GRAVITY (H_2O=1) @ 60° F	1.154
VAPOR PRESSURE (mm Hg.)	n/a	PERCENT, VOLATILE BY VOLUME (%)	n/a
VAPOR DENSITY (AIR=1)	n/a	EVAPORATION RATE (_____ =1)	n/a
SOLUBILITY IN WATER	100%		
APPEARANCE AND ODOR	Pale yellow-Chlorine odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used): None	FLAMMABLE LIMITS: non-flammable	LEL	UEL
EXTINGUISHING MEDIA: Water			
SPECIAL FIRE FIGHTING PROCEDURES: Self contained gas mask in casw chlorine is evolved			
UNUSUAL FIRE AND EXPLOSION HAZARDS: Danger of chlorine gas being evolved			

(Continued on reverse side)

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
Not established

EFFECTS OF OVEREXPOSURE
Sodium Hypochlorite will causw irritation of eyes and skin.

EMERGENCY AND FIRST AID PROCEDURES
Skin contact-wash with soap and water

Eye contact-irrigate with copious amounts of water. Call a physician

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

INCOMPATABILITY (Materials to avoid)
Reducing Agents. Acids. Ammonia

HAZARDOUS DECOMPOSITION PRODUCTS
Chlorine gas

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Flush with large amounts of water.

WASTE DISPOSAL METHOD
Dilute with large amounts of water. Waste disposal must comply with Federal, State, and local enviromental control regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

VENTILATION	LOCAL EXHAUST	Adequate	SPECIAL
	MECHANICAL (General)		OTHER

PROTECTIVE GLOVES
Rubber

EYE PROTECTION
Chemical goggles or face shields

OTHER PROTECTIVE EQUIPMENT
Rubber protective coating

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Sodium Hypochlorite must be shipped and stored in containers approved by the Department of Transportation which classifies it as a corrosive liquid.

OTHER PRECAUTIONS
Should be stored in temperatures not to exceed 80° F.

6293-86-81

MATERIAL SAFETY DATA SHEET

DATE August 19, 1982

Page 1 of 2

PRODUCT NAME CAT FLOC T

CALGON CORPORATION
SUBSIDIARY OF MERCK & CO., INC.

SECTION I

MANUFACTURER'S NAME	Calgon Corporation	EMERGENCY TELEPHONE NO.	(412) 777-8000
ADDRESS	P.O. Box 1346, Pittsburgh, PA 15230		
CHEMICAL NAME AND SYNONYMS	Cationic homopolymer	FORMULA	Multi-component Liquid

SECTION II HAZARDOUS INGREDIENTS

PRINCIPAL HAZARDOUS COMPONENT (S)	%	ORAL LD_{50}	DERMAL LD_{50}	TLV (Unit

SECTION III PHYSICAL DATA

BOILING POINT (°F)	> 212	SPECIFIC GRAVITY (H_2O=1)	1.033
VAPOR PRESSURE (mmHg.)	Similar to Water	PERCENT VOLATILE BY VOLUME (%)	80
VAPOR DENSITY (AIR=1)	Similar to Water	pH	3.0 - 4.0
SOLUBILITY IN WATER	100%		

APPEARANCE AND ODOR: Viscous clear, colorless to pale- yellow liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used)	Not flammable	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA	Product is not flammable.			
SPECIAL FIRE FIGHTING PROCEDURES	None			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

On the basis of animal testing, we would not expect this product to produce any skin or eye irritation. The acute oral LD_{50} (rats) is 14.6 ml/kg.

EMERGENCY AND FIRST AID PROCEDURES

Good First Aid should be followed in all cases of exposure.

In case of eye contact, flush with plenty of water for at least 15 minutes. If irritation develops, call a physician.

SECTION VI REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	STABLE	X	
	UNSTABLE		

INCOMPATABILITY (Materials to Avoid): Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Unknown

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
MAY OCCUR	NO	X	

SECTION VII SPILL OR LEAK PROCEDURES

REPORTABLE QUANTITIES (RQ) IN LBS. OF EPA HAZARDOUS SUBSTANCES IN PRODUCT

1. N/A
2.
3.

NOTIFY EPA OF PRODUCT SPILLS EQUAL TO OR EXCEEDING N/A LBS.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Dispose of in accordance with local, state, and federal regulations. Dike area to contain as much spilled material as possible. Remove any remaining material by absorbing on vermiculite or other suitable absorbing material and place in a sealed metal container for disposal. Product will make surfaces slippery. Hose contaminated surfaces thoroughly.

WASTE DISPOSAL METHOD

Flush product waste with plenty of water.
Dispose of in accordance with local, state, and federal regulations.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify Type): Not Required

VENTILATION	LOCAL EXHAUST	SPECIAL
Normal	Not Required	
	MECHANICAL (General): Not Required	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Not Required	Not Required

OTHER PROTECTIVE EQUIPMENT: Not Required

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Exercise caution in the storage and handling of all chemical substances. Wash thoroughly after handling. Keep container closed.

OTHER PRECAUTIONS

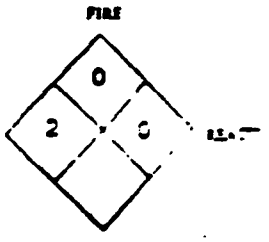
ANTIPCL 662

QUICK IDENTIFIER

Continental Products of Texas

100 Industrial • P O Box 3627 • Odessa, Texas 79760
Telephone No. (915) 337-4691

NFPA Designation



MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTITY

Common Name: (used on label) (Trade Name & Synonyms) ANTIPCL 662

Chemical Name: Zinc Organic Phosphonate Formula: $Zn_xC_xH_x(PO_4)_x$

Chemical Family: Metal Organic

Cas No.

SECTION 2 - HAZARDOUS INGREDIENTS

Hazardous Component(s)	%	Threshold Limit Value (units)
Zinc Chloride		1 mg/m³

SECTION 3 - PHYSICIAL & CHEMICAL CHARACTERISTICS (Fire & Explosive Data)

Boiling Point	None	Specific Gravity (H₂O = 1)	No	Vapor Pressure (mm Hg)	None		
Percent Volatile by Volume (%)	No	Vapor Density (Air = 1)	None	Evaporation Rate (_____ = 1)	No		
Solubility in Water	100%	Reactivity in Water	NA				
Appearance and Odor	White Powder						
Flash Point	None CDC	Flammable Limits in Air % by Volume	NA	Extinguisher Media	None	Auto-Ignition Temperature	NA
Special Fire Fighting Procedures	None	Lower	Upper				
Unusual Fire and Explosion Hazards	None						

SECTION 4 - PHYSICAL HAZARDS

Stability: STABLE [X] UNSTABLE [ ] CONDITIONS TO AVOID

INCOMPATABILITY (MATERIALS TO AVOID) NA

HAZARDOUS DECOMPOSITION PRODUCTS NA

HAZARDOUS POLYMERIZATION CONDITIONS TO AVOID NA

WILL NOT OCCUR [ ] MAY OCCUR [ ]

Threshold Limit Value: 1 mg/M^3 (Source - ACGIH)

Signs and Symptoms of Exposure

1. Acute Overexposure: May cause damage to mucous membranes

2. Chronic Overexposure: May cause sensory problems (ACGIH)

Medical Conditions Generally Aggravated by Exposure: NA

Chemical Listed as Carcinogen or Potential Carcinogen: UN

National Toxicology Program: Yes [X] No [ ]

I.A.R.C. Monographs: Yes [X] No. [ ]

OSHA: Yes [X] No. [ ]

OSHA Permissible Exposure Limit: Exceeds 2%

ACGIH Threshold Limit Value: 1 mg/M^3

Other Exposure Limit Used: NA

Emergency and First Aid Procedures

1. Inhalation: Remove to fresh air.

2. Eyes: Flush with plenty of water.

3. Skin: Flush with water, remove clothing.

4. Ingestion: Do Not induce vomiting, give large quantities of milk or water. Call physician - Never give anything by mouth to an unconscious person.

SECTION 6 - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type): Dust respirator

Ventilation: Yes — Local Exhaust: Yes — Mechanical (General): Yes — Special: NA — Other: NA

Protective Gloves: No — Eye Protection: Safety Glasses

Other Protective Clothing or Equipment: NA

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: None

Steps to be Taken in Case Material is Released or Spilled: Flush with water to chemical sewer.

Waste Disposal Methods: Dispose of according to State and Federal regulations for chemical waste.

Date Issued: 11-13/85

Abbreviations Used
NA Not Applicable
ND Not Determined
UN Unknown

Prepared by: Continental Products of Texas
Eric Klein

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y. 12305

Phone: (518) 385-4085 DIAL COMM 8*235-4085

MATERIALS INFORMATION SERVICES

NO. 9

SULFURIC ACID, CONCENTRATED

REVISION B

Date October 1980

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: SULFURIC ACID, CONCENTRATED
OTHER DESIGNATIONS: Oil of Vitriol, Hydrogen Sulfate, H_2SO_4, GE Material D4A2, CAS #007 664 939
DESCRIPTION: Material consists of about 93-98% H_2SO_4 with water and traces of impurities.
MANUFACTURER: Available from many suppliers.

SECTION II. INGREDIENTS AND HAZARDS	%	HAZARD DATA
Hydrogen Sulfate (H_2SO_4) Water	93-98 Balance*	TLV 1 mg/m^3 for sulfuric acid† Human, mist inhal. TCLo 3 mg/m^3, 24 wk (Toxic Mouth Effects) Rat, Oral LD_{50} 2140 mg/kg

*Material is obtained by the reaction of SO_3 and water. Can contain low impurity levels, such as 0.02% max of iron as Fe. Properties vary with H_2SO_4 content.

†Current OSHA standard and ACGIH (1980) TLV. NIOSH has a 10-hr-TWA, 40 hr work week, of 1 mg/m^3.

SECTION III. PHYSICAL DATA

	93.19% H_2SO_4	98.33% H_2SO_4	100% H_2SO_4
Boiling point, 1 atm, deg C	ca 281	ca 338	ca 330 (dc)
Specific gravity (60/60 F)	1.8354	1.84	1.84
Deg. Baume	66	—	—
Volatiles, % at 340 C	ca 100	ca 100	ca 100
Melting point, deg C	ca -34	ca 3	10.4
Vapor press, mm Hg @ 100 F	<1	—	—

Water solubility: Completely miscible.

Appearance & Odor: Clear, colorless, hygroscopic oily liquid with no odor.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air	LOWER	UPPER
None - nonflammable	N/A	N/A	N/A	N/A

Even though sulfuric acid is nonflammable, it is hazardous when present in a fire area. Small fires may be smothered with suitable dry chemical. Cool exterior of storage tanks of H_2SO_4 with water to avoid rupture if exposed to fire. Do not add water or other liquid to the acid! The acid, especially when diluted with water, can react with metals to liberate flammable hydrogen gas.

Sulfuric acid mists and vapors from a fire area are corrosive. (See Sect. V.)

Firefighters to wear self-contained breathing equipment and full protective clothing.

SECTION V. REACTIVITY DATA

Sulfuric acid is stable under normal conditions of use and storage. It does not undergo hazardous polymerization.

It is a strong mineral acid reacting with bases and metals. The concentrated acid is a strong oxidizing agent and can cause ignition of combustible materials on contact. The concentrated aid is also a dehydrating agent, picking up moisture readily from the air or other materials.

Reacts exothermically with water. (Acid should always be added slowly to water. Water added to acid can cause boiling and uncontrolled splashing of the acid.)

Sulfur oxides can result from decomposition and from oxidizing reactions of sulfuric acid.

GENERAL ELECTRIC

NO. 9

SECTION VI. HEALTH HAZARD INFORMATION

TLV 1 mg/m^3

Concentrated sulfuric acid is a strong mineral acid, an oxidizing agent, and a dehydrating agent that is rapidly damaging to all human tissue with which it comes in contact. Ingestion may cause severe injury or death. Eye contact gives severe or permanent injury. Inhalation of mists can damage both the upper respiratory tract and the lungs.

FIRST AID:

Eye Contact: Immediately flush eyes with plenty of running water for at least 15 minutes (including under the eyelids). Speed in diluting and rinsing out acid with water is extremely important if permananet eye damage is to be avoided. Obtain medical help as soon as possible.

Skin Contact: Immediately flush affected areas with water, removing contaminated clothing under the safety shower. Continue washing with water and get medical attention.

Inhalation: Remove to fresh air. Restore breathing. Call a physician immediately.

Ingestion: Dilute acid immediately with large amounts of milk or water, then give milk of magnesia to neutralize. Do not induce vomiting; if it occurs spontaneously, continue to administer fluid. Obtain medical attention as soon as possible.

Maintain observation of patient for possible delayed onset of pulmonary edema.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Prevent contact with the acid. Provide adequate ventilation to control workplace concentrations. Minor leaks or spills can be diluted with plenty of water and neutralized with soda ash or lime. If water is not available, cover contaminated area with sand, ashes, or gravel and neutralize with soda ash or lime.

Major spills must be handled by a predetermined plan. Contact supplier for assistance in this planning and to meet local requirements and disposing of large amounts.

DISPOSAL: Follow Federal, State, and Local regulations.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Provide general ventilation to meet current TLV requirements in the workplace. Where mists are up to 50 mg/m^3, a high efficiency particulate respirator with full facepiece is warranted; a Type C supplied air respirator with full facepiece operated in pressure demand mode is used to 100 mg/m^3. Avoid eye contact by use of chemical safety goggles or face shield where splashing may occur. Imperious protective clothing, such as rubber gloves, aprons, boots, and suits are recommended to avoid body contact with this acid.

Eyewash fountain and safety showers with deluge type heads should be readily available where this material is handled or stored.

Comprehensive preplacement and annual medical examinations with emphasis on dental erosion, cardiopulmonary system, and mucous membrane irritation and cough.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Sulfuric acid in carboys or drums should be stored in clean ventilated storage areas having acid resistant floors with good drainage. Keep out of direct sunlight, do not store above 32 C. Storage facilities to be separate from metallic powders, chromates, chlorates, nitrates, carbides, oxidizables, etc. Soda ash, sand or lime should be kept in general storage or work areas for emergency use. Protect containers against physical damage. Glass bottles need extra protection. Sulfuric acid is highly corrosive to most metals especially below 77% H_2SO_4. Avoid breathing mist or vapors. Avoid contact with skin or eyes. Do not ingest. Do not add water to concentrated acid. Do not smoke. Use nonsparking tools and vapor-proof type electrical fixtures.

DATA SOURCE(S) CODE: 2-12,19,20,24,26,31, 37-39

APPROVALS: MIS CRD J.M. Nielsen

Industrial Hygiene and Safety 10-14-80

MEDICAL REVIEW: Oct. 26, 1980

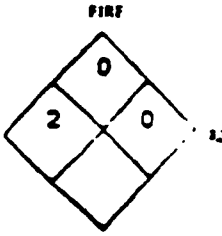
GENERAL ELECTRIC

Continental Products of Texas

100 Industrial • P.O. Box 362[illegible] • Odessa, Texas 79760
Telephone No. (915) 337-[illegible]

QUICK IDENTIFIER

NFPA Designation



MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTITY

Common Name: (used on label) (Trade Name & Synonyms) TOXSEPE 35

Chemical Name NA Formula NA

Chemical Family NA

Cas No. NA (Information according to Suppliers MSDS)

SECTION 2 - HAZARDOUS INGREDIENTS

Hazardous Component(s)	%	Threshold Limit Value (units)
NA		NA

SECTION 3 - PHYSICIAL & CHEMICAL CHARACTERISTICS (Fire & Explosive Data)

Boiling Point 209°F

Specific Gravity (H2O = 1) 1.01

Vapor Pressure (mm Hg) UN

Percent Volatile by Volume (%) 80%

Vapor Density (Air = 1) NA

Evaporation Rate (_____ = 1) Water

Solubility in Water Complete

Reactivity in Water NA

Appearance and Odor Light straw to water white liquid

Flash Point none

Flammable Limits in Air % by Volume NA

Extinguisher Media NA

Auto-Ignition Temperature NA

Special Fire Fighting Procedures NA

Lower Upper

Unusual Fire and Explosion Hazards NA

SECTION 4 - PHYSICAL HAZARDS

Stability STABLE [X] UNSTABLE [ ] CONDITIONS TO AVOID NA

INCOMPATABILITY (MATERIALS TO AVOID) NA

HAZARDOUS DECOMPOSITION PRODUCTS NA

[illegible] CONDITIONS TO AVOID NA

[illegible] WILL OCCUR ____ WILL NOT OCCUR X

SECTION 5 - HEALTH HAZARDS

Threshold Limit Value: NA

Signs and Symptoms of Exposure

1. Acute Overexposure: Corrosive. Causes eye damage and skin irritation

2. Chronic Overexposure: NA

Medical Conditions Generally Aggravated by Exposure: NA

Chemical Listed as Carcinogen or Potential Carcinogen	National Toxicology Program	I.A.R.C. Monographs	OSHA
UN	Yes [ ] No [X]	Yes [ ] No. [X]	Yes [ ] No. [X]

OSHA Permissible Exposure Limit	ACGIH Threshold Limit Value	Other Exposure Limit Used
NA	NA	NA

Emergency and First Aid Procedures

1. Inhalation: UN - Remove to fresh air.

2. Eyes: Flush eyes with plenty of water for at least 15 minutes. Call physician.

3. Skin: Flush skin with plenty of water for at least 15 minutes. Remove and wash contaminated clothing before reuse.

4. Ingestion: Fatal if swallowed.Avoid contamination of food.If swallowed drink promptly large quantities of milk, egg whites, gelatin solution or if these are not available drink large amounts of water. Avoid alcohol. Call physician immediately. Note to physician: Probable mucosal damage may contraindicate use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsion may be needed.

SECTION 6 - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type): NA

Ventilation	Local Exhaust	Mechanical (General)	Special	Other
Yes	Non-recirculating			

Protective Gloves: Rubber gloves

Eye Protection: Safety goggles or face shield

Other Protective Clothing or Equipment: Face shield

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: Toxic to fish keep out of lakes, streams or ponds. Do not contaminate water by cleaning of equipment or disposal of wastes. Do not use,pour,spill or store nea heat or open flame.

Steps to be Taken in Case Material is Released or Spilled: Hose down area of spill.Do not allow this product to come in contact with gra or plants.Do not allow in drinking water or swimming pool.

Waste Disposal Method: Dispose of according to State and Federal Regulations

NO WARRANTY, EXPRESS OF IMPLIED OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE IS MADE. BUYER ASSUMES ALL RISK OF USE, STORAGE AND HANDLING. CONTINENTAL PRODUCTS OF TEXAS SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING DIRECTLY OR INDIRECTLY IN CONNECTION WITH THE PURCHASE, USE, STORAGE OR HANDLING OF THIS PRODUCT.

Date Issued: 11/22/85

Approximate Date Next Revision is to be Determined:

Continental Products of Texas

Prepared by: Eric Klim

Commercial Products of Texas

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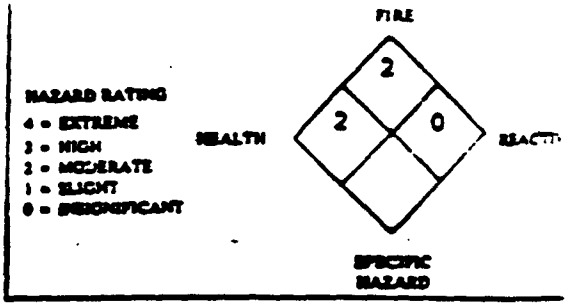
Telephone No. (915) 337-4481

QUICK IDENTIFIER

NFPA Designation 704



MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTITY

Common Name: (used on label) (Trade Name & Synonyms) TOXSENE 37

Chemical Name: Methylene bis(thiocyanate), MBT Formula: NA

Chemical Family: NA

Cas No. NA

SECTION 2 - HAZARDOUS INGREDIENTS

Hazardous Component(s)	%	Threshold Limit Value (units)
NA		

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS (Fire & Explosive Data)

Boiling Point: NA

Specific Gravity (H2O=1): 1.04

Vapor Pressure (mm Hg): NA

Percent Volatile by Volume (%): NA

Vapor Density (Air = 1): NA

Evaporation Rate (_____=1): NA

Solubility in Water: < 5%

Reactivity in Water: Soluble

Appearance and Odor: Creamy beige liquid, organic odor

Flash Point: 127°F TOC

Flammable Limits in Air % by Volume: NA — Lower — Upper

Extinguisher Media: CO_2, Water, Dry Foam

Auto-Ignition Temperature: NA

Special Fire Fighting Procedures: Wear self contained breathing apparatus

Unusual Fire and Explosion Hazards: None

SECTION 4 - PHYSICAL HAZARDS

STABILITY — STABLE [X] UNSTABLE [ ] CONDITIONS TO AVOID: DOT Flammable material

INCOMPATABILITY (MATERIALS TO AVOID): Open flame. Strong oxidizing agents & temperatures > 212°F.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition produces carbon dioxide, sulfur dioxide, nitrous oxide and water.

HAZARDOUS POLYMERIZATION — MAY OCCUR [ ] WILL NOT OCCUR [X] CONDITIONS TO AVOID: Avoid temperatures above 300°F.

Threshold Limit Value: NA

Signs and Symptoms of Exposure

1. Acute Overexposure: Will cause eye damage if splashed on will cause skin irritation

2. Chronic Overexposure: NA

Medical Conditions Generally Aggravated by Exposure: NA

Chemical Listed as Carcinogen or Potential Carcinogen: UN

National Toxicology Program: Yes [ ] No [X]

I.A.R.C. Monographs: Yes [ ] No. [X]

OSHA: Yes [ ] No. [X]

OSHA Permissible Exposure Limit: NA

ACGIH Threshold Limit Value: NA

Other Exposure Limit Used: NA

Emergency and First Aid Procedures

1. Inhalation: Remove to fresh air. Exact effects unknown. Get medical attention immediately.

2. Eyes: Immediately flush with water and get medical attention at once. Will cause eye damage.

3. Skin: May be harmful or fatal if absorbed thru skin. Irritating to skin, remove contamin: clothing and wash skin with soap and water at once. If irritation persists get medical help. Wash contaminated clothing before reuse.

4. Ingestion: Harmful or fatal if swallowed. Get prompt medical help. If person is conscious, gi: water or milk to dilute. Induce vomiting.

SECTION 6 - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type): None

Ventilation: Yes — Local Exhaust: Yes — Mechanical (General): Yes — Special: NA — Other: NA

Protective Gloves: Rubber gloves

Eye Protection: Chemical safety goggles which are dust and splash proof or face shield

Other Protective Clothing or Equipment: Impervious clothing, rubber boots.
Safety shower/eye wash located in immediate area.

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: Protect from freezing & temperatures in excess of 140°F. Keep container closed when not in use. Do Not store near heat or open flame.

Steps to be Taken in Case Material is Released or Spilled: Collect liquid with absorbent material. Do Not flush to open sewer or water sources.

Waste Disposal Methods: Dispose of according to State and Federal Regulations.

Date Issued: 11/22/85

Abbreviations used:
NA = Not Applicable
ND = Not Determined
UN = Unknown

Prepared by: Continental Products of Texas
Eric Klein

Commercial Products of Texas

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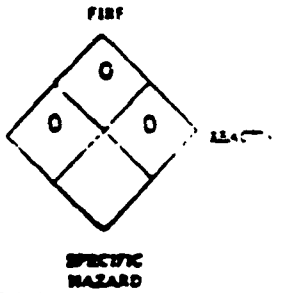
Telephone No. (915) [illegible]

QUICK IDENTIFIER

NFPA Designation "Dia"

HAZARD RATING
4 = EXTREME
3 = HIGH
2 = MODERATE
1 = SLIGHT
0 = INSIGNIFICANT



MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTITY

Common Name: (used on label) (Trade Name & Synonyms) TOXSENE-39

Chemical Name NA Formula NA

Chemical Family NA

Cas No. NA

SECTION 2 - HAZARDOUS INGREDIENTS

Hazardous Component(s)	%	Threshold Limit Value (units)
NA		

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS (Fire & Explosive Data)

Boiling Point: above 212°F.

Specific Gravity (H_2O = 1): 1.15

Vapor Pressure (mm Hg): Same as water

Percent Volatile by Volume (%): 46%

Vapor Density (Air = 1): same as H_2O

Evaporation Rate (_____ = 1): 1

Solubility in Water: miscible

Reactivity in Water:

Appearance and Odor: Clear brown solution with slight odor

Flash Point: Above 212°F

Flammable Limits in Air % by Volume: Lower Not Flammable Upper

Extinguisher Media: Water fog, carbon dioxide, dry chemical apparatus

Auto-Ignition Temperature:

Special Fire Fighting Procedures: None

Unusual Fire and Explosion Hazards: None

SECTION 4 - PHYSICAL HAZARDS

Stability STABLE [X] UNSTABLE [ ] CONDITIONS TO AVOID None

INCOMPATABILITY (MATERIALS TO AVOID) None

HAZARDOUS DECOMPOSITION PRODUCTS None

Hazardous Polymerization CONDITIONS TO AVOID None

MAY OCCUR [ ] WILL NOT OCCUR [X]

SECTION 5 - HEALTH HAZARDS

Threshold Limit Value: NA

Signs and Symptoms of Exposure

1. Acute Overexposure: Harmful if swallowed. Not normally irritating to skin. Mildly irritating to eye

2. Chronic Overexposure: NA

Medical Conditions Generally Aggravated by Exposure: NA

Chemical Listed as Carcinogen or Potential Carcinogen: UN

National Toxicology Program: Yes [ ] No [X]

I.A.R.C. Monographs: Yes [ ] No. [X]

OSHA: Yes [ ] No. [X]

OSHA Permissible Exposure Limit: NA

ACGIH Threshold Limit Value: NA

Other Exposure Limit Used: NA

Emergency and First Aid Procedures

1. Inhalation: Remove to fresh air.

2. Eyes: Wash with plenty of clear, cool water. May be mildly irritating.

3. Skin: Wash with plenty of clear, cool water. Not normally irritating.

4. Ingestion: Induce vomiting and obtain medical attention.

SECTION 6 - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type): No special protection needed.

Ventilation: yes — Local Exhaust: normal — Mechanical (General): — Special: — Other:

Protective Gloves: rubber gloves — Eye Protection: Safety goggles

Other Protective Clothing or Equipment: none

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: Keep containers closed when not in use.

Steps to be Taken in Case Material is Released or Spilled: Absorb in sawdust or sand and bury in an approved location. Do not reuse empty drum.

Waste Disposal Method: Dispose of according to State and Federal Regulations

Date Issued 11/22/85

Abbreviations Used
NA Not Applicable
ND Not Determined
UN Unknown

Continental Products of Texas

Prepared by: Eric Klein

Eric Klein

Continental Products of Texas

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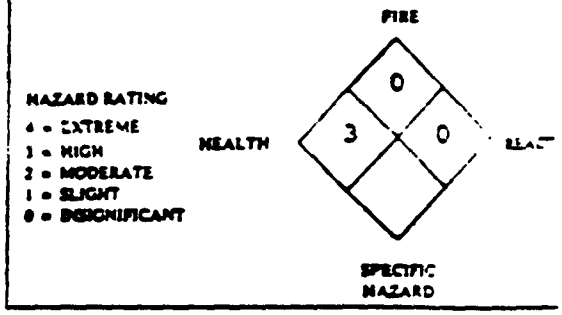
Telephone No. (915) 337-4681

CAUSTIC SODA LIQUID
QUICK IDENTIFIER

NFPA Designation 704



MATERIAL SAFETY DATA SHEET

SECTION I - IDENTITY

Common Name: (used on label) (Trade Name & Synonyms) Caustic Soda Liquid

Chemical Name: Sodium Hydroxide Formula: NaOH

Chemical Family: Alkali

Cas No.

SECTION 2 - HAZARDOUS INGREDIENTS

Hazardous Component(s)	%	Threshold Limit Value (units)
Sodium Hydroxide	5-%	2 mg/m^3

SECTION 3 - PHYSICIAL & CHEMICAL CHARACTERISTICS (Fire & Explosive Data)

Boiling Point: 288-298 ° F.
Specific Gravity (H2O = 1): 1.525
Vapor Pressure (mm Hg): 1
Percent Volatile by Volume (%): NA
Vapor Density (Air = 1): Non flammable
Evaporation Rate (_____ = 1): NA
Solubility in Water: 100 %
Reactivity in Water:
Appearance and Odor: Water white to slightly turbid liquid, no odor
Flash Point: none
Flammable Limits in Air % by Volume: Lower / Upper
Extinguisher Media: CO_2, Dry chemical, Alcohol foam
Auto-Ignition Temperature: non-flammable
Special Fire Fighting Procedures: Pressure demand self-contained respiratory protection & protective clothing should be worn by fire fighters in area where caustic soda is stored.
Unusual Fire and Explosion Hazard: None

SECTION 4 - PHYSICAL HAZARDS

STABLE	X	UNSTABLE	CONDITIONS TO AVOID

INCOMPATABILITY (MATERIALS TO AVOID): Organic materials, concentrated acids and some metals may cause violent reaction

HAZARDOUS DECOMPOSITION PRODUCTS: none

[illegible] CONDITIONS TO AVOID

SECTION 5 - HEALTH HAZARDS

Threshold Limit Value: 2 mg/m^3 (OSHA) (ACGIH)

Signs and Symptoms of Exposure

1. Acute Overexposure: Contact with body tissue causes severe burns, eye contact may cause blindness, swallowing can be fatal. Inhalation of mists causes severe irritation of respi. tract.

2. Chronic Overexposure:

Medical Conditions Generally Aggravated by Exposure: NA

Chemical Listed as Carcinogen or Potential Carcinogen: NA

National Toxicology Program: Yes [ ] No [X]

I.A.R.C. Monographs: Yes [ ] No. [X]

OSHA: Yes [ ] No. [X]

OSHA Permissible Exposure Limit: NA

ACGIH Threshold Limit Value: 2 mg/m^3

Other Exposure Limit Used: 2 mg/m^3

Emergency and First Aid Procedures

1. Inhalation: Get person out of contaminated area to fresh air. If breathing has stopped artificia respiration should be started. Oxygen may be administered. Seek medical help at once

2. Eyes: Immediately flush eyes with plenty of water for at least 15 minutes. Call a physicia Eyes MUST BE WASHED WITHIN ONE (1) MINUTE OF EXPOSURE.

3. Skin: Immediately flush skin with plenty of water for at least 15 minutes. Call a physicia Remove contaminated clothing and foot wear and wash before reuse.

4. Ingestion: Do Not Induce vomiting. Give large quantities of water. If available give several glasses of milk. Never give anything by mouth to an unconscious person. Get Medical help at once.

SECTION 6 - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type): NIOSH/MESA approved mechanical filter type for exposure to mists above TLV

Ventilation: Local Exhaust: yes; Mechanical (General): yes; Special: ; Other:

Protective Gloves: Rubber gloves

Eye Protection: Close fitting chemical safety goggles and face shield

Other Protective Clothing or Equipment: Rubber apron, rubber boots, plastic hard hat, PVC clothing. Eye wash fountain, safety shower should be available.

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: Do Not Store in magnesium, zinc, (galvanized) tin, chromium, brass, bronze or aluminum. Maintain storage temp. between 75°F. and 140°F. in steel equipment.

Steps to be Taken in Case Material is Released or Spilled: Dike area to control spill. Take up spilled material for disposal or recovery. Neutralize any remaining materials with dilute acid. Use caution - heat relea occurs: could cause violent spattering.

Waste Disposal Methods: Dispose of according to State and Federal Regulations.

Date Issued 11/19/88

Continental Products of Texas

Prepared by: Eric Klein

CORLESS 130

QUICK IDENTIFIER

Continental Products of Texas

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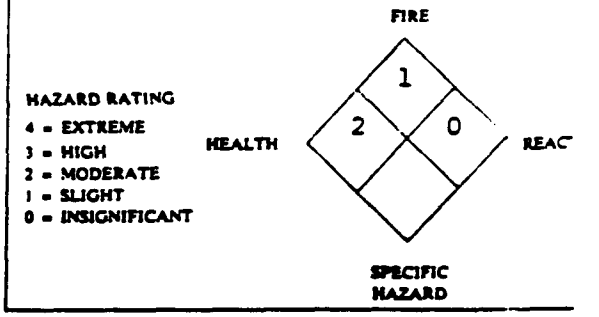
NFPA Designation 704



MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTITY

Common Name: (used on label) (Trade Name & Synonyms): CORLESS 130

Chemical Name: Amino Ethyl Piperazine — Formula: NH $C_2H_4C_6H_8$

Chemical Family: Piperazine Amine

Cas No.: NA

SECTION 2 - HAZARDOUS INGREDIENTS

Hazardous Component(s)	%	Threshold Limit Value (units)
Amino Ethyl piperazine	30	Oral - Rat 2140 (RTECT) Dermal - Rabbit 880 (RTECT)

SECTION 3 - PHYSICIAL & CHEMICAL CHARACTERISTICS (Fire & Explosive Data)

Boiling Point: 230° F.

