NM1 - 4

GENERAL CORRESPONDENCE

YEAR(S):
1991 - 1981

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

July 16, 1991

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

CERTIFIED MAIL
RETURN RECEIPT NO. P-757-737-758

Mr. James R. Maloney
Vice President
Loco Hills Water Disposal Company
P. O. Box 68
Loco Hills, New Mexico 88255

Dear Mr. Maloney:

The Oil Conservation Division (OCD) has received your request dated July 11, 1991 to receive and dispose of wastewater generated from a pumping test at Dowell-Schlumberger's Artesia yard. Analysis reports provided with the request show the wastewater to be non-hazardous. Based on the information provided with your request, authorization is granted for Loco Hills Water Disposal Company to receive and dispose of the requested wastewater.

If you have any questions, feel free to contact me at (505) 827-5812.

Sincerely,

David G. Boyer, Hydrogeologist
Environmental Bureau Chief

DGB/sl

cc: OCD Artesia Office

LOCO HILLS WATER DISPOSAL CO.
P. O. Box 68
Loco Hills, NM 88255

July 11, 1991

Mr. David G. Boyer
OIL CONSERVATION DIVISION
P.O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87504

Re: Disposal of Ground Water from Pump Test

Dear Mr. Boyer,

Loco Hills Water Disposal is requesting a permit allowing our plant to receive and dispose of, the above referenced waste water.

I have enclosed a copy of the analysis reports submitted by Western Water Consultants, Inc. on behalf of Dowell-Schlumgerger, Inc.

If further information is needed, please do not hesitate to call me a (505) 677-2118.

Sincerely,

LOCO HILLS WATER DISPOSAL and
BRINE COMPANY

James R. Maloney
Vice President

JRM:jb

Enclosures (2)

By Phone from J. R. Maloney on 7/16, 10 AM. Water is from D-S Artesia yard, 500 E. Richey. DGB

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR910205
CENREF SAMPLE NUMBER: 879
SAMPLE IDENTIFICATION: 0125.4-1 MW-4

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/l)	RESULT (ug/l)
Chloromethane	74-87-3	5	BDL
Bromomethane	74-83-9	5	BDL
Vinyl Chloride	75-01-4	5	BDL
Chloroethane	75-00-3	5	BDL
Trichlorofluoromethane	75-69-4	5	BDL
Methylene Chloride	75-09-2	5	BDL
Acetone	67-64-1	10	BDL
Carbon Disulfide	75-15-0	10	BDL
1,1-Dichloroethene	75-35-4	1	BDL
1,1-Dichloroethane	75-34-3	1	BDL
Total-1,2-Dichloroethene	540-59-0	2	BDL
Chloroform	67-66-3	1	BDL
1,2-Dichloroethane	107-06-2	1	BDL
2-Butanone	78-93-3	10	BDL
1,1,1-Trichloroethane	71-55-6	1	BDL
Carbon Tetrachloride	56-23-5	1	BDL
Vinyl Acetate	108-05-4	10	BDL
Bromodichloromethane	75-27-4	1	BDL
1,2-Dichloropropane	78-87-5	1	BDL
2-Chloroethyl vinyl ether	110-75-8	10	BDL
cis-1,3-Dichloropropene	10061-01-5	1	BDL
Trichloroethene	79-01-6	1	BDL
Dibromochloromethane	124-48-1	1	BDL
1,1,2-Trichloroethane	79-00-5	1	BDL
Benzene	71-43-2	1	98
trans-1,3-Dichloropropene	10061-02-6	1	BDL
Bromoform	75-25-2	1	BDL
4-Methyl-2-Pentanone	108-10-1	10	BDL
2-Hexanone	591-78-6	10	BDL
Tetrachloroethene	127-18-4	1	BDL
1,1,2,2-Tetrachloroethane	79-34-5	1	BDL
Toluene	108-88-3	1	BDL
Chlorobenzene	108-90-7	1	BDL
Ethylbenzene	100-41-4	1	11
Styrene	100-42-5	5	BDL
Xylene (total)	1330-20-7	5	25

COMPANY NAME: Western Water Consultants

CENREF PROJECT NUMBER: PR910205
CENREF SAMPLE NUMBER: 879
SAMPLE IDENTIFICATION: 0125.4-1 MW-4

METHOD EPA 8240

ANALYSIS	CAS NO.	SDL (ug/l)	RESULT (ug/l)
1,2-Dichlorobenzene	95-50-1	5	BDL
1,3-Dichlorobenzene	541-73-1	5	BDL
1,4-Dichlorobenzene	106-46-7	5	BDL

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: _____

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

June 19, 1991

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

CERTIFIED MAIL
RETURN RECEIPT NO. P-327-278-201

Mr. James R. Maloney
Vice President
Loco Hills Water Disposal Company
P. O. Box 68
Loco Hills, New Mexico 88255

Dear Mr. Maloney:

The Oil Conservation Division (OCD) has received your request dated May 29, 1991 to receive and dispose of wastewater generated at ENRON's mainline compressor stations. Analysis reports provided with the request show the wastewater to be non-hazardous. Based on the information provided with your request, authorization is granted for Loco Hills Water Disposal Company to receive and dispose of the requested wastewater.

If you have any questions, feel free to contact me at (505) 827-5884.

Sincerely,

Roger C. Anderson
Environmental Engineer

RCA/sl

cc: OCD Artesia Office
Larry Campbell - ENRON
Raymond Getman - R&R Recycling

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

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

February 22, 1991

CERTIFIED MAIL
RETURN RECEIPT NO. P-327-278-048

Mr. James R. Maloney
Vice President
Loco Hills Water Disposal Company
P. O. Box 68
Loco Hills, New Mexico 88255

RE: **Disposal of Non-Hazardous Drilling Waste Water**

Dear Mr. Maloney:

We have received your letter of February 18, 1991 requesting permission to dispose of the above waste water at the OCD-approved Loco Hills Water Disposal facility. The waste water is from drilling and development activities associated with ground water monitoring and approximately 2000 barrels of water are expected to be disposed. Analysis reports provided with the request show the waste water to be non-hazardous. Based on the information provided with your letter permission is hereby granted for Loco Hills Water Disposal to receive and dispose of the above waste water.

If you have any questions regarding this letter, please call me at (505) 827-5812.

Sincerely,

David G. Boyer, Hydrogeologist
Environmental Bureau Chief

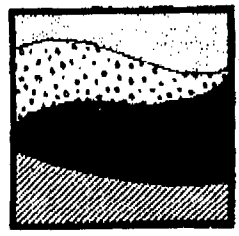
DGB/sl

cc: Mr. Scott Schrader, Geoscience Consultants, Albuquerque
Mike Williams, OCD Artesia Office

Geoscience Consultants, Ltd.

500 Copper Avenue N.W. Suite 200
Albuquerque, New Mexico 87102
(505) 842-0001 FAX (505) 842-0595

GCL



DATE: 2/14/91
TIME: 12:02
OPERATOR: Schrader

SENT BY CANON FAX-350

TO: COMPANY: NM OCD

ATTENTION: Dave Boyer

FAX NO: 1-827-5741 TELEPHONE NO.: 1-827-5812

FROM: Scott Schrader

(NAME)
GEOSCIENCE CONSULTANTS, LTD.
500 COPPER AVE. NW, SUITE 200
ALBUQUERQUE, NM 87102

TELEPHONE NO.: (505) 842-0001 FAX NO.: (505) 842-0595

NUMBER OF PAGES (Including lead page): 12

COMMENTS: Cc of water analyses sent to Loco Hills.

CHARGE CODE: 459-005 FORM\TELECOPY.FRM

Geoscience Consultants, Ltd.

500 Copper Avenue N.W. Suite 200
Albuquerque, New Mexico 87102
(505) 842-0001 FAX (505) 842-0595

GCL

February 13, 1991

Mr. Dick Maloney
Loco Hills Water Disposal Company
P.O. Box 68
Loco Hills, NM 88255

RE: DISPOSAL OF NON-HAZARDOUS DRILLING WASTEWATER.

Dear Dick:

Enclosed are copies of three analysis reports showing typical concentrations for the waste water we wish to dispose of at your site. The purpose of these analyses is to provide you with the necessary documentation to obtain approval to accept these wastes.

The three analyses include the following:

- Decanted Drill Mud Water: This waste is generated during the actual boring of the wells. We would plan to decant the liquid and transport it to your facility for disposal. Settled solids would not be shipped to your facility.
- Development Water: This waste is generated after the well is completed. The casing is flushed until the water exhibits stabilized conditions. This water typically contains very little solids.
- Soil Cuttings: This is the only complete TCLP analysis we have performed. Although we will not be sending any solids to your facility, the soil cuttings represent the "worst case" contamination scenario. All liquid drill wastes result from adding clean water during operations. The soil cuttings TCLP analysis shows that negligible contamination exists even in the "worst case", before dilution.

We wish to be very clear about the nature of this wastewater. If you have any questions, feel free to call us for clarification. Our primary intent is full disclosure of the nature of this waste. If you or the OCD require any further analyses, we will be glad to provide them.

Sincerely yours,
GEOSCIENCE CONSULTANTS, LTD.

Scott Schrader, PE
Project Engineer

cc: Robert Enz, GCL
Rhonda Methvin, GCL

G:\PROJECTS\GEWORK\SAS\LOCO_1.LTR

LOCO HILLS WATER DISPOSAL CO.
P. O. Box 68
Loco Hills, NM 88255

February 18, 1991

Mr. David G. Boyer
OIL CONSERVATION DIVISION
P.O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87504

Re: Disposal of Non-Hazardous Drilling Waste Water

Dear Mr. Boyer,

Loco Hills Water Disposal is requesting a permit allowing our plant to receive and dispose of, the above referenced waste water.

I have enclosed copies of the analysis reports submitted by Geoscience Consultants, Ltd. and if further information is needed, please do not hesitate to call me at (505) 677-2118.

Sincerely,

LOCO HILLS WATER DISPOSAL

James R. Maloney
Vice President

JRM:jb

Enclosures (3)

Drill Mud Waste
3 pgs of analysis

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

ANALYTICAL REPORT
12-18-90

CUSTOMER: Geoscience Consultants, LTD. File No.: 901730

TCLP WASTE CHARACTERIZATION REPORT

Client Sample I.D........ 9011151653
Remark/Project........... GE/CERCLA/COC #2759
Date/Time Sampled........ 11-15-90/1653
Date/Time Received....... 11-16-90/1000
Laboratory Sample I.D.... 901730-1

TOXICITY CHARACTERISTIC LEACHING PROCEDURE - METALS
Aqueous Phase QA Batch Number 901126

Sample Type - As Received		TCLP Metals - Extract Type	
% Liquid	62.4	% Aqueous Phase	100.0
% Solid	37.6	% Non-Aqueous Phase	<0.5

→ Liquids will be decanted
Solids will be disposed of at local landfill.

Parameter	Aqueous Phase Result mg/L
Arsenic (As)	<0.05
Barium (Ba)	1.1
Cadmium (Cd)	<0.01
Chromium (Cr)	0.02
Copper (Cu)	0.02
Iron (Fe)	<0.03
Lead (Pb)	<0.05
Manganese (Mn)	1.27
Mercury (Hg)	<0.003
Selenium (Se)	<0.1
Zinc (Zn)	0.27

Approved By: Ellen J. Maggio

1300 South Potomac St., Suite 130
Aurora, Colorado 80012
Tele. (303) 751-1780

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

ANALYTICAL REPORT
12/18/90

CUSTOMER: Geoscience Consultants, LTD. File No.: 901730

TCLP WASTE CHARACTERIZATION REPORT

Client Sample I.D..... 9011151653
Remark/Project..... GE/CERCLA/COC #2759
Date/Time Sampled..... 11-15-90/1653
Date/Time Received..... 11-16-90/1000
Laboratory Sample I.D.... 901730-1

TOXICITY CHARACTERISTIC LEACHING PROCEDURE - ORGANICS

Sample Type - As Received		ZHE (Volatiles) - Extract Type	
% Liquid	62.4	% Aqueous Phase	100.0
% Solid	37.6	% Non-Aqueous Phase	<0.5

VOLATILE ORGANIC COMPOUNDS	Aqueous Phase Result ug/L
Benzene	<10
Carbon tetrachloride	<50
Chlorobenzene	<50
Chloroform	<50
1,2-Dichloroethane	<50
1,1-Dichloroethylene	<50
Methyl ethyl ketone	<1000
Tetrachloroethylene	<50
Trichloroethylene	<50
Vinyl chloride	<100

Approved By: Ellen J. Mahoney

1300 South Potomac St., Suite 130
Aurora, Colorado 80012
Tele. (303) 751-1780

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

ANALYTICAL REPORT
12/18/90

CUSTOMER: Geoscience Consultants, LTD. File No..: 901730

TCLP WASTE CHARACTERIZATION REPORT

Client Sample I.D..... 9011151653
Remark/Project..... GE/CERCLA/COC #2759
Date/Time Sampled..... 11-15-90/1653
Date/Time Received..... 11-16-90/1000
Laboratory Sample I.D.... 901730-1