Specific Gravity (H,O = 1): 0.97

Vapor Pressure (mm Hg): 760

Percent Volatile by Volume (%): (@ 230°F.) 70 %

Vapor Density (Air = 1): NA

Evaporation Rate (_____ = 1): 1

Solubility in Water: 100%

Reactivity in Water:

Appearance and Odor: Dark amber, ammonia odor

Flash Point: 420°F COC

Flammable Limits in Air % by Volume: NA — Lower: — Upper:

Extinguisher Media: Water, CO_2, Dry chemical

Auto-Ignition Temperature: NA

Special Fire Fighting Procedures: None

Unusual Fire and Explosion Hazards: None

SECTION 4 - PHYSICAL HAZARDS

Stability: STABLE [X] UNSTABLE [ ] CONDITIONS TO AVOID: NA

INCOMPATABILITY (MATERIALS TO AVOID): NA

HAZARDOUS DECOMPOSITION PRODUCTS: NA

Hazardous Polymerization: CONDITIONS TO AVOID: NA

MAY OCCUR [ ] WILL NOT OCCUR [ ]

SECTION 5 - HEALTH HAZARDS

Threshold Limit Value: 70 mg/m^3

Signs and Symptoms of Exposure

1. Acute Overexposure

2. Chronic Overexposure

Medical Conditions Generally Aggravated by Exposure: NA

Chemical Listed as Carcinogen or Potential Carcinogen: UN

National Toxicology Program Yes [ ] No [X]

I.A.R.C. Monographs Yes [ ] No. [X]

OSHA Yes [ ] No. [X]

OSHA Permissible Exposure Limit:

ACGIH Threshold Limit Value: 70 mg/m^3

Other Exposure Limit Used: NA

Emergency and First Aid Procedures

1. Inhalation: Remove to fresh air

2. Eyes: Flush with water for 15 minutes

3. Skin: Wash off with water, remove contaminated clothing

4. Ingestion: Induce vomiting

SECTION 6 - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type): NA

Ventilation: NA | Local Exhaust: NA | Mechanical (General): NA | Special: NA | Other: NA

Protective Gloves: Rubberized gloves

Eye Protection: Safety glasses

Other Protective Clothing or Equipment: None

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: NA

Steps to be Taken in Case Material is Released or Spilled: Wash with water

Waste Disposal Methods: Dispose of according to State and Federal Regulations

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Date Issued: 11/15/85

Abbreviations Used
NA Not Applicable
ND Not Determined

Continental Products of Texas

Prepared by ERIC Kim

Continental Products of Texas

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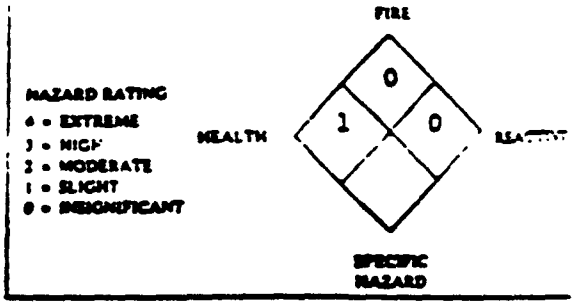
QUICK IDENTIFIER

NFPA Designation



MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTITY

Common Name: (used on label) (Trade Name & Synonyms) DeOx-21

Chemical Name: Sodium Sulfite Formula: Na_2SO_3

Chemical Family: Sulfur

Cas No.

SECTION 2 - HAZARDOUS INGREDIENTS

Hazardous Component(s)	%	Threshold Limit Value (units)
Sulfurous Acid		1 ppm 0.1 mg/m^3
Sodium Sulfite	99%	
Cobalt Sulfate	1%	

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS (Fire & Explosive Data)

Boiling Point: NA Specific Gravity (H2O = 1): 2.63 Vapor Pressure (mm Hg): NA

Percent Volatile by Volume (%): NA Vapor Density (Air = 1): NA Evaporation Rate (_____ = 1): NA

Solubility in Water: 100% Reactivity in Water: NA

Appearance and Odor: White powder - odorless

Flash Point: None COC Flammable Limits in Air % by Volume: NA Extinguishing Media: NA Auto-Ignition Temperature: NA

Special Fire Fighting Procedures: NA Lower Upper

Unusual Fire and Explosion Hazards: Will emit sulfur dioxide fumes when heated dry above 500°F.

SECTION 4 - PHYSICAL HAZARDS

Stability: STABLE [X] UNSTABLE [ ] CONDITIONS TO AVOID: NA

INCOMPATABILITY (MATERIALS TO AVOID): NA

HAZARDOUS DECOMPOSITION PRODUCTS: NA

[illegible] CONDITIONS TO AVOID: NA

Threshold Limit Value: 0.1 mg/m^3 (NIOSH)

Signs and Symptoms of Exposure

1. Acute Overexposure: May irritate eyes and skin

2. Chronic Overexposure: NA

Medical Conditions Generally Aggravated by Exposure: UN

Chemical Listed as Carcinogen or Potential Carcinogen: UN

National Toxicology Program: Yes [ ] No [X]

I.A.R.C. Monographs: Yes [ ] No. [X]

OSHA: Yes [ ] No. [X]

OSHA Permissible Exposure Limit: 1 ppm

ACGIH Threshold Limit Value: 0.1 mg/m^3

Other Exposure Limit Used: NA

Emergency and First Aid Procedures

1. Inhalation: Can irritate nose, throat and lungs. Get to fresh air if overexposed

2. Eyes: Flush with water

3. Skin: Wash off

4. Ingestion: Do not induce vomiting, drink plenty of liquids

SECTION 6 - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type): NA

Ventilation: Local Exhaust: Yes; Mechanical (General): Yes; Special: ; Other:

Protective Gloves: Rubberized Gloves

Eye Protection: Safety Glasses

Other Protective Clothing or Equipment: None

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: Avoid excess heat - over 250°F

Steps to be Taken in Case Material is Released or Spilled: Sweep or wash with water

Waste Disposal Methods: Dispose of according to State and Federal Regulations

Date Issued: 11/16/85

Continental Products of Texas

Prepared by: Eric Flint

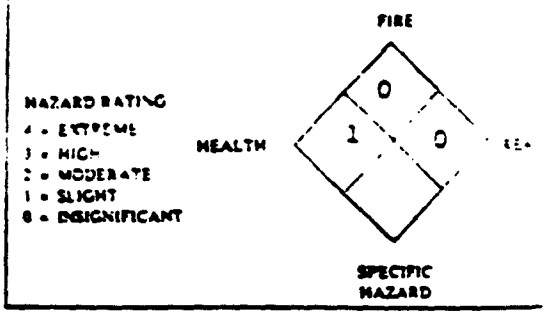
Eric Flint

Continental Products of Texas

100 Industrial • P.O. Box 3627 • Odessa, Texas 79760
Telephone No. (915) 337-4665

HYMOL 82
QUICK IDENTIFIER

NFPA Designation



MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTITY

Common Name (used on label)
(Trade Name & Synonyms) HYMOL 82

Chemical Name: Sodium Tripolyphosphate

Formula: $(Na)x(PO_3)x$

Chemical Family: Inorganic Phosphate

Cas No.

SECTION 2 - HAZARDOUS INGREDIENTS

Hazardous Component(s)	%	Threshold Limit Value (units)
Ingredients determined non-hazardous, per 29 CFR 1910.1200		

SECTION 3 - PHYSICAL DATA

Point: 220°F

Specific Gravity (H₂O = 1): 1.2

Vapor Pressure (mm Hg): 760

Percent Volatile by Volume (%): NA

Vapor Density (Air = 1): 1

Evaporation Rate (_____ = 1): 1

Solubility in Water: 100%

Reactivity in Water:

Appearance and Odor: Dark amber liquid, odorless

Flash Point: None COC

Flammable Limits in Air % by Volume: Lower Upper

Extinguisher Media: Water, CO_2, Dry chemical

Auto-ignition Temperature:

Special Fire Fighting Procedures: NA

Unusual Fire and Explosion Hazards: NA

SECTION 4 - PHYSICAL HAZARDS

Stability: STABLE X UNSTABLE

CONDITIONS TO AVOID: None

INCOMPATABILITY (MATERIALS TO AVOID): NA

HAZARDOUS DECOMPOSITION PRODUCTS: NA

[illegible] CONDITIONS TO AVOID: None

SECTION 5 - HEALTH HAZARDS

Threshold Limit Value: NA

Signs and Symptoms of Exposure

1. Acute Overexposure: May irritate eyes, skin slightly

2. Chronic Overexposure: NA

Medical Conditions Generally Aggravated by Exposure: NA

Chemical Listed as Carcinogen or Potential Carcinogen: NA

National Toxicology Program: Yes [ ] No [X]

I.A.R.C. Monographs: Yes [ ] No. [X]

OSHA: Yes [ ] No. [X]

OSHA Permissible Exposure Limit: NA

ACGIH Threshold Limit Value: NA

Other Exposure Limit Used: NA

Emergency and First Aid Procedures

1. Inhalation: Slight irritant, remove from exposure

2. Eyes: May burn, flush with water for 15 minutes

3. Skin: Wash with water

4. Ingestion: Drink plenty of liquids

SECTION 6 - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type)

Ventilation: Local Exhaust: Yes; Mechanical (General): Yes; Special: ; Other:

Protective Gloves: Rubber gloves

Eye Protection: Safety Glasses

Other Protective Clothing or Equipment: NA

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: NA

Steps to be Taken in Case Material is Released or Spilled: Wash area with water

Waste Disposal Methods: Dispose of according to State and Federal Regulations

Date Issued: 11/16/85

Abbreviations Used
NA Not Applicable
ND Not Determined
UK Unknown

Continental Products of Texas

Prepared by: Eric Klim

Eric Klim

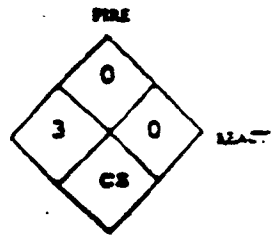
Continental Products of Texas

100 Industrial • P.O Box 3427 • Odessa Texas 79760
Telephone No. (915) 337-4681

CHROMINE T

QUICK IDENTIFIER

NFPA Designation 704



HAZARD RATING
4 - EXTREME
3 - HIGH
2 - MODERATE
1 - SLIGHT
0 - INSIGNIFICANT

CS-Carcinogen Suspect SPECIFIC HAZARD

MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTITY

Common Name: (used on label) (Trade Name & Synonyms) CHROMINE T

Chemical Name: Sodium Bichromate-Chromic Acid Formula: $Na_2Cr_2O_7 \cdot H_6C=O_4$ + Water

Chemical Family: Organic Chromates

Cas No. Blend

SECTION 2 - HAZARDOUS INGREDIENTS

Hazardous Component(s)	%	Threshold Limit Value (units)
Sodium Bichromate	Confidential	0.05 mg/m^3, ACGIH
Zinc Chloride	Confidential	1 mg/m^3, ACGIH

SECTION 3 - PHYSICIAL & CHEMICAL CHARACTERISTICS (Fire & Explosive Data)

Boiling Point: 212° F

Specific Gravity (H2O = 1): 1.4

Vapor Pressure mm Hg: (212°F) 760

Percent Volatile by Volume (%): 60%

Vapor Density (Air = 1): NA

Evaporation Rate (_____ = 1): 1

Solubility in Water: 100%

Reactivity in Water: NA

Appearance and Odor: Dark amber - odorless

Flash Point: None COC

Flammable Limits in Air % by Volume: NA Lower Upper

Extinguisher Media: CO_2, water, Dry Chemical.

Auto-Ignition Temperature: NA

Special Fire Fighting Procedures: May release toxic fumes if involved in fire

Unusual Fire and Explosion Hazards: NA

SECTION 4 - PHYSICAL HAZARDS

Stability STABLE [X] UNSTABLE [ ] CONDITIONS TO AVOID NA

INCOMPATABILITY (MATERIALS TO AVOID) Amines or strong reducing agents

HAZARDOUS DECOMPOSITION PRODUCTS Hydrogen chloride, zinc oxide

Hazardous Polymerization CONDITIONS TO AVOID NA

SECTION 5 - HEALTH HAZARDS

Threshold Limit Value: 0.05 mg/m^3 based on Cr^{+6}, ACGIH

Signs and Symptoms of Exposure

1. Acute Overexposure: Skin ulcers, dermatitis

2. Chronic Overexposure: Potential carcinogen

Medical Conditions Generally Aggravated by Exposure: UN

Chemical Listed as Carcinogen or Potential Carcinogen: Certain Chromium compounds have demonstrated to be carcinogenic on the basis of epedemialogical investigations

National Toxicology Program: Yes [X] No [ ]

I.A.R.C. Monographs: Yes [X] No. [ ]

OSHA: Yes [X] No. [ ]

OSHA Permissible Exposure Limit: 0.05 mg/m^3 in water soluble form Cr^{6+}

ACGIH Threshold Limit Value

Other Exposure Limit Used: NA

Emergency and First Aid Procedures

1. Inhalation: Avoid breathing dust, remove to fresh air

2. Eyes: Flush with water for 15 minutes

3. Skin: Wash off with water, remove contaminated clothing

4. Ingestion: Do Not induce vomiting, give plenty of liquids, water or milk, call physician. Never give anything by mouth to an unconscious person

SECTION 6 - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type): NA

Ventilation: Local Exhaust: Yes; Mechanical (General): Yes; Special: NA; Other: NA

Protective Gloves: Rubber gloves

Eye Protection: Safety glasses

Other Protective Clothing or Equipment: NA

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: Prevent prolonged skin contact

Steps to be Taken in Case Material is Released or Spilled: Wash with water into a contained area (sump or holding tank)

Waste Disposal Methods: Dispose of according to State and Federal Regulations
DOT Class I hazardous waste

Date Issued: 11/15/85

Continental Products of Texas

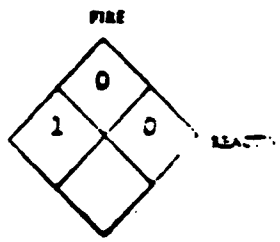
Prepared by: Eric Klein

Continental Products of Texas

100 Industrial • P.O. Box 3627 • Odessa, Texas 79760
Telephone No. (915) 337-4081

QUEST 40
QUICK IDENTIFIER

NFPA Designation



MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTITY

Common Name: (used on label; Trade Name & Synonyms) QUEST 40

Chemical Name: Nitrilotriacetic Acid — Formula: NA

Chemical Family: Organic chelating agent

Cas No. 5064-31-3

SECTION 2 - HAZARDOUS INGREDIENTS

Hazardous Component(s)	%	Threshold Limit Value (units)
Nitrilotriacetic Acid		$\simeq 10$ mg/m^3
Non-Hazardous		

SECTION 3 - PHYSICIAL & CHEMICAL CHARACTERISTICS (Fire & Explosive Data)

Boiling Point: NA
Specific Gravity (H$_2$O = 1): NA
Vapor Pressure (mm Hg): NA
Percent Volatile by Volume (%): 0.5 %
Vapor Density (Air = 1): NA
Evaporation Rate (_____ = 1): NA
Solubility in Water: 50%
Reactivity in Water: Soluble
Appearance and Odor: Clear liquid, no odor
Flash Point: NA
Flammable Limits in Air % by Volume: UN
Lower: Upper:
Extinguisher Media: Water, Dry Chemical, CO_2, Foam
Auto-Ignition Temperature:
Special Fire Fighting Procedures: NA
Unusual Fire and Explosion Hazards: NA Non-flammable

SECTION 4 - PHYSICAL HAZARDS

Stability: STABLE X UNSTABLE
CONDITIONS TO AVOID: Do not get into eyes

INCOMPATABILITY (MATERIALS TO AVOID): No specific incompatability

HAZARDOUS DECOMPOSITION PRODUCTS: NA

HAZARDOUS POLYMERIZATION
CONDITIONS TO AVOID: NA
MAY OCCUR ____ WILL NOT OCCUR X

Threshold Limit Value ≃ 10 mg/m^3 Respirable 5 mg/m^3 (ACGIH) TLV/VWA

Signs and Symptoms of Exposure

1. Acute Overexposure: May cause irritation to eyes and skin and throat

2. Chronic Overexposure: NA

Medical Conditions Generally Aggravated by Exposure: UN

Chemical Listed as Carcinogen or Potential Carcinogen: UN

National Toxicology Program Yes [ ] No [X]

I.A.R.C. Monographs Yes [ ] No. [X]

OSHA Yes [ ] No. [X]

OSHA Permissible Exposure Limit:

ACGIH Threshold Limit Value: ≃ 10 mg/m^3

Other Exposure Limit Used: NA

Emergency and First Aid Procedures

1. Inhalation: Remove to fresh air

2. Eyes: Flush eyes with plenty of water for at least 15 minutes

3. Skin: Wash skin with plenty of water for at least 15 minutes

4. Ingestion: Induce vomiting, consult a physician

SECTION 6 - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type): NA

Ventilation: yes Local Exhaust: yes Mechanical (General): yes Special: NA Other: NA

Protective Gloves: Rubber Eye Protection: Safety Goggles

Other Protective Clothing or Equipment: NA

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: NA

Steps to be Taken in Case Material is Released or Spilled: Wash down drain

Waste Disposal Methods: Dispose of according to State and Federal Regulations

Date Issued: 11/22/85

Abbreviations Used
NA Not Applicable
ND Not Determined
UN Unknown

Continental Products of Texas

Prepared by: Eric Klim

Eric Klim

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y. 12305

Phone: (518) 385-4085 DIAL COMM: 8*235-4085

MATERIALS INFORMATION SERVICES

NO. 323

ETHYLENE GLYCOL

REVISION B

Date November 1980

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: ETHYLENE GLYCOL
OTHER DESIGNATIONS: Glycol, 1,2-Ethanediol, $HOCH_2CH_2OH$, ASTM D2693, GE Material D5B38
CAS #000 107 211
MANUFACTURER: Available from many suppliers.

SECTION II. INGREDIENTS AND HAZARDS	%	HAZARD DATA
Ethylene glycol *Current ACGIH (1980) TLV; Intended Changes List has a ceiling value for vapors at 50 ppm or 125 mg/m^3.	ca 100	Vapor* TLV 100 ppm or 250 mg/m^3 Particulate TLV 10 mg/m^3 Human, oral LDLo 710 mg/kg Human, inhalation TCLo 10 g/m^3 Toxic irritant effects

SECTION III. PHYSICAL DATA

Boiling point, 1 atm, deg F (C)	387 (197)	Specific gravity (H_2O=1)	1.12
Vapor pressure @ 20 C, mm Hg	0.06	Evaporation rate (CCl_4=1)	1
Vapor density (Air=1)	2.1	Refractive index at 25 C	1.430
Viscosity @ 35 C (95 F), cp	12.3	Freezing point, deg C	-12.7
Solubility in water @ 20 C	Complete	Molecular weight	62.08

Appearance & Odor: Colorless, sweet- tasting (Poisonous!) hygroscopic liquid. Practically odorless.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air	LOWER	UPPER
		% by Vol.		
232 F (TCC) 245 F (OC)	752 F		3.2	15.3

Extinguishing Media: CO_2, water, dry chemical or alcohol foam (especially for large fires). Cool fire-exposed containers with water. Spills may be flushed and diluted with water to reduce flammability. Water or foam may cause frothing.
Ethylene glycol, when heated or misted into the air, becomes a moderate fire and explosion hazard.
Firefighters should use self-contained breathing equipment and proper protective clothing.

SECTION V. REACTIVITY DATA

Ethylene glycol is a noncorrosive, stable material. It is hygroscopic.
Ignition in air will generate oxides of carbon and nitrogen.
Lowers the freezing point of water; f.p. at eutectic composition, 60% ethylene glycol, is -49 C. Is miscible with water, ether, low aliphatic alcohols, aldehydes and ketones; partially soluble in hydrocarbons.
Mixing with chlorosulfonic acid, or oleum, or 96% sulfuric acid in a sealed container causes the temperature and pressure to increase.
It is incompatible with strong oxidizing agents.

GENERAL ELECTRIC

NO. 323

SECTION VI. HEALTH HAZARD INFORMATION

TLV particulate: 10 mg/m³
vapor: 100 ppm or 250 mg/m³

Inhalation of high ethylene glycol concentrations produces symptoms similar to ethyl alcohol intoxication; pulmonary edema may also develop. The single lethal oral dose for humans is about 3-4 ounces or about 1.4 ml/kg. Sub-lethal ingestion can produce intoxication and coma. Symptoms may include: lack of appetite, spasmodic motion of the eyeball, dizziness, abdominal pain, CNS stimulation followed by depression, respiratory arrest or cardiovascular collapse, acute renal failure with uremia. Eye contact may cause irritation and iridocyclitis. Skin absorption may also contribute to intoxication.

FIRST AID:

Eye Contact: Wash with plenty of running water for 15 minutes.

Skin Contact: Rinse off with water; then wash area with soap and water.

Inhalation: Remove victim to fresh air. Restore or support breathing as required.

Ingestion: Give 3 glasses milk or water and induce vomiting at once! Gastric lavage recommended. Support respiration.

In all cases of excessive exposure get prompt medical help for further treatment, support, and observation.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Notify safety personnel. Provide adequate ventilation. (Normal ventilation may be satisfactory if liquid is at room temperature and not misted into the air). Those handling spill emergencies should use proper protective equipment. Recover as much spilled material as feasible for disposal. Wash residue or small spills to the sewer with copious water.

DISPOSAL: Large quantities of liquids may be disposed of by mixing with more flammable solvents and atomizing into an incinerator. Follow Federal, State, and Local regulations.

Aquatic toxicity rating TLm 96:1000-100 ppm.

SECTION VIII. SPECIAL PROTECTION INFORMATION

When ethylene glycol is heated, or agitated, or sprayed, proper exhaust hoods with 100 lfm face velocities should be used. Rubber gloves should be worn to prevent skin contact. Respirators should be available for nonroutine or emergency use above the TLV.

Safety glasses or goggles should be worn in areas of use where splashing is possible.

Eyewash stations should be available.

Preemployment and annual medical exam to include kidney and liver function tests.

Preclude from exposure individuals with diseases of liver, kidneys, lungs and central nervous system.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Store material in mild steel, except where color requirements are most critical. Then store in resin-coated steel, glass, aluminum or stainless steel containers. Close containers tightly to avoid moisture. Separate from oxidizing materials.

Do not take internally! Poisonous! Toxic concentration of ethylene glycol are unlikely to occur at room temperature due to its unique vapor pressure. Poisoning resulting from vapor usually occurs only if ethylene glycol liquid is heated. Heated and agitated solutions should have proper exhaust ventilation of area to prevent inhalation liquid particles and vapors.

Do not eat or drink in work areas.

DATA SOURCE(S) CODE: 2-11,23-25,26,34,37,39

APPROVALS: MIS CRD J. M. Nielsen

Industrial Hygiene and Safety 11-26-80

MEDICAL REVIEW: December 5, 1980

GENERAL ELECTRIC

M A T E R I A L S A F E T Y D A T A S H E E T PAGE: 1

DOW CHEMICAL U.S.A. MIDLAND MICHIGAN 48640 EMERGENCY PHONE: 517-636-4400

EFFECTIVE DATE: 11 JUN 81 PRODUCT CODE: 87792

PRODUCT NAME: TRIETHYLENE GLYCOL - TECHNICAL MSD: 0271

INGREDIENTS (TYPICAL VALUES-NOT SPECIFICATIONS)	%
TRIETHYLENE GLYCOL	99

SECTION 1 PHYSICAL DATA

BOILING POINT: 545.9F; 286C : SOL. IN WATER: COMPLETELY MISCIBLE
VAP PRESS: 1.0 MMHG @ 20C : SP. GRAVITY: 1.1 @ 25/25C
VAP DENSITY (AIR=1): 5.18 : % VOLATILE BY VOL: NOT APPLICABLE
APPEARANCE AND ORDER: COLORLESS LIQUID, MILD ODOR.

SECTION 2 FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 350F; 177C : FLAMMABLE LIMITS (STP IN AIR)
METHOD USED: PENSKY-MARTENS C.C. : LFL: 0.9% UFL: 9.2%
EXTINGUISHING MEDIA: WATER FOG, ALCOHOL FOAM, CO2, DRY CHEMICAL.
SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: ----

SECTION 3 REACTIVITY DATA

STABILITY: ----
INCOMBATIBILITY: OXIDIZING MATERIAL.
HAZARDOUS DECOMPOSITION PRODUCTS: ----
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

SECTION 4 SPILL,LEAK,AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT): FOR LARGE SPILLS, USE CONTAINMENT DIKE TO PREVENT WATER POLLUTION. RECOVER WITH VACUUM TRUCK. SMALL AMOUNTS CAN BE SOAKED UP WITH ABSORBENT MATERIAL AND SHOVELED INTO DRUMS. WASH DOWN REMAINING SMALL AMOUNT WITH WATER.
DISPOSAL METHOD: RECOVER LARGE QUANTITIES BY REPROCESSING OR BURN ACCORDING TO LOCAL LAWS.

SECTION 5 HEALTH HAZARD DATA

(CONTINUED ON PAGE 2)

M A T E R I A L S A F E T Y D A T A S H E E T PAGE: 2
DOW CHEMICAL U.S.A. MIDLAND MICHIGAN 48640 EMERGENCY PHONE: 517-636-4400

EFFECTIVE DATE: 11 JUN 81 PRODUCT CODE: 87792
PRODUCT (CONT'D): TRIETHYLENE GLYCOL - TECHNICAL MSD: 0271

SECTION 5 HEALTH HAZARD DATA (CONTINUED)

INGESTION: VERY LOW IN SINGLE DOSE ORAL TOXICITY.
EYE CONTACT: UP TO SLIGHT IRRITATION, NO CORNEAL INJURY LIKELY.
SKIN CONTACT: PROLONGED AND REPEATED CONTACT: SLIGHT IRRITATION.
SKIN ABSORPTION: NOT LIKELY TO BE ABSORBED IN TOXIC AMOUNTS.
INHALATION: NO GUIDE FOR CONTROL ESTABLISHED. LOW VOLATILITY AND HAZARD.
EFFECTS OF OVEREXPOSURE: ----

SECTION 6 FIRST AID--NOTE TO PHYSICIAN

FIRST AID PROCEDURES:

EYES: IRRIGATION OF THE EYE IMMEDIATELY WITH WATER FOR FIVE MINUTES IS GOOD SAFETY PRACTICE.
SKIN: CONTACT WILL PROBABLY CAUSE NO MORE THAN IRRITATION. WASH OFF IN FLOWING WATER OR SHOWER.
INHALATION: FAIREMOVE TO FRESH AIR IF EFFECTS OCCUR. CALL PHYSICIAN AND/OR TRANSPORT TO MEDICAL FACILITY.
INGESTION: LOW IN TOXICITY. INDUCE VOMITING IF LARGE AMOUNTS ARE INGESTED.

NOTE TO PHYSICIAN:
EYES: INJURY IS UNLIKELY. MAY CAUSE MILD IRRITATION.
SKIN: MAY CAUSE MILD IRRITATION. INJURY IS UNLIKELY. NOT LIKELY TO BE ABSORBED IN ACUTELY TOXIC AMOUNTS.
RESPIRATORY: LOW VOLATILITY.
ORAL: LOW IN TOXICITY.
SYSTEMIC: PROBABLY WOULD PRODUCE NO MORE THAN MILD ILLNESS WITH SPONTANEOUS RECOVERY. NO SPECIFIC ANTIDOTE. TREATMENT BASED ON SOUND JUDGMENT OF PHYSICIAN AND THE INDIVIDUAL REACTIONS OF THE PATIENT.

SECTION 7 SPECIAL HANDLING INFORMATION

VENTILATION: GOOD ROOM VENTILATION USUALLY ADEQUATE FOR MOST OPERATIONS.
RESPIRATORY PROTECTION: NONE LIKELY TO BE REQUIRED.
PROTECTIVE CLOTHING: CLEAN CLOTHING.
EYE PROTECTION: SAFETY GLASSES WITHOUT SIDE SHIELDS.

SECTION 8 SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: PRACTICE REASONABLE CARE TO AVOID EXPOSURE.

ADDITIONAL INFORMATION: 11 JUN 81 REVISIONS OF 31 MAY 78 -- SECTIONS 5 AND 6.

(CONTINUED ON PAGE 3)

MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y. 12305

MATERIALS INFORMATION SERVICES

NO. 1257

VARSOL 1

Date May 1982

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: VARSOL 1
DESCRIPTION: Petroleum solvent or mineral spirits.
OTHER DESIGNATIONS: GE Material D5B8, ASTM D235, ASTM D484, Type 1
MANUFACTURER: Exxon Co.
P.O. Box 2180
Houston, Texas Tel: (713) 656-3424

SECTION II. INGREDIENTS AND HAZARDS

SECTION II. INGREDIENTS AND HAZARDS	%	HAZARD DATA
Mixture of petroleum hydrocarbons Typical Composition: Vol % Aromatics (C_8 and higher) 18 Olefins 1 Saturates 81 Sulfur content 1 ppm *ACGIH(1982) TLV for Stoddard Solvent. Animal studies by Exxon Corp. medical research has shown that male rats exposed to similar vapors at 100 ppm had kidney damage. Additional studies are being conducted to validate these findings and to determine if a revised TLV should be recommended.	100	8-hr TWA 100 ppm* Rat, Oral LD_{50} >5 g/kg Rabbit, Dermal LD_{50} >2 g/kg

SECTION III. PHYSICAL DATA

Boiling range, 1 atm, deg C	155-205	Specific gravity, 15.6/15.6C	ca 0.79
Vapor pressure, 25C, mmHg	<10	Evaporation rate (nBuAc=1)	<0.1
Vapor density (Air=1)	ca 4.8	Volatiles, %	100
Solubility in water	Negligible	Molecular weight (avg)	ca 140

Appearance & odor: Water-white liquid; mineral spirits odor (no long-lasting odor after evaporation).

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air % by Volume @ 25C	LOWER	UPPER
ca 42C (108F) TCC	254C (ASTM D2155)		0.9	6.0

Extinguishing Media: Dry chemical, carbon dioxide, foam, water spray or fog. Water spray can be used to keep fire-exposed containers cool to avoid pressure rupture.
This material is an OSHA Class II Combustible Liquid. It is a dangerous fire hazard if heated or sprayed in air.
Firefighters should wear self-contained breathing apparatus for fighting fires in enclosed areas.

SECTION V. REACTIVITY DATA

This is a stable material in closed containers at room temperature under normal storage and handling conditions. It does not polymerize.
Incompatible with strong oxidizing agents such as chlorine, conc. oxygen, calcium hypochlorite, nitric acid, etc.
Thermal-oxidative degradation may produce carbon monoxide and partially oxidized hydrocarbons.

GENERAL ELECTRIC

EXXON COMPANY, U.S.A.
A DIVISION OF EXXON CORPORATION

VARSOL 1
Form No. OS-1A-20
9/25/79
Supersedes issue of 8/10/79
DG-JP

U.S. DEPARTMENT OF LABOR
OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
MATERIAL SAFETY DATA SHEET

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
EXXON COMPANY, U.S.A.	(713) 656-3424

ADDRESS (Number, Street, City, State and ZIP Code)
P. O. Box 2180 Houston, Texas 77001

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
Petroleum Solvent	VARSOL-1
CHEMICAL FAMILY	**FORMULA**
Petroleum Hydrocarbon	Complex mixture of petroleum hydrocarbons

SECTION II HAZARDOUS INGREDIENTS

	%	TLV (UNITS)
VARSOL 1	100	SEE NOTE

NOTE:
The Threshold Limit Value (TLV) of 100 ppm vapor in air has been established by the American Conference of Governmental Industrial Hygienists for Stoddard solvent, and is thus applicable to VARSOL 1. In a recent study by Exxon Corporation Medical Research with laboratory animals (rats) exposed to vapors in air of a solvent similar to VARSOL 1, kidney damage was noted in male rats at this concentration. The recent study suggests that this occupational exposure limit may have to be lowered for this product. Work is continuing to validate these findings and determine whether a revised occupational exposure limit should be recommended for VARSOL 1.

SECTION III PHYSICAL DATA

BOILING RANGE		SPECIFIC GRAVITY (H_2O=1)	
IBP-Dry Pt. (313-400°F)	156-204°C	15.6°/15.6°C	0.79
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
@ 25°C	< 10		100
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (n-BUTYL ACETATE=1)	
	4.8		< 0.1
SOLUBILITY IN WATER			
	Negligible		

APPEARANCE AND ODOR
Water-white liquid. Mineral spirits odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used)	FLAMMABLE OR EXPLOSIVE LIMITS Approximate (PERCENT BY VOLUME IN AIR)	LOWER LIMIT	UPPER LIMIT
Tag Closed Cup 42°C (108°F)		0.9%	6.0%

EXTINGUISHING MEDIA
Foam, dry chemical, CO_2, or water fog or spray.

SPECIAL FIRE FIGHTING PROCEDURES
Use air-supplied breathing equipment for enclosed areas.
Cool exposed containers with water spray. Avoid breathing vapor or fumes.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Do not mix or store with strong oxidants like liquid chlorine or concentrated oxygen.

COMBUSTIBLE LIQUID.

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
Charter International Oil Company	AC 713 / 923-1651
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 5008; Houston, TX 77012	Medical Emergency No. AC 713 / 225-0463
CHEMICAL NAME AND SYNONYMS Petroleum Hydrocarbons	TRADE NAME AND SYNONYMS Espesol 300 (Mineral Spirits)
CHEMICAL FAMILY Petroleum Hydrocarbons	FORMULA ~~Sovs~~ Varsol I

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS Espesol 300	100	100ppm	FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.) ASTM D-86, °F	323/380	SPECIFIC GRAVITY (H_2O=1)	0.791
VAPOR PRESSURE (mm Hg.) @ 60°F/100°F	1.5/6.0	PERCENT, VOLATILE BY VOLUME (%)	100%
VAPOR DENSITY (AIR=1)	4.86	EVAPORATION RATE (n-BuAc =1)	0.09
SOLUBILITY IN WATER	Negligible		
APPEARANCE AND ODOR	Water White Liquid; mild aliphatic hydrocarbon odor.		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
TCC, °F 110		1.1	6.0

EXTINGUISHING MEDIA
(1) Mechanical Foam (2) Dry Chemical (3) Water Fog (4) CO_2

SPECIAL FIRE FIGHTING PROCEDURES
A straight water stream would spread oil fires.

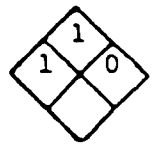
UNUSUAL FIRE AND EXPLOSION HAZARDS
A vapor accumulation would flash and/or explode if ignited; closed cup flash point is 110°F.

(Continued on reverse side)

ADAPTED FROM USDL
FORM NO LSB-005-4-MAY 1959

SHELL OIL COMPANY
SHELL CHEMICAL COMPANY MSDS 60,970
SHELL DEVELOPMENT COMPANY
SHELL PIPE LINE CORPORATION

HAZARD RATING



MATERIAL SAFETY DATA SHEET

SECTION I

MANUFACTURER'S NAME: Shell Oil Company	EMERGENCY TELEPHONE NO: 713-473-9461
ADDRESS (Number, Street, City, State, and ZIP Code): P. O. Box 2463, One Shell Plaza, Houston, TX 77001	
CHEMICAL NAME AND SYNONYMS: Lubricating Oil	TRADE NAME: SHELL MYSELLA® Oil 40
CHEMICAL FAMILY: Hydrocarbon	FORMULA: Code 67184

SECTION II HAZARDOUS INGREDIENTS*

COMPOSITION	Approx. %	SPECIES	LD_{50} ORAL	LD_{50} DERMAL	LC_{50} CONCENTRATION	LC_{50} HOURS
Petroleum Hydrocarbons	99	Rat	>5 g/kg			
		Rabbit		>2 g/kg		
Hindered Phenol	1		>24 g/kg			
Oxidation & Corrosion Inhibitor Containing P and S	0.5		>10 g/kg			
Polymethacrylate Additive	<.5					
This formulation calls for special precautions						
SEE ATTACHED PAGE						

SECTION III PHYSICAL DATA

BOILING POINT (°F)	N.A.	SPECIFIC GRAVITY (H_2O=1)	0.88
VAPOR PRESSURE (mmHg)	N.A.	PERCENT VOLATILE BY VOLUME (%)	N.A.
VAPOR DENSITY (AIR=1)	N.A.	EVAPORATION RATE (_____=1)	N.A.
SOLUBILITY IN WATER	Insoluble		
APPEARANCE AND ODOR: Dark liquid. Slight odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LEL	UEL
455°F, PMCC	N.A.		

EXTINGUISHING MEDIA: Dry chemical type preferred.

SPECIAL FIRE FIGHTING PROCEDURES: None special.

UNUSUAL FIRE AND EXPLOSION HAZARDS: CO, SO_x, PO_x, and oxygenates may be formed during combustion.

MSDS 60,970

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
Vapor - not established. Oil mist - 5 mg/m^3

EFFECTS OF OVEREXPOSURE Pulmonary irritation possible. Defatting action on skin. Prolonged or repeated contact may cause skin disorders such as dermatitis, folliculitis, oil acne or even skin cancer.

EMERGENCY AND FIRST AID PROCEDURES Eyes-flush with water for at least 15 minutes. Skin-remove oil by wiping or applying waterless hand cleaner, followed by washing with soap & water. Remove all contaminated clothing. Ingestion-induce vomiting if conscious & consult medical personnel.

SECTION VI REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID: Mist formation.
	STABLE	X	

INCOMPATIBILITY (Materials to avoid)

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb with clay, diatomaceous earth, or other inert material.

WASTE DISPOSAL METHOD Controlled burning in compliance with local regulations or bury in approved landfill.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)
OSH approved respirator to avoid exposure to hot vapors or mist.

VENTILATION	LOCAL EXHAUST: As required if mist is being generated	SPECIAL
	MECHANICAL (General)	OTHER

PROTECTIVE GLOVES Oil resistant (rubber)

EYE PROTECTION: Goggles if oil is being sprayed or splashed.

OTHER PROTECTIVE EQUIPMENT Appropriate clothing to avoid skin contact.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Avoid breathing oil mist & vapors. Avoid skin contact. Airborne mist should be kept substantially below the nuisance TLV for oil s

OTHER PRECAUTIONS Launder contaminated clothing before using. Discard leather goods when contaminated. Wash before eating or smoking.

Shell Oil Company
Product Safety & Compliance
Oil & Chemical Products

March, 1979

Code 67184 MYSELLA® Oil 40 MSDS 60,970

The petroleum hydrocarbons in this product contain a mixture of paraffinic, naphthenic, aromatic, and small amounts of heterocyclic hydrocarbons. As with other petroleum oils, the aromatics contain polycyclic compounds of various concentrations and structures. Some of these polycyclics may be those which have been shown to induce cancer in animals under laboratory conditions. Epidemiologic studies have suggested the possibility of skin cancer induction in man after prolonged and repeated contact with oils containing these materials under conditions of poor personal hygiene. Inhalation of mists arising from oils containing these materials may also present a cancer hazard.

Mobil

MOBIL OIL CORPORATION MATERIAL SAFETY DATA BULLETIN

REVISED: 10/26/82

********** I. PRODUCT IDENTIFICATION **********

MOBIL PEGASUS 490

SUPPLIER:
MOBIL OIL CORP.

HEALTH EMERGENCY TELEPHONE:
(212) 883-4411

CHEMICAL NAMES AND SYNONYMS:
PET. HYDROCARBONS AND ADDITIVES

TRANSPORT EMERGENCY TELEPHONE:
(800) 424-9300 (CHEMTREC)

USE OR DESCRIPTION:
GAS ENGINE OIL

********** II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES **********

APPEARANCE: ASTM 4.0 LIQUID ODOR: MILD PH: NA
VISCOSITY AT 100 F, SUS: 670.0 AT 40 C, CS: 128.0
VISCOSITY AT 210 F, SUS: 72.0 AT 100 C, CS: 13.6
FLASH POINT F(C): >480(249) (ASTM D-92)
MELTING POINT F(C): NA POUR POINT F(C): 10(-12)
BOILING POINT F(C): > 600(316)
RELATIVE DENSITY, 15/4 C: 0.879 SOLUBILITY IN WATER: NEGLIGIBLE
VAPOR PRESSURE-MM HG 20C: < .1

NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES

FOR FURTHER INFORMATION, CONTACT YOUR LOCAL MARKETING OFFICE.

********** III. INGREDIENTS **********

	WT PCT (APPROX)	EXPOSURE LIMITS MG/M3	EXPOSURE LIMITS PPM	SOURCES (AND NOTES)
HAZARDOUS INGREDIENTS:				
NONE				
OTHER INGREDIENTS:				
REFINED MINERAL OILS	>95			
ADDITIVES AND/OR OTHER INGREDS.	< 5			

KEY TO SOURCES: A=ACGIH-TLV, A*=SUGGESTED-TLV, M=MOBIL, O=OSHA

NOTE: LIMITS SHOWN FOR GUIDANCE ONLY. FOLLOW APPLICABLE REGULATIONS.

********** IV. HEALTH HAZARD DATA **********

--- INCLUDES AGGRAVATED MEDICAL CONDITIONS, IF ESTABLISHED ---

EFFECTS OF OVEREXPOSURE: NOT EXPECTED TO BE A PROBLEM.

********** V. EMERGENCY AND FIRST AID PROCEDURES **********

--- FOR PRIMARY ROUTES OF ENTRY ---

EYE CONTACT: FLUSH WITH WATER.
SKIN CONTACT: WASH CONTACT AREAS WITH SOAP AND WATER.
INHALATION: NOT EXPECTED TO BE A PROBLEM.
INGESTION: NOT EXPECTED TO BE A PROBLEM. HOWEVER, IF GREATER THAN 1/2 LITER(PINT) INGESTED, IMMEDIATELY GIVE 1 TO 2 GLASSES OF WATER AND CALL A PHYSICIAN, HOSPITAL EMERGENCY ROOM OR POISON CONTROL CENTER FOR ASSISTANCE. DO NOT INDUCE VOMITING OR GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

********** VI. FIRE AND EXPLOSION HAZARD DATA **********
FLASH POINT F(C): > 480(249) (ASTM D-92)
FLAMMABLE LIMITS. LEL: .6 UEL: 7.0
EXTINGUISHING MEDIA: CARBON DIOXIDE, FOAM, DRY CHEMICAL AND WATER FOG.
SPECIAL FIRE FIGHTING PROCEDURES: FOR FIRES IN ENCLOSED AREAS, FIREFIGHTERS MUST USE SELF-CONTAINED BREATHING APPARATUS.
UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE
NFPA HAZARD ID: HEALTH: 0, FLAMMABILITY: 1, REACTIVITY: 0

********** VII. REACTIVITY DATA **********
STABILITY (THERMAL, LIGHT, ETC.): STABLE
CONDITIONS TO AVOID: EXTREME HEAT
INCOMPATIBILITY (MATERIALS TO AVOID): STRONG OXIDIZERS
HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

********** VIII. SPILL OR LEAK PROCEDURE **********
ENVIRONMENTAL IMPACT: REPORT SPILLS AS REQUIRED TO APPROPRIATE AUTHORITIES. U. S. COAST GUARD REGULATIONS REQUIRE IMMEDIATE REPORTING OF SPILLS THAT COULD REACH ANY WATERWAY INCLUDING INTERMITTENT DRY CREEKS. REPORT SPILL TO COAST GUARD TOLL FREE NUMBER 800-424-8802.
PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: ADSORB ON FIRE RETARDANT TREATED SAWDUST, DIATOMACEOUS EARTH, ETC. SHOVEL UP AND DISPOSE OF AT AN APPROPRIATE WASTE DISPOSAL FACILITY IN ACCORDANCE WITH CURRENT APPLICABLE LAWS AND REGULATIONS, AND PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL.
WASTE MANAGEMENT: PRODUCT IS SUITABLE FOR BURNING IN AN ENCLOSED, CONTROLLED BURNER FOR FUEL VALUE OR DISPOSAL BY SUPERVISED INCINERATION. SUCH BURNING MAY BE LIMITED PURSUANT TO THE RESOURCE CONSERVATION AND RECOVERY ACT. IN ADDITION, THE PRODUCT IS SUITABLE FOR PROCESSING BY AN APPROVED RECYCLING FACILITY OR CAN BE DISPOSED OF AT ANY GOVERNMENT APPROVED WASTE DISPOSAL FACILITY. USE OF THESE METHODS IS SUBJECT TO USER COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS AND CONSIDERATION OF PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL.

********** IX. SPECIAL PROTECTION INFORMATION **********
EYE PROTECTION: NO SPECIAL EQUIPMENT REQUIRED.
SKIN PROTECTION: NO SPECIAL EQUIPMENT REQUIRED. HOWEVER, GOOD PERSONAL HYGIENE PRACTICES SHOULD ALWAYS BE FOLLOWED.
RESPIRATORY PROTECTION: NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.
VENTILATION: NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.

********** X. SPECIAL PRECAUTIONS **********
NO SPECIAL PRECAUTIONS REQUIRED.

********** XI. TOXICOLOGICAL DATA **********

---ACUTE---

ORAL TOXICITY (RATS): LD50: > 5 G/KG 0/10 RATS DIED AT THIS DOSAGE LEVEL. SLIGHTLY TOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

DERMAL TOXICITY (RABBITS): LD50: > 2 G/KG 0/10 RABBITS DIED AT THIS DOSAGE LEVEL. SLIGHTLY TOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

INHALATION TOXICITY (RATS): NOT APPLICABLE ---HARMFUL CONCENTRATIONS OF MISTS AND/OR VAPORS ARE UNLIKELY TO BE ENCOUNTERED THROUGH ANY CUSTOMARY OR REASONABLY FORESEEABLE HANDLING, USE, OR MISUSE OF THIS PRODUCT.

EYE IRRITATION (RABBITS): EXPECTED TO BE NON-IRRITATING. EYE IRRITATION SCORES: 0 AT 24 HOURS, 0 AT 48 HOURS, 0 AT 72 HOURS--- BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SKIN IRRITATION (RABBITS): EXPECTED TO BE NON-IRRITATING. PRIMARY IRRITATION SCORE: 0/8---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

---CHRONIC OR SPECIALIZED (SUMMARY)---

THE BASE OILS IN THIS PRODUCT ARE SEVERELY SOLVENT REFINED AND/OR SEVERELY HYDROTREATED. TWO YEAR MOUSE SKIN PAINTING STUDIES OF SIMILAR OILS SHOWED NO EVIDENCE OF CARCINOGENIC EFFECTS. SEVERELY SOLVENT REFINED AND SEVERELY HYDROTREATED MINERAL BASE OILS HAVE BEEN TESTED AT MOBIL ENVIRONMENTAL AND HEALTH SCIENCES LABORATORY BY DERMAL APPLICATION TO RATS 5 DAYS/WEEK FOR 90 DAYS AT DOSES SIGNIFICANTLY HIGHER THAN THOSE EXPECTED DURING NORMAL INDUSTRIAL EXPOSURE. EXTENSIVE EVALUATIONS INCLUDING MICROSCOPIC EXAMINATION OF INTERNAL ORGANS AND CLINICAL CHEMISTRY OF BODY FLUIDS, SHOWED NO ADVERSE EFFECTS.

********** XII. REGULATORY INFORMATION **********

TSCA INVENTORY STATUS: ALL COMPONENTS REGISTERED.

D.O.T. SHIPPING NAME: NOT APPLICABLE

D.O.T. HAZARD CLASS: NOT APPLICABLE

US OSHA HAZARD COMMUNICATION STANDARD: PRODUCT ASSESSED IN ACCORDANCE WITH OSHA CFR 1910.1200 AND DETERMINED NOT TO BE HAZARDOUS.

RCRA INFORMATION: THE UNUSED PRODUCT, IN OUR OPINION, IS NOT SPECIFICALLY LISTED BY THE EPA AS A HAZARDOUS WASTE (40 CFR, PART 261D); DOES NOT EXHIBIT THE HAZARDOUS CHARACTERISTICS OF IGNITABILITY, CORROSIVITY, OR REACTIVITY, AND IS NOT FORMULATED WITH THE METALS CITED IN THE EP TOXICITY TEST. HOWEVER, USED PRODUCT MAY BE REGULATED.

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
ZINC (ELEMENTAL ANALYSIS) (0.018 PCT)	7440-66-6	15

--- KEY TO LIST CITATIONS ---

1 = OSHA Z, 2 = ACGIH, 3 = IARC, 4 = NTP, 5 = NCI,
6 = EPA CARC, 7 = NFPA 49, 8 = NFPA 325M, 9 = DOT HMT, 10 = CA RTK,
11 = IL RTK, 12 = MA RTK, 13 = MN RTK, 14 = NJ RTK, 15 = MI 293,
16 = FL RTK, 17 = PA RTK.

--- NTP, IARC, AND OSHA INCLUDE CARCINOGENIC LISTINGS ---

****

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

****

PREPARED BY: MOBIL OIL CORPORATION
ENVIRONMENTAL AFFAIRS AND TOXICOLOGY DEPARTMENT, PRINCETON, NJ
FOR FURTHER INFORMATION, CONTACT:
MOBIL OIL CORPORATION, PRODUCT FORMULATION AND QUALITY CONTROL
3225 GALLOWS ROAD, FAIRFAX, VA 22037 (703) 849-3265

********** APPENDIX **********

FOR MOBIL USE ONLY: (FILL NO: RN612DA201) MHC: 1* 1* NA 0* 0* PPEC: US82-090 APPROVE REVISED: 10/26/82

B

APPENDIX B

CHEMICAL ANALYSES OF WASTEWATER AND GROUNDWATER

Report of Chemical Analysis

Consulting Geotechnical, Materials and Environmental Engineers
Geologists, Scientists and Chemists

Raba-Kistner
Consultants, Inc.
P.O. Box 690287, San Antonio, TX 78269-0287
12821 W. Golden Lane, San Antonio, TX 78249
(512) 699-9090

To: El Paso Natural Gas Company
P.O. Box 4990
Farmington, New Mexico 87499

Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-059, Water, Filter Backwash, Kutz Plant, R-KCI 6-10160-3 (Softener)

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
COD	Hach Tube[1]	10.4	
Nitrate-N	EPA 300.0[2]	0.17	
Oil and Grease	EPA 413.2	<1.0	
TOC	EPA 415.1	3	
O-Phosphate	EPA 300.0	<0.1	
Cyanide (total)	EPA 335.2	<0.005	
Phenolics	EPA 420.1	<0.05	
Arsenic	EPA 206.2	<0.01	

Special Comments:

1. Federal Register, Vol. 45, April, 1980.
2. EPA 600/4-79-020, March, 1984.
3. Standard Methods, 16th Edition, 1985.
4. Federal Register, Vol. 49, October, 1984.
5. High Pressure Liquid Chromatography (HPLC).

C.C. Mr. Loren Gearhart, EPNG, El Paso, Texas
Dr. Henry Van, EPNG, El Paso, Texas

Raba-Kistner Consultants, Inc.

by Francis Y. Huang
Francis Y. Huang, Ph.D., CPC

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Project No: 686-003
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Submitted By: EPNG

Sample Description/Code: J86-059, Water, Filter Backwash, Kutz Plant, R-KCI 6-10160-3 (Softener)

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Barium	EPA 208.1	<0.5	
Cadmium	EPA 213.1	<0.01	
Calcium	EPA 215.1	41.4	
Chromium (total)	EPA 218.1	<0.01	
Copper	EPA 220.1	<0.01	
Hardness	St. Method 209[3]	130	as $CaCO_3$
Iron	EPA 236.1	-	
Lead	EPA 239.1	0.06	
Magnesium	EPA 242.1	6.34	
Manganese	EPA 243.1	0.01	

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by Francis Y. Huang
Francis Y. Huang, Ph.D., CPC

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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-059, Water, Filter Backwash, Kutz Plant, R-KCI 6-10160-3 (Softener)

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Mercury	EPA 245.1	<0.001	
Potassium	EPA 258.1	1.62	
Selenium	EPA 270.2	<0.02	
Silver	EPA 272.1	<0.01	
Sodium	EPA 273.1	10.3	
Zinc	EPA 289.1	0.07	
Alkalinity, total	Std. Method 403	81.0	as $CaCO_3$
Alkalinity, Bicarbonate	Std. Method 403	98.8	as HCO_3

Special Comments:

Raba-Kistner Consultants, Inc.
by Francis Y. Huang
Francis Y. Huang, Ph.D., CPC

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Submitted By: EPNG

Sample Description/Code: J86-059, Water, Filter Backwash, Kutz Plant, R-KCI 6-10160-3 (Softener)

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Chloride	EPA 300.0	3.83	
Fluoride	EPA 300.0	<0.1	
TDS	EPA 160.1	214	
Total Residue	EPA 160.3	-	
Sulfate	EPA 300.0	50.5	
Volatile Organics	EPA 624[4]	See attached	
PCB's	EPA 608[4]	<0.0001	
pH	EPA 150.1	7.6	

Special Comments:

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Submitted By: EPNG

Sample Description/Code: J86-059, Water, Filter Backwash, Kutz Plant, R-KCI 6-10160-3 (Softener)

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Ethylene dibromide	EPA 624[4]	<0.005	
Naphthalene	EPA 610[5]	<0.001	
Monomethylnaphthalene	EPA 610[5]	<0.001	
Anion/Cation Balance	Calculation	2.8 meq./3.08 meq.	

Special Comments:

Raba-Kistner Consultants, Inc.
by Francis Y. Huang
Francis Y. Huang, Ph.D., CPC

R-KCI Lab No. 6-10160-3 Project No. 686-003

(PURGEABLES)
(EPA Method 624)

Compound	Concentration (ug/L)	Method Detection Limits (ug/L)
Chloromethane	N.D.	5.0
Bromomethane	N.D.	5.0
Vinyl Chloride	N.D.	10.0
Chloroethane	N.D.	5.0
Methylene Chloride	N.D.	2.8
Trichlorofluoromethane	N.D.	5.0
1,1-Dichloroethene	N.D	2.8
1,1-Dichloroethane	N.D.	4.7
Trans-1,2-Dichloroethene	N.D.	1.6
Chloroform	N.D.	1.6
1,2-Dichloroethane	N.D.	2.8
1,1,1-Trichloroethane	N.D.	3.8
Carbon Tetrachloride	N.D.	2.8
Bromodichloromethane	N.D.	2.2
1,2-Dichloropropane	N.D.	6.0
Trans-1,3-Dichloropropene	N.D.	5.0
Trichloroethene	N.D	1.9
Dibromochloromethane	N.D.	3.1
1,1,2-Trichloroethane	N.D	5.0
cis-1,3-Dichloropropene	N.D.	5.0
Benzene	N.D.	4.4
2-Chloroethylvinyl Ether	N.D.	5.0
Bromoform	N.D.	4.7
1,1,2,2-Tetrachloroethane	N.D.	6.9
Tetrachloroethene	N.D	4.1
Toluene	N.D.	6.0
Chlorobenzene	N.D.	6.0
Ethylbenzene	N.D.	7.2
Xylenes	N.D.	5.0

N.D. = Not Detected

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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-060, Water, Cooler Backwash, Kutz Plant, R-KCI 6-1016C-4

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
COD	Hach Tube[1]	47.0	
Nitrate-N	EPA 300.0[2]	<0.1	
Oil and Grease	EPA 413.2	<1.0	
TOC	EPA 415.1	22	
O-Phosphate	EPA 300.0	0.40	
Cyanide (total)	EPA 335.2	<0.005	
Phenolics	EPA 420.1	<0.05	
Arsenic	EPA 206.2	<0.01	

Special Comments:

1. Federal Register, Vol. 45, April, 1980.
2. EPA 600/4-79-020, March, 1984.
3. Standard Methods, 16th Edition, 1985.
4. Federal Register, Vol. 49, October, 1984.
5. High Pressure Liquid Chromatography (HPLC).

C.C. Mr. Loren Gearhart, EPNG, El Paso, Texas
Dr. Henry Van, EPNG, El Paso, Texas

Raba-Kistner Consultants, Inc.
by Francis Y. Huang
Francis Y. Huang, Ph.D., CPC

Report of Chemical Analysis

Consulting Geotechnical, Materials and Environmental Engineers
Geologists, Scientists and Chemists

Raba-Kistner Consultants, Inc.
P.O. Box 690287, San Antonio, TX 78269-0287
12821 W. Golden Lane, San Antonio, TX 78249
(512) 699-9090

To: El Paso Natural Gas Company
P.O. Box 4990
Farmington, New Mexico 87499

Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-060, Water, Cooler Backwash, Kutz Plant, R-KCI 6-10160-4

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Barium	EPA 208.1	<0.5	
Cadmium	EPA 213.1	<0.01	
Calcium	EPA 215.1	219	
Chromium (total)	EPA 218.1	0.02	
Copper	EPA 220.1	0.05	
Hardness	St. Method 209[3]	719	as $CaCO_3$
Iron	EPA 236.1	-	
Lead	EPA 239.1	0.08	
Magnesium	EPA 242.1	41.8	
Manganese	EPA 243.1	0.06	

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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-060, Water, Cooler Backwash, Kutz Plant, R-KCI 6-10160-4

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Mercury	EPA 245.1	<0.001	
Potassium	EPA 258.1	32.5	
Selenium	EPA 270.2	<0.02	
Silver	EPA 272.1	<0.01	
Sodium	EPA 273.1	128	
Zinc	EPA 289.1	8.44	
Alkalinity, total	Std. Method 403	54.0	as $CaCO_3$
Alkalinity, Bicarbonate	Std. Method 403	65.9	as HCO_3

Special Comments:

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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-060, Water, Cooler Backwash, Kutz Plant, R-KCI 6-1-160-4

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Chloride	EPA 300.0	23.1	
Fluoride	EPA 300.0	2.13	
TDS	EPA 160.1	1,370	
Total Residue	EPA 160.3	-	
Sulfate	EPA 300.0	809	
Volatile Organics	EPA 624[4]	See attached	
PCB's	EPA 608[4]	<0.0001	
pH	EPA 150.1	7.5	

Special Comments:

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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-060, Water, Cooler Backwash, Kutz Plant, R-KCI 6-10160-4

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Ethylene dibromide	EPA 624[4]	<0.005	
Naphthalene	EPA 610[5]	<0.001	
Monomethylnaphthalene	EPA 610[5]	<0.001	
Anion/Cation Balance	Calculation	18.6 meq./20.8 meq.	

Special Comments:

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by Francis Y. Huang
Francis Y. Huang, Ph.D., CPC

R-KCI Lab No. 6-10160-4 Project No. 686-003

(PURGEABLES)
(EPA Method 624)

Compound	Concentration (ug/L)	Method Detection Limits (ug/L)
Chloromethane	N.D.	5.0
Bromomethane	N.D.	5.0
Vinyl Chloride	N.D.	10.0
Chloroethane	N.D.	5.0
Methylene Chloride	N.D.	2.8
Trichlorofluoromethane	N.D.	5.0
1,1-Dichloroethene	N.D	2.8
1,1-Dichloroethane	N.D.	4.7
Trans-1,2-Dichloroethene	N.D.	1.6
Chloroform	N.D.	1.6
1,2-Dichloroethane	N.D.	2.8
1,1,1-Trichloroethane	N.D.	3.8
Carbon Tetrachloride	N.D.	2.8
Bromodichloromethane	N.D.	2.2
1,2-Dichloropropane	N.D.	6.0
Trans-1,3-Dichloropropene	N.D.	5.0
Trichloroethene	N.D	1.9
Dibromochloromethane	N.D.	3.1
1,1,2-Trichloroethane	N.D	5.0
cis-1,3-Dichloropropene	N.D.	5.0
Benzene	N.D.	4.4
2-Chloroethylvinyl Ether	N.D.	5.0
Bromoform	N.D.	4.7
1,1,2,2-Tetrachloroethane	N.D.	6.9
Tetrachloroethene	N.D	4.1
Toluene	N.D.	6.0
Chlorobenzene	N.D.	6.0
Ethylbenzene	N.D.	7.2
Xylenes	N.D.	5.0

N.D. = Not Detected

Report of Chemical Analysis

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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-061, Water, Dehy. Water, Kutz Plant, R-KCI 6-10160-5

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
COD	Hach Tube[1]	74,900	
Nitrate-N	EPA 300.0[2]	0.1	
Oil and Grease	EPA 413.2	1,320	
TOC	EPA 415.1	3,880	
O-Phosphate	EPA 300.0	<0.1	
Cyanide (total)	EPA 335.2	<0.005	
Phenolics	EPA 420.1	1.87	
Arsenic	EPA 206.2	<0.01	

Special Comments:

1. Federal Register, Vol. 45, April, 1980.
2. EPA 600/4-79-020, March, 1984.
3. Standard Methods, 16th Edition, 1985.
4. Federal Register, Vol. 49, October, 1984.
5. High Pressure Liquid Chromatography (HPLC).

C.C. Mr. Loren Gearhart, EPNG, El Paso, Texas
Dr. Henry Van, EPNG, El Paso, Texas

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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-061, Water, Dehy. Water, Kutz Plant, R-KCI 6-10160-5

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Barium	EPA 208.1	<0.5	
Cadmium	EPA 213.1	<0.01	
Calcium	EPA 215.1	2.05	
Chromium (total)	EPA 218.1	<0.01	
Copper	EPA 220.1	0.01	
Hardness	St. Method 209[3]	6.56	as $CaCO_3$
Iron	EPA 236.1	-	
Lead	EPA 239.1	<0.05	
Magnesium	EPA 242.1	0.35	
Manganese	EPA 243.1	0.15	

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Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-061, Water, Dehy. Water, Kutz Plant, R-KCI 6-10160-5

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Mercury	EPA 245.1	<0.001	
Potassium	EPA 258.1	0.33	
Selenium	EPA 270.2	<0.02	
Silver	EPA 272.1	<0.01	
Sodium	EPA 273.1	1.56	
Zinc	EPA 289.1	0.47	
Alkalinity, total	Std. Method 403	9.0	as $CaCO_3$
Alkalinity, Bicarbonate	Std. Method 403	11.0	as HCO_3

Special Comments:

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Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-061, Water, Dehy. Water, Kutz Plant, R-KCI 6-10160-5

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Chloride	EPA 300.0	<0.1	
Fluoride	EPA 300.0	2.90	
TDS	EPA 160.1	194	
Total Residue	EPA 160.3	-	
Sulfate	EPA 300.0	<0.1	
Volatile Organics	EPA 624[4]	See attached	
PCB's	EPA 608[4]	<0.0001	
pH	EPA 150.1	5.4	

Special Comments:

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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-061, Water, Dehy. Water, Kutz Plant, R-KCI 6-10160-5

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Ethylene dibromide	EPA 624[4]	<0.005	
Naphthalene	EPA 610[5]	<0.001	
Monomethylnaphthalene	EPA 610[5]	<0.001	
Anion/Cation Balance	Calculation	0.18 meq./0.21 meq.	

Special Comments:

Raba-Kistner Consultants, Inc.

by _____
Francis Y. Huang, Ph.D., CPC

R-KCI Lab No. 6-10160-5 Project No. 686-003

(PURGEABLES)
(EPA Method 624)

Compound	Concentration (ug/L)	Method Detection Limits (ug/L)
Chloromethane	N.D.	5.0
Bromomethane	N.D.	5.0
Vinyl Chloride	N.D.	10.0
Chloroethane	N.D.	5.0
Methylene Chloride	N.D.	2.8
Trichlorofluoromethane	N.D.	5.0
1,1-Dichloroethene	N.D	2.8
1,1-Dichloroethane	N.D.	4.7
Trans-1,2-Dichloroethene	N.D.	1.6
Chloroform	N.D.	1.6
1,2-Dichloroethane	N.D.	2.8
1,1,1-Trichloroethane	N.D.	3.8
Carbon Tetrachloride	N.D.	2.8
Bromodichloromethane	N.D.	2.2
1,2-Dichloropropane	N.D.	6.0
Trans-1,3-Dichloropropene	N.D.	5.0
Trichloroethene	N.D	1.9
Dibromochloromethane	N.D.	3.1
1,1,2-Trichloroethane	N.D	5.0
cis-1,3-Dichloropropene	N.D.	5.0
Benzene	24,600	4.4
2-Chloroethylvinyl Ether	N.D.	5.0
Bromoform	N.D.	4.7
1,1,2,2-Tetrachloroethane	N.D.	6.9
Tetrachloroethene	N.D	4.1
Toluene	55,100	6.0
Chlorobenzene	N.D.	6.0
Ethylbenzene	3,620	7.2
Xylenes	1,990	5.0

N.D. = Not Detected

Report of Chemical Analysis

Consulting Geotechnical, Materials and Environmental Engineers
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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-062, Water, Softener Regeneration, Kutz Plant, R-KCI 6-10160-6

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
COD	Hach Tube[1]	20,700	
Nitrate-N	EPA 300.0[2]	<0.1	
Oil and Grease	EPA 413.2	<1.0	
TOC	EPA 415.1	-	
O-Phosphate	EPA 300.0	<0.1	
Cyanide (total)	EPA 335.2	<0.005	
Phenolics	EPA 420.1	<0.05	
Arsenic	EPA 206.2	<0.01	

Special Comments:

1. Federal Register, Vol. 45, April, 1980.
2. EPA 600/4-79-020, March, 1984.
3. Standard Methods, 16th Edition, 1985.
4. Federal Register, Vol. 49, October, 1984.
5. High Pressure Liquid Chromatography (HPLC).

C.C. Mr. Loren Gearhart, EPNG, El Paso, Texas
Dr. Henry Van, EPNG, El Paso, Texas

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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-062, Water, Softener Regeneration, Kutz Plant, R-KCI 6-10160-6

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Barium	EPA 208.1	4.79	
Cadmium	EPA 213.1	0.27	
Calcium	EPA 215.1	5,870	
Chromium (total)	EPA 218.1	0.14	
Copper	EPA 220.1	0.28	
Hardness	St. Method 209[3]	16,800	as $CaCO_3$
Iron	EPA 236.1	-	
Lead	EPA 239.1	1.50	
Magnesium	EPA 242.1	513	
Manganese	EPA 243.1	0.48	

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Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-062, Water, Softener Regeneration, Kutz Plant, R-KCI 6-10160-6

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Mercury	EPA 245.1	<0.001	
Potassium	EPA 258.1	61.2	
Selenium	EPA 270.2	<0.02	
Silver	EPA 272.1	0.20	
Sodium	EPA 273.1	37,000	
Zinc	EPA 289.1	7.07	
Alkalinity, total	Std. Method 403	58.5	as $CaCO_3$
Alkalinity, Bicarbonate	Std. Method 403	71.4	as HCO_3

Special Comments:

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Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-062, Water, Softener Regeneration, Kutz Plant, R-KCI 6-10160-6

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Chloride	EPA 300.0	73,600	
Fluoride	EPA 300.0	<0.1	
TDS	EPA 160.1	114,000	
Total Residue	EPA 160.3	-	
Sulfate	EPA 300.0	97.2	
Volatile Organics	EPA 624[4]	See attached	
PCB's	EPA 608[4]	<0.0001	
pH	EPA 150.1	7.3	

Special Comments:

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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-062, Water, Softener Regeneration, Kutz Plant, R-KCI 6-10160-5

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Ethylene dibromide	EPA 624[4]	<0.005	
Naphthalene	EPA 610[5]	<0.001	
Monomethylnaphthalene	EPA 610[5]	<0.001	
Anion/Cation Balance	Calculation	1910 meq./1946 meq.	

Special Comments:

Raba-Kistner Consultants, Inc.
by Francis Y. Huang
Francis Y. Huang, Ph.D., CPC

R-KCI Lab No. 6-10160-6 Project No. 686-003

(PURGEABLES)
(EPA Method 624)

Compound	Concentration (ug/L)	Method Detection Limits (ug/L)
Chloromethane	N.D.	5.0
Bromomethane	N.D.	5.0
Vinyl Chloride	N.D.	10.0
Chloroethane	N.D.	5.0
Methylene Chloride	N.D.	2.8
Trichlorofluoromethane	N.D.	5.0
1,1-Dichloroethene	N.D	2.8
1,1-Dichloroethane	N.D.	4.7
Trans-1,2-Dichloroethene	N.D.	1.6
Chloroform	N.D.	1.6
1,2-Dichloroethane	N.D.	2.8
1,1,1-Trichloroethane	N.D.	3.8
Carbon Tetrachloride	N.D.	2.8
Bromodichloromethane	N.D.	2.2
1,2-Dichloropropane	N.D.	6.0
Trans-1,3-Dichloropropene	N.D.	5.0
Trichloroethene	N.D	1.9
Dibromochloromethane	N.D.	3.1
1,1,2-Trichloroethane	N.D	5.0
cis-1,3-Dichloropropene	N.D.	5.0
Benzene	N.D.	4.4
2-Chloroethylvinyl Ether	N.D.	5.0
Bromoform	N.D.	4.7
1,1,2,2-Tetrachloroethane	N.D.	6.9
Tetrachloroethene	N.D	4.1
Toluene	N.D.	6.0
Chlorobenzene	N.D.	6.0
Ethylbenzene	N.D.	7.2
Xylenes	N.D.	5.0

N.D. = Not Detected

Report of Chemical Analysis

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Farmington, New Mexico 87499

Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-065, Water, Disposal Pond, Kutz Plant, R-KCI 6-10160-9

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
COD	Hach Tube[1]	214	
Nitrate-N	EPA 300.0[2]	1.74	
Oil and Grease	EPA 413.2	<1.0	
TOC	EPA 415.1	62	
O-Phosphate	EPA 300.0	<0.1	
Cyanide (total)	EPA 335.2	<0.005	
Phenolics	EPA 420.1	<0.05	
Arsenic	EPA 206.2	<0.01	

Special Comments:

1. Federal Register, Vol. 45, April, 1980.
2. EPA 600/4-79-020, March, 1984.
3. Standard Methods, 16th Edition, 1985.
4. Federal Register, Vol. 49, October, 1984.
5. High Pressure Liquid Chromatography (HPLC).