TOXICITY CHARACTERISTIC LEACHING PROCEDURE - ORGANICS

Sample Type - As Received		Glass Jar (BNA/Pest/Herb) - Extract Type	
% Liquid	62.4	% Aqueous Phase	100.0
% Solid	37.6	% Non-Aqueous Phase	<0.5

SEMI-VOLATILE ORGANIC COMPOUNDS	Aqueous Phase Result ug/L
o-Cresol (2-Methylphenol)	<100
m & p-Cresol (3 & 4-Methylphenol)	<100
1,4-Dichlorobenzene	<100
2,4-Dinitrotoluene	<100
Hexachlorobenzene	<100
Hexachlorobutadiene	<100
Hexachloroethane	<100
Nitrobenzene	<100
Pentachlorophenol	<500
Pyridine	<100
2,4,5-Trichlorophenol	<100
2,4,6-Trichlorophenol	<100

Approved By: Ellen J. Hoffman

1300 South Potomac St., Suite 130
Aurora, Colorado 80012
Tele. (303) 751-1780

Development water waste
2 pgs of analysis

Western Atlas International
A Gearhart Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
12/14/90

JOB NUMBER: 901767 CUSTOMER: GEOSCIENCE CONSULTANTS, LTD. ATTN:

CLIENT I.D.....: GE SJ6
DATE SAMPLED.....: 11/21/90
TIME SAMPLED.....: 16:49
WORK DESCRIPTION...: 9011211649

LABORATORY I.D...: 901767-0003
DATE RECEIVED....: 11/26/90
TIME RECEIVED....: 00:00
REMARKS.....: GE/CERCLA/COC #2777

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Cyanide, Total (Unfilt.)	<0.02	0.02	mg/L	335.2 (1)	11/30/90	DTJ
Cyanide, ATC (Unfilt.)	<0.02	0.02	mg/L	335.1 (1)	11/30/90	DTJ
Oil and Grease	6	5	mg/L	413.2 (1)	12/03/90	MW
Phenols (Unfilt.)	<0.05	0.05	mg/L	420.1 (1)	11/30/90	RMH
Arsenic, Total (As)	<0.05	0.05	mg/L	200.7/6010 (1,2)	12/05/90	TLK
Barium, Total (Ba)	0.24	0.01	mg/L	200.7/6010 (1,2)	12/05/90	TLK
Cadmium, Total (Cd)	<0.005	0.005	mg/L	200.7/6010 (1,2)	12/05/90	TLK
Chromium, Total (Cr)	<0.01	0.01	mg/L	200.7/6010 (1,2)	12/05/90	TLK
Copper, Total (Cu)	<0.01	0.01	mg/L	200.7/6010 (1,2)	12/05/90	TLK
Iron, Total (Fe)	1.23	0.03	mg/L	200.7/6010 (1,2)	12/05/90	TLK
Mercury, Total (Hg)	<0.0003	0.0003	mg/L	245.1 (1)	12/11/90	JLH
Manganese, Total (Mn)	0.10	0.01	mg/L	200.7/6010 (1,2)	12/05/90	TLK
Nickel, Total (Ni)	<0.04	0.04	mg/L	200.7/6010 (1,2)	12/05/90	TLK
Selenium, Total (Se)	<0.1	0.1	mg/L	200.7/6010 (1,2)	12/05/90	TLK
Silver, Total (Ag)	<0.01	0.01	mg/L	200.7/6010 (1,2)	12/05/90	TLK
Zinc, Total (Zn)	0.31	0.01	mg/L	200.7/6010 (1,2)	12/05/90	TLK
VOLATILE ORGANIC COMPOUNDS		*1		624 (1)	12/05/90	DFM
Benzene	ND	1	ug/L			
Bromomethane	ND	10	ug/L			
Chloroethane	ND	10	ug/L			
2-Chloroethylvinyl ether	ND	10	ug/L			
Chloroform	ND	5	ug/L			
Chloromethane	ND	5	ug/L			
Dibromochloromethane	ND	5	ug/L			
1,1-Dichloroethane	ND	5	ug/L			
1,2-Dichloroethene	ND	5	ug/L			
1,1-Dichloroethene	ND	5	ug/L			
trans-1,2-Dichloroethene	ND	5	ug/L			

APPROVED BY: Eileen J. Hagen

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

Western Atlas International

A Litton/Dresser Company

CORE LABORATORIES

L A B O R A T O R Y T E S T S R E S U L T S
12/14/90

JOB NUMBER: 901767 CUSTOMER: GEOSCIENCE CONSULTANTS, LTD. ATTN:

CLIENT I.D.........: GE SJ6
DATE SAMPLED.......: 11/21/90
TIME SAMPLED.......: 16:49
WORK DESCRIPTION...: 9011211649

LABORATORY I.D...: 901767-0003
DATE RECEIVED....: 11/26/90
TIME RECEIVED....: 00:00
REMARKS..........: GE/CERCLA/COC #2777

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
trans-1,3-Dichloropropene	ND	5	ug/L			
Ethylbenzene	ND	5	ug/L			
Methylene chloride	ND	5	ug/L			
1,1,2,2-Tetrachloroethane	ND	5	ug/L			
Tetrachloroethene	ND	5	ug/L			
Toluene	ND	5	ug/L			
1,1,1-Trichloroethane	ND	5	ug/L			
Trichloroethene	ND	5	ug/L			
Trichlorofluoromethane	ND	5	ug/L			
Vinyl chloride	ND	10	ug/L			
Xylenes-total	ND	5	ug/L			
SEMI-VOLATILE BASE/NEUTRAL		*1		625 (1)	12/05/90	LSN
Acenaphthene	ND	10	ug/L			
Anthracene	ND	10	ug/L			
Benzo(a)anthracene	ND	10	ug/L			
Benzo(k)fluoranthene	ND	10	ug/L			
Benzo(a)pyrene	ND	10	ug/L			
Butyl benzyl phthalate	ND	10	ug/L			
Fluoranthene	ND	10	ug/L			
Fluorene	ND	10	ug/L			
Isophorone	ND	10	ug/L			
Naphthalene	ND	10	ug/L			
N-Nitrosodiphenylamine	ND	10	ug/L			
Phenanthrene	ND	10	ug/L			
Pyrene	ND	10	ug/L			

APPROVED BY: Ellen J. Mayinger

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

5 pages of analyses

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
01/22/91

JOB NUMBER: 910041 CUSTOMER: GEOSCIENCE CONSULTANTS, LTD. ATTN:

SAMPLE NUMBER: 1 DATE RECEIVED: 01/09/91 TIME RECEIVED: 10:00 SAMPLE DATE: 01/08/91 SAMPLE TIME: 11:30

PROJECT: GE/CERCLA/2957 SAMPLE: 9101081130 REM:

TEST DESCRIPTION	SAMPLE 1						UNITS OF MEASURE
Corrosivity (pH-Soil)	8.5						pH
Ignitability (Solids)	Neg						Pos/Neg
Reactivity (HCN)	<1						mg/Kg
Reactivity (H2S)	36						mg/Kg

APPROVED BY: [signature]

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

ANALYTICAL REPORT
01/22/91

CUSTOMER: Geoscience Consultants, Ltd. File No.: 910041

TCLP WASTE CHARACTERIZATION REPORT

Client Sample I.D..... 9101081130
Remark/Project..... GE/CERCLA/COC #2957
Date/Time Sampled..... 01-08-91/1130
Date/Time Received..... 01-09-91/1000
Laboratory Sample I.D.... 910041-1

TOXICITY CHARACTERISTIC LEACHING PROCEDURE - METALS
Aqueous Phase QA Batch Number 910110

Sample Type - As Received		TCLP Metals - Extract Type	
% Liquid	<0.5	% Aqueous Phase	100.0
% Solid	100.0	% Non-Aqueous Phase	<0.5

Parameter	Aqueous Phase Result mg/L
Arsenic (As)	<0.05
Barium (Ba)	1.4
Cadmium (Cd)	<0.01
Chromium (Cr)	<0.01
Lead (Pb)	<0.05
Mercury (Hg)	<0.003
Selenium (Se)	<0.1
Silver (Ag)	<0.01

Approved By: Ellen J. Naylor

1300 South Potomac St., Suite 130
Aurora, Colorado 80012
Tele. (303) 751-1780

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

ANALYTICAL REPORT
01/22/91

CUSTOMER: Geoscience Consultants, Ltd. File No.: 910041

TCLP WASTE CHARACTERIZATION REPORT

Client Sample I.D..... 9101081130
Remark/Project..... GE/CERCLA/COC #2957
Date/Time Sampled..... 01-08-91/1130
Date/Time Received..... 01-09-91/1000
Laboratory Sample I.D.... 910041-1

TOXICITY CHARACTERISTIC LEACHING PROCEDURE - ORGANICS

Sample Type - As Received	
% Liquid	<0.5
% Solid	100.0

ZHE (Volatiles) - Extract Type	
% Aqueous Phase	100.0
% Non-Aqueous Phase	<0.5

VOLATILE ORGANIC COMPOUNDS	Aqueous Phase Result ug/L
Benzene	<10
Carbon tetrachloride	<50
Chlorobenzene	<50
Chloroform	<50
1,2-Dichloroethane	<50
1,1-Dichloroethylene	<50
Methyl ethyl ketone	<1000
Tetrachloroethylene	<50
Trichloroethylene	<50
Vinyl chloride	<100

Approved By: Ellen J. Moyer

1300 South Potomac St., Suite 130
Aurora, Colorado 80012
Tele. (303) 751-1780

Western Atlas International
A Litton/Finmar Company

CORE LABORATORIES

ANALYTICAL REPORT
01/22/91

CUSTOMER: Geoscience Consultants, Ltd. File No.: 910041

TCLP WASTE CHARACTERIZATION REPORT

Client Sample I.D..... 9101081130
Remark/Project..... GE/CERCLA/COC #2957
Date/Time Sampled..... 01-08-91/1130
Date/Time Received..... 01-09-91/1000
Laboratory Sample I.D.... 910041-1

TOXICITY CHARACTERISTIC LEACHING PROCEDURE - ORGANICS

Sample Type - As Received	
% Liquid	<0.5
% Solid	100.0

Glass Jar (BNA/Pest/Herb) - Extract Type	
% Aqueous Phase	100.0
% Non-Aqueous Phase	<0.5

SEMI-VOLATILE ORGANIC COMPOUNDS	Aqueous Phase Result ug/L
o-Cresol (2-Methylphenol)	<100
m & p-Cresol (3 & 4-Methylphenol)	<100
1,4-Dichlorobenzene	<100
2,4-Dinitrotoluene	<100
Hexachlorobenzene	<100
Hexachlorobutadiene	<100
Hexachloroethane	<100
Nitrobenzene	<100
Pentachlorophenol	<500
Pyridine	<100
2,4,5-Trichlorophenol	<100
2,4,6-Trichlorophenol	<100

Approved By: Ellen J. Taylor

1300 South Potomac St., Suite 130
Aurora, Colorado 80012
Tele. (303) 751-1780

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

ANALYTICAL REPORT
01/22/91

CUSTOMER: Geoscience Consultants, Ltd. File No.: 910041

TCLP WASTE CHARACTERIZATION REPORT

Client Sample I.D..... 9101081130
Remark/Project..... GE/CERCLA/COC #2957
Date/Time Sampled..... 01-08-91/1130
Date/Time Received..... 01-09-91/1000
Laboratory Sample I.D.... 910041-1

TOXICITY CHARACTERISTIC LEACHING PROCEDURE - ORGANICS

Sample Type - As Received		Glass Jar (BNA/Pest/Herb) - Extract Type	
% Liquid	<0.5	% Aqueous Phase	100.0
% Solid	100.0	% Non-Aqueous Phase	<0.5

	Aqueous Phase Result UG/L
PESTICIDE COMPOUNDS	
Chlordane	<14
Endrin	<6.0
Heptachlor	<3.0
Heptachlor epoxide	<83
gamma-BHC (Lindane)	<4.0
Methoxychlor	<180
Toxaphene	<240
HERBICIDE COMPOUNDS	
2,4-D	<120
2,4,5-TP (Silvex)	<17

Approved By: Ellen J. Dwyer

1300 South Potomac St., Suite 130
Aurora, Colorado 80012
Tele. (303) 751-1780

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

January 2, 1991

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

CERTIFIED MAIL
RETURN RECEIPT NO. P 918 402 438

Mr. James R. Maloney
Vice President
Loco Hills Water Disposal Co.
P. O. Box 68
Loco Hills, New Mexico 88255

RE: Disposal of Diesel and Calcium Chloride Waste Mixture

Dear Mr. Maloney:

We have received your letter of December 28, 1990 requesting permission to dispose of the above waste mixture at the OCD-approved Loco Hills Water Disposal facility. Disposal of this material was first requested by Steere Tank lines in their letter of November 14, 1990, but approval awaited OCD's receipt of your request. Based on the information provided in that letter and your request, permission is hereby granted for Loco Hills Water Disposal to receive and dispose of the above waste mixture.

If you have any questions regarding this letter, please call me at 827-5812.