C.C. Mr. Loren Gearhart, EPNG, El Paso, Texas
Dr. Henry Van, EPNG, El Paso, Texas

Raba-Kistner Consultants, Inc.
by Francis Y. Huang
Francis Y. Huang, Ph.D., CPC

Report of Chemical Analysis

Consulting Geotechnical, Materials and Environmental Engineers
Geologists, Scientists and Chemists

Raba-Kistner Consultants, Inc.
P.O. Box 690287, San Antonio, TX 78269-0287
12821 W. Golden Lane, San Antonio, TX 78249
(512) 699-9090

To: El Paso Natural Gas Company
P.O. Box 4990
Farmington, New Mexico 87499

Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-065, Water, Disposal Pond, Kutz Plant, R-KCI 6-10160-9

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Barium	EPA 208.1	<0.5	
Cadmium	EPA 213.1	<0.01	
Calcium	EPA 215.1	114	
Chromium (total)	EPA 218.1	0.06	
Copper	EPA 220.1	0.01	
Hardness	St. Method 209[3]	352	as $CaCO_3$
Iron	EPA 236.1	-	
Lead	EPA 239.1	0.08	
Magnesium	EPA 242.1	16.2	
Manganese	EPA 243.1	0.10	

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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-065, Water, Disposal Pond, Kutz Plant, R-KCI 6-10160-9

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Mercury	EPA 245.1	<0.001	
Potassium	EPA 258.1	17.4	
Selenium	EPA 270.2	<0.02	
Silver	EPA 272.1	<0.01	
Sodium	EPA 273.1	128	
Zinc	EPA 289.1	0.20	
Alkalinity, total	Std. Method 403	94.5	as $CaCO_3$
Alkalinity, Bicarbonate	Std. Method 403	115	as HCO_3

Special Comments:

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Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J-86-065, Water, Disposal Pond, Kutz Plant, R-KCI 6-10160-9

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Chloride	EPA 300.0	151	
Fluoride	EPA 300.0	20.9	
TDS	EPA 160.1	1,060	
Total Residue	EPA 160.3	-	
Sulfate	EPA 300.0	376	
Volatile Organics	EPA 624[4]	See attached	
PCB's	EPA 608[4]	<0.0001	
pH	EPA 150.1	-	

Special Comments:

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Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-065, Water, Disposal Pond, Kutz Plant, R-KCI 6-10160-9

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Ethylene dibromide	EPA 624[4]	<0.005	
Naphthalene	EPA 610[5]	<0.001	
Monomethylnaphthalene	EPA 610[5]	<0.001	
Anion/Cation Balance	Calculation	14.1 meq./13.0 meq.	

Special Comments:

Raba-Kistner Consultants, Inc.

by Francis Y. Huang
Francis Y. Huang, Ph.D., CPC

R-KCI Lab No. 6-10160-9 Project No. 686-003

(PURGEABLES)
(EPA Method 624)

Compound	Concentration (ug/L)	Method Detection Limits (ug/L)
Chloromethane	N.D.	5.0
Bromomethane	N.D.	5.0
Vinyl Chloride	N.D.	10.0
Chloroethane	N.D.	5.0
Methylene Chloride	N.D.	2.8
Trichlorofluoromethane	N.D.	5.0
1,1-Dichloroethene	N.D	2.8
1,1-Dichloroethane	N.D.	4.7
Trans-1,2-Dichloroethene	N.D.	1.6
Chloroform	N.D.	1.6
1,2-Dichloroethane	N.D.	2.8
1,1,1-Trichloroethane	N.D.	3.8
Carbon Tetrachloride	N.D.	2.8
Bromodichloromethane	N.D.	2.2
1,2-Dichloropropane	N.D.	6.0
Trans-1,3-Dichloropropene	N.D.	5.0
Trichloroethene	N.D	1.9
Dibromochloromethane	N.D.	3.1
1,1,2-Trichloroethane	N.D	5.0
cis-1,3-Dichloropropene	N.D.	5.0
Benzene	9.73	4.4
2-Chloroethylvinyl Ether	N.D.	5.0
Bromoform	N.D.	4.7
1,1,2,2-Tetrachloroethane	N.D.	6.9
Tetrachloroethene	N.D	4.1
Toluene	N.D.	6.0
Chlorobenzene	10.1	6.0
Ethylbenzene	N.D.	7.2
Xylenes	N.D.	5.0

N.D. = Not Detected

Report of Chemical Analysis

Consulting Geotechnical, Materials and Environmental Engineers
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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-066, Water, Cooling Tower Basin, Kutz Plant, R-KCI 6-10160-10

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
COD	Hach Tube[1]	49.7	
Nitrate-N	EPA 300.0[2]	<0.1	
Oil and Grease	EPA 413.2	<1.0	
TOC	EPA 415.1	20	
O-Phosphate	EPA 300.0	0.38	
Cyanide (total)	EPA 335.2	<0.005	
Phenolics	EPA 420.1	<0.05	
Arsenic	EPA 206.2	<0.01	

Special Comments:

1. Federal Register, Vol. 45, April, 1980.
2. EPA 600/4-79-020, March, 1984.
3. Standard Methods, 16th Edition, 1985.
4. Federal Register, Vol. 49, October, 1984.
5. High Pressure Liquid Chromatography (HPLC).

C.C. Mr. Loren Gearhart, EPNG, El Paso, Texas
Dr. Henry Van, EPNG, El Paso, Texas

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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-066, Water, Cooling Tower Basin, Kutz Plant, R-KCI 6-10160-10

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Barium	EPA 208.1	<0.5	
Cadmium	EPA 213.1	<0.01	
Calcium	EPA 215.1	212	
Chromium (total)	EPA 218.1	0.03	
Copper	EPA 220.1	0.05	
Hardness	St. Method 209[3]	694	as $CaCO_3$
Iron	EPA 236.1	0.40	
Lead	EPA 239.1	0.07	
Magnesium	EPA 242.1	40.0	
Manganese	EPA 243.1	0.05	

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Sample Description/Code: J86-066, Water, Cooling Tower Basin, Kutz Plant, R-KCI 6-10160-10

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Mercury	EPA 245.1	<0.001	
Potassium	EPA 258.1	33.0	
Selenium	EPA 270.2	<0.02	
Silver	EPA 272.1	<0.01	
Sodium	EPA 273.1	121	
Zinc	EPA 289.1	8.02	
Alkalinity, total	Std. Method 403	76.5	as $CaCO_3$
Alkalinity, Bicarbonate	Std. Method 403	93.3	as HCO_3

Special Comments:

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Submitted By: EPNG

Sample Description/Code: J86-066, Water, Cooling Tower Basin, Kutz Plant, R-KCI 6-10160-10

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Chloride	EPA 300.0	27.7	
Fluoride	EPA 300.0	1.70	
TDS	EPA 160.1	-	
Total Residue	EPA 160.3	1,150	
Sulfate	EPA 300.0	904	
Volatile Organics	EPA 624[4]	See attached	
PCB's	EPA 608[4]	<0.0001	
pH	EPA 150.1	7.7	

Special Comments:

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Date Received: 6/14/86
Date Reported: 7/11/86
Submitted By: EPNG

Sample Description/Code: J86-066, Water, Cooling Basin, Kutz Plant, R-KCI 6-10160-10

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Ethylene dibromide	EPA 624[4]	<0.005	
Naphthalene	EPA 610[5]	<0.001	
Monomethylnaphthalene	EPA 610[5]	<0.001	
Anion/Cation Balance	Calculation	21.1 meq./20.0 meq.	

Special Comments:

Raba-Kistner Consultants, Inc.
by Francis Y. Huang
Francis Y. Huang, Ph.D., CPC

R-KCI Lab No. 6-10160-10 Project No. 686-003

(PURGEABLES)
(EPA Method 624)

Compound	Concentration (ug/L)	Method Detection Limits (ug/L)
Chloromethane	N.D.	5.0
Bromomethane	N.D.	5.0
Vinyl Chloride	N.D.	10.0
Chloroethane	N.D.	5.0
Methylene Chloride	N.D.	2.8
Trichlorofluoromethane	N.D.	5.0
1,1-Dichloroethene	N.D	2.8
1,1-Dichloroethane	N.D.	4.7
Trans-1,2-Dichloroethene	N.D.	1.6
Chloroform	N.D.	1.6
1,2-Dichloroethane	N.D.	2.8
1,1,1-Trichloroethane	N.D.	3.8
Carbon Tetrachloride	N.D.	2.8
Bromodichloromethane	N.D.	2.2
1,2-Dichloropropane	N.D.	6.0
Trans-1,3-Dichloropropene	N.D.	5.0
Trichloroethene	N.D	1.9
Dibromochloromethane	N.D.	3.1
1,1,2-Trichloroethane	N.D	5.0
cis-1,3-Dichloropropene	N.D.	5.0
Benzene	N.D.	4.4
2-Chloroethylvinyl Ether	N.D.	5.0
Bromoform	N.D.	4.7
1,1,2,2-Tetrachloroethane	N.D.	6.9
Tetrachloroethene	N.D	4.1
Toluene	N.D.	6.0
Chlorobenzene	N.D.	6.0
Ethylbenzene	N.D.	7.2
Xylenes	N.D.	5.0

N.D. = Not Detected

Report of Chemical Analysis

Consulting Geotechnical, Materials and Environmental Engineers
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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 8/09/86
Date Reported: 8/21/86
Submitted By: EPNG

Sample Description/Code: J86-082, Water, Piezometer No. 1, Kutz Plant, R-KCI 6-10308-1

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Nitrate-N	EPA 300.0[2]	<0.1	
Cyanide (total)	EPA 335.2	<0.010	
Phenolics	EPA 420.1	<0.05	
Arsenic	EPA 206.2	<0.01	
Barium	EPA 208.1	<0.25	
Cadmium	EPA 213.1	<0.01	
Calcium	EPA 215.1	132	
Chromium (total)	EPA 218.1	<0.01	

Special Comments:

1. Federal Register, Vol. 45, April, 1980.
2. EPA 600/4-79-020, March, 1984.
3. Standard Methods, 16th Edition, 1985.
4. Federal Register, Vol. 49, October, 1984.
5. High Pressure Liquid Chromatography (HPLC).

C.C. Mr. Loren Gearhart, EPNG, El Paso, Texas

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AUG 28 1986
ENVIRONMENTAL AFFAIRS

Raba-Kistner Consultants, Inc.
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Francis Y. Huang, Ph.D., CPC

Report of Chemical Analysis

Consulting Geotechnical, Materials and Environmental Engineers
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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 8/09/86
Date Reported: 8/21/86
Submitted By: EPNG

Sample Description/Code: J86-082, Water, Diezometer No. 1, Kutz Plant, R-KCI 6-10308-1

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Copper	EPA 220.1	<0.01	
Hardness	St. Method 209[3]	375	as $CaCO_3$
Lead	EPA 239.1	<0.05	
Magnesium	EPA 242.1	11.1	
Manganese	EPA 243.1	0.17	
Mercury	EPA 245.1	<0.001	
Potassium	EPA 258.1	17.4	
Selenium	EPA 270.2	<0.02	

Special Comments:

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Report of Chemical Analysis

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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 8/09/86
Date Reported: 8/21/86
Submitted By: EPNG

Sample Description/Code: J86-082, Water, Diezometer No. 1, Kutz Plant, R-KCI 6-10308-1

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Silver	EPA 272.1	<0.01	
Sodium	EPA 273.1	61.6	
Alkalinity, total	Std. Method 403	192	as $CaCO_3$
Alkalinity, Bicarbonate	Std. Method 403	234	as HCO_3
Chloride	EPA 300.0	25.8	
Fluoride	EPA 300.0	1.28	
TDS	EPA 160.1	774	
Sulfate	EPA 300.0	356	

Special Comments:

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Project No: 686-003
Date Received: 8/09/86
Date Reported: 8/21/86
Submitted By: EPNG

Sample Description/Code: J86-082, Water, Diezometer No. 1, Kutz Plant, R-KCI 6-10308-1

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Volatile Organics	EPA 624[4]	See Attached	
PCB's	EPA 608[4]	<0.0005	
pH	EPA 150.1	7.0	
Ethylene dibromide	EPA 624[4]	<0.005	
Naphthalene	EPA 610[5]	<0.001	
Monomethylnaphthalene	EPA 610[5]	<0.001	
Anion/Cation Balance	Calculation	11.5 meq/10.6 meq	

Special Comments:

Raba-Kistner Consultants, Inc.
by Francis Y. Huang, Ph.D., CPC

Project No. 686-003
R-KCI Lab No. 6-10308-1

(PURGEABLES)
(EPA Method 624)

Compound	Concentration (ug/L)	Method Detection Limits (ug/L)
Chloromethane	N.D.	5.0
Bromomethane	N.D.	5.0
Vinyl Chloride	N.D.	10.0
Chloroethane	N.D.	5.0
Methylene Chloride	N.D.	2.8
Trichlorofluoromethane	N.D.	5.0
1,1-Dichloroethene	N.D	2.8
1,1-Dichloroethane	N.D.	4.7
Trans-1,2-Dichloroethene	N.D.	1.6
Chloroform	N.D.	1.6
1,2-Dichloroethane	N.D.	2.8
1,1,1-Trichloroethane	N.D.	3.8
Carbon Tetrachloride	N.D.	2.8
Bromodichloromethane	N.D.	2.2
1,2-Dichloropropane	N.D.	6.0
Trans-1,3-Dichloropropene	N.D.	5.0
Trichloroethene	N.D	1.9
Dibromochloromethane	N.D.	3.1
1,1,2-Trichloroethane	N.D	5.0
cis-1,3-Dichloropropene	N.D.	5.0
Benzene	N.D.	4.4
2-Chloroethylvinyl Ether	N.D.	5.0
Bromoform	N.D.	4.7
1,1,2,2-Tetrachloroethane	N.D.	6.9
Tetrachloroethene	N.D	4.1
Toluene	N.D.	6.0
Chlorobenzene	N.D.	6.0
Ethylbenzene	N.D.	7.2
Xylenes	N.D.	5.0

N.D.= Not Detected

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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 8/09/86
Date Reported: 8/21/86
Submitted By: EPNG

Sample Description/Code: J86-083, Water, Piezometer No. 2, Kutz Plant, R-KCI 6-10308-2

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Nitrate-N	EPA 300.0[2]	1.87	
Cyanide (total)	EPA 335.2	<0.010	
Phenolics	EPA 420.1	<0.05	
Arsenic	EPA 206.2	<0.01	
Barium	EPA 208.1	<0.25	
Cadmium	EPA 213.1	<0.01	
Calcium	EPA 215.1	269	
Chromium (total)	EPA 218.1	0.02	

Special Comments:

1. Federal Register, Vol. 45, April, 1980.
2. EPA 600/4-79-020, March, 1984.
3. Standard Methods, 16th Edition, 1985.
4. Federal Register, Vol. 49, October, 1984.
5. High Pressure Liquid Chromatography (HPLC).

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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 8/09/86
Date Reported: 8/21/86
Submitted By: EPNG

Sample Description/Code: J86-003, Water, Piezometer No. 2, Kutz Plant, R-KCI 6-10308-2

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Copper	EPA 220.1	<0.01	
Hardness	St. Method 209[3]	853	as $CaCO_3$
Lead	EPA 239.1	<0.05	
Magnesium	EPA 242.1	44.1	
Manganese	EPA 243.1	0.03	
Mercury	EPA 245.1	<0.001	
Potassium	EPA 258.1	28.1	
Selenium	EPA 270.2	<0.02	

Special Comments:

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Consulting Geotechnical, Materials and Environmental Engineers
Geologists, Scientists and Chemists

Raba-Kistner Consultants, Inc.
P.O. Box 690287, San Antonio, TX 78269-0287
12821 W. Golden Lane, San Antonio, TX 78249
(512) 699-9090

To: El Paso Natural Gas Company
P.O. Box 4990
Farmington, New Mexico 87499

Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 8/09/86
Date Reported: 8/21/86
Submitted By: EPNG

Sample Description/Code: J86-083, Water, Piezometer No. 2, Kutz Plant, R-KCI 6-10308-2

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Silver	EPA 272.1	<0.01	
Sodium	EPA 273.1	53.5	
Alkalinity, total	Std. Method 403	125	as $CaCO_3$
Alkalinity, Bicarbonate	Std. Method 403	152	as HCO_3
Chloride	EPA 300.0	45.5	
Fluoride	EPA 300.0	1.93	
TDS	EPA 160.1	2,100	
Sulfate	EPA 300.0	1,030	

Special Comments:

Raba-Kistner Consultants, Inc.
by Francis Y. Huang
Francis Y. Huang, Ph.D., CPC

Report of Chemical Analysis

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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 8/09/86
Date Reported: 8/21/86
Submitted By: EPNG

Sample Description/Code: J86-003, Water Piezometer No. 2, Kutz Plant, R-KCI 6-10308-2

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Volatile Organics	EPA 624[4]	See Attached	
PCB's	EPA 608[4]	<0.0005	
pH	EPA 150.1	7.2	
Ethylene dibromide	EPA 624[4]	<0.005	
Naphthalene	EPA 610[5]	<0.001	
Monomethylnaphthalene	EPA 610[5]	<0.001	
Anion/Cation Balance	Calculation	22.5 meq/ 20.1 meq	

Special Comments:

Raba-Kistner Consultants, Inc.
by Francis Y. Huang
Francis Y. Huang, Ph.D., CPC

Project No. 686-003
R-KCI Lab No. 6-10308-2

(PURGEABLES)
(EPA Method 624)

Compound	Concentration (ug/L)	Method Detection Limits (ug/L)
Chloromethane	N.D.	5.0
Bromomethane	N.D.	5.0
Vinyl Chloride	N.D.	10.0
Chloroethane	N.D.	5.0
Methylene Chloride	N.D.	2.8
Trichlorofluoromethane	N.D.	5.0
1,1-Dichloroethene	N.D	2.8
1,1-Dichloroethane	N.D.	4.7
Trans-1,2-Dichloroethene	N.D.	1.6
Chloroform	N.D.	1.6
1,2-Dichloroethane	N.D.	2.8
1,1,1-Trichloroethane	N.D.	3.8
Carbon Tetrachloride	N.D.	2.8
Bromodichloromethane	N.D.	2.2
1,2-Dichloropropane	N.D.	6.0
Trans-1,3-Dichloropropene	N.D.	5.0
Trichloroethene	N.D	1.9
Dibromochloromethane	N.D.	3.1
1,1,2-Trichloroethane	N.D	5.0
cis-1,3-Dichloropropene	N.D.	5.0
Benzene	N.D.	4.4
2-Chloroethylvinyl Ether	N.D.	5.0
Bromoform	N.D.	4.7
1,1,2,2-Tetrachloroethane	N.D.	6.9
Tetrachloroethene	N.D	4.1
Toluene	N.D.	6.0
Chlorobenzene	N.D.	6.0
Ethylbenzene	N.D.	7.2
Xylenes	N.D.	5.0

N.D.= Not Detected

Rabe-Kistner Consultants, Inc.

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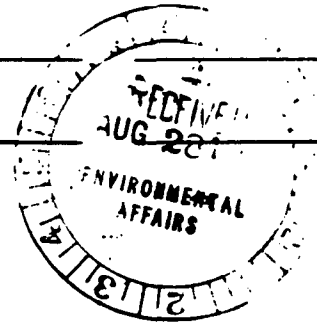
Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 8/09/86
Date Reported: 8/21/86
Submitted By: EPNG

Sample Description/Code: J86-084, Water, Piezometer No. 3, Kutz Plant, R-KCI 6-10308-3

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Nitrate-N	EPA 300.0[2]	<0.1	
Cyanide (total)	EPA 335.2	<0.010	
Phenolics	EPA 420.1	<0.05	
Arsenic	EPA 206.2	<0.01	
Barium	EPA 208.1	<0.25	
Cadmium	EPA 213.1	<0.01	
Calcium	EPA 215.1	357	
Chromium (total)	EPA 218.1	0.02	



Special Comments:

1. Federal Register, Vol. 45, April, 1980.
2. EPA 600/4-79-020, March, 1984.
3. Standard Methods, 16th Edition, 1985.
4. Federal Register, Vol. 49, October, 1984.
5. High Pressure Liquid Chromatography (HPLC).

C.C. Mr. Loren Gearhart, EPNG, El Paso, Texas

Raba-Kistner Consultants, Inc.
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Francis Y. Huang, Ph.D., CPC

Report of Chemical Analysis

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Attn: Mr. Kenneth E. Beasley

Project No: 686-003
Date Received: 8/09/86
Date Reported: 8/21/86
Submitted By: EPNG

Sample Description/Code: J86-084, Water, Piezometer No. 3, Kutz Plant, R-KCI 6-10308-3

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Copper	EPA 220.1	<0.01	
Hardness	St. Method 209[3]	991	as $CaCO_3$
Lead	EPA 239.1	<0.05	
Magnesium	EPA 242.1	24.1	
Manganese	EPA 243.1	0.09	
Mercury	EPA 245.1	<0.001	
Potassium	EPA 258.1	8.58	
Selenium	EPA 270.2	<0.02	

Special Comments:

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Submitted By: EPNG

Sample Description/Code: J86-084, Water, Piezometer No. 3, Kutz Plant, R-KCI 6-10308-3

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Silver	EPA 272.1	<0.01	
Sodium	EPA 273.1	436	
Alkalinity, total	Std. Method 403	115	as $CaCO_3$
Alkalinity, Bicarbonate	Std. Method 403	140	as HCO_3
Chloride	EPA 300.0	6.18	
Fluoride	EPA 300.0	<0.1	
TDS	EPA 160.1	3,270	
Sulfate	EPA 300.0	1,960	

Special Comments:

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Sample Description/Code: J86-084, Water, Piezometer No. 3, Kutz Plant, R-KCI 6-10308-3

SUMMARY OF ANALYSIS

Determination	Analytical Method	Results (mg/L)	Miscellaneous
Volatile Organics	EPA 624[4]	See Attached	
PCB's	EPA 608[4]	<0.0005	
pH	EPA 150.1	7.3	
Ethylene dibromide	EPA 624[4]	<0.005	
Naphthalene	EPA 610[5]	<0.001	
Monomethylnaphthalene	EPA 610[5]	<0.001	
Anion/Cation Balance	Calculation	41.6 meq/39.0 meq	

Special Comments:

Raba-Kistner Consultants, Inc.
by Francis Y. Huang
Francis Y. Huang, Ph.D., CPC

Project No. 686-003
R-KCI Lab No. 6-10308-3

(PURGEABLES)
(EPA Method 624)

Compound	Concentration (ug/L)	Method Detection Limits (ug/L)
Chloromethane	N.D.	5.0
Bromomethane	N.D.	5.0
Vinyl Chloride	N.D.	10.0
Chloroethane	N.D.	5.0
Methylene Chloride	N.D.	2.8
Trichlorofluoromethane	N.D.	5.0
1,1-Dichloroethene	N.D	2.8
1,1-Dichloroethane	N.D.	4.7
Trans-1,2-Dichloroethene	N.D.	1.6
Chloroform	N.D.	1.6
1,2-Dichloroethane	N.D.	2.8
1,1,1-Trichloroethane	N.D.	3.8
Carbon Tetrachloride	N.D.	2.8
Bromodichloromethane	N.D.	2.2
1,2-Dichloropropane	N.D.	6.0
Trans-1,3-Dichloropropene	N.D.	5.0
Trichloroethene	N.D	1.9
Dibromochloromethane	N.D.	3.1
1,1,2-Trichloroethane	N.D	5.0
cis-1,3-Dichloropropene	N.D.	5.0
Benzene	N.D.	4.4
2-Chloroethylvinyl Ether	N.D.	5.0
Bromoform	N.D.	4.7
1,1,2,2-Tetrachloroethane	N.D.	6.9
Tetrachloroethene	N.D	4.1
Toluene	N.D.	6.0
Chlorobenzene	N.D.	6.0
Ethylbenzene	N.D.	7.2
Xylenes	N.D.	5.0

N.D.= Not Detected

Raba-Kistner Consultants, Inc.

by _____
Francis Y. Huang, Ph.D., CPC

C

APPENDIX C

EPNG PIEZOMETER LOG FROM DRILLING PROGRAM

KUTZ PLANT

EL PASO NATURAL GAS COMPANY

PIEZOMETERS - DRILLER'S LOG

P.Z. #1

Depth	Soil Condition
10'	Sand and Gravel
20'	Sand
30'	Sand and Clay
PVC depth -	
40'	SWL = 35' = Wtr. Zone
50'	Sandy Clay
60'	Sand

P.Z. #2

Depth	Soil Condition
10'	Sand
20'	Sand
30'	Sand and Gravel
PVC depth -	
40'	SWL = 33' = Wtr.Sand
50'	Water Zone
60'	Sand and Clay

P.Z. #3

Depth	Soil Condition
10'	Sand
20'	Sand and Gravel
30'	Sand and Clay
40'	Sand
50'	Water Sand
60'	Water Zone
70'	SWL = 70' = Sand
PVC depth	
80'	Clay/sand

KUTZ PLANT

EL PASO NATURAL GAS COMPANY

PIEZOMETER JOB LOG

July 22, 1986

E. P. Electric Drilling Contractor moved on location and commenced drilling 4-3/4" hole. Encountered large gravel and boulders at 15 feet. Finally penetrated and ran 20' of 6" PVC temporary casing. Drilled to 60 feet below ground level. Some moisture at 40 feet and fine sand with water to 60 feet.

July 23, 1986

Gravel delivered to all three locations. Rigtime to 4:00 p.m. (8 hours). Hole kept caving in at water level +40'.

July 24, 1986

Started jetting muck from inside 2" then some small gravel - indicating the 2" must be parted. Left location to go to PZ-2 (South). Will come back after other two wells.

PZ-2 (South) - Drilled to 60'. Gravel bed at +40' - keeps coming into hole - water level at 30' put in 40' of 2" PVC with 10' slots on bottom. Jetted well muddy water.

July 25, 1986

Started jetting PZ-2 well - still muddy - need to seal the top with the cement pad.

Moved to PZ-3 - drilled to 80' - TD sand with some water. Damp sand at 45' not wet enough at 65'. Installed 2" PVC, jetted some - not much - water. Moved back to PZ-1 - pulled two joints of 2" PVC from hole - casing was parted. Started drilling another hole for PZ-1. Drilled to 60' - water at 35'. Run 40 feet of 2" PVC - shutdown for weekend.

July 28, 1986

Jetted PZ-1 and PZ-2. All afternoon for water samples - water muddy.

July 29, 1986

Jetted PZ-3 for water sample - water muddy - 4 hours.

End of Job.

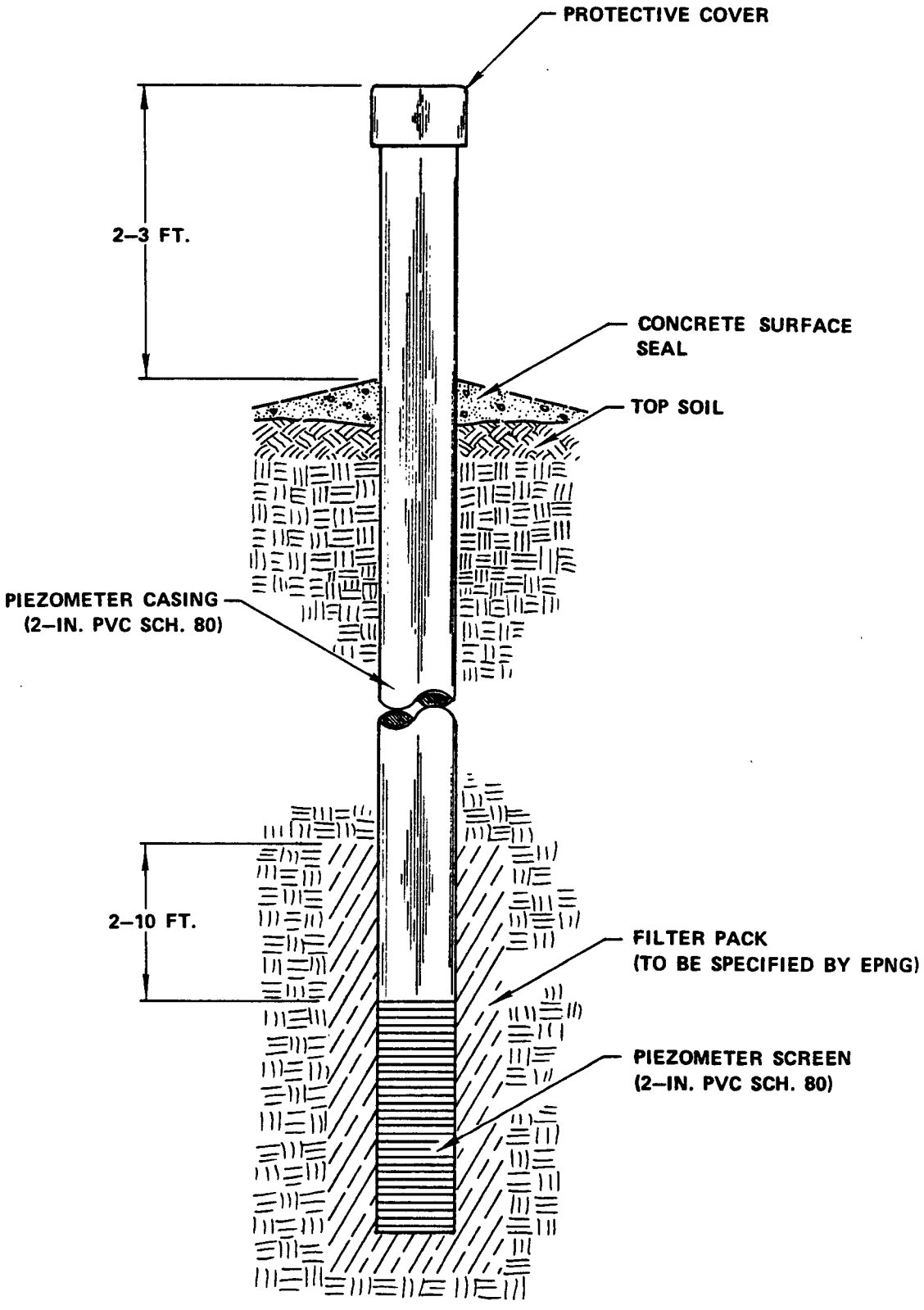
KUTZ PLANT

EL PASO NATURAL GAS COMPANY

Piezometer Data	PZ-1	PZ-2	PZ-3
2" PVC - depth	40'	40'	80'
Static water level	35'	35'	70'
Bottom 10' to 2" PVC slotted			
4'x 4' x 4' cement pad at surface	(center)	(south)	(north)*

*As one faces a map of the plant area.

APPENDIX "C"



TYPICAL GROUNDWATER PIEZOMETER DESIGN
KUTZ PLANT
EL PASO NATURAL GAS CO.

D

APPENDIX D

ONE HUNDRED-YEAR FLOOD CALCULATIONS

EL PASO NATURAL GAS COMPANY

APPENDIX "D"

ONE HUNDRED-YEAR FLOOD CALCULATIONS

Calculations regarding the peak discharge for the 100-year flood in the unnamed arroyo are as follows:

Using the equation given by Heji R. H., Jr. in his report titled "Preliminary Appraisal of Ephemeral-Streamflow Characteristics as Related to Drainage Area Active-Channel Width, and Soils in Northwestern New Mexico". U.S.G.S. OFR 81-64, Albuquerque, New Mexico, December, 1980, Pg. 10.

$$Q_{100} = 120\ W_{ac}^{0.98} D_a 0.14$$

Where:

Q_{100} = peak discharge at 100-year recurrence interval, in ft.^{3}/sec.
D_a = drainage area of basin, in mi.^{2}
W_{ac} = active-channel width, in ft.

D_a was taken from the 1:24000 topographic map as 2938 ac, or 4.59 mi.^{2}

W_{ac} was taken from Plate 4 as about 40 ft.

$$Q_{100} = 120\ (40)^{0.98}\ (4.59)^{0.14} = 5520 \text{ ft.}^3/\text{sec.}$$

The standard error of estimate is 46 percent.

This equation is based on regression analysis of records for 10 stations in northwestern New Mexico, for the purpose of predicting ephemeral streamflow characteristics.