Sincerely,

David G. Boyer
Hydrogeologist/Environmental Bureau Chief

cc : Mr. Scott Jones, Steere Tank Lines, Albuquerque
Mike Williams, OCD Artesia

LOCO HILLS WATER DISPOSAL CO.
P. O. Box 68
Loco Hills, NM 88255

December 28, 1990

Mr. David G. Boyer
OIL CONSERVATION DIVISION
P.O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87504

RE: Disposal of Diesel and Calcium Chloride Waste Mixture

Dear Mr. Boyer,

Loco Hills Water Disposal is requesting authorization from your office, granting permission to receive from Steere Tank Lines, the above referenced waste mixture, and the disposal of same.

Sincerely,

LOCO HILLS WATER DISPOSAL

James R Maloney, Jr

James R. Maloney
Vice President

JRM:jb

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

December 21, 1990

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

Mr. Scott Jones
Terminal Manager
Steere Tank Lines
P. O. Box 25666
Albuquerque, New Mexico 87125

RE: Disposal of Diesel and Calcium Chloride Waste Mixture

Dear Mr. Jones:

We have received your letter of November 14, 1990 requesting permission to dispose of the above waste mixture at the OCD-approved Loco Hills Water Disposal facility. However, to my knowledge Loco Hills has not yet contacted this office regarding this matter. Since they are restricted to receiving oil field waste unless special authorization has been given by this office upon their request, we can not approve the disposal at this time. However, OCD has no objection to the disposal provided such a written request or confirmation from the Loco Hills facility is received by this office. Please have the Loco Hills facility contact us to resolve the matter.

If you have further questions please call me at 827-5812.

Sincerely,

David G. Boyer
Hydrogeologist/Environmental Bureau Chief

cc : James R. Maloney, Loco Hills Water Disposal
Mike Williams, OCD Artesia

STEERE TANK LINES, INC.

P. O. BOX 25666 - ALBUQUERQUE, NEW MEXICO 87125-0666

TERMINALS: Albuquerque, Alvin, Amarillo, Artesia, Big Spring, Dallas, Dimmitt, Duchesne, El Paso, Farmington, Garland, Houston, Las Cruces, Lubbock, Odessa, Phoenix, Woods Cross

NOVEMBER 14, 1990

NEW MEXICO OIL CONSERVATION
P.O. BOX 2088
SANTA FE, NEW MEXICO 87504

MR. DAVID BOYER:

THIS letter is to coninside with our conversation on Novermber 14, 1990, conserning the mixture of diesel and calcium chloride.

On November 7, 1990, we had hauled 1110 gals of calcium Chloride to Pioneer Concrete here in Albuquerque, N.M.. The truck had last contained diesel, which it pumped off. The driver had flushed out pump before going to unload the Calcium Chloride. The driver must have not flushed the pump out well enough, thus causing a mixture of diesel (of less than 1 gal) with calcium chloride.

The customer complained about a slight oder of diesel in their product, and stated that they wanted their tank pumped out and cleaned. At that time we pumped their tank out.

At this time we are seeking permission from you to dispose of this material at Waste Water Disposal, which is located at Loco Hills, N.M. There is about 1110 gals of this material, which contains less than 1 gals of diesel in it.

Thank you for your time and help in the above matter.

Scott Jones
Terminal Manager

Steere Tank Lines, Inc.
P.O. BOX 25666
Albuquerque, N.M. 87125
1-800-366-7852

LOCO HILLS WATER DISPOSAL CO.
P. O. Box 68
Loco Hills, NM 88255

October 22, 1990

Mr. David G. Boyer
OIL CONSERVATION DIVISION
P.O. Box 2088
Land Office Building
Santa Fe, New Mexico 87501

Dear Mr. Boyer,

Per our phone conversation, October 18, 1990, this letter is to affirm our permission for the disposal of approximately 450 bbls of ground water recovered during an aquifer pumping test and is presently stored in a frac tank in Tatum, New Mexico, by Geoscience Consultants, LTD., 13111 E. Briarwood Avenue, Suite 250, Englewood, Colorado 80112.

Sincerely,

LOCO HILLS WATER DISPOSAL COMPANY

James R. Maloney
Vice President

JRM:jb

LOCO HILLS WATER DISPOSAL CO.
P. O. Box 68
Loco Hills, NM 88255

September 5, 1990

Mr. David G. Boyer
OIL CONSERVATION DIVISION
P.O. Box 2088
Land Office Building
Santa Fe, New Mexico 87501

Dear Mr. Boyer,

Per our conversation this date, this letter is to affirm our permission for the disposal of 2200 gallons of material containing Aluminum Sulfate and Diesel fuel by Steere Tank Lines of Albuquerque, using our disposal site located in Loco Hills, New Mexico.

Sincerely,

LOCO HILLS WATER DISPOSAL COMPANY

James R Maloney

James R. Maloney
Vice President

JRM:jb

STEERE TANK LINES, INC.

P. O. BOX 328 / FARMINGTON, NEW MEXICO 87499

TERMINALS — Artesia • Albuquerque • Alvin • Amarillo • Big Spring • Carlsbad • Dallas • Dimmitt
El Paso • Farmington • Gallup • Las Cruces • Lubbock • Odessa • Plainview • Tucumcari

Dave Boyer

We Have 80 BBl Or 3300 Gal Of Sodium Sulfate That Was Contaminated With #2 Diesel Fuel. Lab Test Show No Diesel.

Would You Please Approve A Disposal Site For Us.

Thank You

Ed M. Carney

LOCO HILLS WATER DISPOSAL CO.
P. O. Box 68
Loco Hills, NM 88255

September 6, 1990

Mr. David G. Boyer
OIL CONSERVATION DIVISION
P.O. Box 2088
Land Office Building
Santa Fe, New Mexico 87501

Dear Mr. Boyer,

Per our conversation this date, this letter is to affirm our permission for the disposal of 20,000 gallons to 30,000 gallons of water that is contaminated with gasoline, by Dan B. Stephens and Associates, using our disposal site located in Loco Hills, New Mexico.

Sincerely,

LOCO HILLS WATER DISPOSAL COMPANY

James R Maloney

James R. Maloney
Vice President

JRM:jb

STEERE TANK LINES, INC.

P. O. BOX 25666 - ALBUQUERQUE, NEW MEXICO 87125-0666

TERMINALS: Albuquerque, Alvin, Amarillo, Artesia, Big Spring, Dallas, Dimmitt, Duchesne, El Paso, Farmington, Garland, Houston, Las Cruces, Lubbock, Odessa, Phoenix, Woods Cross

AUGUST 24, 1990

NEW MEXICO OIL CONSERVATION
P.O. BOX 2088
SANTA FE, NEW MEXICO 87504

MR DAVID BOYER:

On August 16, 1990, Pete Hester with Steere Tank Lines, Inc, talked to you concerning some Aluminum Sulfate Solution that was contaminated with diesel fuel.

On August 8, 1990, we delivered a load of Aluminum Sulfate Solution to Santa Fe Water Treating Plt. in Santa Fe, N.M.. Due to difficlty during unloading, about one gallon of diesel fuel was mixed into about 2200 gallons of Aluminum Sulfate. At that time the tanks were cleaned out with a steam cleaner and a bio-degradable soap.

At this time we have 2200 gals of Aluminum Sulfate, which was contaminated with one gallon of diesel fuel. We also have about 750 gallons of flush water mixed with about a ½ gallon of soap.

At this time we are seeking permission from you to dispose of this material in one of two of the following locations:
Dick Malone at Waste Water Disposal located at Loco Hills, N.M. or at TNT in Lindrith. If you could possibly either write or call one of these locations, stating that we have permission to dispose of this material, we would appreciate it.

Thank you for all your help in the above matter. If you could please advise me of any developments, that would be helpful.

Scott Jones
Terminal Manager

Steere Tank Lines, Inc.
P.O. Box 25666
Albuquerque, N.M. 87125
1-800-366-7852

LION INDUSTRIES INC.

MATERIAL SAFETY DATA SHEET

MANUFACTURER INFORMATION

LION INDUSTRIES INC., P.O. BOX 980, HWY. 277
SNOWFLAKE, ARIZONA 85937
PHONE 800-841-1582

EFFECTIVE DATE: 1/1/90

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not "hazardous" per this OSHA Standard may be listed. Where "proprietary ingredient" shows, the identity may be made available as provided in this standard.

Lion Industries urges each customer or recipient of this MSDS to study it carefully to understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology, and fire prevention, as necessary or appropriate to use and understand the data contained in this MSDS.

To promote safe handling, each customer or recipient should: (1) notify its employees, agents, contractors and others whom it knows or believes will use this material of the information in this MSDS and any other information regarding hazards or safety; (2) furnish this same information to each of its customers for the product; and (3) request its customers to notify their employees, customers, and other users of the product of this information.

I. IDENTIFICATION

PRODUCT NAME: Low Iron Alum

CHEMICAL NAME: Aluminum Sulfate

CHEMICAL FAMILY: Hydrated Aluminum Salts

FORMULA: $Al_2(SO_4)_3 \times 14\ H_2O$ MOLECULAR WEIGHT: 594

SYNONYMS: Papermaker's Alum

CAS # and

CAS NAME: 10043-01-3, Aluminum Sulfate

PRODUCT NAME: Low Iron Alum

II. PHYSICAL DATA (Determined on typical material)

BOILING POINT, 760 mm Hg: >200°F	FREEZING POINT: Not Determined
pH: 2.8	% VOLATILE BY VOLUME: 51-52% (water)
SPECIFIC GRAVITY (H_2O = 1.0): 1.32	VAPOR PRESSURE at 20°C: Not Applicable
VAPOR DENSITY (air = 1.0): Not Applicable	SOLUBILITY IN WATER by wt: Complete
EVAPORATION RATE (Butyl Acetate = 1.0): <1.0	VISCOSITY: >H_2O

APPEARANCE AND ODOR: Clear to light amber liquid; no odor

III. HAZARDOUS INGREDIENTS

NOTE: The concentrations shown here and in Section X are maximum or ceiling levels (weight %) to be used for calculations for regulations. Proprietary ingredients are so noted.

MATERIAL	%	TLV (Units)	HAZARD
Aluminum Sulfate	48	2 mg/m^3	Irritant

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method(s)): Not Applicable

FLAMMABLE LIMITS IN AIR, % by volume — LOWER: Not Applicable; UPPER: Not Applicable

EXTINGUISHING MEDIA: Not Applicable

SPECIAL FIRE FIGHTING PROCEDURES: Not Applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS: Not Applicable

V. HEALTH HAZARD DATA

TLV AND SOURCE: 2 mg/m³ ACGIH

EFFECTS OF SINGLE OVEREXPOSURE:

SWALLOWING: May cause irritation of mouth and throat, nausea and vomiting, stomach cramps, diarrhea

SKIN ABSORPTION: Not Determined

INHALATION: Irritating to respiratory tract in high concentrations

SKIN CONTACT: Irritating; may cause redness and swelling

EYE CONTACT: Irritating, will cause tissue damage if not removed promptly

EFFECTS OF REPEATED OVEREXPOSURE: Ulceration and necrosis of mucous membranes, hepatic lesions, intense thirst

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

Chronic respiratory diseases, i.e.: bronchial hyper-reactivity and bronchial or lung disease

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:

Not Determined

OTHER EFFECTS OF OVEREXPOSURE: Not Determined

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING: Do not induce vomiting. Give plenty of water or milk. If vomiting occurs, hold head lower than hips to prevent pulmonary aspiration.

SKIN: Flush with large amounts of water, use soap if available. Remove grossly contaminated clothing, including shoes, and launder before reuse. If irritation persists, seek medical attention.

INHALATION: Using proper respiratory protection, immediately remove the affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest. Call for prompt medical attention.

EYES: Immediately flush eyes with large amounts of water for at least 15 minutes. Get prompt medical attention.

NOTES TO PHYSICIAN:

Treat as symptoms indicate.

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: Evaporation yields solid aluminum sulfate. Heating accelerates evaporation. Solid Aluminum Sulfate decomposes at 770°C to Al_2O_3, SO_2, and SO_3. SO_2 and SO_3 are corrosive to steel and iron.

INCOMPATIBILITY (materials to avoid): May produce hazardous decomposition products if mixed with pH sensitive materials (e.g. chlorine when mixed with sodium hypochlorite)

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS: SO_2, SO_3

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: Not Applicable

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Prevent additional discharge of material, if possible to do so without hazard. For small spills implement cleanup procedures; for large spills implement cleanup procedures and, if in public area, keep public away and advise authorities. Also, if this product is subject to CERCLA reporting (see Section X) notify the National Response Center.
Prevent liquid from entering sewers, watercourses, or low areas. Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust.
Recover by pumping or with a suitable absorbent.
If liquid is too viscous for pumping, scrape up.
Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

WASTE DISPOSAL METHOD: Ensure conformity to local disposal regulations.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type):

When there are high airborne concentrations of this product and engineering, work practice or other means of exposure reduction are not adequate, NIOSH/MSHA approved respirators may be necessary to prevent overexposure by inhalation.

VENTILATION: Provide sufficient ventilation to maintain mist levels below ACGIH TLV levels.

PROTECTIVE GLOVES: Chemical resistant gloves required.

EYE PROTECTION: Safety glasses with side shields or goggles required.

OTHER PROTECTIVE EQUIPMENT: Eye wash and safety shower

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Not Determined

OTHER PRECAUTIONS:

Not Determined

X. REGULATORY INFORMATION

STATUS ON SUBSTANCE LISTS:

The concentrations shown are maximum or ceiling levels (weight %) to be used for calculations for regulations. Proprietary Ingredients are so noted (see page 1).