E

APPENDIX E

PLATES


EL PASO NATURAL GAS COMPANY


NOTES
1. CLASS LOCATION AND JURISDICTION DETERMINED BY DWELLING UNIT COUNT (BUILDING INTENDED FOR HUMAN OCCUPANCY) WITHIN 660' OF SYSTEM.
2. DWELLING UNIT COUNT WITHIN 660' LIMIT
A. 12 HOUSES
B. 2 COMPRESSOR BLDGS
C. 1 OFFICE-UTILITY BLDG
15 TOTAL UNITS
3. MULTIPLE OCCUPANCY AREA WITHIN 300'
A. RECREATION-PLAYGROUND AREA (POSSIBLE 20 OR MORE)
4. GATHERING LINES NOT UNDER D.O.T. JURISDICTION
TRANSMISSION OR GATHERING LINES UNDER D.O.T. JURISDICTION
T-29-N, R-12-W
1/4 CORNER MARKED ROCK
TRUNK 3B
(DWG. NO. B733.0-1)
16"
LAT. 3B-59 (DWG. NO. 59B733.0-1) 4 1/2"
KUTZ PLANT DISCHARGE LINE (DWG. NO. 3204.0-1) 12 3/4"
TRUNK 3A (DWG. NO. A733.0-1) 20"
TRUNK 5D (DWG. NO. D735.0-1) 10 3/4"
TRUNK 5D
24" O.D. DRIP
24" O.D. DRIP BOTTLE
STEEL LINE
PLANT DISPOSAL
METER BUILDING
COMPRESSOR BUILDING
PUMP HOUSE
COOLING TOWER
SEPTIC TANK
UTILITY BUILDING
FIN-FAN
SUBSTATION
PLAYGROUND
TENNIS COURT
CAMP EVAPORATION POND
CAMP CLOSED
HOUSING AREA
ROAD
EQUATION 1+90 BACK 0+00 AHEAD
EQUATION 11+10 BACK 6+10 AHEAD
FROM 73911 UNION OIL CO. MONCRIEF GOV'T. NO. 1
FROM 73497
Sec. 15
Sec. 22

CLASS LOCATION DATA

LINE NO	O.D.	LINE DESIGNATION	BEGIN	END	CL. LOC	METER NO
		GAS PLANT PIPING			2 & 3	
A 733	20"	TRUNK 3A	-6+50	11+10 BK.	2	
A 733.0	20"	TRUNK 3A	-11+70	-6+50	3 (POSS)	
B 733	16"	TRUNK 3B	0+00	5+60	2	
59B733	4 1/2"	LATERAL 59B	52+10	E.O.L.	2	
D 735	10 3/4"	TRUNK 5D	52+10	92+81	2	
D 735.0-5	4 1/2"	UNION OIL CO.-MONCRIEF GOVT. #1	0+00	4+80	2	73911
3204	12 3/4"	KUTZ PLANT DISCHARGE LINE	52+10	E.O.L.	2	
D735.0-3	4 1/2"	UNION TEX. PET-NEW MEXICO "A" NO. 1	0+00	7+60	1	73497

REVISIONS

NO	DATE	BY	DESCRIPTION
A	2-15-79	LD	Added Notes & Dwelling Units
B	7-31-81	LD	Adjusted CL. 2 Locations & Photo-Revised Per 1981 Photos

ENGINEERING RECORD

DRAWN BY	Aero-Graphics
TRACED BY	
CHECKED BY	
APPROVED	R. L. G.
DATE	7-14-78
PHOTO DATE	10-29-76
PHOTO RECHECK	6-7-81

SCALE IN FEET 0 100 200 300

El Paso NATURAL GAS COMPANY
TEXAS

SAN JUAN GATHERING SYSTEM

PROCESS AND WASTEWATER SCHEMATIC

KUTZ PLANT

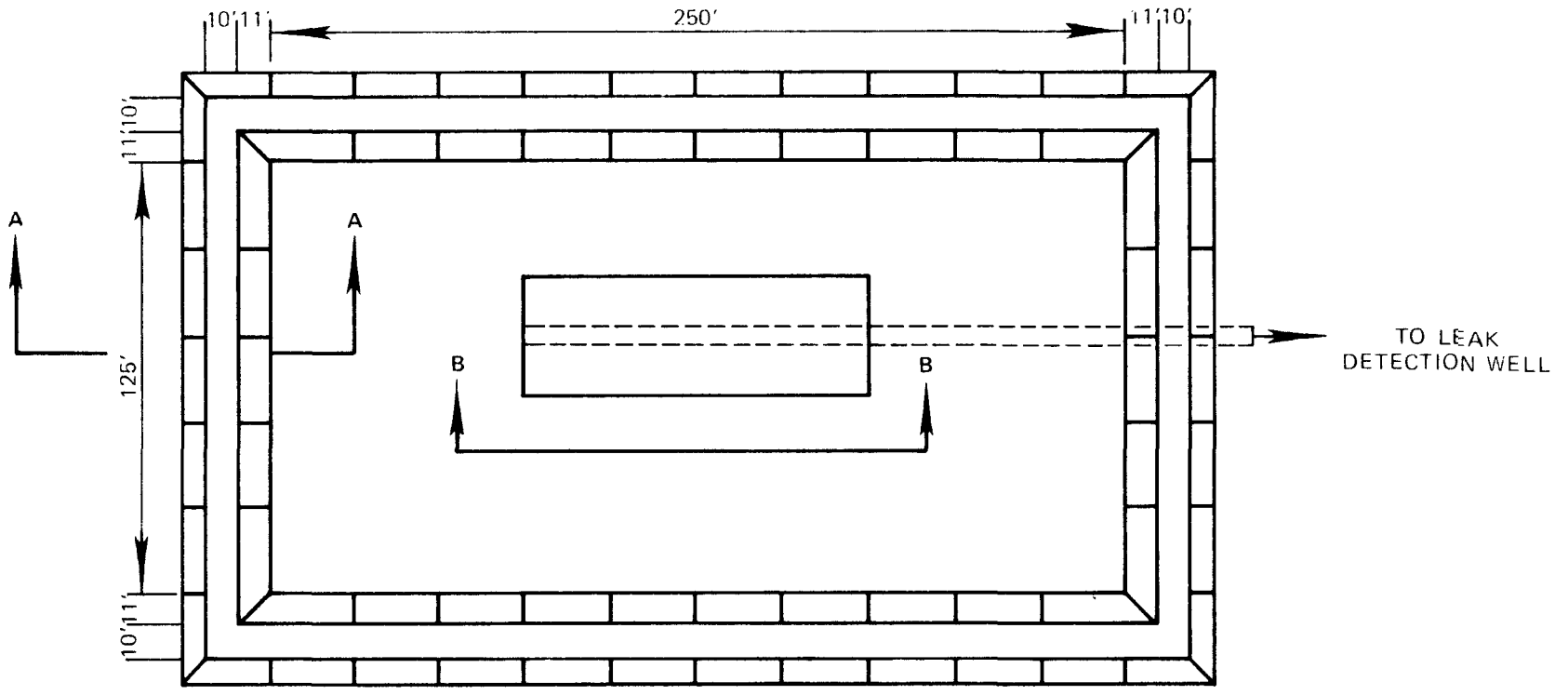
SAN JUAN COUNTY, NEW MEXICO

PLATE 3

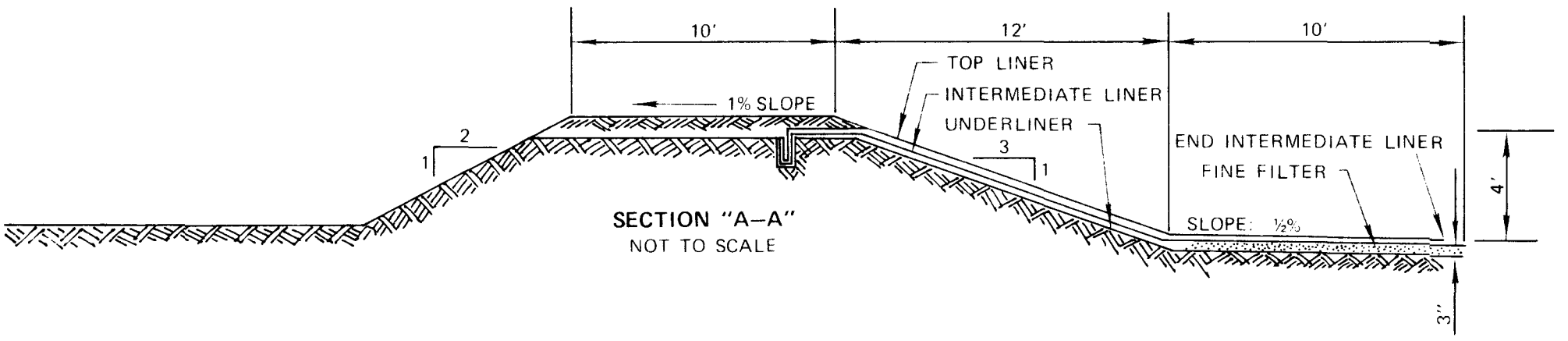
DWG. NO. 5201.19-3 — REV. B

REPRODUCTION BY aero-graphics INC. SALT LAKE CITY, UTAH

DRAFTING BY AERO-GRAPHICS, INC SALT LAKE CITY, UTAH



KUTZ PLANT EVAPORATION POND



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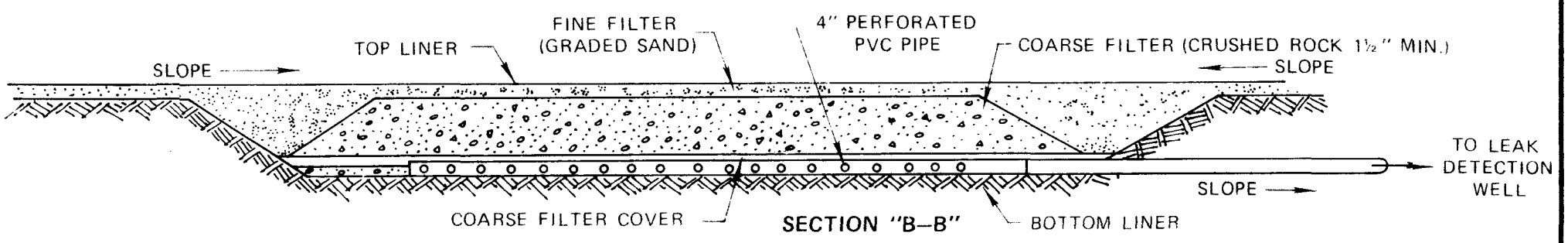
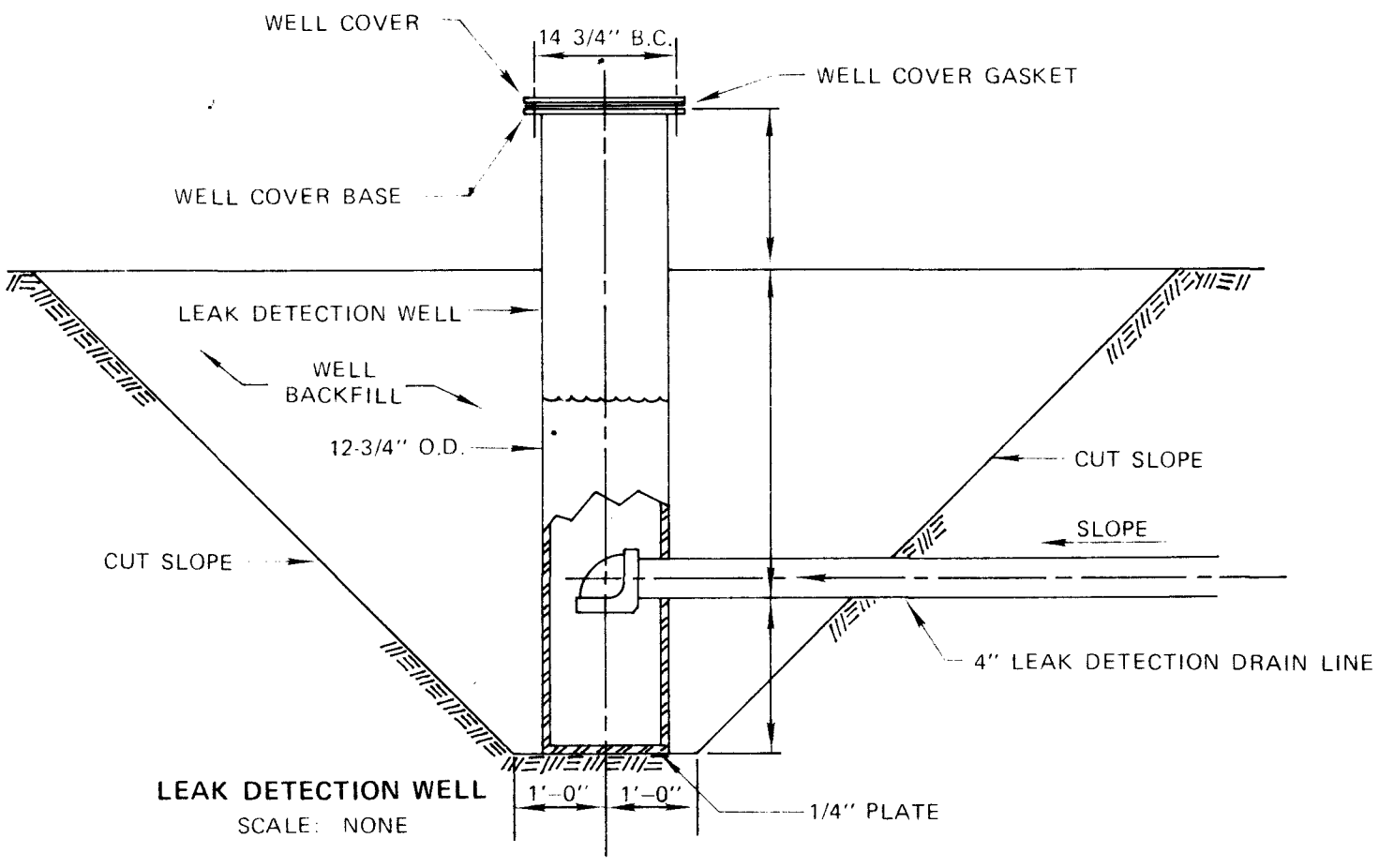


SECTION "B–B"
NOT TO SCALE



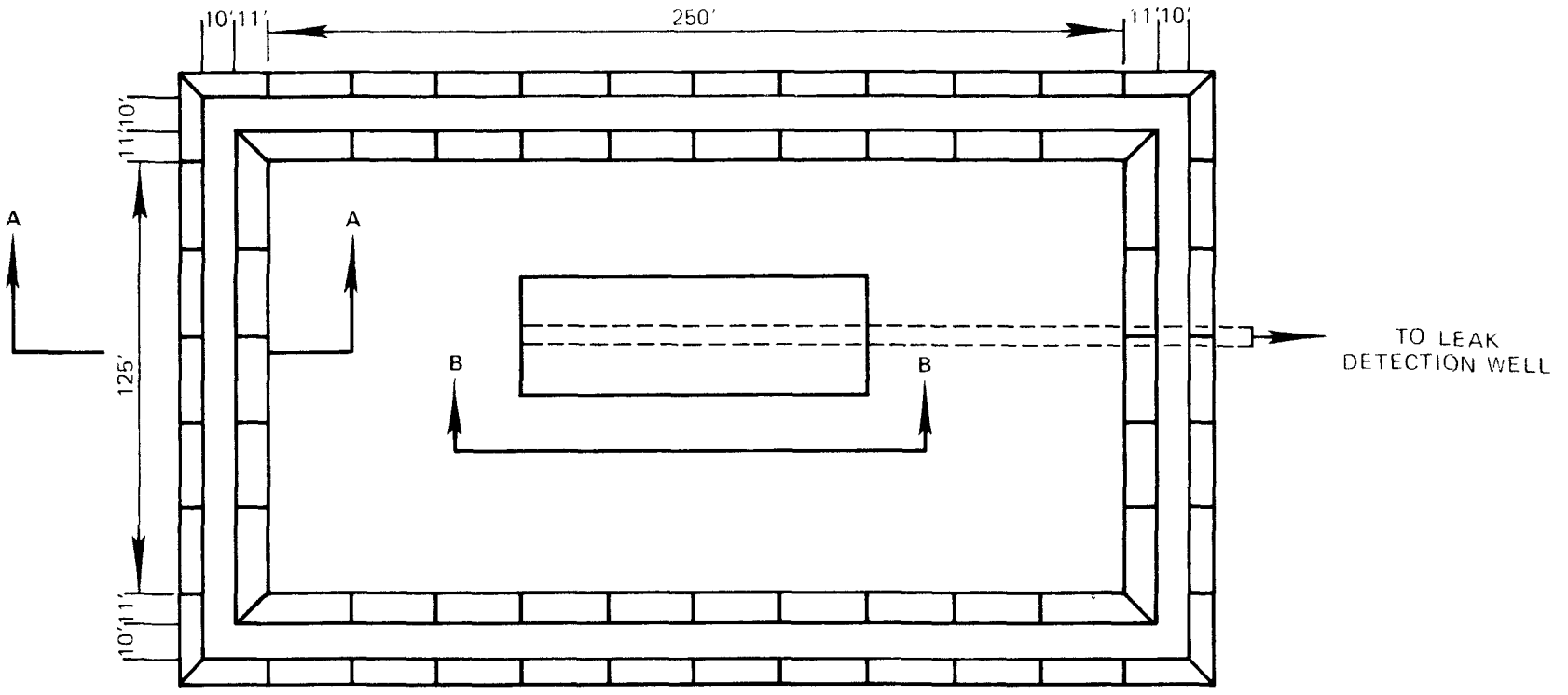
LEAK DETECTION WELL
SCALE: NONE

KUTZ PLANT EVAPORATION POND

El Paso Natural Gas Company

FIGURE 4–1

CONCEPTUAL DESIGN OF MODIFICATION
TO WASTEWATER MANAGEMENT SYSTEM–
KUTZ PLANT



KUTZ PLANT EVAPORATION POND

SECTION "A–A"
NOT TO SCALE

SECTION "B–B"
NOT TO SCALE

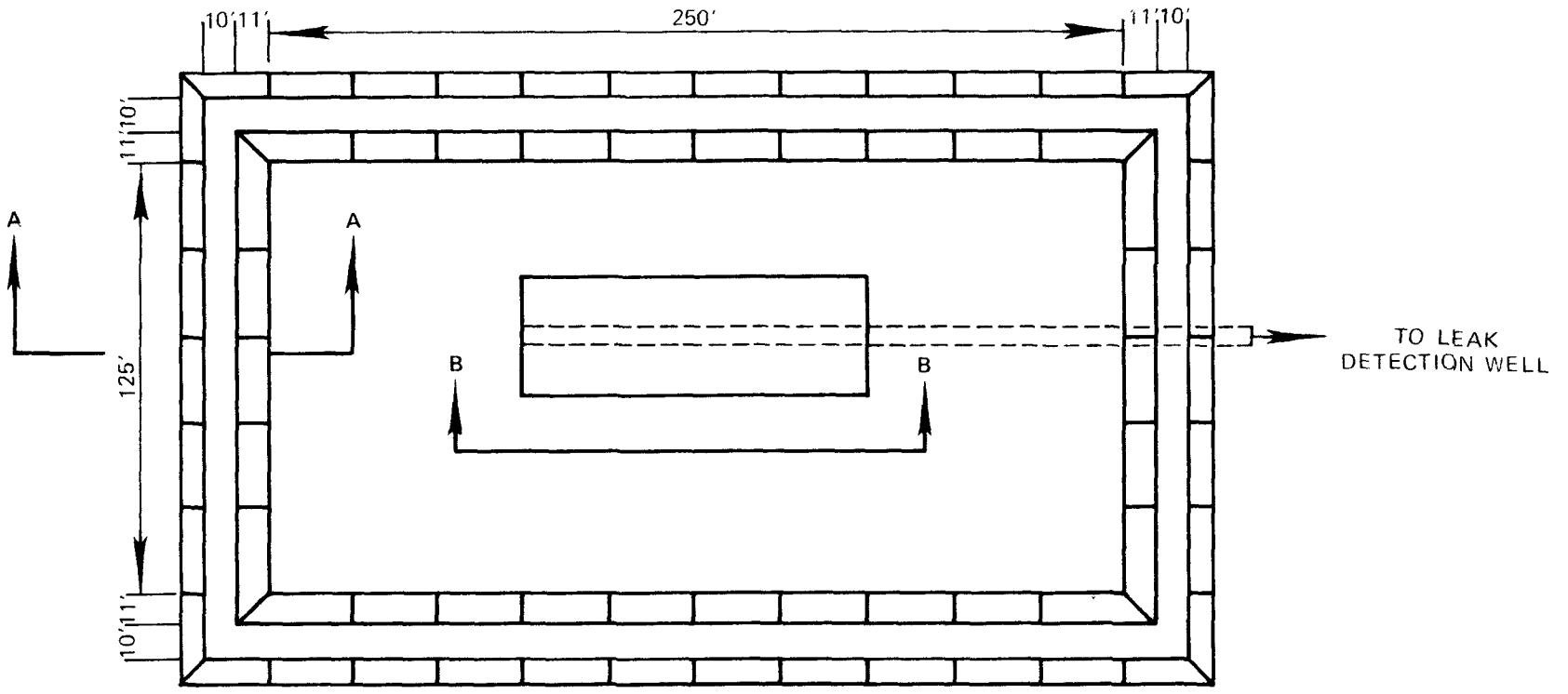
LEAK DETECTION WELL
SCALE: NONE

KUTZ PLANT EVAPORATION POND

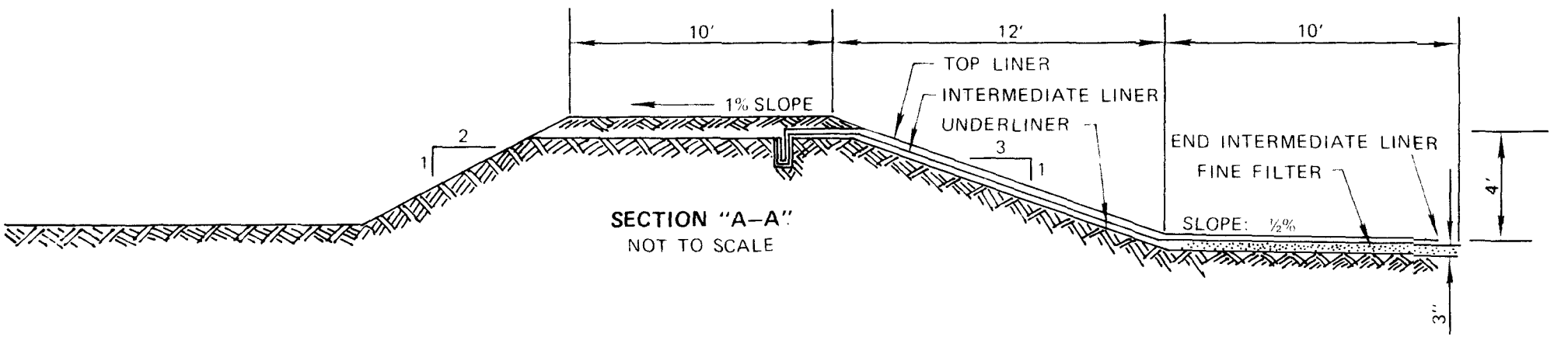
El Paso Natural Gas Company

FIGURE 4–1

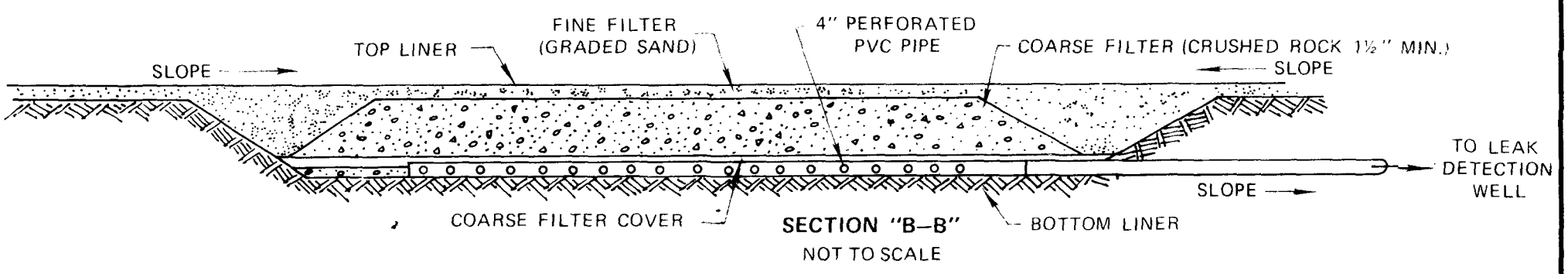
CONCEPTUAL DESIGN OF MODIFICATION
TO WASTEWATER MANAGEMENT SYSTEM–
KUTZ PLANT



KUTZ PLANT EVAPORATION POND



SECTION "A–A"
NOT TO SCALE



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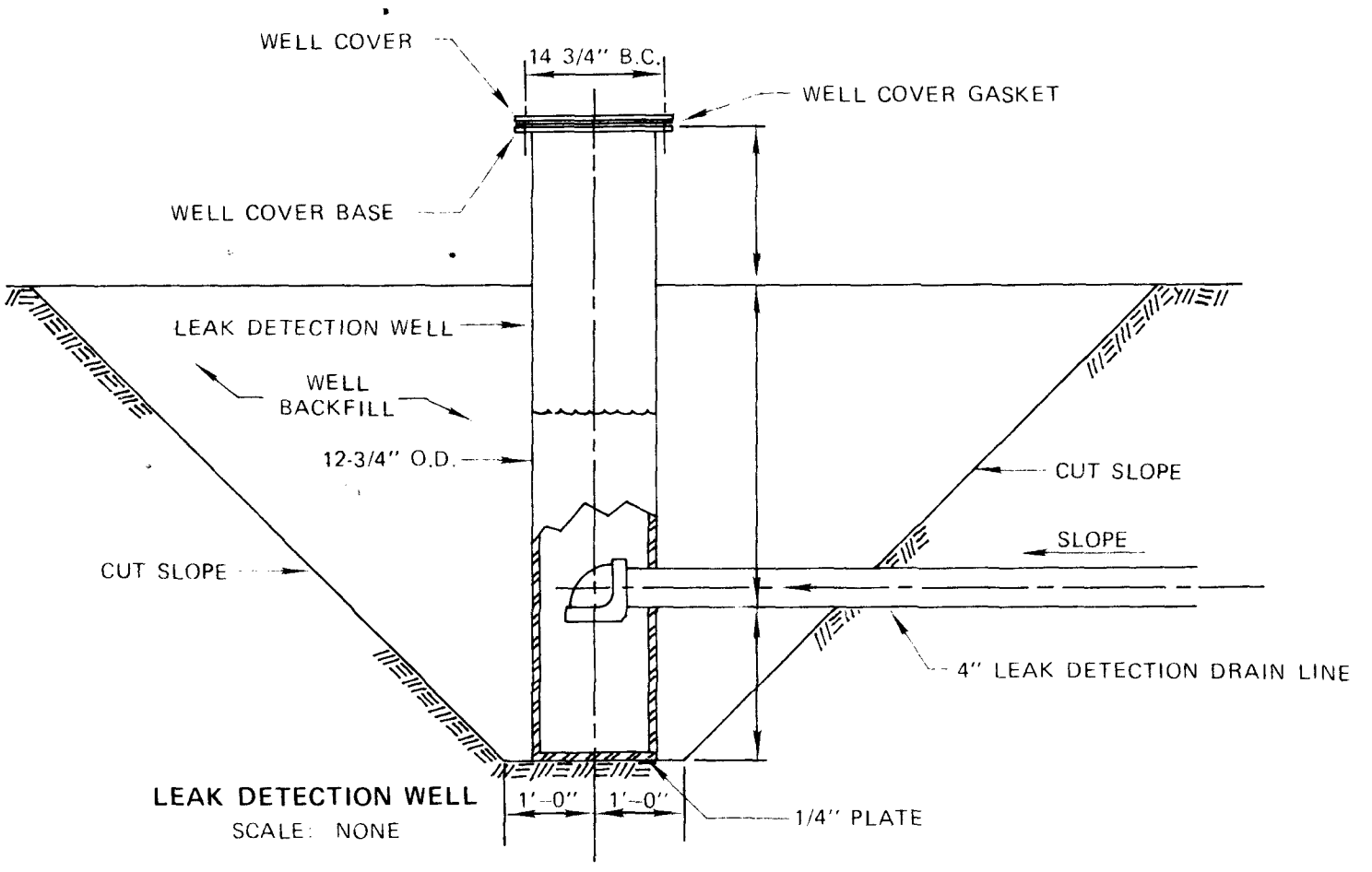


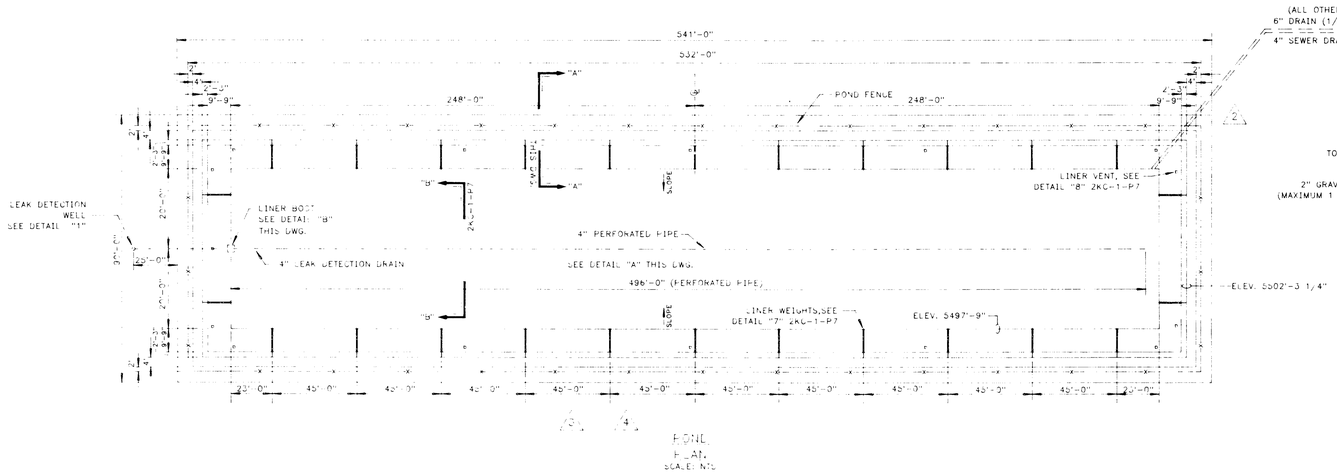
LEAK DETECTION WELL
SCALE: NONE

KUTZ PLANT EVAPORATION POND

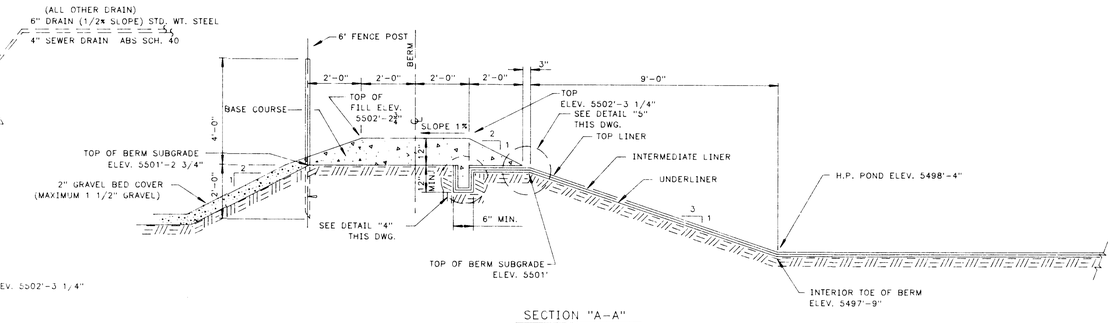
El Paso Natural Gas Company

FIGURE 4–1

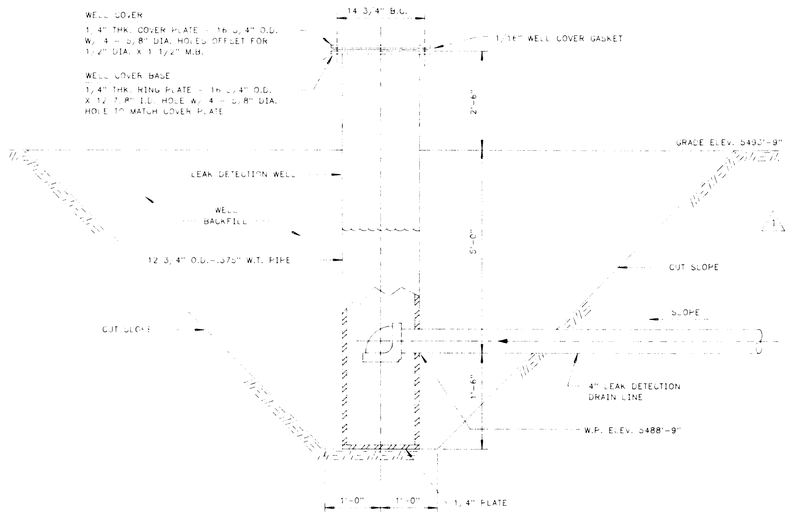
CONCEPTUAL DESIGN OF MODIFICATION
TO WASTEWATER MANAGEMENT SYSTEM–
KUTZ PLANT



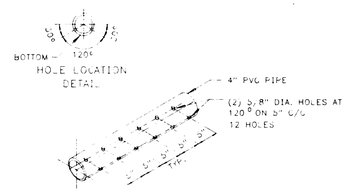
POND
PLAN
SCALE: NTS



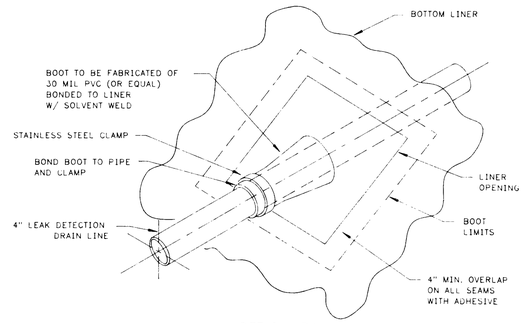
SECTION "A-A"
THIS DWG.
SCALE: 3/8" = 1'-0"



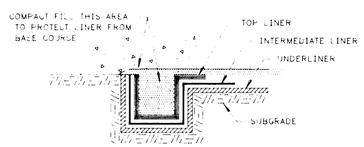
DETAIL "1"
LEAK DETECTION WELL
SCALE: NONE



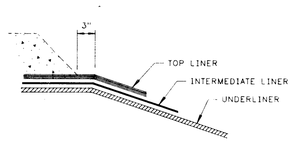
DETAIL "A"
PERFORATED PIPE
SCALE: NONE



DETAIL "B"
LINER BOOT
SCALE: NONE
THIS DWG



DETAIL "4"
THIS DWG.
SCALE: NONE



DETAIL "5"
THIS DWG.
SCALE: NONE

LEGEND	REFERENCE DRAWINGS	REVISIONS							PRINT RECORD				ENG. RECORD		DATE
													DRAFTING DESIGN	JN	8/26/87
													COMPUTER GRAPHICS	MD	8/27/87
													CHECKED		
													PROJECT APPROVAL		
													DESIGN APPROVAL		
													COMPUTER SAVE NAME		
		NO.	DATE	BY	DESCRIPTION	W.O.	APP.	PRT. SEP.	DATE	TO	W.O.			KUTJ	
		4	8/26/87	MD	REVISED POND STRUCTURE										
		3	8/6/87	MD	REVISED POND DIMENSIONS										
		2	6/22/87	MD	REVISED POND INLET										
		1	5/5/87	MD	CHANGED ELEVATIONS										
	DWG. NO.	TITLE													

El Paso NATURAL GAS COMPANY

KUTZ PLANT
WASTE WATER DISPOSAL POND
LEAK DETECTION PLAN AND SECTIONS

SCALE: NOTED	DWG. NO. 2KC-1-P6	REV. 4
W.O.:		

CAMP
CLOSED

SEWAGE POND
CLOSED

(2) ● 2,100mg/L

(1) ● 7.7mg/L

EVAPORATION POND

(3) 3,270mg/L

DRAINAGE

( ) PIEZOMETER

CLASS LOCATION DATA

LINE NO.	O.D.	LINE DESIGNATION	BEGIN	END	CL. LOC.	METER NO.

LINE NO.	O.D.	LINE DESIGNATION	BEGIN	END	CL. LOC.	METER NO.

LINE NO.	O.D.	LINE DESIGNATION	BEGIN	END	CL. LOC.	METER NO.

REVISIONS

NO	DATE	BY	DESCRIPTION

ENGINEERING RECORD

DRAWN BY	
TRACED BY	
CHECKED BY	
APPROVED	
DATE	6-13-86
PHOTO DATE	6-7-81
PHOTO RECHECK	

0 100 200 300
SCALE IN FEET

El Paso Natural Gas Company
ENGINEERING DRAFTING DIVISION

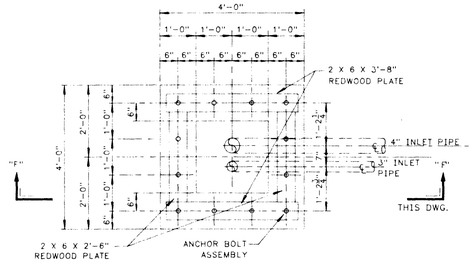
PIEZOMETER LOCATION, TDS AND DRAINAGE PATTERN

E 1/2 SW 1/4 SEC. 15, T-29-N, R-12-W, N.M.P.M.
SAN JUAN COUNTY, NEW MEXICO

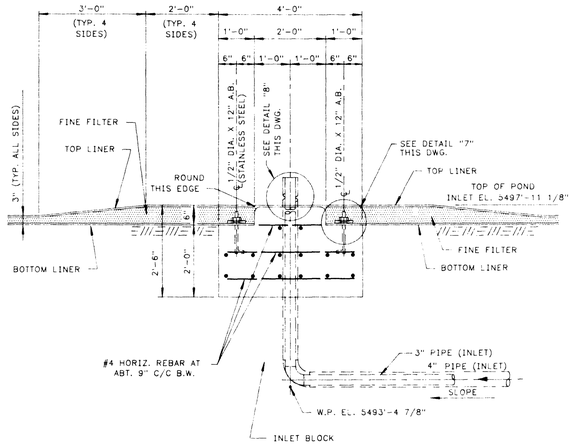
PLATE 4

DWG. NO. 5201.19-1

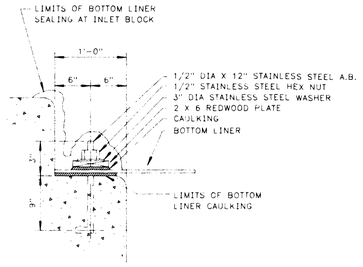
REV.



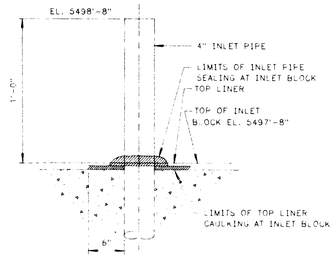
DETAIL "6"
POND INLET PLAN
2KC-1-P6
SCALE: 1/2"=1'-0"



SECTION "F-F"
POND INLET
THIS DWG.
SCALE: 1/2" = 1'-0"



DETAIL "7"
INLET BLOCK
ANCHOR BOLT ASSEMBLY
THIS DWG.
SCALE: 1" = 1'-0"



DETAIL "8"
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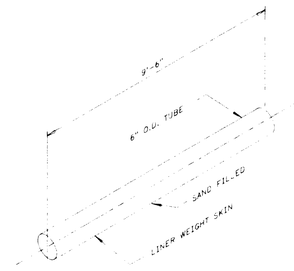
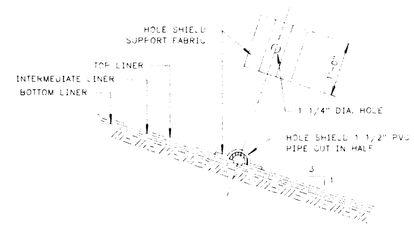
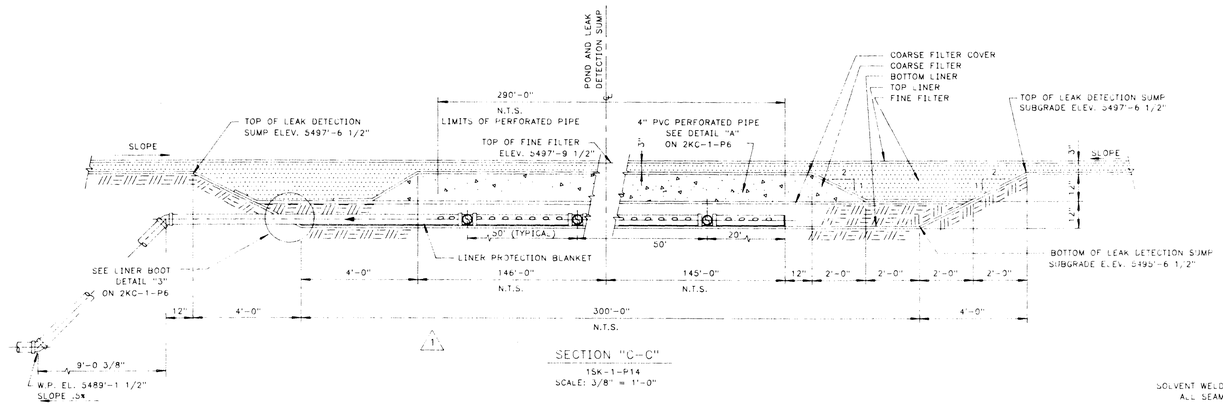
SCALE: 1"=1'-0"



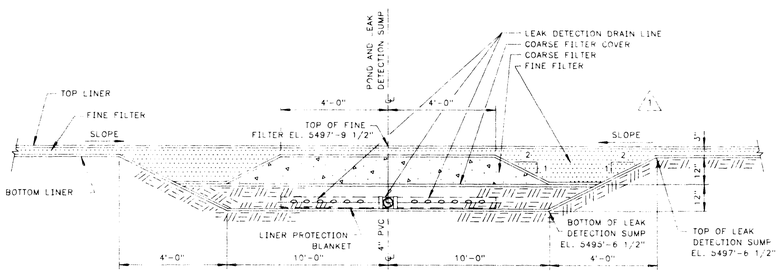
DETAIL "9"
POND LINER WEIGHT
1SK-1-P14
SCALE: NONE



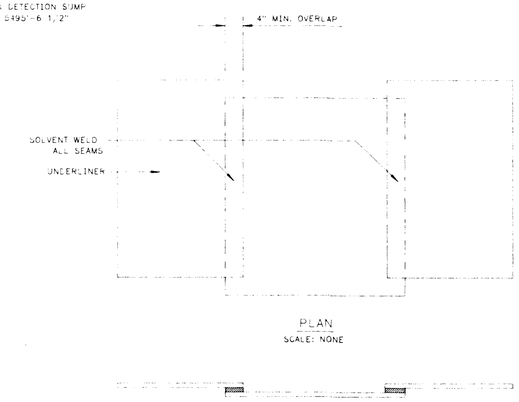
DETAIL "10"
LINER VENT DETAIL
1SK-1-P14
TYPICAL 18 PLACES
SCALE: NONE



SECTION "C-C"
1SK-1-P14
SCALE: 3/8" = 1'-0"



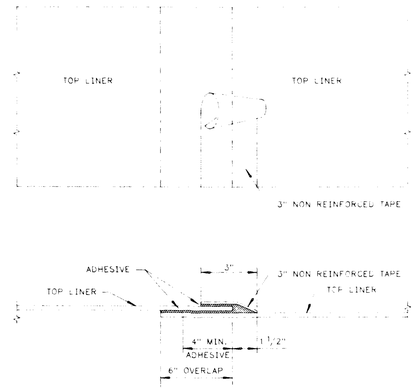
SECTION "B-B"
2KC-1-P6
SCALE: N.T.S.



PLAN
SCALE: NONE

ELEVATION

UNDERLINER SEAM SEALING DETAIL



TOP LINER
SEAM SEALING DETAIL
SCALE: NONE

LEGEND

DWG. NO.	REFERENCE DRAWINGS

NO.	A.F.E.	BY	DESCRIPTION	W.O.	APP.	PRT.	SEP.	DATE	TO	W.O.
*	M.		LOWERED LEAK DETECTION DRAIN LINE							

REVISIONS

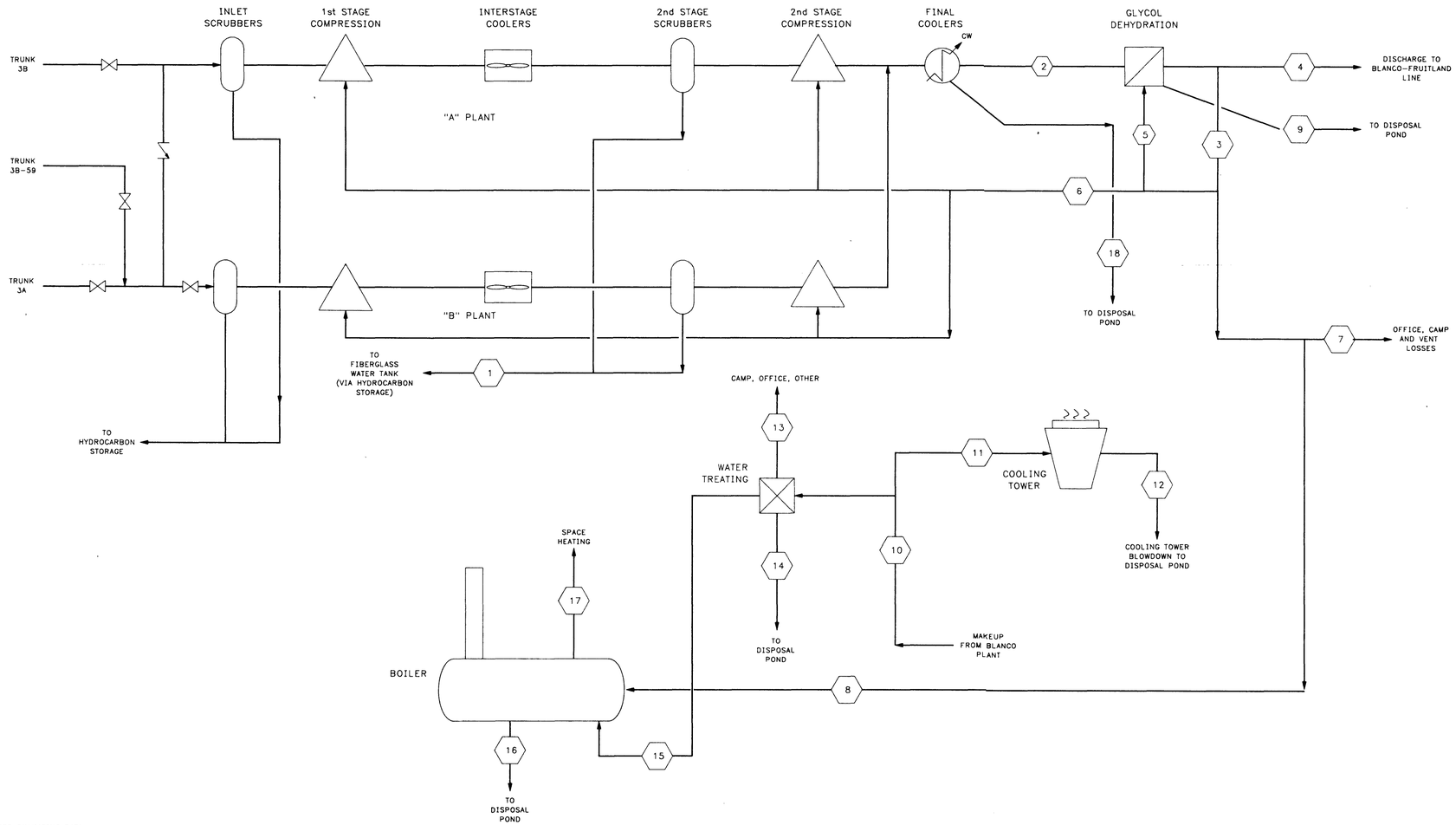
PRINT RECORD

ENG. RECORD	DATE
DRAFTING DESIGN	DW 4/87
COMPUTER GRAPHICS	MD 4/15/87
CHECKED	
PROJECT APPROVAL	
DESIGN APPROVAL	
COMPUTER SAVE NAME	KIT4

El Paso NATURAL GAS COMPANY

KUTZ PLANT
WASTE WATER DISPOSAL POND
MISC. AND POND SECTIONS AND DETAILS

SCALE: NOTED	DWG. NO.	REV.
W.O.	2KC-1-P7	



NOTES:

1. BALANCE BASED ON CALCULATED AVERAGE DAILY FLOWS FOR 1985 OPERATING DATA.
2. COMPOSITION AND FLOW OF STREAM 1 ARE ESTIMATED.
3. INTERMITTENT FLOWS SHOWN ON EQUIVALENT CONTINUOUS BASIS.
4. CAMP TO BE CLOSED AUGUST, 1986.

STR.NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
SERVICE	SCRUBBER BLOWDOWN	INLET GAS	TOTAL FUEL GAS	OUTLET GAS	DEHY FUEL	COM-PRESSOR FUEL	OTHER FUEL	BOILER FUEL	DEHY BLOWDOWN	MAKEUP WATER	COOLING TOWER MAKEUP	COOLING TOWER BLOWDOWN	CAMP, OFFICE, ETC.	WATER TREATING WASTE	BOILER WATER MAKEUP	BOILER BLOW DOWN	STEAM	COOLER BACK WASH		
	COMPONENT FLOWS IN MOLES/HR.																			
CO_2		45.2	0.7	44.5	0.01	0.68	<0.01	0.01												
N_2		17.1	0.2	16.9	<0.01	0.19	<0.01	<0.01												
C_1		3627.6	52.4	3575.2	0.85	50.50	0.38	0.66												
C_2		327.1	4.7	322.4	0.08	4.53	0.04	0.06												
C_3		114.2	1.7	112.5	0.03	1.64	0.01	0.02												
$I-C_4$		15.5	0.2	15.3	<0.01	0.19	<0.01	<0.01												
$N-C_4$		20.9	0.3	20.6	0.01	0.28	<0.01	<0.01												
$I-C_5$		5.9	0.1	5.8	<0.01	0.09	<0.01	<0.01												
$N-C_5$		4.2	0.1	4.1	<0.01	0.09	<0.01	<0.01												
C_6+		5.0	0.1	4.9	<0.01	0.09	<0.01	<0.01												
H_2O	1.1	0.5	<0.01	0.1	<0.01	<0.01	<0.01	<0.01	0.4	534.6	173.4	28.9	349.2	2.5	9.3	3.8	33.3	1.5		
MIXED HC	TRACE								TRACE											
TOTAL	1.1	4183.2	60.5	4122.3	0.98	58.3	0.44	0.76	0.4	534.6	173.4	28.9	349.2	2.5	9.3	3.8	33.3	1.5		
STATE	LIQUID	GAS	GAS	GAS	GAS	GAS	GAS	GAS	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	STEAM	LIQUID		
GAL/DAY	56								23	27,723	8,998	1500	18,112	132	481	192		80		
MMSCF/D		38.1	0.55	37.5	0.008	0.53	0.004	0.006												
LB/HR.																	600			

LEGEND

DWG. NO.	TITLE

REFERENCE DRAWINGS

NO.	DATE	BY	DESCRIPTION	W.O.	APP.

REVISIONS

PRT. SEP.	DATE	TO	W.O.

PRINT RECORD

ENG. RECORD		DATE
DRAFTING DESIGN	R.A.Y.	7/1/86
COMPUTER GRAPHICS	MD	7/10/86
CHECKED		
PROJECT APPROVAL		
DESIGN APPROVAL		
COMPUTER SAVE NAME	KUT2	

El Paso NATURAL GAS COMPANY

BLOCK FLOW DIAGRAM AND TYPICAL MATERIAL BALANCE KUTZ FIELD PLANT

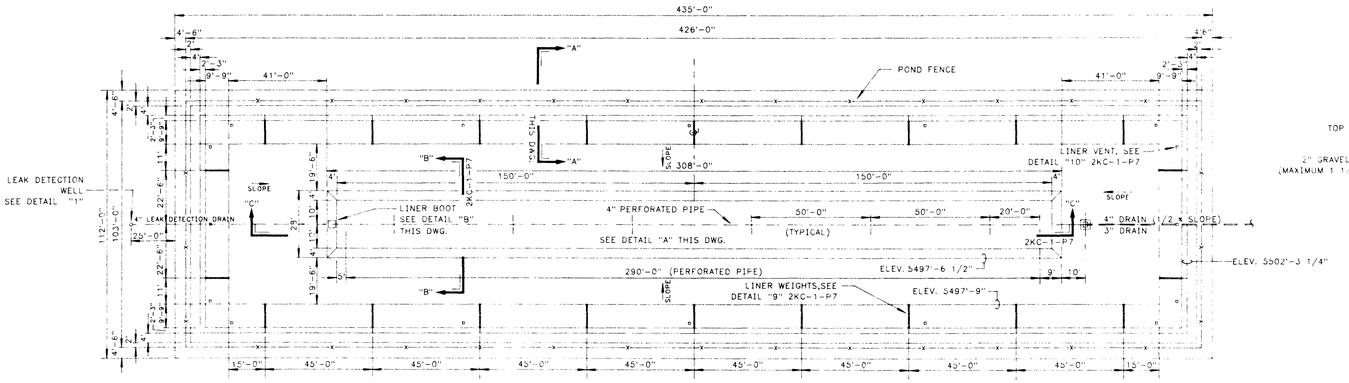
PLATE 2

SCALE: NONE

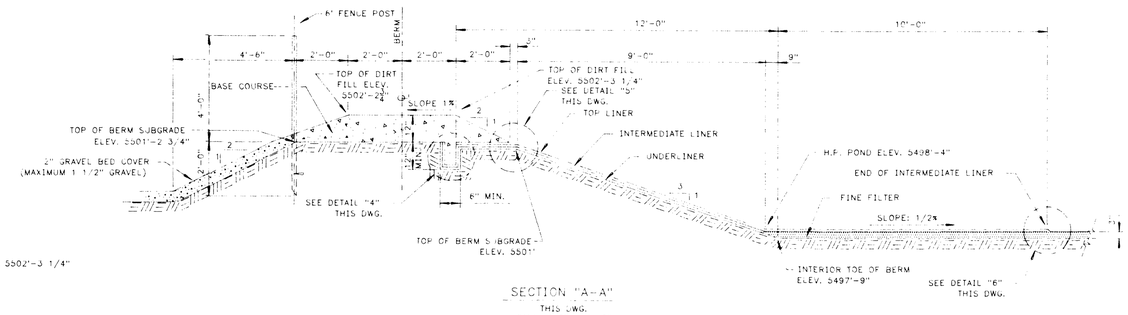
W.O.:

DWG. NO. 5201.19-4

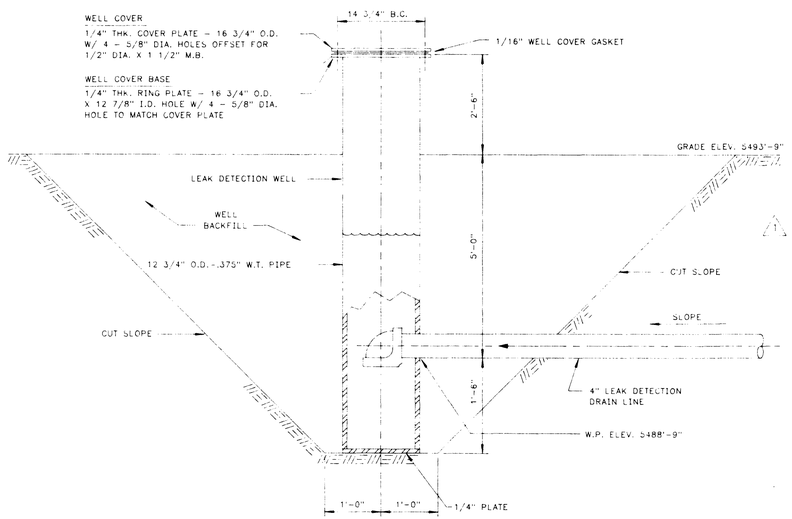
REV.



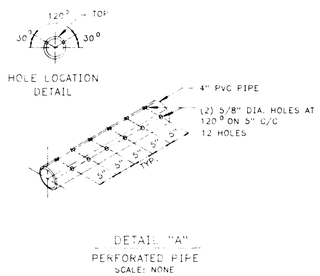
POND
PLAN
SCALE: 1"=30'-0"



SECTION "A-A"
THIS DWG.
SCALE: 3/8" = 1'-0"

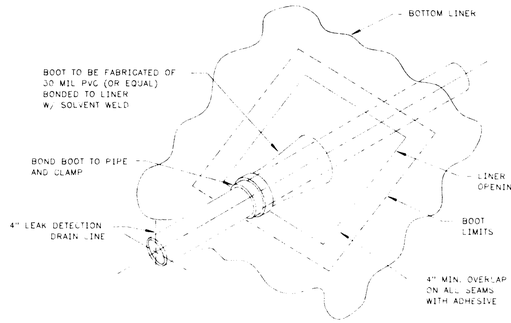


DETAIL "1"
LEAK DETECTION WELL
SCALE: NONE

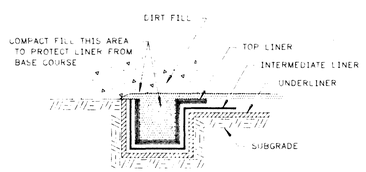


HOLE LOCATION
DETAIL

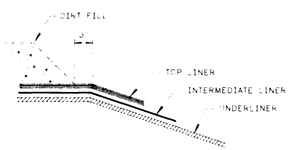
DETAIL "A"
PERFORATED PIPE
SCALE: NONE



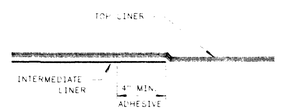
DETAIL "B"
LINER BOOT
SCALE: NONE
THIS DWG.



DETAIL "4"
THIS DWG.
SCALE: NONE



DETAIL "5"
THIS DWG.
SCALE: NONE



DETAIL "6"
THIS DWG.
SCALE: NONE

LEGEND

DWG. NO. | TITLE
REFERENCE DRAWINGS

NO.	DATE	BY	DESCRIPTION	W.O.	APP.
1	5/5/87	MD	CHANGED ELEVATIONS		

REVISIONS

PRT. SEP. | DATE | TO | W.O.
PRINT RECORD

ENG. RECORD		DATE
DRAFTING		
DESIGN	DW	3/17/87
COMPUTER GRAPHICS	MD	4/15/87
CHECKED		
PROJECT APPROVAL		
DESIGN APPROVAL		
COMPUTER SAVE NAME	KUTJ	

El Paso NATURAL GAS COMPANY

KUTZ PLANT
WASTE WATER DISPOSAL POND
LEAK DETECTION PLAN AND SECTIONS

SCALE: NOTED	DWG. NO. 2KC-1-P6	REV. 1
W.O.:		

LINE NO	O.D.	LINE DESIGNATION	BEGIN	END	CL. LOC.	METER NO	LINE NO	O.D.	LINE DESIGNATION	BEGIN	END	CL. LOC.	METER NO
		GAS PLANT PIPING			2 & 3								
A 733	20"	TRUNK 3A	-6+50	11+10 BK.	2								
A 733.0	20"	TRUNK 3A	-11+70	-6+50	3 (POSS)								
B 733	16"	TRUNK 3B	0+00	5+60	2								
59B733	4 1/2"	LATERAL 59B	52+10	E.O.L.	2								
D 735	10 3/4"	TRUNK 5D	52+10	92+81	2								
D 735.0-5	4 1/2"	UNION OIL CO.-MONCRIEF GOVT. #1	0+00	4+80	2	73911							
3204	12 3/4"	KUTZ PLANT DISCHARGE LINE	52+10	E.O.L.	2								
D7350-3	4 1/2"	UNION TEX. PET-NEW MEXICO "A" NO. 1	0+00	7+60	1	73497							

DRAFTING BY AERO GRAPHICS, INC.
SALT LAKE CITY, UTAH

REPRODUCTION BY: aero-graphics inc.

LEGEND

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
1	RAW WATER	17	SEPTIC TANK
2	DOMESTIC WATER	18	VARSOL STORAGE (300 GAL)
3	SCRUBBER LIQUIDS (300 BBL)	19	OIL & JACKET WATER SURGE TANK
4	WATER (50 BBL.)	20	LUBE OIL STORAGE TANKS (65 BBL. EA)
5	INLET SCRUBBERS		
6	ANTI-FREEZE STORAGE (1400 GAL.)		
7	GLYCOL CONTACTOR		
8	DEHYDRATOR		
9	GAS COOLER		
10	GLYCOL SURGE TANK		
11	GLYCOL STORAGE (100 BBL.)		
12	FIRE EQUIPMENT STORAGE		
13	USED OIL (275 GAL)		
14	AIR RECEIVER		
15	ACID STORAGE (187 GAL)		
16	STORAGE BUILDING		

REVISIONS

NO.	DATE	BY	DESCRIPTION
A	2-15-79	LD	Added Notes & Dwelling Units
B	7-31-81	LD	Adjusted CL. 2 Locations & Photo-Revised Per 1981 Photos

ENGINEERING RECORD

DRAWN BY	Aero-Graphics
TRACED BY	
CHECKED BY	
APPROVED	R. L. G.
DATE	7-14-78
PHOTO DATE	10-29-76
PHOTO RE-CHECK	6-7-81

0 100 200 300
SCALE IN FEET

El Paso NATURAL GAS COMPANY
EL PASO, TEXAS

SAN JUAN GATHERING SYSTEM

PLOT PLAN

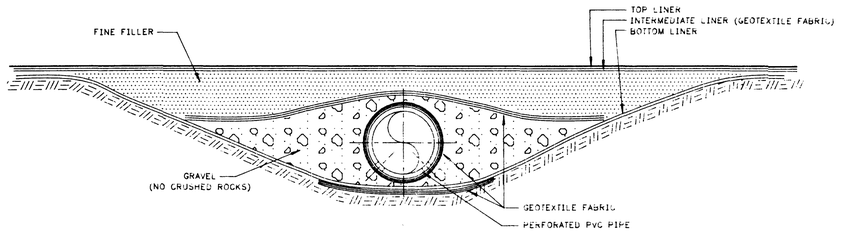
KUTZ PLANT

SAN JUAN COUNTY, NEW MEXICO

PLATE 1

DWG. NO. 5201.19-2

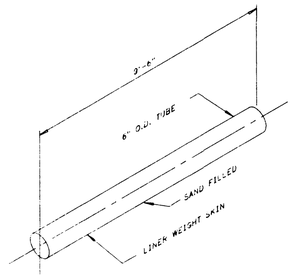
REV B



SECTION "B-B"

2KC-1-P6

SCALE: N.T.S.

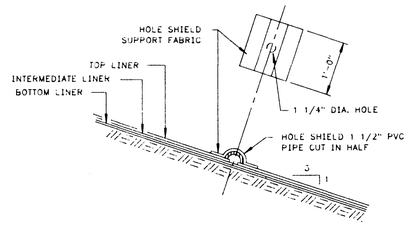


DETAIL "7"

POND LINER WEIGHT

1SK-1-P14

SCALE: NONE



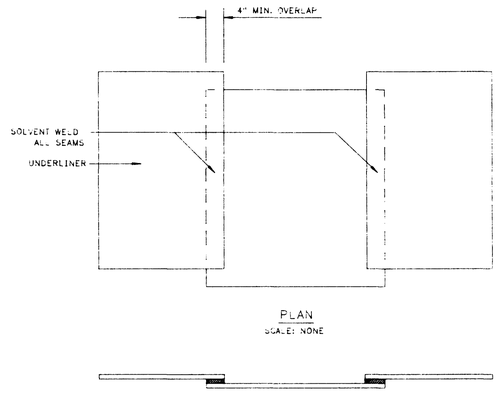
DETAIL "8"

LINER VENT DETAIL

1SK-1-P14

TYPICAL 18 PLACES

SCALE: NONE

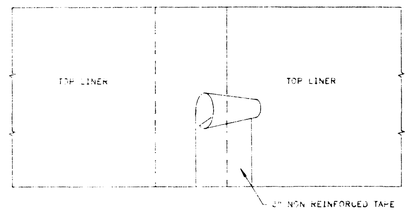


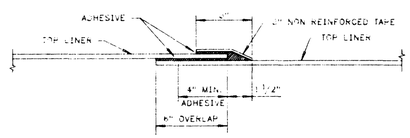
PLAN

SCALE: NONE

ELEVATION

UNDERLINER SEAM SEALING DETAIL





TOP LINER
SEAM SEALING DETAIL

SCALE: NONE

LEGEND

REFERENCE DRAWINGS

DWG. NO.	TITLE

NO.	DATE	BY	DESCRIPTION	W.O.	APP.
4	8/28/87	MD	REVISED SECTION B-B		
3	8/6/87	MD	ADDED NEW DIMENSIONS		
2	6/22/87	MD	DELETED POND INLET DETAILS		
1	1/30/87	MD	LOWERED LEAK DETECTION DRAIN LINE		

REVISIONS

PRT.	SEP.	DATE	TO	W.O.