FEDERAL EPA

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQs) in 40 CFR 302.4.

Components present in this product at a level which could require reporting under the statute are:

**** NONE ****

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III

requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312).

Components present in this product at a level which could require reporting under the statute are:

**** NONE ****

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III

requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDSs that are copied and distributed for this material.

Components present in this product at a level which could require reporting under the statute are:

**** NONE ****

PRODUCT NAME: Low Iron Alum

STATE RIGHT-TO-KNOW

ARIZONA

OTHER REGULATORY INFORMATION:

All ingredients are TSCA listed.

NOTE ....

The opinions expressed herein are those of qualified experts within Lion Industries Inc. We believe that the information contained herein is current as of the date of issuance of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Lion Industries Inc., it is the user's obligation to determine the conditions of safe use of the product.

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

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

February 3, 1988

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Hershel Moye
Steere Tank Lines, Inc.
P. O. Box 218
Artesia, New Mexico 88210

RE: Request to Dispose of Wash Water from Holding Pond

Dear Mr. Moye:

The Oil Conservation Division (OCD) received your request today to remove fluids from the wash water holding pond located on your premises to the Loco Hills Water Disposal Company pits near Loco Hills.

Based on the field inspection performed in conjunction with the EID on August 28, 1987, and the laboratory analysis of the sample taken from the pond at that time, the OCD has no objection if Loco Hills Water Disposal Company chooses to accept this fluid for disposal in their pits. The OCD assumes from your letter that no more water, chemicals, or wastes of any kind have been added to the pond since the inspection.

If only the outsides of your trucks are washed with AB-88 and Poxylene, and no chlorinated solvents are used, the OCD has no objection to future disposal of wash water at Loco Hills. However, if chlorinated solvents are ever used, or if hazardous materials are transported and the insides of the trucks are washed out into the wash water, the OCD will not allow the disposal of such fluids at the Loco Hills.

If you have any questions, please contact me at 827-5884.

Sincerely,

Jami Bailey
Geologist

JB:sl

cc: Loco Hills Water Disposal Company
OCD - Artesia

STEERE TANK LINES, INC.
P. O. BOX 218, ARTESIA, NEW MEXICO 88210

TERMINALS — Artesia • Albuquerque • Amarillo • Big Spring • Dallas • El Paso • Lubbock
Tucumcari • Odessa • Gallup • Colorado City • Dumas • Las Cruces

1-27-88

To: Oil Conservation Commission Div. Attn. Jami Bailey
From: Steere Tank Lines Inc (Hershel Moye & Bob Davis)
Subject: Material Safty Data Sheet On Products Used To wash Equipment:

Dear Jami Bailey

Sorry that we have been so late geting this information to you Our Old Data Sheets were worn to where we could not copie them so we ask for new ones from our supply.

The AB-88 is a washing powder Dry Form,We use this on all most ever day. Washing our equipment.

The Poxylene & Premix Poxylene is only used when one of our trucks & or trailers get dirty with asphalt off the hiway or get a Road film that can not be washed off with the AB-88.

We Buy this in a 5 Gallon Bucket with the Powder to blend with it and for Use in our washing of the Trucks. And this will Last quite awhile.

I Have inclosed a letter from Mr Lewis With The N.M. Environmental Improvement Division.

We are hoping to use the Disposal at Loco Hills,N.M. To Haul Our washwater to. I spoke to mr.Maloney with the Loco Hills Desposal and he said we would need your permission and a letter stating that we could use his desposal for our wash water.

We are not leting any water into this pit, and So we are not able wash any of our equipment. and as soon as we can empty our pit and get an overhead or Above ground tank set to the approval of Mr Lewis we hope to continue using the loco Hills Desposal.

I would hope to hear from you soon.

Many Thanks For Your consideration
with this problem.

Hershel Moye
Hershel Moye

Bob Davis
Bob Davis

UNICHEM INTERNATIONAL

MATERIAL SAFETY DATA SHEET

Date Prepared 05/22/86

Supersedes Previous Sheet Dated Not Dated

I. PRODUCT IDENTIFICATION

Unichem International 707 N. Leech/P. O. Box 1499/Hobbs, New Mexico 88240

EMERGENCY TELEPHONE NUMBER (505) 393-7751

Trade Name POXYLENE

Chemical Description Proprietary Industrial Cleaner

II. HAZARDOUS INGREDIENTS

Material	TLV (Units)
Proprietary Blend of Surfactants and Emulsifiers	Not Determined
Aromatic Solvent	100 ppm for 8 Hour Work Day (Recommended)
Proprietary Co-Solvent	25 ppm (Skin) ACGIH

Neither this product nor its ingredients are listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic.

III. PHYSICAL DATA

Boiling Point, 760 mm Hg	320°F Initial	Freezing Point	10°F
Specific Gravity (H_2O=1)	0.97 g/ml	Solubility in Water	Dispersible

Appearance and Odor Purple to Brown Clear Liquid; Grape Odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method) 104°F TCC

Extinguishing Media Carbon Dioxide, Dry Chemical, Water Spray or Fog, Foam. Use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures Firefighers should wear self-contained breathing apparatus and full protective clothing.

Unusual Fire and Explosion Hazards None

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

V. HEALTH HAZARD DATA

Threshold Limit Value Not Determined

Effects of Overexposure Inhalation of high vapor concentrations may have results ranging from mild depression to convulsions and loss of consciousness. Concentrations over 100 ppm may cause dizziness, nausea, and headache. Prolonged or repeated skin contact is irritating and will cause dermatitus. Eye contact may cause burning and irritation. Aspiration can be hazard if material is ingested.

Emergency and First Aid Procedures **Eyes:** Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. **Skin:** Flush area with water. Wash with soap and remove contaminated clothing. **Inhalation:** Remove to fresh air. Apply artifical respiration if necessary. **Ingestion:** Call a physician. Do not induce vomiting. Dilute with water or milk.

VI. REACTIVITY DATA

Stability		Conditions to Avoid
	Stable X	None
	Unstable	

Incompatibility (Materials to Avoid) Oxidizers

Hazardous Decomposition of Products Oxides of Carbon and Nitrogen

Hazardous Polymerization		Conditions to Avoid
	May Occur	None
	Will Not Occur X	

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Released or Spilled Provide adequate ventilation. Remove sources of ignition. Contain and absorb spill.

Waste Disposal Method Dispose via a licensed waste disposal company. Follow local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.

Ventilation				
	Local Exhaust	As needed to prevent accumulation of vapors above TLV	Special	None
	Mechanical (General)		Other	None

Protective Gloves Rubber **Eye Protection** Safety Glasses, Goggles, and/or Face Shield

Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.

Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

ChemTech
Chemical Technologies, Inc.

AB-88

SODIUM TRIPOLYPHOSPHATE

NITRENE

5809 Commerce • Odessa, Texas 79762 • (915) 367-9027

Material Safety Data Sheet

Required under USDL Safety and Health Regulations for Shipyard Employment (29 CFR 1915)

U.S. Department of Labor
Occupational Safety and Health Administration

OMB No. 1218-0074
Expiration Date 05/31.86

Section I

Manufacturer's Name: CHEMICAL TECHNOLOGIES, INC.

Emergency Telephone Number: 1-915-367-9027

Address (Number, Street, City, State, and ZIP Code): 5809 Commerce

Odessa, Texas 79762

Chemical Name and Synonyms:

Trade Name and Synonyms: AB-88

Chemical Family: PHOSPHATE

Formula:

Section II - Hazardous Ingredients NONE

Paints, Preservatives, and 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)

Section III - Physical Data

Boiling Point (°F)		Specific Gravity (H_2O=1)	
Vapor Pressure (mm Hg.)		Percent Volatile by Volume (%)	
Vapor Density (AIR=1)		Evaporation Rate (_____ =1)	

Solubility in Water: 100%

Appearance and Odor: POWDER (MILD)

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	Lel	Uel
NONE			

Extinguishing Media

Special Fire Fighting Procedures

Unusual Fire and Explosion Hazards

Section V - Health Hazard Data

Threshold Limit Value

Effects of Overexposure

Emergency First Aid Procedures

NONE

Section VI - Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable YES		

Incompatability (Materials to Avoid)

NONE

Hazardous Decomposition Products

NONE

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur NO		

Section VII - Spill or Leak Procedures

Steps to be Taken in Case Material is Released or Spilled

WASH WITH WATER

Waste Disposal Method

Section VIII - Special Protection Information None

Respiratory Protection (Specify Type)

Ventilation	Local Exhaust	Special
NONE	Mechanical (General)	Other

Protective Gloves NONE	Eye Protection NONE

Other Protective Equipment

Section IX - Special Precautions None

Precautions to be Taken in Handling and Storing

NONE

Other Precautions

ENVIRONMENT

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

105 wph

1465-C

REPORT TO: Greg Lewis
EID Ground Water Section
POB 968
Santa Fe, NM 87504-0968

S.L.D. No. OR- 1465 BB
DATE REC. 9-4-87
PRIORITY
PHONE(S): 827-2890

COLLECTION CITY: Artesia ; COUNTY: EDDY

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) 87 08 28 10 25

LOCATION CODE: (Township-Range-Section-Tracts) 17S+26E+05+4 (10N06E24342)

USER CODE: 591010 SUBMITTER: Co. Lewis CODE:

SAMPLE TYPE: WATER [X], SOIL [ ], FOOD [ ], OTHER:

RECEIVED
OCT 26 1987
GROUND WATER HAZARDOUS WASTE BUREAU

This form accompanies 2 Septum Vials, ____ Glass Jugs, and/or ____
Samples were preserved as follows:

- [ ] NP: No Preservation; Sample stored at room temperature.
- [X] P-Ice Sample stored in an ice bath (Not Frozen).
- [ ] P-$Na_2S_2O_3$ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- [ ] (753) Aliphatic Headspace (1-5 Carbons)
- [X] (754) Aromatic & Halogenated Purgeables
- [X] (765) Mass Spectrometer Purgeables
- [ ] (766) Trihalomethanes

Other Specific Compounds or Classes

- [ ] _____
- [ ] _____
- [ ] _____
- [ ] _____
- [ ] _____

EXTRACTABLE SCREENS

- [ ] (751) Aliphatic Hydrocarbons
- [ ] (755) Base/Neutral Extractables
- [ ] (758) Herbicides, Chlorophenoxy acid
- [ ] (759) Herbicides, Triazines
- [ ] (760) Organochlorine Pesticides
- [ ] (761) Organophosphate Pesticides
- [ ] (767) Polychlorinated Biphenyls (PCB's)
- [ ] (764) Polynuclear Aromatic Hydrocarbons
- [ ] (762) SDWA Pesticides & Herbicides

Remarks: Pond containing water & oil from hydrocarbon trucking firm

FIELD DATA:

pH=____; Conductivity=____umho/cm at ____°C; Chlorine Residual=____mg/l

Dissolved Oxygen=____mg/l; Alkalinity=____mg/l; Flow Rate____ ____/____

Depth to water ____ft.; Depth of well____ft.; Perforation Interval ____-____ft.; Casing:____

Sampling Location, Methods and Remarks (i.e. odors, etc.)
Steese Tank lines holding pond

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities.(signature collector): Greg Lewis Method of Shipment to the Lab:____

CHAIN OF CUSTODY

I certify that this sample was transferred from ____ to ____

at (location) ____ on ____/____/____ - ____:____ and that the statements in this block are correct. Evidentiary Seals: Not Sealed [ ] OR Seals Intact: Yes [ ] No [ ]

Signatures ____ ____

ANALYSES PERFOR[illegible]D

LAB. N[illegible]OR- 1165

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
- ☐ (754) Aromatic & Halogenated Purgeables
- ☒ (765) Mass Spectrometer Purgeables
- ☐ (766) Trihalomethanes

Other Specific Compounds or Classes

- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
- ☐ (755) Base/Neutral Extractables
- ☐ (758) Herbicides, Chlorophenoxy acid
- ☐ (759) Herbicides, Triazines
- ☐ (760) Organochlorine Pesticides
- ☐ (761) Organophosphate Pesticides
- ☐ (767) Polychlorinated Biphenyls (PCB's)
- ☐ (764) Polynuclear Aromatic Hydrocarbons
- ☐ (762) SDWA Pesticides & Herbicides

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
2-propanone	TR		
* DETECTION LIMIT *	10ppb	+ DETECTION LIMIT +	

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: Significant quantities of six aliphatic compounds were detected. Tetra-methybenzene, trimethyl-benzene, and ethylmethylbenzene compounds were also detected.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☒ Intact: Yes ☐ No ☐. Seal(s) broken by: _____ date: _____

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 9-15-87. Analyst's signature: [signature]

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: R Meyerhen

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

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

ENVIRONMENTAL IMPROVEMENT DIVISION

Michael J. Burkhart
Director

Received 1-13-87 HM

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

January 11, 1988

Hershel Moye
Terminal Manager
Steere Tank Lines, Inc.
P.O. Box 218
Artesia, NM 88210

Dear Mr. Moye:

Enclosed please find the results of organic sampling that I performed at the Steere facility on August 28, 1987. These samples were obtained from your washwater holding lagoon. While none of the regulated constituents analyzed for was found at a significant concentration at that time, the presence of several aromatic organic compounds at trace levels in addition to significant quantities of several alphatic compounds suggests that a potential for ground-water contamination exists at the lagoon site. Accordingly, the Environmental Improvement Division is notifying you that a discharge plan is required for your facility.