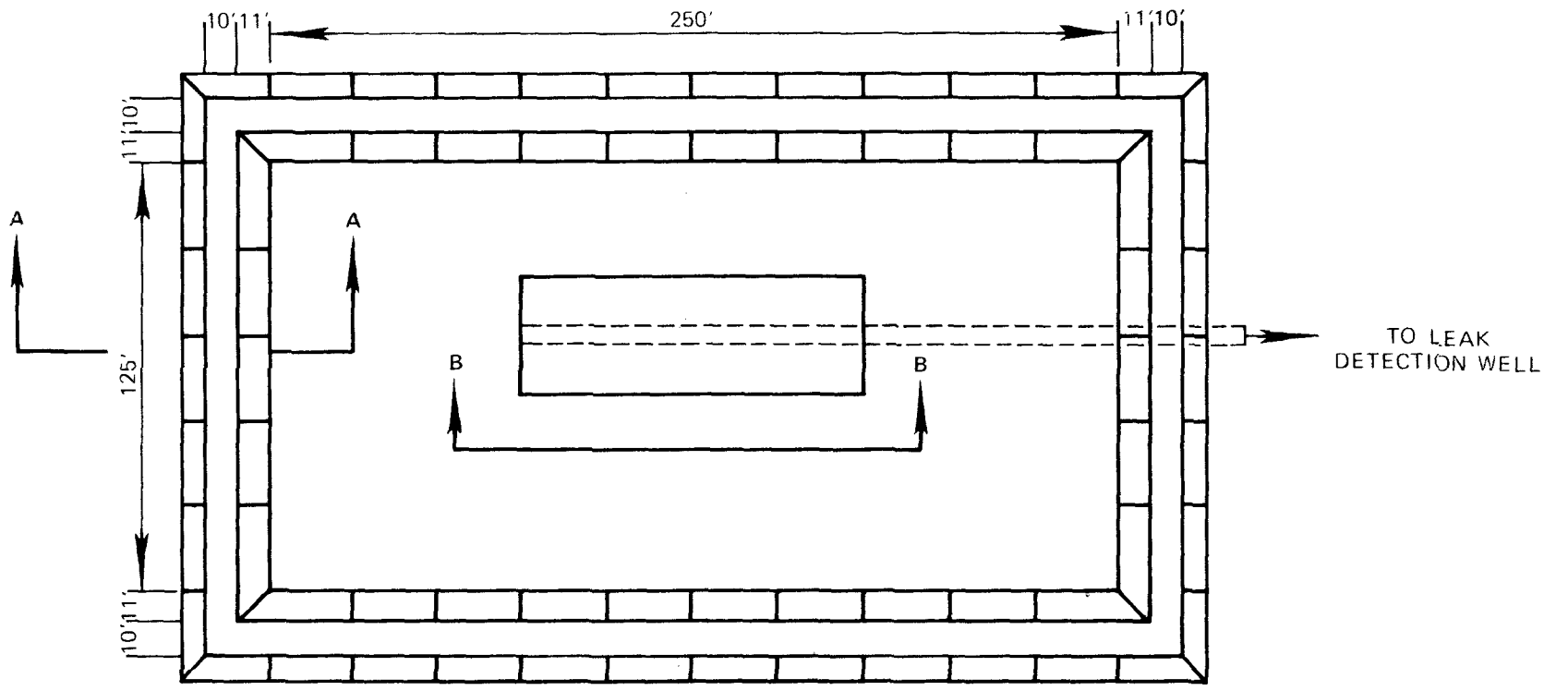
PRINT RECORD

ENG. RECORD		DATE
DRAFTING DESIGN	JN	8/87
COMPUTER GRAPHICS	MD	8/26/87
CHECKED		
PROJECT APPROVAL		
DESIGN APPROVAL		
COMPUTER SAVE NAME	KUT4	

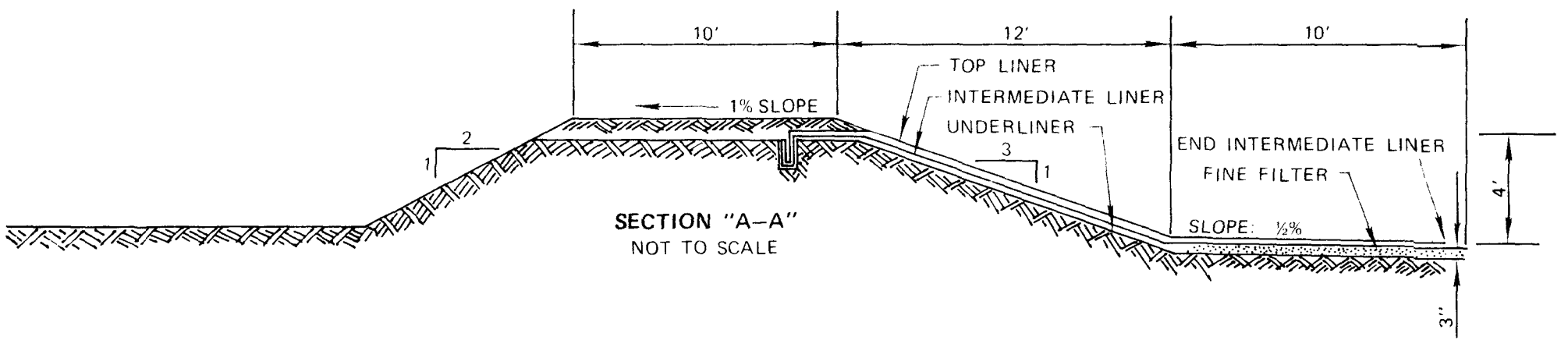
El Paso NATURAL GAS COMPANY

KUTZ PLANT
WASTE WATER DISPOSAL POND
MISCELLANEOUS SECTIONS AND DETAILS

SCALE: NOTED	DWG. NO. 2KC-1-P7	REV. 4
W.O.:		



KUTZ PLANT EVAPORATION POND



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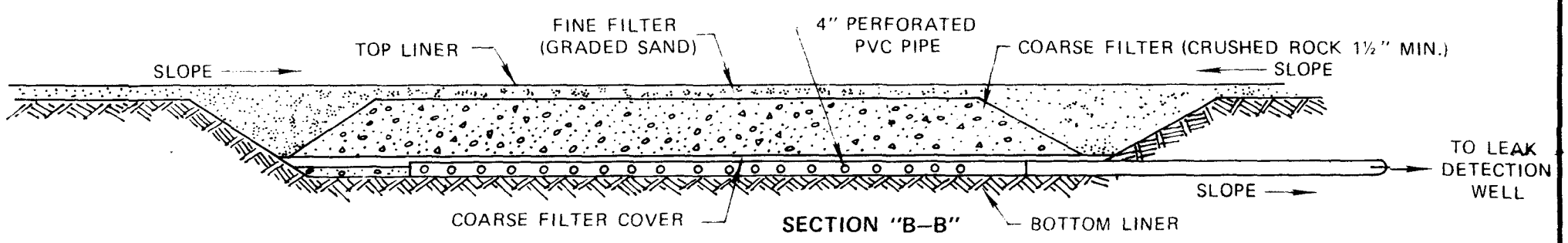
NOT TO SCALE



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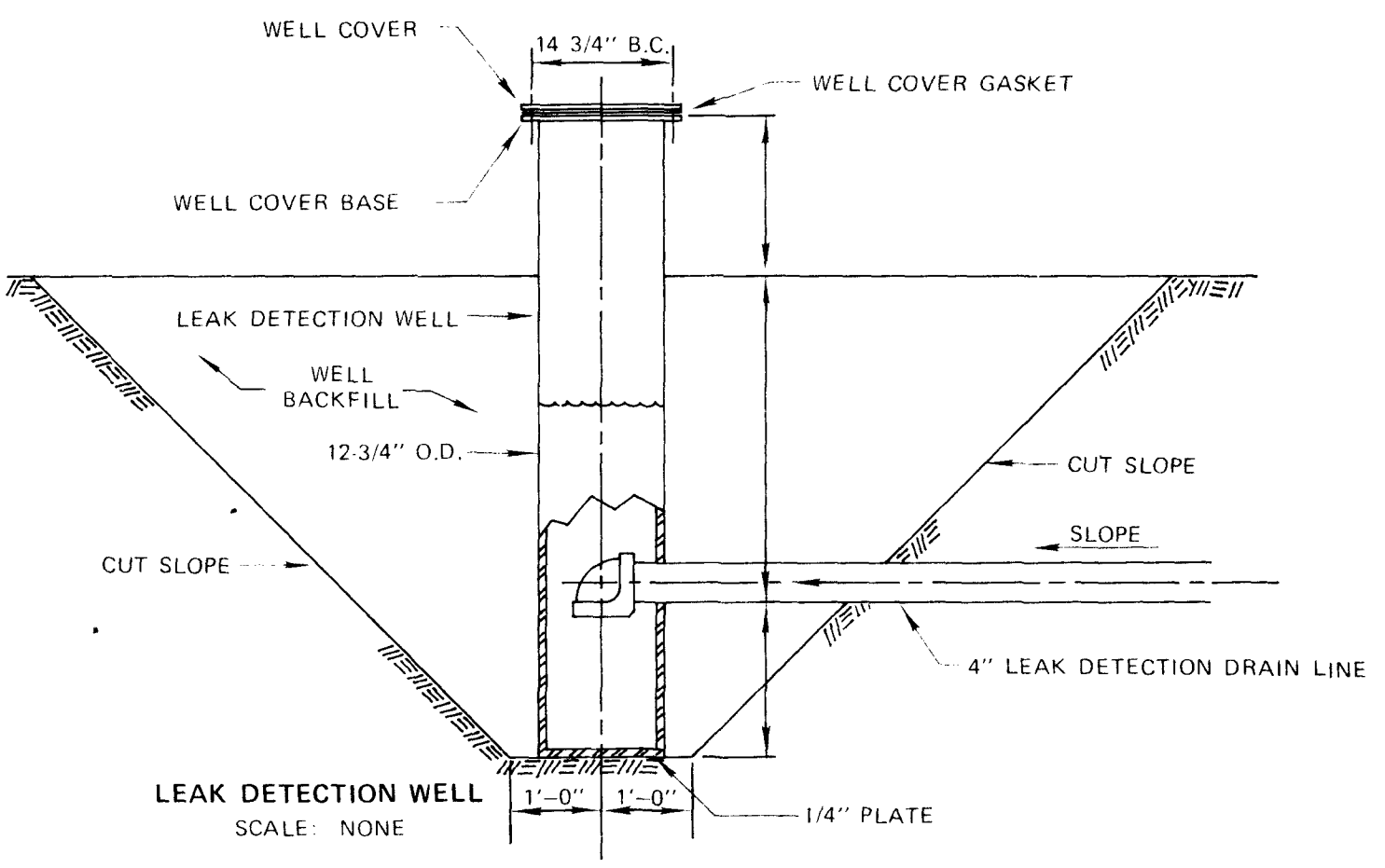


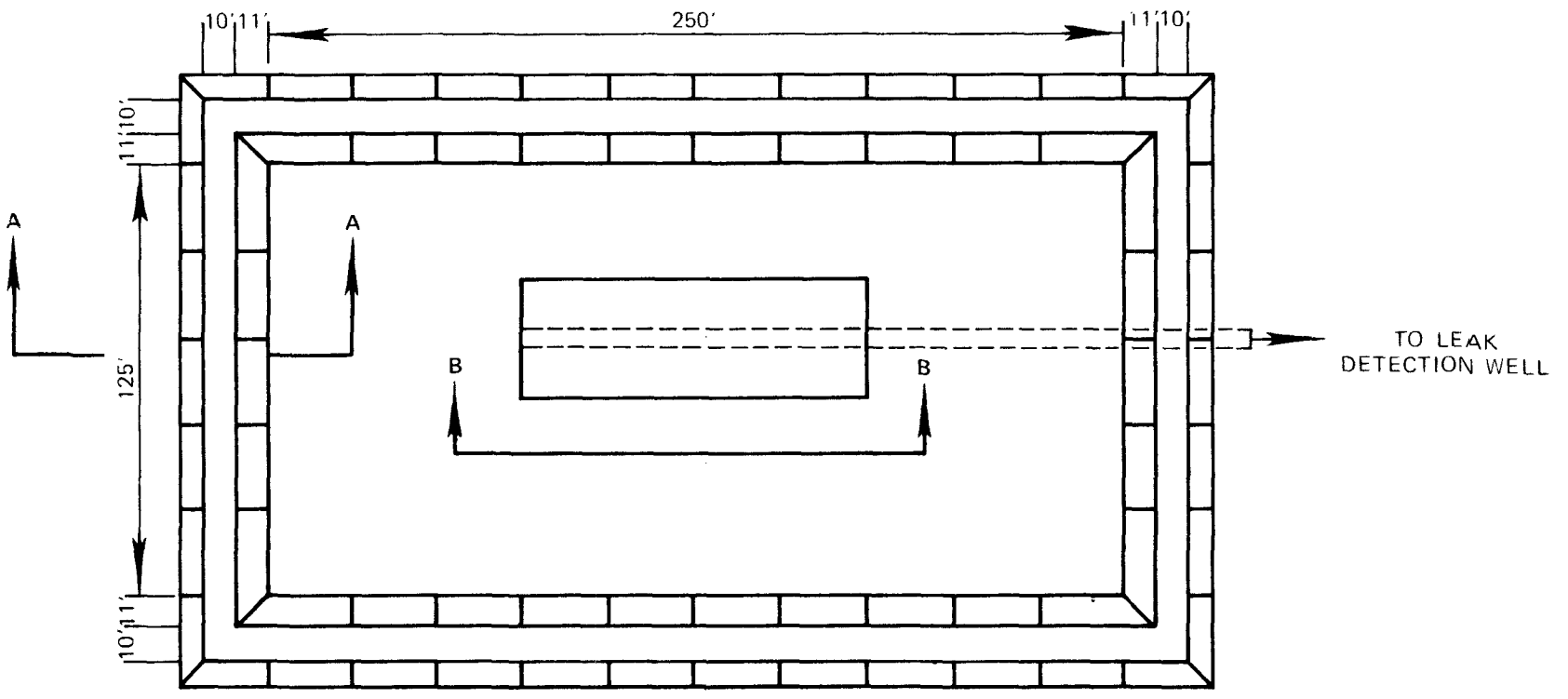
LEAK DETECTION WELL
SCALE: NONE

KUTZ PLANT EVAPORATION POND

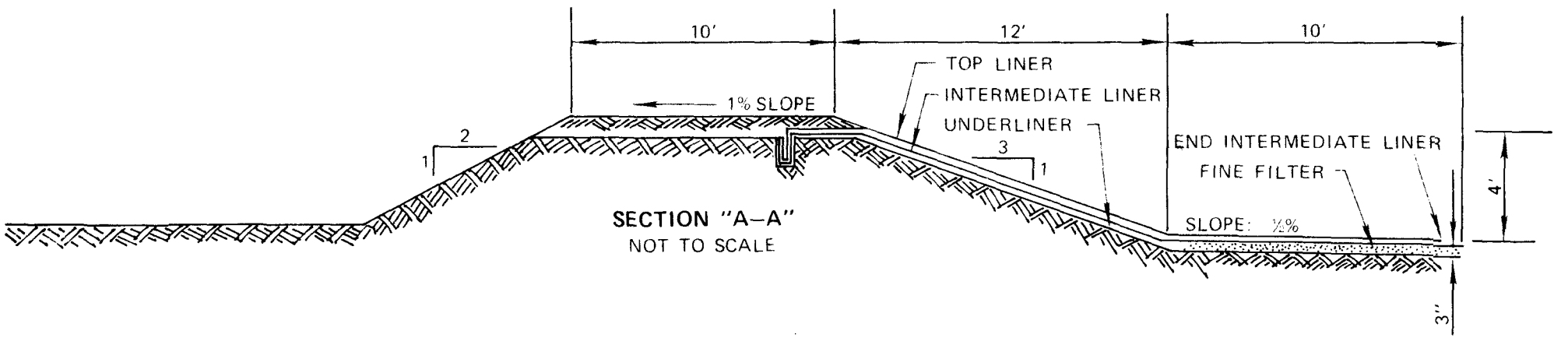
El Paso Natural Gas Company

FIGURE 4–1

CONCEPTUAL DESIGN OF MODIFICATION
TO WASTEWATER MANAGEMENT SYSTEM–
KUTZ PLANT



KUTZ PLANT EVAPORATION POND



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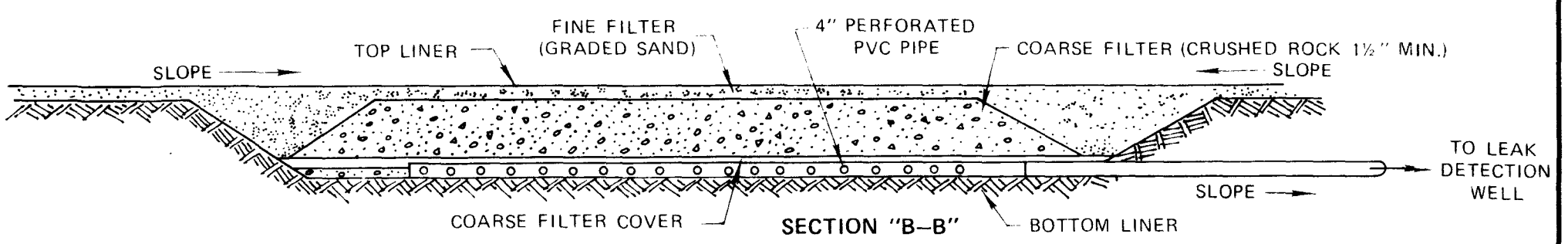

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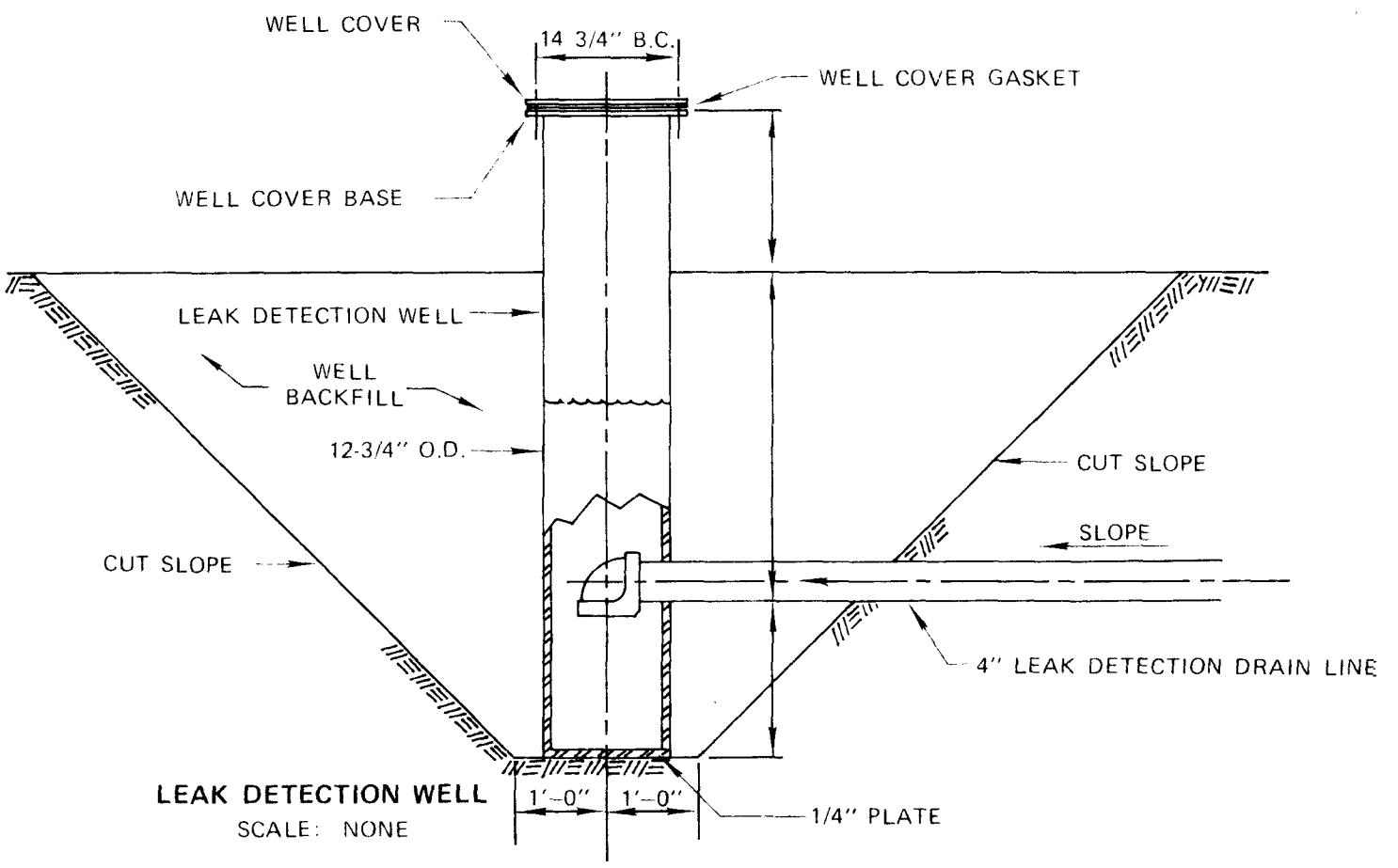


LEAK DETECTION WELL
SCALE: NONE

KUTZ PLANT EVAPORATION POND

El Paso Natural Gas Company

FIGURE 4–1

CONCEPTUAL DESIGN OF MODIFICATION
TO WASTEWATER MANAGEMENT SYSTEM–
KUTZ PLANT

SOIL GAS SURVEY
OF
LEE ACRES SITE
FARMINGTON, NEW MEXICO

Contract AA 852-RP6-7

JULY 1986

Prepared For:

United States Department of The Interior
Bureau of Land Management
Washington, D.C. 20240

Submitted By:

Tracer Research Corporation

TABLE OF CONTENTS

EXECUTIVE SUMMARY

- A total of 46 soil gas samples were analyzed during an investigation of the Lee Acres site near Farmington, New Mexico.

- The Lee Acres landfill was found to be a source of both halocarbon and hydrocarbon contamination.

- Results indicate that the El Paso Natural Gas facility and the Giant Refinery are other potential sources of hydrocarbon contamination.

INTRODUCTION

A shallow soil gas investigation was conducted by Tracer Research Corporation (TRC) at the Lee Acres site near Farmington, New Mexico. The investigation was conducted July 8 - 11, 1986 under contract to the United States Department of the Interior, Bureau of Land Management. The primary objective was to delineate the distribution of volatile organic compounds (VOCs) in the subsurface underlying the site.

For this study, soil gas samples were analyzed for the following components:

Methylene Chloride (CH_2CH_2)
Chloroform ($CHCl_3$)
1,1,1-Trichloroethane (TCA)
Trichloroethene (TCE)
Tetrachloroethene (PCE)
Benzene
Toluene
Ethyl Benzene
O-Xylene
Total Hydrocarbons
(C_1 - C_8 Aliphatic and Aromatic Hydrocarbons)

The site contains two areas which are believed to be potentially responsible for contaminating private wells downgradient (to the south). One area is the Giant Refinery and the other the Lee Acres landfill. In the past, the landfill accepted liquid waste including produced waters from oil and gas fields in the region.

BACKGROUND ON THE METHODOLOGY

The presence of volatile organic chemicals (VOCs) in shallow soil gas indicates the observed compounds may either be in the vadose zone near the probe or in groundwater below the probe. The soil gas technology is most effective in mapping low molecular weight halogenated solvent chemicals and petroleum hydrocarbons possessing high vapor pressures and low aqueous solubilities. These compounds readily partition out of the groundwater and into the soil gas as a result of their high gas/liquid partitioning coefficients. Once in the soil gas, VOCs diffuse vertically and horizontally through the soil to the ground surface where they dissipate into the atmosphere. The groundwater acts as a source and the above ground atmosphere acts as a sink, and typically a concentration gradient develops between the two. The concentration gradient in soil gas between the water table and ground surface may be locally distorted by hydrologic and geologic anomalies (e.g. clays, perched water); however, soil gas mapping generally remains effective because surface distribution features of the observed compound are usually much larger in scale than the local anomalies and are defined using a large data base. The presence of geologic obstructions on a small scale tends to create anomalies in the soil gas-groundwater correlation, but generally does not obscure the broader areal picture of the contaminant distribution.

SAMPLING AND ANALYTIC PROCEDURES

Tracer Research Corporation (TRC) utilized an analytical field van which was equipped with two Varian 3300 gas chromatograph and Spectra Physics SP4270 computing integrators. In addition, the van has two built-in gasoline powered generators which provide the electrical power (110 volts AC) to operate all of the gas chromatographic instruments and field equipment. A specialized hydraulic mechanism consisting of two cylinders and a set of jaws was used to drive and withdraw the sampling probes. Probes consist of 7-foot lengths of 3/4 inch diameter steel pipe which are fitted with detachable drive points. A hydraulic hammer was used to assist in driving probes past cobbles and through unusually hard soil.

Soil gas samples were collected by driving a hollow steel probe from 5.5 to 13 feet into the ground. The above-ground end of the sampling probes were fitted with a steel reducer and a length of polyethylene tubing leading to a vacuum pump. Five to 10 liters of gas was evacuated with a vacuum pump. During the soil gas evacuation, samples were collected by inserting a syringe needle through a silicone rubber segment in the evacuation line and down into the steel probe. Ten milliliters of gas were collected for immediate analysis in the TRC analytical field van. Soil gas was subsampled (duplicate injections) in volumes ranging from 1 ul to 2 ml, depending on the VOC concentration at any particular location.

The gas chromatograph equipped with the electron capture detector was used for analyses of TCA, TCE, PCE, CH_2Cl_2, and $CHCl_3$. Analyses were performed on OV-101 packed columns. The gas chromatograph was equipped with a flame ionization detector which was used for the analysis of hydrocarbons.

Total hydrocarbons include as C_1 - C_4 aliphatic and

aromatic hydrocarbons are reported. The response factor for benzene (typically within 25% of other hydrocarbons) was used to calculate total hydrocarbons. Nitrogen was used as the carrier gas.

Detection limits are a function of the injection volume as well as the detector sensitivity for individual compounds. Thus, the detection limit varies with the sample size. Generally, the larger the sample, the greater the sensitivity. However, chromatographic peaks for compounds of interest must be kept within the linear range of the detector. If any compound has a high concentration, it is necessary to use small injections, and in some cases to dilute the sample to keep it within linear range. This may cause decreased detection limits for other compounds in the analyses. The detection limits range down to .00005 ug/l for compounds such as TCA and PCE depending on the conditions of the measurement, in particular, the sample size. If any component being analyzed is not detected, the detection limit for that compound in that analysis is given as a "less than" value (e.g. <.0001 ug/l). This number is calculated from the current response factor, the sample size and the estimated minimum peak size (area) that would have been visible under the conditions of the measurement.

Another factor which determines the sensitivity of the technique are the background concentrations which may be present at a given site. This background level is normally linked to the concentrations which are detected in ambient air. The end effect is that the background limits what can be identified as "significant" in the soil gas. For example at the Lee Acres Site, ambient air concentrations for TCA approached 0.001 ug/L. This figure only allowed TRC to identify concentrations greater than 0.01 ug/L as significant. This effect is true only for those compounds which have measureable air concentrations, in most cases only TCA and PCE.

Tracer Research Corporation's normal quality assurance procedures were followed in order to prevent any cross-contamination of soil gas samples. Prior to sampling, syringes were purged with nitrogen (i.e. carrier gas) and checked for contamination by injection into the gas chromatograph. System blanks were run periodically to confirm that there was no contamination in the probes, adaptors or 10 ml syringes. Soil gas probes, syringes and adaptors were used only once during the course of a working day and then thoroughly cleaned before use on the subsequent day. Analytical instruments were continuously checked for calibration by the use of chemical standards prepared in water from commercially available pure chemicals.

RESULTS

A total of 46 soil gas samples were analyzed during an investigation at the Lee Acres site near Farmington, New Mexico. Analytical results are summarized in Appendix A. Maps showing sampling locations and isoconcentration contour lines are attached as Figures 1 through 5.

Halocarbon Distribution

TCA

Concentrations for TCA at each sampling location as well as isoconcentration contour lines are attached as Figure 1. There is a source of TCA in the landfill with the highest concentrations of contaminant vapor being detected in the northern section. Contour lines show a trend which indicates a plume migrating off the landfill towards the south. Higher concentrations in the western section may be from an area which is also contributing to the plume. As reported by the New Mexico Environmental Improvement Division and Bureau of Land Managment Contracted Site Investigation Reports, private wells south of

U.S. Route 64 have shown detectable amounts of TCA.

CH_2Cl_2, TCE and PCE

Maps showing soil gas sampling locations, concentrations and isoconcentration contour lines for CH_2Cl_2, TCE and PCE are attached as Figures 2 through 4. The distribution of these halogenated solvents and chloroform is not as widespread as that for TCA. These compounds give further evidence that the landfill is a source of subsurface halocarbon contamination. Concentrations as high as 3,400 ug/l (CH_2Cl_2 at SG-9) are consistent with soil gas concentrations from samples taken in contaminated soil, that is soil which physically contains the contaminant in question, and not just vapors. The highest concentrations were found in both the north and west sections of the landfill.

Hydrocarbon Distribution

Total Hydrocarbons

A map showing soil gas sampling locations including concentrations and isoconcentration contour lines for total hydrocarbons is attached as Figure 5. Contour lines again indicate that the northern section of the landfill is the major source of contamination. Landfills commonly have high concentrations of hydrocarbons in the soil gas from the natural biodegradation of wastes. High concentrations of petroleum specific hydrocarbons (benzene, toluene, ethyl benzene and xylenes) indicate that the amount of total hydrocarbons measured had a petroleum source. All locations which had petroleum specific hydrocarbon concentrations greater than .1 ug/l are contained within the 1000 ug/l total hydrocarbon contour.

Concentrations greater than 0.1 ug/l indicate other potential sources of hydrocarbon contamination north of the line defined by SG-36 through SG-40 and north of the line defined by SG-26 through SG-28. More soil gas work is needed directly upgradient (north) from the two areas mentioned above to check this possibility.

Figures A and B are a graphical representation of the diminution of contaminant concentration in the soil gas plotted vs. distance away from the source for TCA (Figure A) and total hydrocarbons (Figure B).

TCA

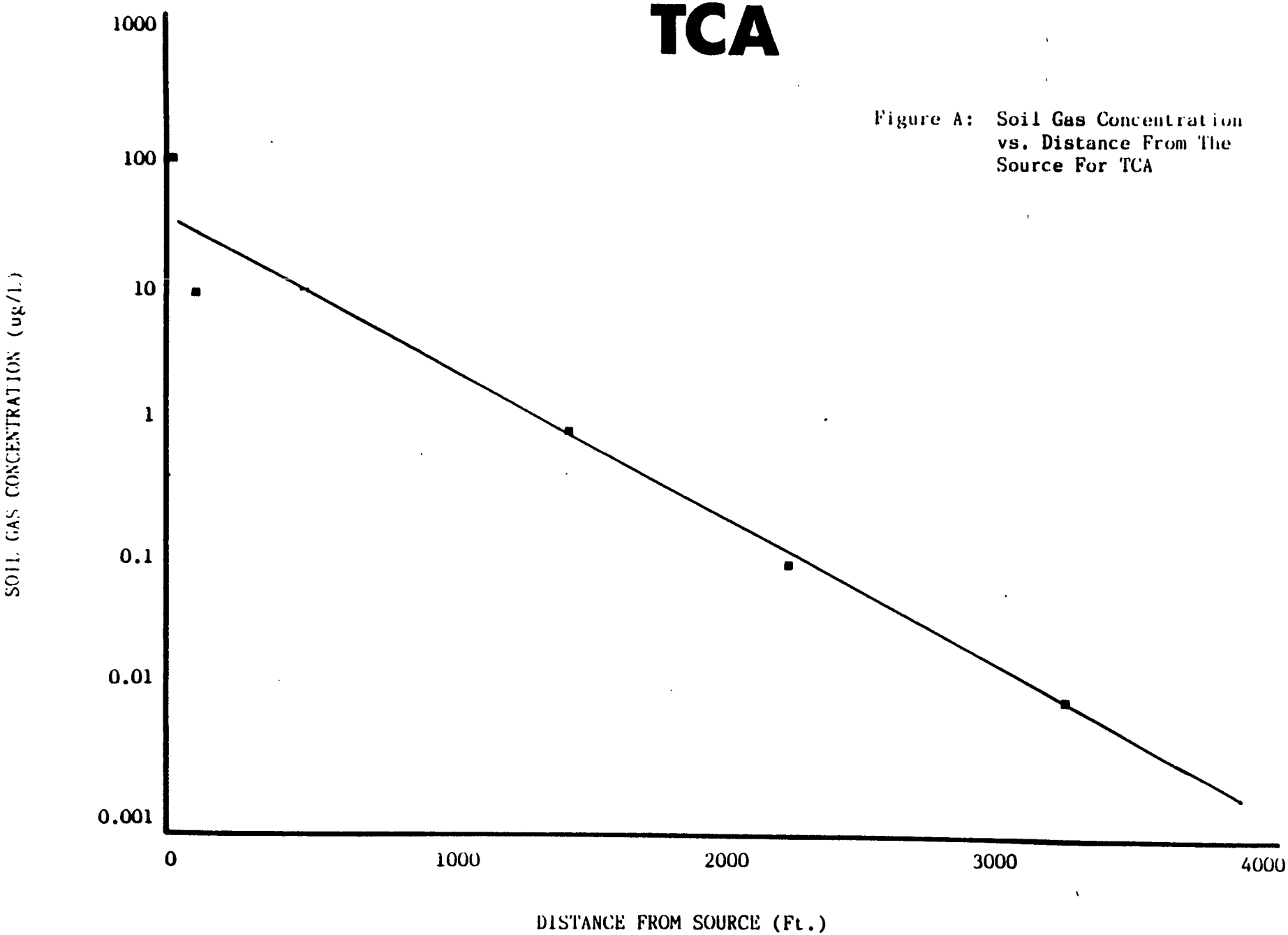


Figure A: Soil Gas Concentration vs. Distance From The Source For TCA

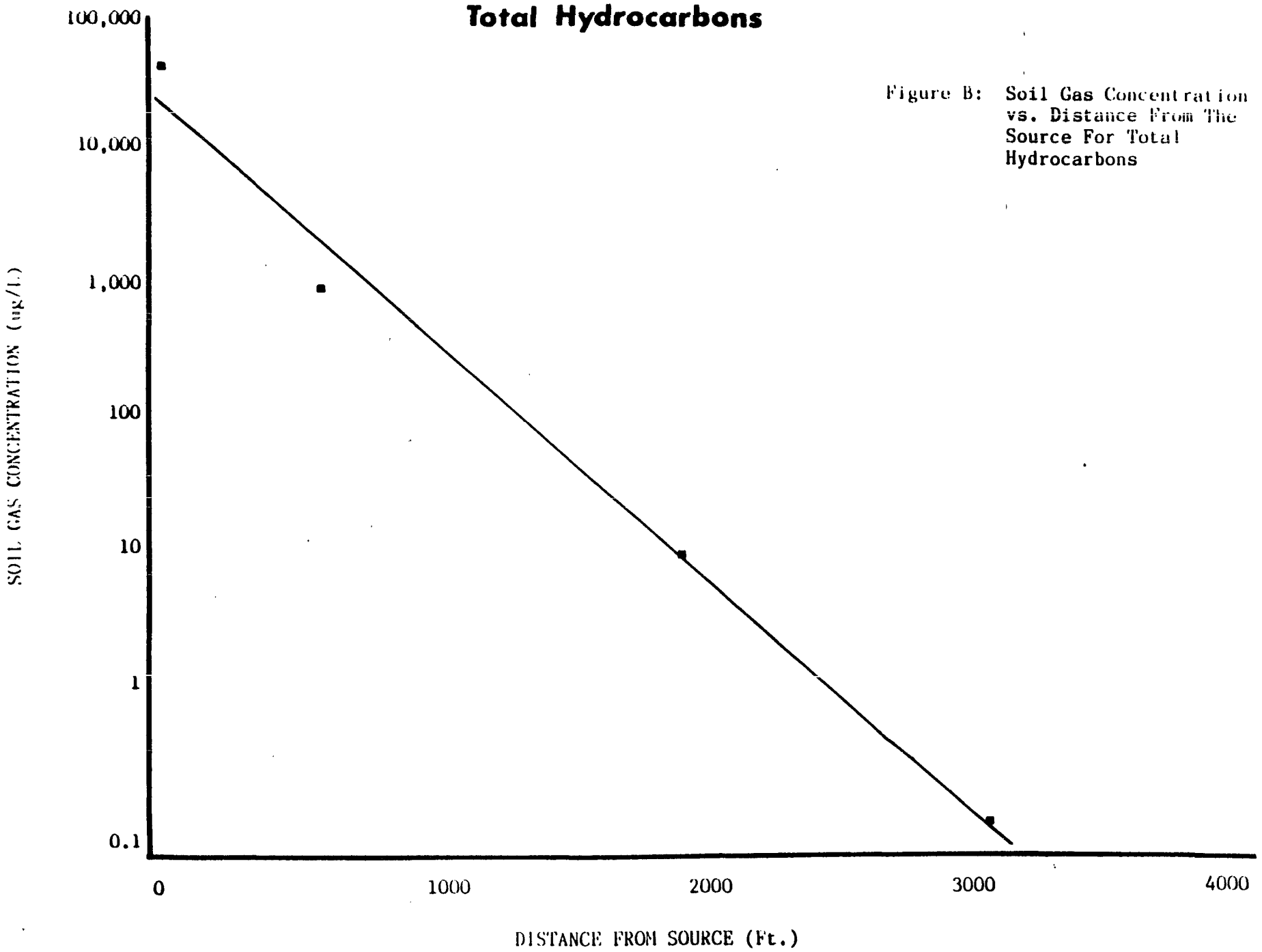


Figure B: Soil Gas Concentration vs. Distance From The Source For Total Hydrocarbons

CONCLUSIONS

Results of this investigation indicate that the Lee Acres landfill is a source of both halocarbon and hydrocarbon contamination. Isoconcentration contour maps show VOCs migrating in a southerly direction towards wells which have been shown to be contaminated. Other potential sources of hydrocarbon contamination indicated by the soil gas survey include the El Paso Natural Gas facility and the Giant Refinery.