In order to obtain an approved discharge plan, Steere must commit to take measures to eliminate the potential for seepage from Steere's holding lagoon. This would involve lining the lagoon with an appropriate material, or eliminating the lagoon entirely. Further, EID does not consider Steere's practice of disposing of some lagoon fluids by spreading them over the facility grounds as described to me by you during my August 28, 1987, site visit to be an appropriate disposal procedure. Steere must commit to disposal of all fluids at an approved location.

In addition to obtaining an approved discharge plan for all future discharges, Steere must evaluate what impacts to ground-water quality have been incurred by past disposal practices. Steere's location in Artesia directly overlying a highly transmissive sole-source aquifer, the Ogallala, makes this evaluation extremely important. Steere should be working towards completion of a proposal to investigate the hydrogeologic regime at the site including appropriate soil and ground-water sampling. Steere may wish to enlist the assistance of a consultant experienced in ground-water quality investigations to assist with this aspect of the discharge plan process.

I would be happy to discuss any aspect of the discharge plan process with you at any time, please feel free to contact me at 827-2890. I look forward to working with you towards approval of your discharge plan.

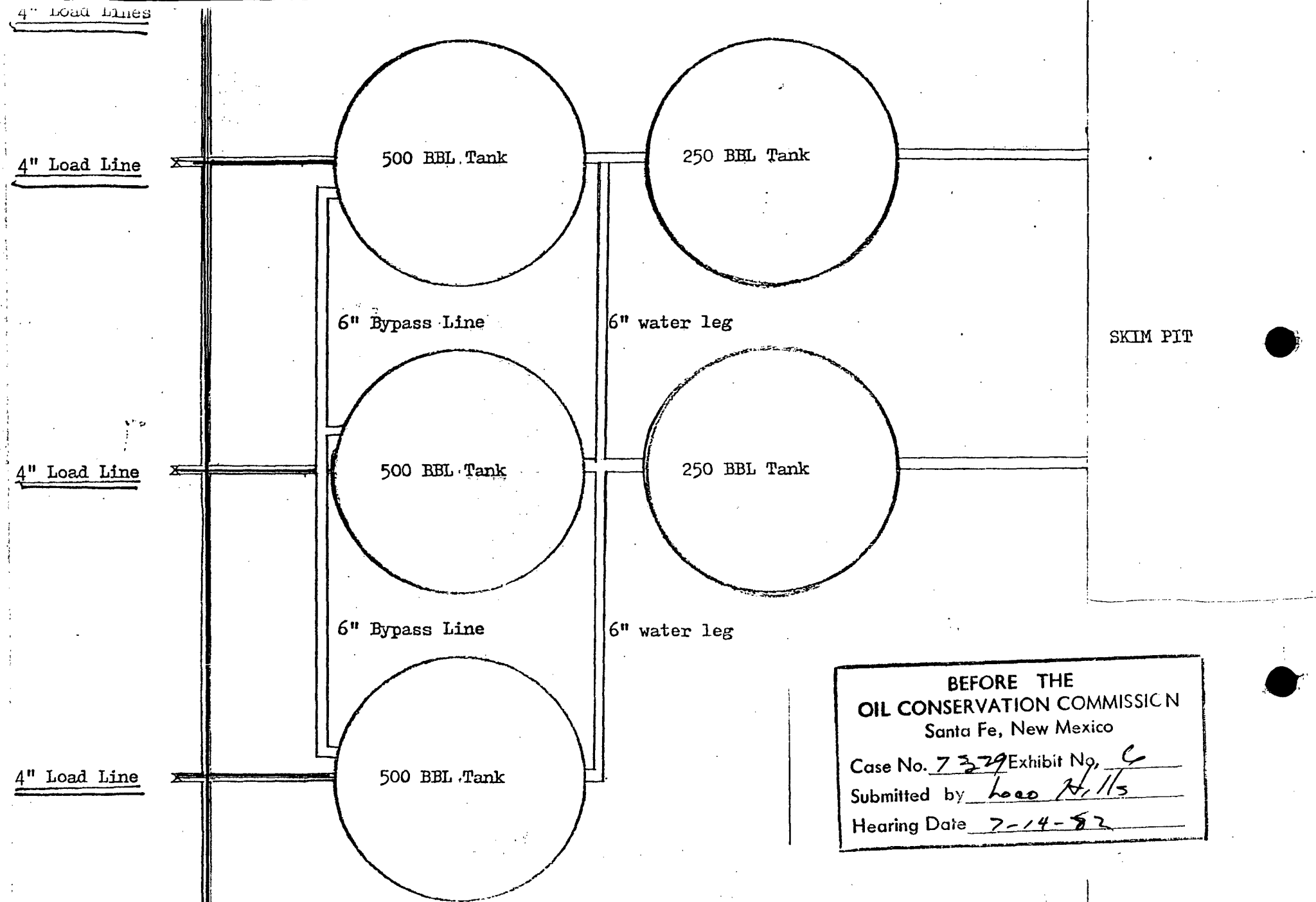
Sincerely,

Greg Lewis
Water Resource Specialist
Ground Water Section

GL:egr

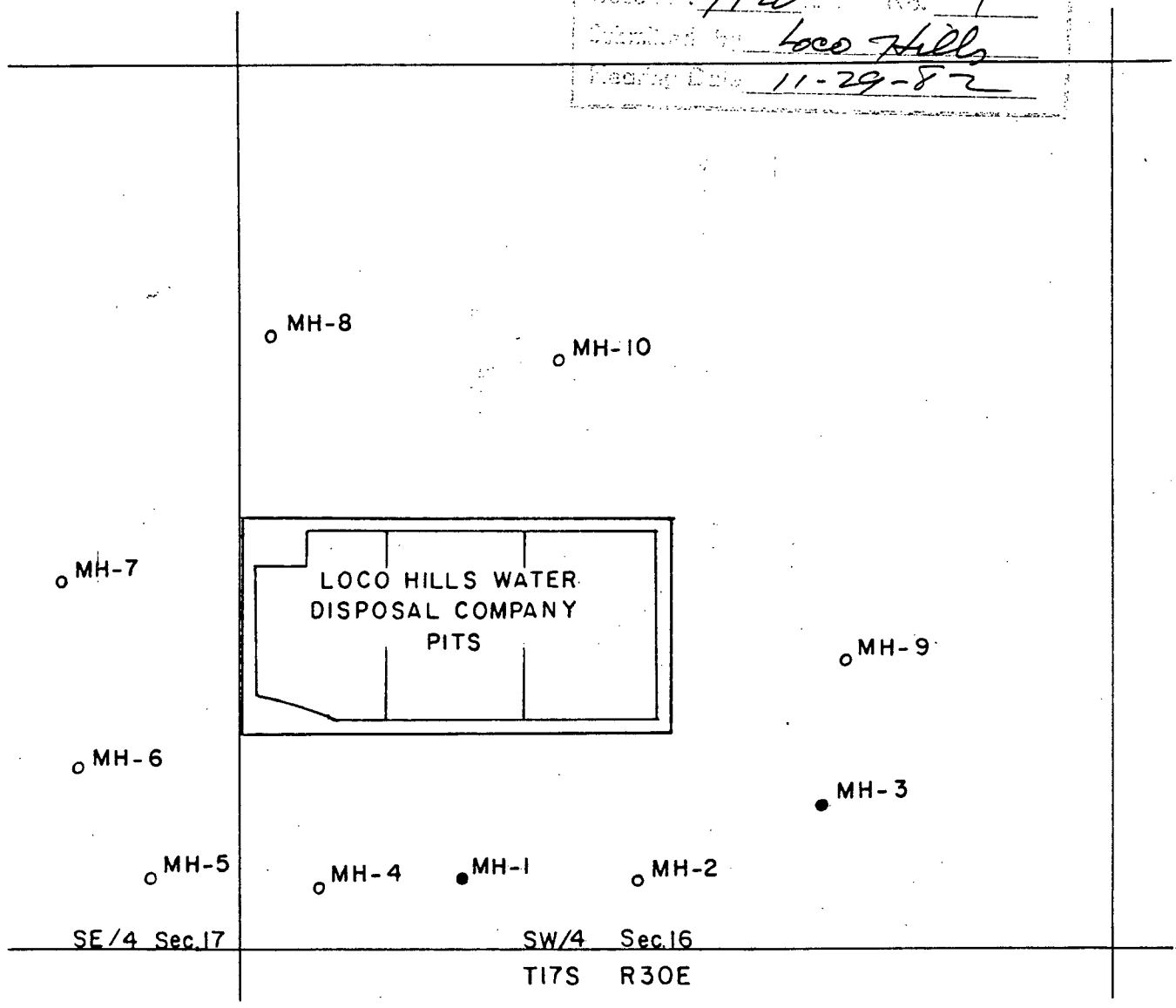
Enclosure

cc: Tom Burt, EID Field Office, Carlsbad
Gary McCaslin, EID District IV Manager, Roswell



PROPOSED WATER DISPOSAL PLANT

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 7329 Exhibit No. 6
Submitted by Loco Hills
Hearing Date 7-14-82



EDDY COUNTY, NEW MEXICO
MONITOR HOLE LOCATIONS
LOCO HILLS WATER DISPOSAL CO.
9/17/82

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGIST
MIDLAND & CORPUS CHRISTI, TEXAS

SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co.
LOCATION 680' FWL 210'FSL SW/4 Sec.16 T17SR30E, Eddy Co. N.M.
DATE 9/7/82
WELL NUMBER MH-1 (Rustler Depth)
ELEVATION 3661'

S.W.L. Dry 9/9/82 after jetting
CASING 4" PVC, 272.3'
PERFORATIONS 10'-270' 6-3/4"/1.5', 1/8 wide
DRILLER L. Scarborough

6-3/4' bit, drilling with water (60-90 cl- ppm, field test)
Location 7' NW of stake.

INTERVAL	DESCRIPTION	POROSITY
0-10	50% quartz sand, multicolored, coarse grain, rounded to subrounded, 50% sandstone caliche, white calcareous.	Good
10-20	60% Argillaceous sand, quartz sand, rounded to sub-rounded coarse grained, reddish brown.	Poor
20-30	As above, finer grains.	Poor
30-40	Argillaceous sand, F-M grained, sub-rounded, reddish brown.	Poor
40-50	As above; sub-rounded, sub-angular; trace sandstone.	Poor
50-60	As above; frosted grains.	Poor
60-70	Sandy clay; fine grained, rounded to sub-rounded, reddish brown. Some clay.	Poor
70-80	Sandy clay and clay; reddish brown, fine grained sub-rounded, sub-angular. Quartz grains are multicolored.	Poor
80-89	Sandy clay; reddish brown, quartz fine grained.	Poor
89	Driller reports gravel	
89-100	Gravel, sandy Bentonitic clay, 80% cryptocrystalline multicolored coarse gravel, 20% sandy clay and sand.	Fair
100-110	Sandy clay; coarse to fine grained quartz, multicolored grains. Some minor interbedded gravel and calareous sandstone.	Poor-Fair
111	Driller reports base of gravel.	
110-120	Sandy clay; reddish brown.	Poor
120-130	Sandy clay and clay; reddish brown, fine grained.	Poor
130-140	Slightly sandy, silty clay; reddish brown and more compact than above.	Poor
140-150	Slightly sandy clay; reddish brown, fine to medium grained quartz, multicolored grains, sub-angular.	Poor
150-160	As above, more compact.	Poor
160-170	Slightly silty to sandy clay; reddish brown, not as compact as 150-160.	Poor
170-180	Clay, sand and gravels; reddish brown; coarse to medium grained multicolored quartz sand angular gravel, some sandstone with a calcareous matrix.	Poor-Fair
180-190	As above with more clay.	Poor
190-200	Sandy to silty clay; reddish brown, medium to very fine grained, compact.	Poor
200-207	As above.	Poor
207-212	Sandy clay and sandstone with calcareous matrix and sand; reddish brown to white.	Poor
212-220	Sandy clay; reddish brown, coarse to medium grained, angular to sub-angular, multicolored quartz grains.	Poor
220-230	Same as above.	Poor
	CONTINUED ON NEXT PAGE	

SAMPLE DESCRIPTION
MH-1 Rustler, Page 2

CLIENT Loco Hills Water Disposal Co. S.W.L. _____

LOCATION _____ CASING _____

DATE 9/7/82 PERFORATIONS _____

WELL NUMBER MH-1 (Rustler) DRILLER _____

ELEVATION _____

INTERVAL	DESCRIPTION	POROSITY
230-240	Clay, sandy clay, sand, gravel; reddish brown clay and sandy clay, gravels are angular and multicolored.	Poor
240-250	Sandy clay; reddish brown minor amounts of coarse grained multicolored quartz sand at 248'.	Poor-Fair
250	Driller reports "Stickey clay"	
250-260	As above.	Poor
260-270	As above.	Poor
	Top Rustler 270', gravel and anhydrite "powder"	
	Total Depth 272'	
	Cemented surface to 3.0'	
	Total jetting time 40 minutes. Drilling fluid and mud produced for 3-1/2 minutes. Last 36-1/2 minutes nothing produced.	

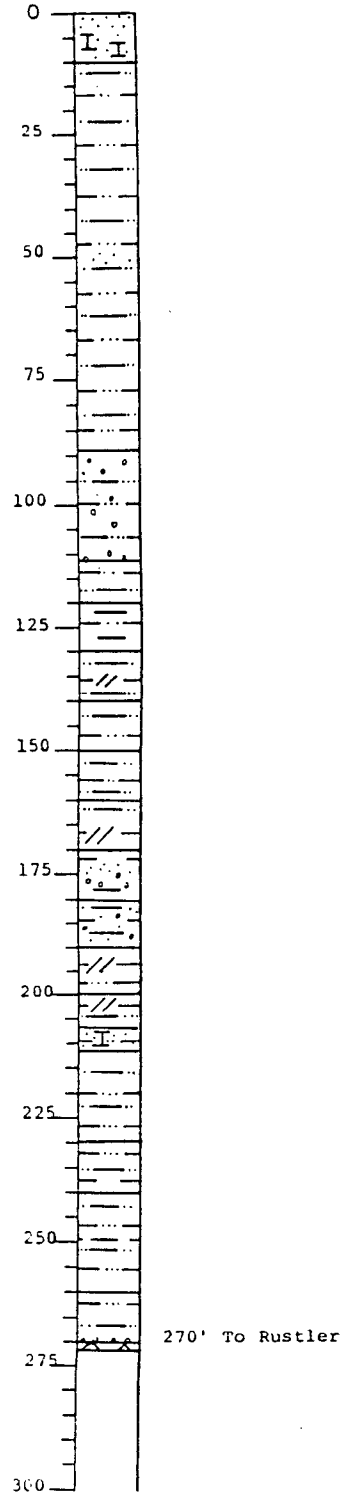
WELL NUMBER MH-1

TOTAL DEPTH 272'

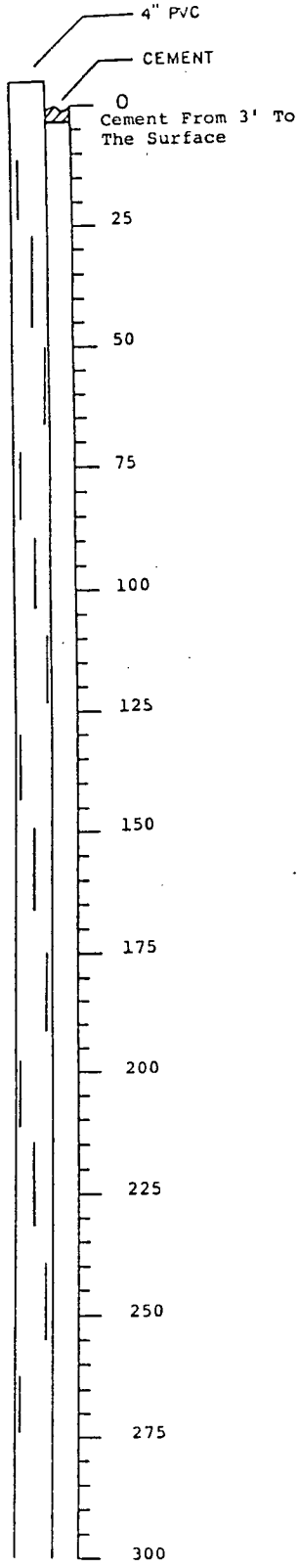
CLIENT Loco Hills

DATE 9/9/82

LITHOLOGIC LOG



COMPLETION LOG



KEY

PERFORATIONS

CEMENT

SAND

CLAY

SANDY CLAY OR CLAYEY SAND

SILTY SAND

CALCAREOUS SAND

GRAVEL

ANHYDRITE

SILT

SILTY CLAY

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co.
LOCATION 1,200'FWL 200'FSL SW/4 Sec.16 ~~T-17S, R30E, Eddy Co., N.M.~~
DATE 9/8/82
WELL NUMBER MH-2
ELEVATION ±3,663'

S.W.L. Dry
CASING 4" PVC, 62.1'
PERFORATIONS 4' to TD, 6-3/4"/1.5', 1/8" wide
DRILLER L. Scarborough

6-3/4" bit drilled with air. Location 45' WNW of stake

INTERVAL	DESCRIPTION	POROSITY
0-10	Sand and sandstone with calcareous (caliche) matrix; quartz grains medium to fine, sub-angular, pink to white.	Fair-Good
10-20	Sand, silt, silty clay; reddish brown, quartz fine grained sub-angular to sub-rounded.	Poor
20-30	Sand and sandstone or silt; reddish brown, quartz grains medium to fine, sub-angular to sub-rounded, frosted, some clay matrix.	Poor
30-40	80% sand fine grained and silt; reddish brown, loose, rounded to sub-rounded.	Poor
40-50	Sand; minor clay; reddish brown, sub-angular to sub-rounded, medium to fine grained, clay matrix.	Poor
50-60	Clayey sand; reddish brown, sub-rounded, frosted. More compact than above, slightly bentonitic.	Poor
	Total Depth 60'	
	Cemented from surface to 4'.	

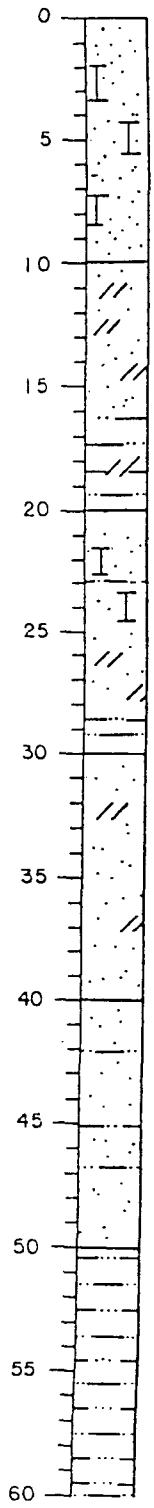
WELL NUMBER MH-2

TOTAL DEPTH 60'

CLIENT Loco Hills

DATE 9/8/82

LITHOLOGIC LOG



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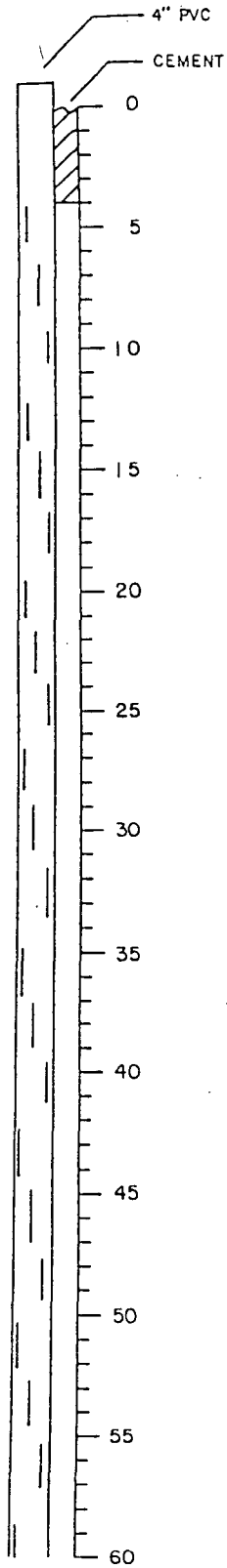


KEY

PERFORATIONS

CEMENT

SAND

CLAY

SANDY CLAY OR CLAYEY SAND

SILTY SAND

CALCAREOUS SAND

GRAVEL

ANHYDRITE

SILT

SILTY CLAY

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co.
LOCATION 870'FEL, 430'FSL, T17S, R30E ~~SW/4 Sec. 16, Eddy Co. N.M.~~
DATE 9/8/82
WELL NUMBER MH-3, Rustler Depth
ELEVATION 3,664'

S.W.L. ~~Dry, 9/9/82 after jetting~~
CASING 4" PVC 243.4'
PERFORATIONS 4' to TD 6-3/4"/1.6',1/8"wide
DRILLER L. Scarborough

~6-3/4" bit, drilled with water, Location 10' N of stake,

INTERVAL	DESCRIPTION	POROSITY
0-10	Quartz sand stone in calcareous matrix and sand; pink to red, angular to rounded, fine to medium grained, frosted.	Good-Fair
10-20	Clayey sand (Argillaceous sand) fine to medium grained, sub-rounded multicolored quartz grains. Reddish brown clay.	Poor
20-30	Silty clay; rounded to sub-rounded fine quartz grains, reddish brown.	Poor
30-40	As above; sub-angular.	Poor
40-50	As above; sub-angular, bentonitic clay.	Poor
50-60	As above.	Poor
60-70	Sandy to silty clay; reddish brown, medium to fine grains sub-angular, frosted, bentonitic clay.	Poor
70-80	As above.	Poor
80-90	As above, slightly more silty.	Poor
90-100	Sandy clay, clay and gravel; reddish brown sub-angular gravels, red to dark brown gravels about 1/4". Gravel at 99'.	Poor
100-110	Clayey sand; fine to medium grained, sub-angular to angular, multicolored quartz grains. Reddish brown.	Poor
110-120	Sandy clay; reddish brown bentonitic clays poorly sorted angular quartz grains. Reddish to pink to white grains.	Poor
120-150	As 100-110, some clay between 140-150.	Poor
150-160	As 100-110.	Poor
160-180	Sandy clay; reddish brown, compact bentonitic.	Poor
180-190	Silty to sandy clay; reddish brown; some coarse quartz grains, angular to sub-rounded, poorly sorted.	Poor
190-200	As above.	Poor
200-210	As above.	Poor
210-220	As above.	Poor
220-230	As above.	Poor
230-240	Silty clay, clay and anhydrite. Anhydrite at 239'. 239-244' anhydrite; white powder, alkaline taste.	Poor
	Total Depth 244'	
	Total jetting time 40 minutes. Drilling fluid and mud produced for 10 minutes. Last 30 minutes nothing produced.	
	Cemented from surface to 4'.	

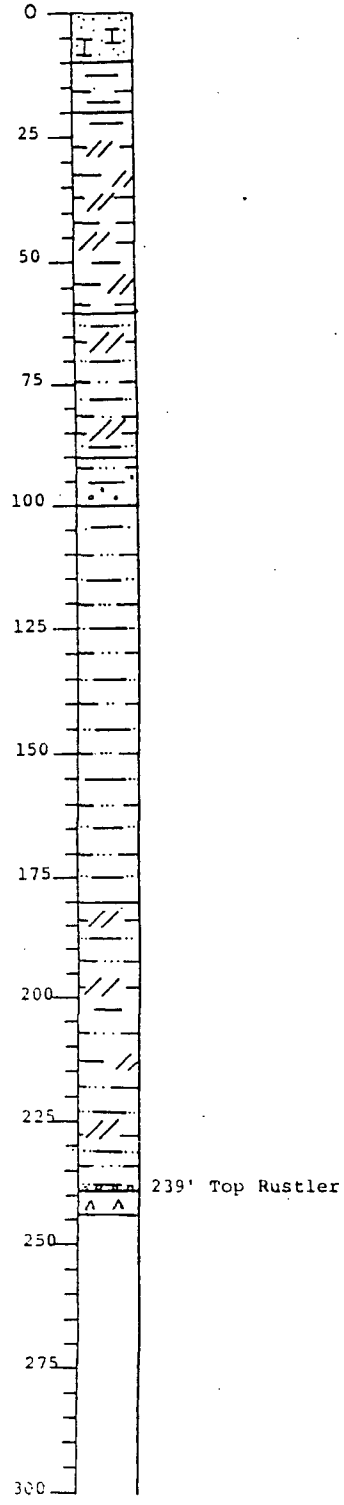
WELL NUMBER MH-3

TOTAL DEPTH 244'

CLIENT Loco Hills

DATE 9/8/82

LITHOLOGIC LOG



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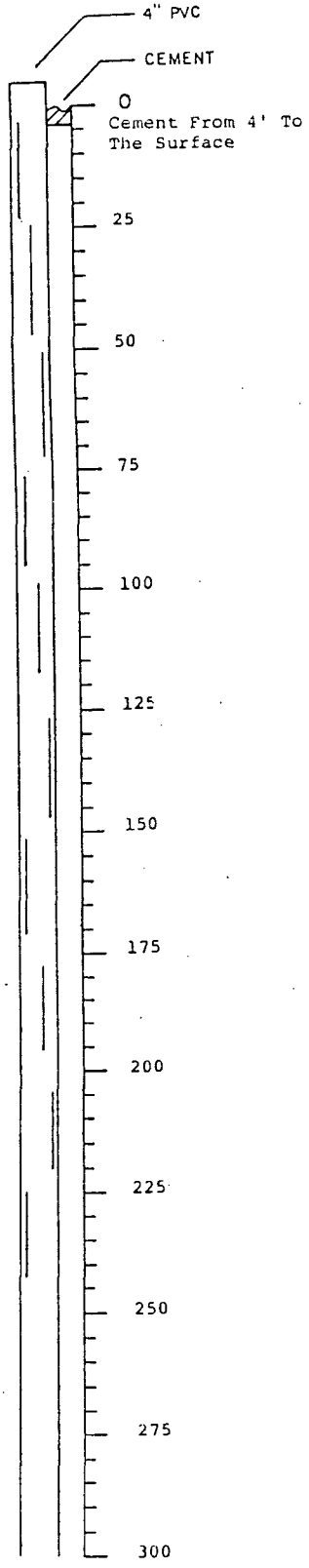

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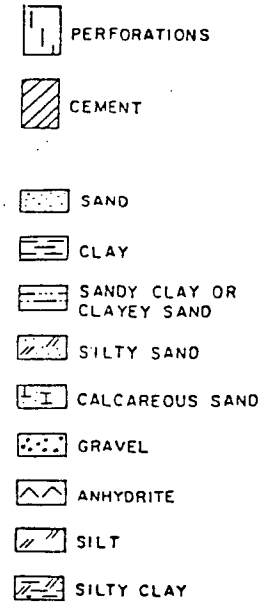


ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co.
LOCATION 236'FWL, 180'FSL SW/4 Sec.16 T17S, R30E., Eddy Co., N.M.
DATE ~~9/9/82~~
WELL NUMBER MH-4 shallow
ELEVATION ± 3,657'

S.W.L. Dry
CASING 4" PVC 61.5'
PERFORATIONS 4' to TD 6-3/4"/1.5', 1/8" wide
DRILLER L. Scarborough

6-3/4" bit, drilled with air, location is 31' east of stake.