High concentrations found in the source areas indicate that the soil underlying the landfill is contaminated. That is, the soil actually contains the contaminant, not just its vapors. Knowing this fact, it is possible that the contamination is still diffusing downward in those areas, actively contaminating the groundwater.

APPENDIX A: CONDENSED DATA

Job Lee Acres Site, Farmington, New Mexico

TRACER RESEARCH CORPORATION

Date _____ Page _____

CONDENSED DATA

CONTAMINANT			CH_2Cl_2	$CHCl_3$	TCA	TCE
sample	depth	date	mean ug/l concentration	mean ug/l concentration	mean ug/l concentration	mean ug/l concentra
SG1	6'	7/8	260	<0.07	8	2
SG2	6'	7/8	<2	<0.07	0.6	2
SG3	6'	7/8	<2	<0.07	24	<0.06
SG4	5.5'	7/8	<0.2	<0.007	0.5	<0.06
SG5	5.5'	7/8	<0.2	<0.007	30	6
SG6	6'	7/8	<2	<0.07	7	0.3
SG7	5.5'	7/8	<2	<0.07	4	<0.06
SG8	6'	7/8	2,000	<0.07	1	<0.06
SG9	6'	7/8	3,400	<0.07	180	60
SG10	6'	7/9	<4	<0.1	3	0.7
SG11	6'	7/9	5	<0.07	0.1	11
SG12	6'	7/9	1	<0.01	0.02	0.4
SG13	6'	7/9	<0.04	0.02	0.4	0.02
SG14	6'	7/9	<0.1	0.04	8	<0.003
SG15	6'	7/9	<0.1	0.5	0.08	<0.003
SG16	6'	7/9	<0.04	<0.001	0.008	<0.001
SG17	6'	7/9	0.4	<0.001	0.2	<0.001
SG17	13'	7/9	0.4	<0.004	0.2	<0.003
SG18	6'	7/9	12	0.3	5	11
SG19	6'	7/9	<10	3	1	80
SG20	6'	7/9	300	<0.004	0.1	<0.003

Notations:
RF response factor
I interference with adjacent peaks
NA not analyzed
E estimated peak area

Summarized by: L. Lawlor

Checked by: J. Olexa

Proofed by: L. Laplander

Job Lee Acres Site, Farmington, New Mexico

TRACER RESEARCH CORPORATION

Date _____ Page _____

CONDENSED DATA

CONTAMINENT			CH_2Cl_2	$CHCl_3$	TCA	TCE
sample	depth	date	mean ug/l concentration	mean ug/l concentration	mean ug/l concentration	mean ug/l concentra
SG20D	6'	7/9	900	<0.004	2	0.2
SG21	6'	7/9	<0.04	<0.001	<0.003	<0.001
SG22	6'	7/9	<0.1	<0.004	0.1	<0.003
SG23	6'	7/9	1	0.1	0.6	0.3
SG24	6'	7/10	NA	NA	NA	NA
SG24D	6'	7/10	<0.04	<0.001	0.2	<0.0008
SG25	6'	7/10	<0.01	<0.0004	0.001	<0.0002
SG26	6'	7/10	<0.01	0.004	0.0008	<0.0002
SG27	6'	7/11	<0.01	0.0009	0.0007	<0.0003
SG28	6'	7/11	<0.01	<0.0004	0.0004	<0.0003
SG29	6'	7/10	<0.01	0.008	0.002	<0.0002
SG30	5.5'	7/10	<0.01	<0.0004	0.0004	<0.0002
SG31	6'	7/10	<0.01	<0.0004	0.0004	<0.0002
SG32	6'	7/10	<0.01	<0.0004	0.0004	<0.0002
SG33	6'	7/10	<0.01	<0.0004	0.007	<0.0002
SG34	6'	7/10	<0.04	<0.001	0.01	<0.0008
SG35	6'	7/10	<0.01	0.001	<0.0001	<0.0002
SG36	6'	7/11	<0.01	<0.0004	0.001	<0.0003
SG37	6'	7/11	<0.01	<0.0004	0.0007	<0.0003
SG37D	6'	7/11	<0.01	<0.0004	0.0007	<0.0003
SG38	5.5'	7/11	<0.01	0.007	0.002	<0.0003

Notations:
- RF response factor
- I interference with adjacent peaks
- NA not analyzed
- E estimated peak area

Summarized by: L. Lawlor

Checked by: J. Olexa

Proofed by: L. Laplander

Job Lee Acres Site, Farmington, New Mexico

TRACER RESEARCH CORPORATION

Date _____ Page _____

CONDENSED DATA

CONTAMINANT			CH_2Cl_2	$CHCl_3$	TCA	TCE
sample	depth	date	mean ug/l concentration	mean ug/l concentration	mean ug/l concentration	mean ug/l concentra
SG39	6'	7/11	<0.01	<0.0004	0.0005	<0.0003
SG40	6'	7/11	<0.01	<0.0004	0.002	<0.0003
SG41	6'	7/10	<0.01	0.003	0.0006	<0.0002
SG42	6'	7/10	<0.01	<0.0004	0.0006	<0.0002

Notations:
- RF response factor
- I interference with adjacent peaks
- NA not analyzed
- E estimated peak area

Summarized by: L. Lawlor

Checked by: J. Olexa

Proofed by: L. Laplander

Job Lee Acres Site, Farmington, New Mexico

TRACER RESEARCH CORPORATION

Date_____ Page_____

CONDENSED DATA

CONTAMINANT			PCE			
sample	depth	date	mean ug/l concentration	mean ug/l concentration	mean ug/l concentration	mean ug/l concentra
SG1	6'	7/8	0.4			
SG2	6'	7/8	2			
SG3	6'	7/8	1			
SG4	5.5'	7/8	<0.003			
SG5	5.5'	7/8	1			
SG6	6'	7/8	70			
SG7	5.5'	7/8	0.4			
SG8	6'	7/8	1			
SG9	6'	7/8	9			
SG10	6'	7/9	2			
SG11	6'	7/9	3			
SG12	6'	7/9	0.2			
SG13	6'	7/9	0.03			
SG14	6'	7/9	0.07			
SG15	6'	7/9	0.01			
SG16	6'	7/9	0.005			
SG17	6'	7/9	0.2			
SG17	13'	7/9	0.2			
SG18	6'	7/9	20			
SG19	6'	7/9	120			
SG20	6'	7/9	0.03			

Notations:
- RF response factor
- I interference with adjacent peaks
- NA not analyzed
- E estimated peak area

Summarized by: L. Lawlor

Checked by: J. Olexa

Proofed by: L. Laplander

Job Lee Acres Site, Farmington, New Mexico

TRACER RESEARCH CORPORATION

Date _____ Page _____

CONDENSED DATA

CONTAMINANT			PCE			
sample	depth	date	mean ug/l concentration	mean ug/l concentration	mean ug/l concentration	mean ug/l concentra
SG20D	6'	7/9	0.3			
SG21	6'	7/9	0.003			
SG22	6'	7/9	0.2			
SG23	6'	7/9	0.8			
SG24	6'	7/10	NA			
SG24D	6'	7/10	0.003			
SG25	6'	7/10	<0.0002			
SG26	6'	7/10	<0.00007			
SG27	6'	7/11	0.0002			
SG28	6'	7/11	<0.00009			
SG29	6'	7/10	<0.00007			
SG30	5.5'	7/10	<0.00007			
SG31	6'	7/10	<0.00007			
SG32	6'	7/10	0.001			
SG33	6'	7/10	<0.00007			
SG34	6'	7/10	0.03			
SG35	6'	7/10	<0.00007			
SG36	6'	7/11	0.002			
SG37	6'	7/11	0.0007			
SG37D	6'	7/11	0.0008			
SG38	5.5'	7/11	0.0006			

Notations:
- RF response factor
- I interference with adjacent peaks
- NA not analyzed
- E estimated peak area

Summarized by: L. Lawlor

Checked by: J. Olexa

Proofed by: L. Laplander

Job Lee Acres Site, Farmington, New Mexico

TRACER RESEARCH CORPORATION

Date _____ Page _____

CONDENSED DATA

CONTAMINANT			PCE			
sample	depth	date	mean ug/l concentration	mean ug/l concentration	mean ug/l concentration	mean ug/l concentra
SG39	6'	7/11	0.0004			
SG40	6'	7/11	0.002			
SG41	6'	7/10	<0.00007			
SG42	6'	7/10	<0.00007			

Notations:
RF response factor
I interference with adjacent peaks
NA not analyzed
E estimated peak area

Summarized by: L. Lawlor

Checked by: J. Olexa

Proofed by: L. Laplander

Job Lee Acres Site, Farmington, New Mexico

TRACER RESEARCH CORPORATION

Date _____ Page _____

CONDENSED DATA

CONTAMINANT			Benzene	Toluene	Ethyl Benzene	Ortho Xylene
sample	depth	date	mean ug/l concentration	mean ug/l concentration	mean ug/l concentration	mean ug/l concentra
SG1	6'	7/8	<0.3	33	<0.5	<0.5
SG2	6'	7/8	<0.1	3	<0.09	0.1
SG3	6'	7/8	<0.1	<0.1	<0.2	<0.2
SG4	5.5'	7/8	<0.06	<0.07	<0.09	<0.1
SG5	5.5'	7/8	<0.1	<0.1	<0.2	<0.2
SG6	6'	7/8	<0.3	8	<0.5	<0.5
SG7	5.5'	7/8	<0.06	<0.07	<0.09	<0.1
SG8	6'	7/8	<0.1	<0.2	<0.2	<0.3
SG9	6'	7/8	<0.1	<4	320	<5
SG10	6'	7/9	<7	60	<7	<7
SG11	6'	7/9	<7	80	<7	<7
SG12	6'	7/9	<1	<1	<1	<1
SG13	6'	7/9	<0.03	<0.04	<0.04	<0.03
SG14	6'	7/9	<0.03	<0.04	<0.04	<0.03
SG15	6'	7/9	<0.03	<0.04	<0.04	<0.03
SG16	6'	7/9	<0.03	<0.04	<0.04	<0.03
SG17	6'	7/9	<0.03	<0.04	<0.04	<0.03
SG17	13'	7/9	<0.03	<0.04	<0.04	<0.03
SG18	6'	7/9	<0.03	<0.04	<0.04	<0.03
SG19	6'	7/9	<0.03	<0.04	<0.04	<0.03
SG20	6'	7/9	<0.03	<0.04	<0.04	<0.03

Notations:
- RF response factor
- I interference with adjacent peaks
- NA not analyzed
- E estimated peak area

Summarized by: L. Lawlor

Checked by: J. Olexa

Proofed by: L. Laplander

Job Lee Acres Site, Farmington, New Mexico

TRACER RESEARCH CORPORATION

Date _____ Page _____

CONDENSED DATA

CONTAMINANT			Benzene	Toluene	Ethyl Benzene	Ortho Xylene
sample	depth	date	mean ug/l concentration	mean ug/l concentration	mean ug/l concentration	mean ug/l concentra
SG20D	6'	7/9	1	0.8	<0.03	<0.03
SG21	6'	7/9	<0.03	<0.04	<0.04	<0.03
SG22	6'	7/9	<0.03	<0.04	<0.04	<0.03
SG23	6'	7/9	<0.03	<0.04	<0.04	<0.03
SG24	6'	7/10	<0.03	<0.03	<0.03	<0.03
SG24D	6'	7/10	<0.03	<0.03	<0.03	<0.03
SG25	6'	7/10	<0.03	<0.03	<0.03	<0.03
SG26	6'	7/10	<0.03	<0.03	<0.03	<0.03
SG27	6'	7/11	<0.03	<0.03	<0.03	<0.03
SG28	6'	7/11	<0.03	<0.03	<0.03	<0.03
SG29	6'	7/10	<0.03	<0.03	<0.03	<0.03
SG30	5.5'	7/10	<0.03	<0.03	<0.03	<0.03
SG31	6'	7/10	<0.03	<0.03	<0.03	<0.03
SG32	6'	7/10	<0.03	<0.03	<0.03	<0.03
SG33	6'	7/10	<0.03	<0.03	<0.03	<0.03
SG34	6'	7/10	<0.03	<0.03	<0.03	<0.03
SG35	6'	7/10	<0.03	<0.03	<0.03	<0.03
SG36	6'	7/11	<0.03	<0.03	<0.03	<0.03
SG37	6'	7/11	<0.03	<0.03	<0.03	<0.03
SG37D	6'	7/11	<0.03	<0.03	<0.03	<0.03
SG38	5.5'	7/11	<0.03	<0.03	<0.03	<0.03

Notations:
- RF response factor
- I interference with adjacent peaks
- NA not analyzed
- E estimated peak area

Summarized by: L. Lawlor

Checked by: J. Olexa

Proofed by: L. Laplander

Job Lee Acres Site, Farmington, New Mexico

TRACER RESEARCH CORPORATION

Date _____ Page _____

CONDENSED DATA

CONTAMINANT			Benzene	Toluene	Ethyl Benzene	Ortho Xylene
sample	depth	date	mean ug/l concentration	mean ug/l concentration	mean ug/l concentration	mean ug/l concentra
SG39	6'	7/11	<0.03	<0.03	<0.03	<0.03
SG40	6'	7/11	<0.03	<0.03	<0.03	<0.03
SG41	6'	7/10	<0.03	<0.03	<0.03	<0.03
SG42	6'	7/10	<0.03	<0.03	<0.03	<0.03

Notations:
RF response factor
I interference with adjacent peaks
NA not analyzed
E estimated peak area

Summarized by: L. Lawlor

Checked by: J. Olexa

Proofed by: L. Laplander

Job Lee Acres Site, Farmington, New Mexico

TRACER RESEARCH CORPORATION

Date _____ Page _____

CONDENSED DATA

CONTAMINANT			Total Hydrocarbons			
sample	depth	date	mean ug/l concentration	mean ug/l concentration	mean ug/l concentration	mean ug/l concentra
SG1	6'	7/8	4900			
SG2	6'	7/8	730			
SG3	6'	7/8	350			
SG4	5.5'	7/8	46			
SG5	5.5'	7/8	450			
SG6	6'	7/8	1100			
SG7	5.5'	7/8	80			
SG8	6'	7/8	3800			
SG9	6'	7/9	50000			
SG10	6'	7/9	6800			
SG11	6'	7/9	140000			
SG12	6'	7/9	8400			
SG13	6'	7/9	0.6			
SG14	6'	7/9	0.7			
SG15	6'	7/9	16			
SG16	6'	7/9	0.2			
SG17	6'	7/9	0.2			
SG17	13'	7/9	0.2			
SG18	6'	7/9	7			
SG19	6'	7/9	73			
SG20	6'	7/9	0.7			

Notations: RF response factor
I interference with adjacent peaks
NA not analyzed
E estimated peak area

Summarized by: L. Lawlor

Checked by: D. Evans

Proofed by: D. Evans

Job Lee Acres Site, Farmington, New Mexico

TRACER RESEARCH CORPORATION

Date _____ Page _____

CONDENSED DATA

CONTAMINANT			Total Hydrocarbons			
sample	depth	date	mean ug/l concentration	mean ug/l concentration	mean ug/l concentration	mean ug/l concentrat
SG20D	6'	7/9	31			
SG21	6'	7/9	0.1			
SG22	6'	7/9	0.6			
SG23	6'	7/9	0.9			
SG24	6'	7/10	0.1			
SG24D	6'	7/10	0.04			
SG25	6'	7/10	0.02			
SG26	6'	7/10	0.8			
SG27	6'	7/11	0.4			
SG28	6'	7/11	0.3			
SG29	6'	7/10	0.06			
SG30	5.5'	7/10	0.08			
SG31	6'	7/10	0.09			
SG32	6'	7/10	0.3			
SG33	6'	7/10	0.02			
SG34	6'	7/10	0.02			
SG35	6'	7/11	0.3			
SG36	6'	7/11	0.3			
SG37	6'	7/11	0.5			
SG37D	6'	7/11	0.2			
SG38	5.5'	7/11	0.3			

Notations:
- RF response factor
- I interference with adjacent peaks
- NA not analyzed
- E estimated peak area

Summarized by: L. Lawlor

Checked by: D. Evans

Proofed by: D. Evans

Job Lee Acres Site, Farmington, New Mexico

TRACER RESEARCH CORPORATION

Date _____ Page _____

CONDENSED DATA

CONTAMINANT			Total Hydrocarbons			
sample	depth	date	mean ug/l concentration	mean ug/l concentration	mean ug/l concentration	mean ug/l concentrat
SG39	6'	7/11	0.03			
SG40	6'	7/11	0.4			
SG41	6'	7/10	0.09			
SG42	6'	7/10	0.02			

Notations:
RF response factor
I interference with adjacent peaks
NA not analyzed
E estimated peak area

Summarized by: L. Lawlor

Checked by: D. Evans

Proofed by: D. Evans

Figure 1. Trichloroethane (TCA) in Soil Gas.
BUREAU OF LAND MANAGEMENT
Contract AA852-RP6-7
LEE ACRES SITE, NEW MEXICO

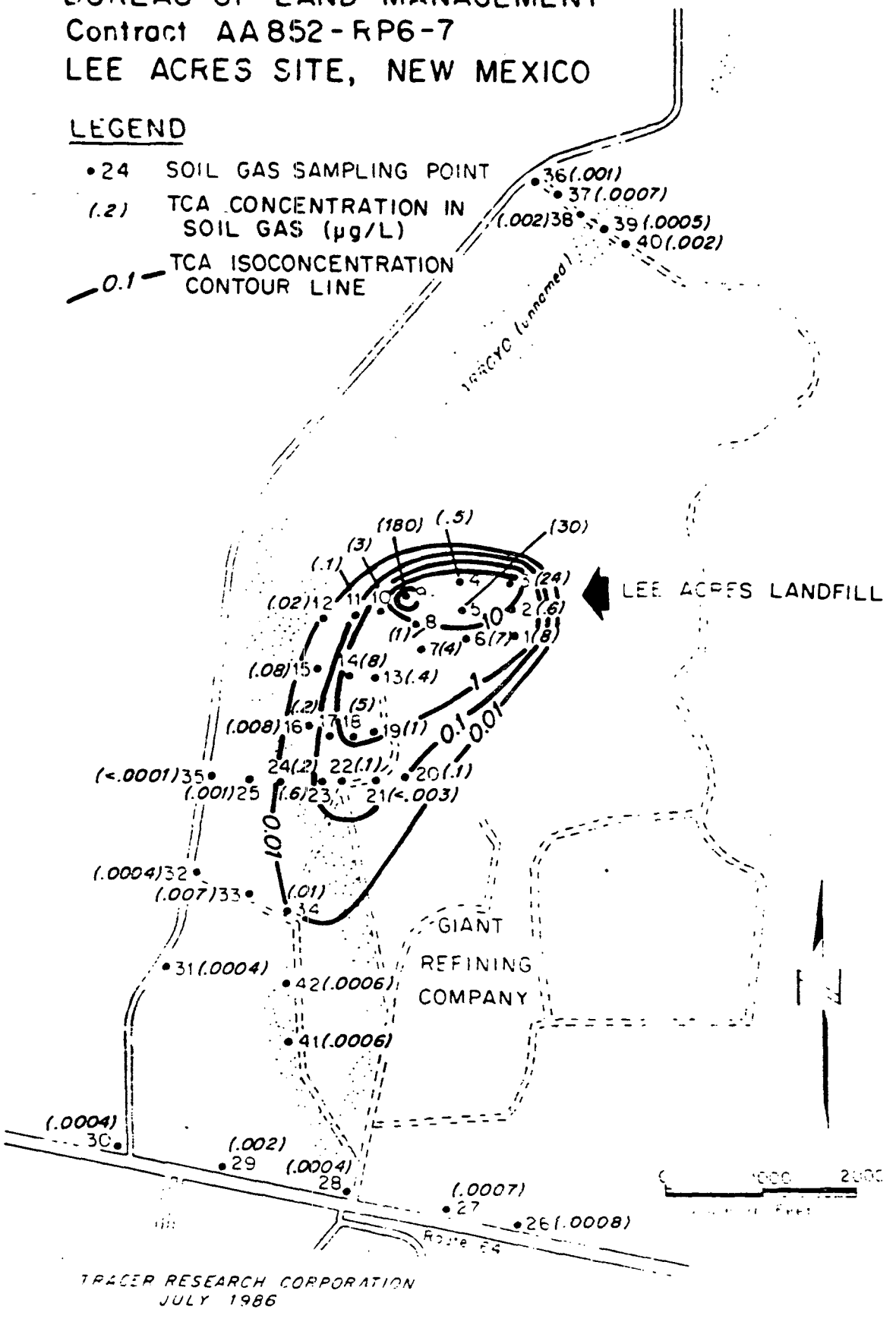
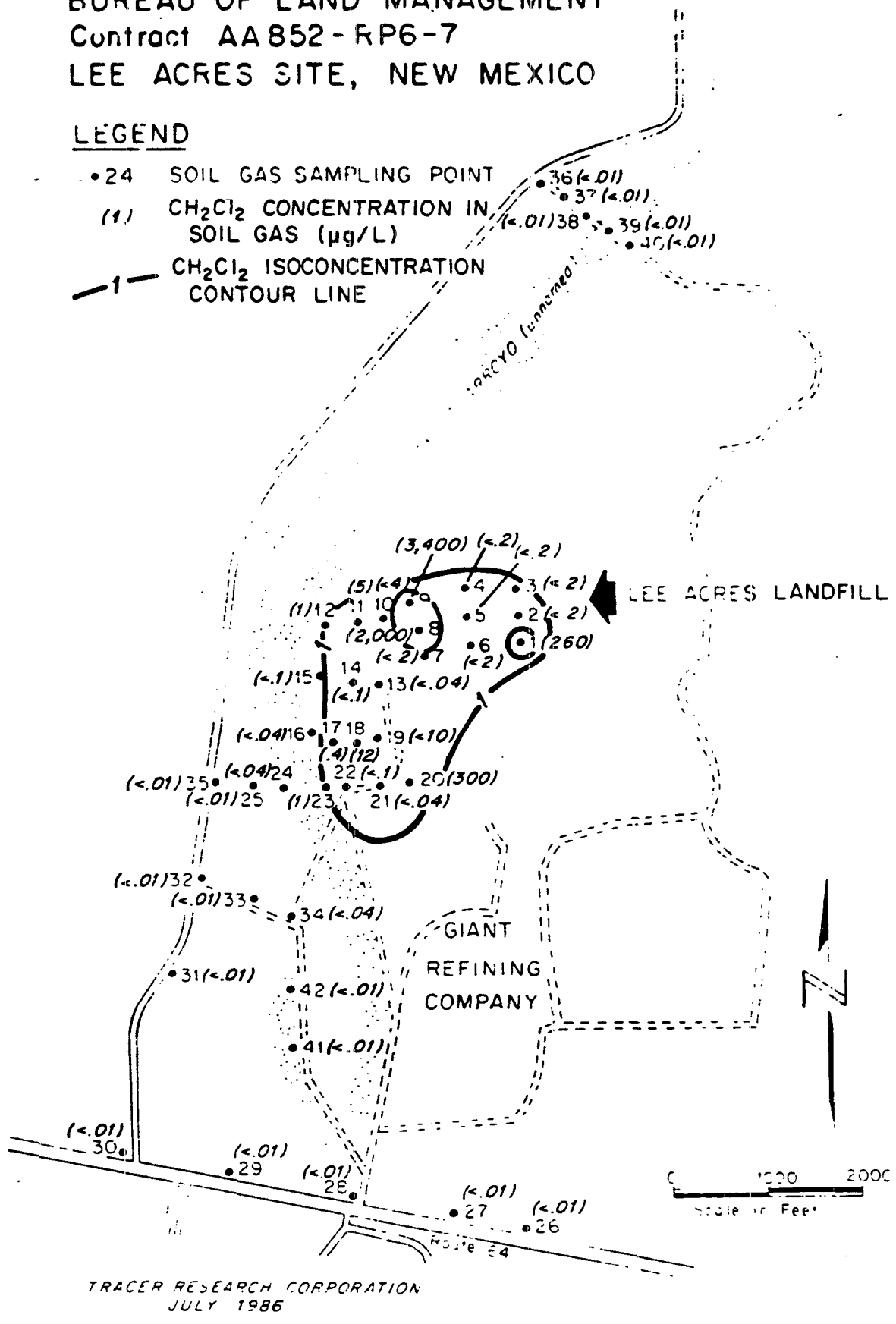


Figure 2. Methylene Chloride (CH_2Cl_2) in Soil Gas.
BUREAU OF LAND MANAGEMENT
Contract AA852-RP6-7
LEE ACRES SITE, NEW MEXICO



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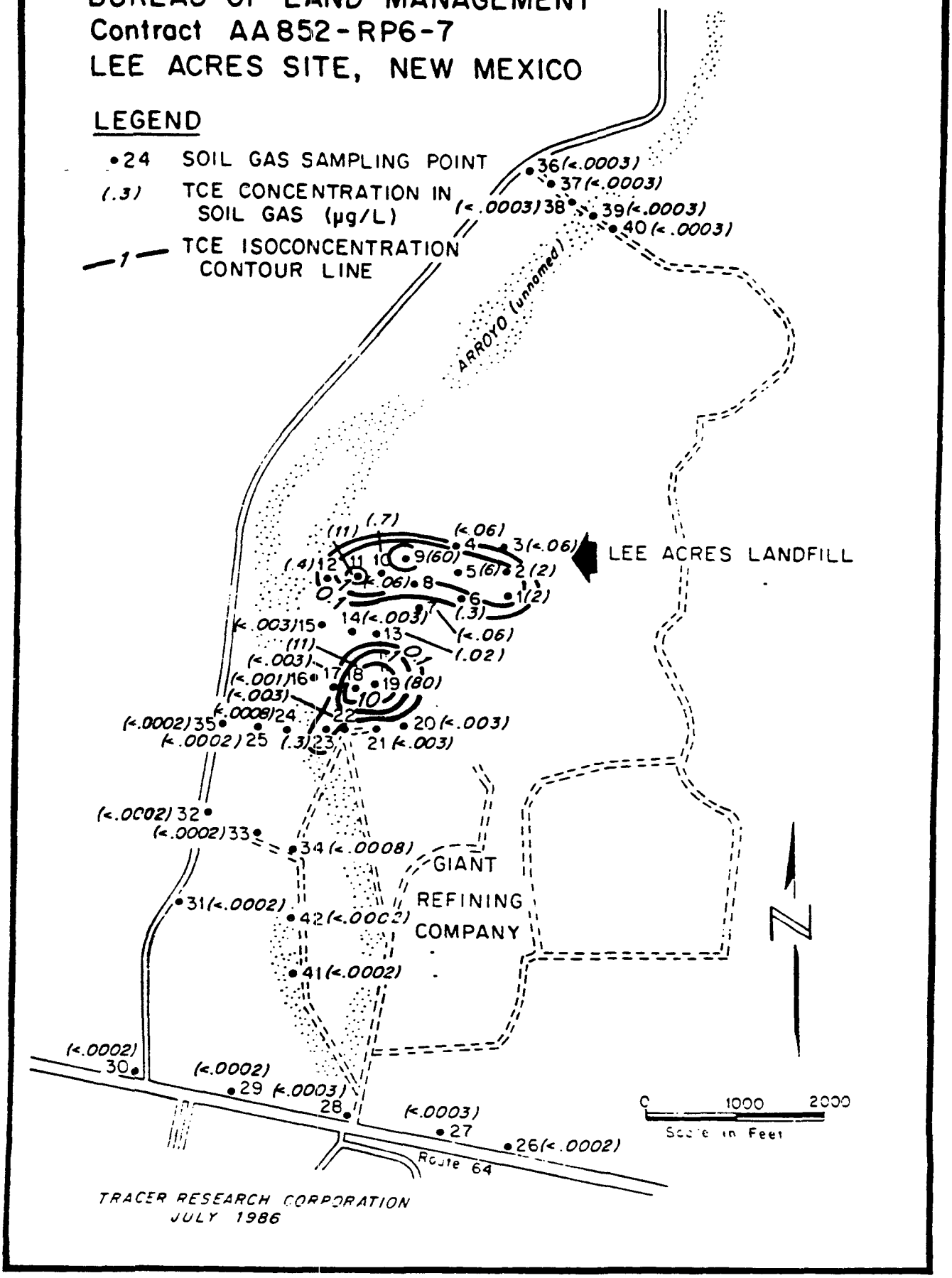
JULY 1986

Figure 3. Trichloroethylene (TCE) in Soil Gas.
BUREAU OF LAND MANAGEMENT
Contract AA852-RP6-7
LEE ACRES SITE, NEW MEXICO



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JULY 1986

Figure 4. Perchloroethylene (PCE) in Soil Gas.
BUREAU OF LAND MANAGEMENT
Contract AA 852-RP6-7
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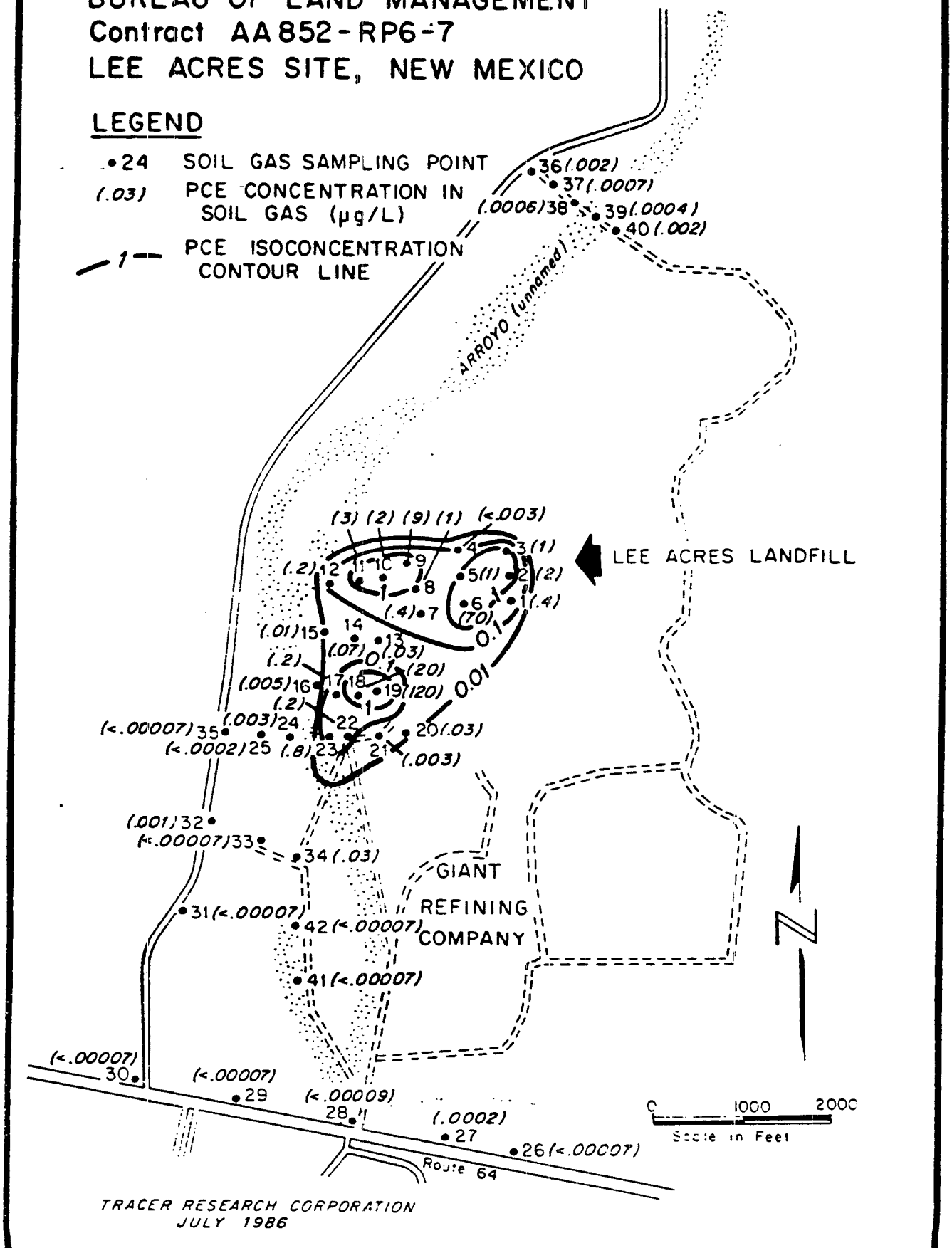

Figure 5. Total Hydrocarbons in Soil Gas.
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Contract AA852-RP6-7
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