INTERVAL	DESCRIPTION	POROSITY
0-10	Caliche, sandstone with calcareous matrix, silt and sand. white to reddish brown, rounded to sub-rounded quartz grains.	Poor
10-20	Sandy to silty clay to clayey sand; reddish brown, fine to medium grains, sub-rounded, indurated, almost a shale.	Poor-Fair
20-26	Same as above.	Fair
26-30	Silty sand; reddish brown to pink. Fine to medium quartz grains in sand, some caliche.	
30-40	Silty sand; reddish brown, fine grained sub-rounded to sub-angular, frosted, well sorted.	Fair
40-50	As above, more silt and some caliche gravel.	Fair
50-60	Silty clay and sand; reddish brown to maroon, fine to medium grained multicolored quartz, frosted sub-rounded to rounded.	Poor
	Total Depth 60'	
	Cemented from surface to 4'.	

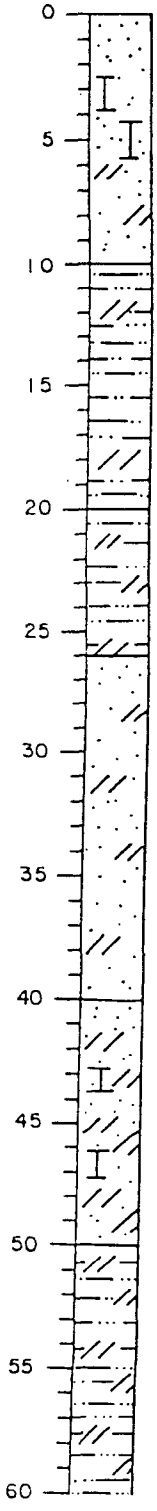
WELL NUMBER MH-4

TOTAL DEPTH 60'

CLIENT Loco Hills

DATE 9/9/82

LITHOLOGIC LOG



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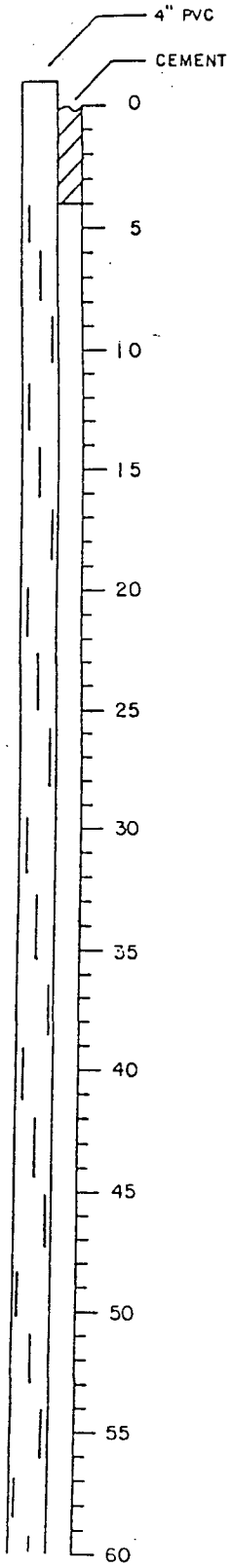


KEY

PERFORATIONS

CEMENT

SAND

CLAY

SANDY CLAY OR CLAYEY SAND

SILTY SAND

CALCAREOUS SAND

GRAVEL

ANHYDRITE

SILT

SILTY CLAY

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co. S.W.L. Dry

LOCATION 260'FEL, 210'FSL, SE/4 Sec.17 T17S, R30E, Eddy Co. N.M. CASING 4" PVC 61.5'

DATE 9/9/82 PERFORATIONS 4' to TD, 6-3/4"/1.5, 1/8" wide

WELL NUMBER MH-5 DRILLER L. Scarborough

ELEVATION ±3,648'

6-3/4" bit, drilled with air, location 17' west of stake.

INTERVAL	DESCRIPTION	POROSITY
0-10	Caliche, sandstone with calcareous matrix; white to pink.	Fair
10-20	Clayey sand; reddish brown, fine quartz grains, sub-rounded.	Poor
20-40	Clayey sand; reddish brown, fine grained rounded to sub-rounded, to sub-angular, frosted.	Poor
40-50	Silty sand; sub-angular to sub-rounded, medium sorting, reddish brown to pink.	Good-Fair
50-60	Silty clay and silty sand; red to brownish red, very fine to fine grained quartz.	Good-Fair
	Total Depth 60'	
	Cemented from surface to 4'.	

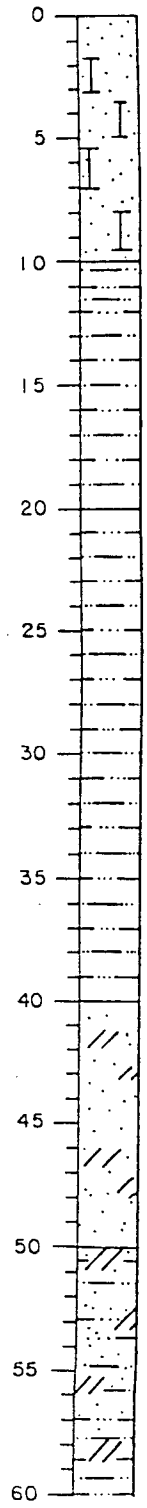
WELL NUMBER MH-5

TOTAL DEPTH 60'

CLIENT Loco Hills

DATE 9/9/82

LITHOLOGIC LOG



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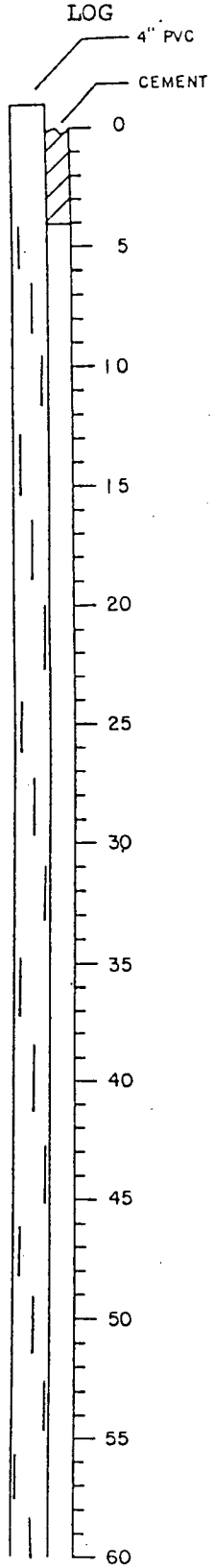


KEY

- PERFORATIONS
- CEMENT
- SAND
- CLAY
- SANDY CLAY OR CLAYEY SAND
- SILTY SAND
- CALCAREOUS SAND
- GRAVEL
- ANHYDRITE
- SILT
- SILTY CLAY

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co.
LOCATION 470'FEL, 540'FSL, SE/4 Sec.17 T17S, R30E, Eddy Co. N.M.
DATE 9/9/82
WELL NUMBER MH-6
ELEVATION ± 3,657'
6-3/4" bit, drilled with air.
Location 7' west from stake.

S.W.L. Dry
CASING 4" PVC 61.5"
PERFORATIONS 4' to TD, 6-3/4"/1.5', 1/8" wide
DRILLER L. Scarborough

INTERVAL	DESCRIPTION	POROSITY
0-10	Caliche, sandstone with caliche matrix. Some silt and sand. Pink to white.	Fair
10-20	Clayey sand and silt; reddish brown sub-rounded fine quartz grains.	Poor
20-30	Silty sand, clayey sand; reddish brown; fine grained quartz; sub-rounded, frosted.	Poor-Fair
30-40	Clayey sand to sandy silty clay; reddish brown. Darker than 20-30. Sub-Angular frosted quartz.	Poor
40-50	Silty sand; pinkish to reddish brown, sub-rounded, fine grained quartz.	Fair
50-60	As above, slightly finer grained, more silt, slightly darker.	Fair
	Total Depth 60'	
	Cemented from surface to 4'.	

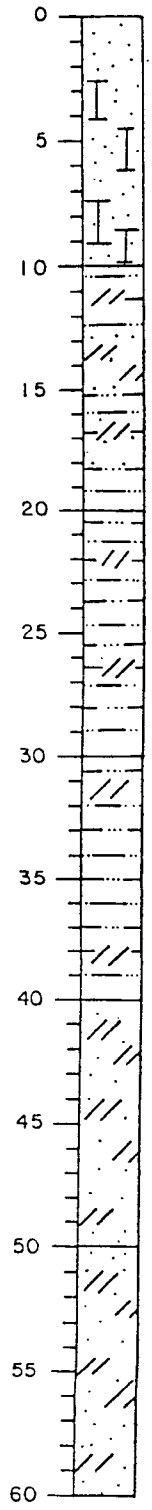
WELL NUMBER MH-6

TOTAL DEPTH 60'

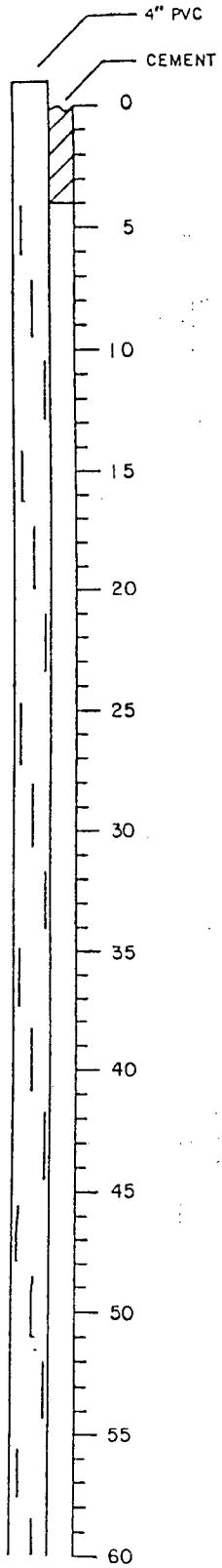
CLIENT Loco Hills

DATE 9/9/82

LITHOLOGIC LOG



COMPLETION LOG



KEY

PERFORATIONS

CEMENT

SAND

CLAY

SANDY CLAY OR CLAYEY SAND

SILTY SAND

CALCAREOUS SAND

GRAVEL

ANHYDRITE

SILT

SILTY CLAY

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal
LOCATION 531'FEL, 1090'FSL, SE/4 Sec.17 T17S, R30E, Eddy Co. N.M.
DATE 9/9/82
WELL NUMBER MH-7
ELEVATION 3,664'

S.W.L. Dry
CASING 4" PVC 61.3'
PERFORATIONS 4' to TD 6-3/4"/1.5',1/8" wide
DRILLER L. Scarborough

6-3/4" bit, drilled with air, 4' S.E. from the stake.

INTERVAL	DESCRIPTION	POROSITY
0-10	Caliche and sandstone with calcareous matrix, white to pink.	Fair
10-20	Quartz sand; pink to reddish brown, sub-angular grains fine grained, minor sandstone.	Fair
20-30	Quartz sand; fine grained, sub-angular, multicolored, well sorted. Tan to pink, frosted.	Good
30-40	Silty to sandy clay; reddish brown, minor caliche.	Fair-Poor
40-50	Silty to sandy clay, brown to reddish brown.	Poor
50-60	Quartz sand, gravels and sandstone. Fine to medium grains in sand, sub-rounded to angular multicolored quartzite gravel up to 3/8". Some caliche.	Good
	Total Depth 60'	
	Cemented from surface to 4'.	

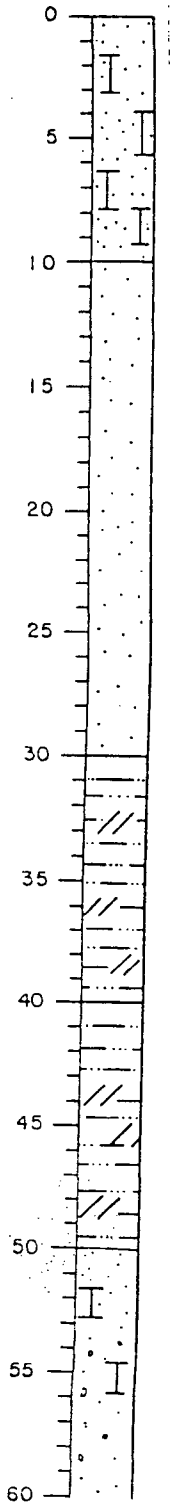
WELL NUMBER MH-7

TOTAL DEPTH 60'

CLIENT Loco Hills

DATE 9/9/82

LITHOLOGIC LOG



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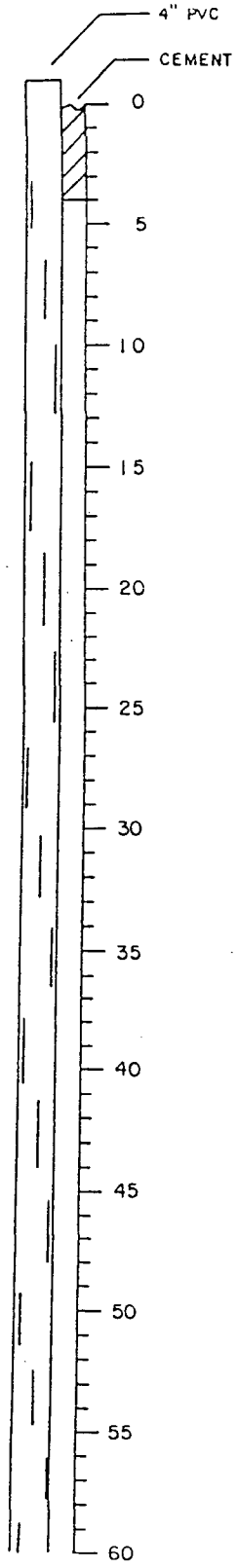


KEY

PERFORATIONS

CEMENT

SAND

CLAY

SANDY CLAY OR CLAYEY SAND

SILTY SAND

CALCAREOUS SAND

GRAVEL

ANHYDRITE

SILT

SILTY CLAY

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

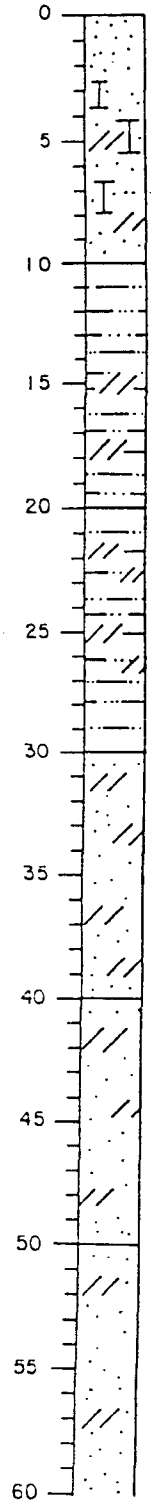
WELL NUMBER MH-8

TOTAL DEPTH 60'

CLIENT Loco Hills

DATE 9/9/82

LITHOLOGIC LOG



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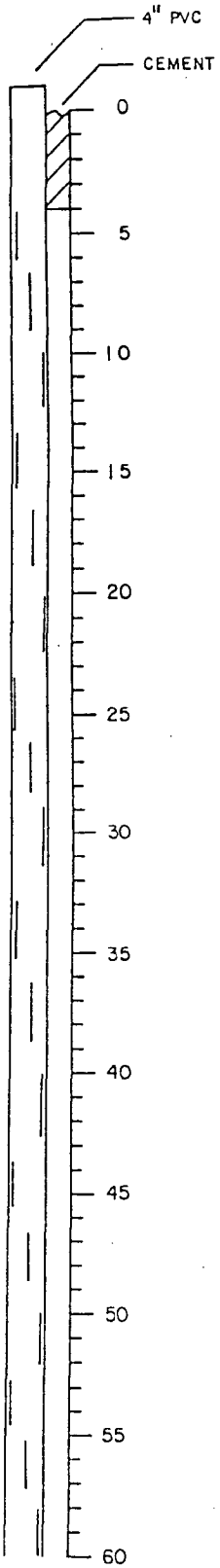


KEY

PERFORATIONS

CEMENT

SAND

CLAY

SANDY CLAY OR CLAYEY SAND

SILTY SAND

CALCAREOUS SAND

GRAVEL

ANHYDRITE

SILT

SILTY CLAY

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co.
LOCATION 800'FNL, 100'FWL, SW4, Sec. 16 T17S, R30E. Eddy Co. N.M.
DATE 9/9/82
WELL NUMBER MH-8
ELEVATION ±3,672'

S.W.L. Dry
CASING 4" PVC, 61.7'
PERFORATIONS 4' to TD, 6-3/4"/1.5', 1/8" wide
DRILLER L. Scarborough

6-3/4" bit, drilled with air, 43' ENE of stake.

INTERVAL	DESCRIPTION	POROSITY
0-10	Caliche, silt, sand, and sandstone with calcareous matrix, white to pink.	Fair
10-20	Clayey to silty sand. Pink to reddish brown fine grained sub-angular quartz.	Fair
20-30	Silty to sandy clay; reddish brown, some minor caliche.	Poor
30-40	Silty quartz sand; reddish brown. Very fine, sub-angular sub-rounded, frosted, well sorted.	Good
40-50	As above, medium sorting.	Good
50-60	As 30-40	
	Total Depth 60'	
	Cemented from surface to 4'.	

SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co. S.W.L. Dry

LOCATION 850'FSL, 810 FEL SW/4, Sec. 16 T17S, R30E, Eddy Co. N.M. CASING 4" PVC, 61.9'

DATE 9/10/82 PERFORATIONS 4' to TD, 6-3/4"/1.5',1/8" wide

WELL NUMBER MH-9 DRILLER L. Scarborough

ELEVATION ±3,668

± 6-3/4" bit, drilled with air, location 65' WSW from stake.

INTERVAL	DESCRIPTION	POROSITY
0-10	Caliche, sand and sandstone with calcareous matrix, pink.	Fair
10-20	Sandy silt; reddish brown; minor sandy clay and caliche.	Fair
20-30	Clay; brown to slightly maroon.	Poor
30-40	Silty clay; reddish brown.	Poor
40-50	Silty sand; brownish red, very fine grained, sub-rounded	Good
	to sub-angular, frosted .	
50-60	Silty clay; reddish brown.	Poor
	Total Depth 60'	
	Cemented from surface to 4'.	

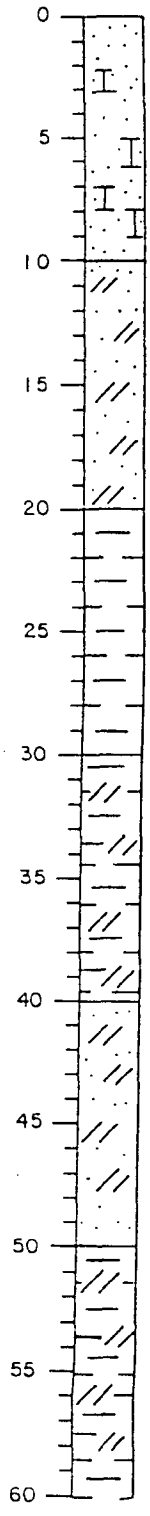
WELL NUMBER MH-9

TOTAL DEPTH 60'

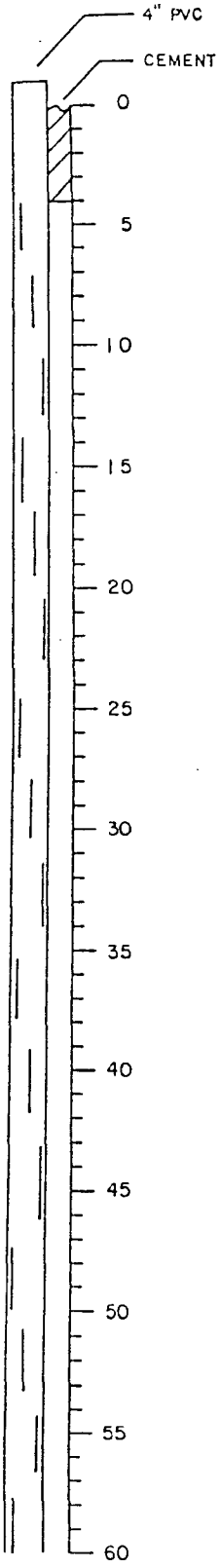
CLIENT Loco Hills

DATE 9/10/82

LITHOLOGIC LOG



COMPLETION LOG



KEY

PERFORATIONS

CEMENT

SAND

CLAY

SANDY CLAY OR CLAYEY SAND

SILTY SAND

CALCAREOUS SAND

GRAVEL

ANHYDRITE

SILT

SILTY CLAY

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co. S.W.L. Dry

LOCATION 870'FNL, 960'FWL, SW/4, Sec.16 ~~T17S, R30E, Eddy Co. N.M.~~ CASING 4" PVC, 61.5'

DATE 9/10/82 PERFORATIONS 4' to TD, 6-3/4"/1.5',1/8" wide

WELL NUMBER MH-10 DRILLER L. Scarborough

ELEVATION ±3,669 (Note: Elevation is @ 5' less than stake 3669-5=3664)

6-3/4" bit drilled with air, location approximately 114' south west of stake.

INTERVAL	DESCRIPTION	POROSITY
0-10	Sand and caliche; pink, sub-rounded to sub-angular grains; fine grained pink quartz. Minor sandstone with calcareous matrix.	Good
10-20	Sand, silt and clayey silt and sand; reddish brown.	Fair
20-30	Clayey silt and sand; reddish brown very fine grained.	Poor
30-40	Silty sand; brownish red, sub-rounded to angular, frosted, very fine grained, well sorted.	Good
40-50	Silty sand; brownish red, sub-rounded to sub-angular, very fine to fine grained. Not as well sorted as 30-40.	Good
50-56	Silty sand; brownish, red orange. Fine grained well sorted, sub-angular to sub-rounded.	Fair
56-59	Silty to sandy clay; reddish brown.	Poor
59-60	As 50-56	Fair
	Total Depth 60'	
	Cemented from surface to 4'.	

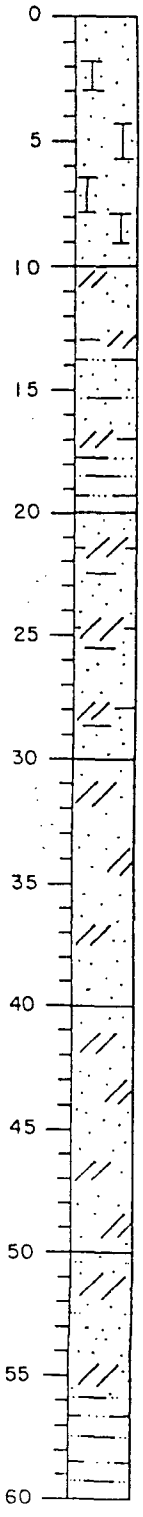
LL NUMBER MH-10

TOTAL DEPTH 60'

CLIENT Loco Hills

DATE 9/10/82

LITHOLOGIC LOG



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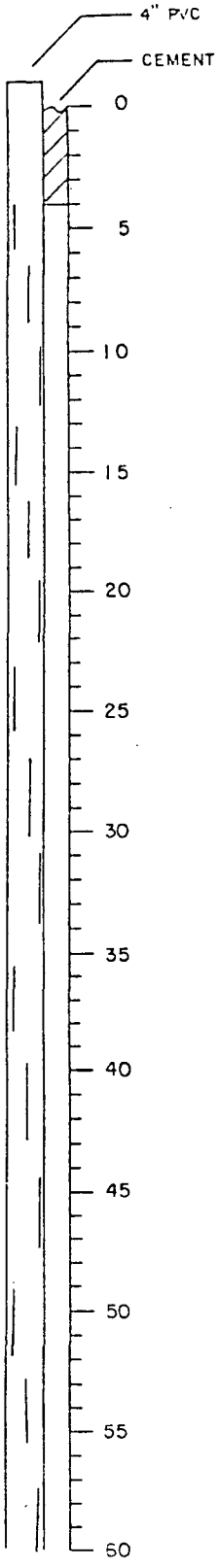


KEY

- PERFORATIONS
- CEMENT
- SAND
- CLAY
- SANDY CLAY OR CLAYEY SAND
- SILTY SAND
- CALCAREOUS SAND
- GRAVEL
- ANHYDRITE
- SILT
- SILTY CLAY

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

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
(505) 827-5800

April 16, 1985

Les Clements
District Supervisor
Oil Conservation Division
P. O. Drawer DD
Artesia, New Mexico 88210

Re: Case No. 7329
Order No. R-6811-A

Dear Les:

Attached is a map and a plat of the Loco Hills Water Disposal System showing the recent pit added on the South side of the installation.

As the total pit area is confined within the southwest quarter of the section and does not exceed 15 acres, this change falls within the authority for disposal granted under Order No. R-6811-A as amended.

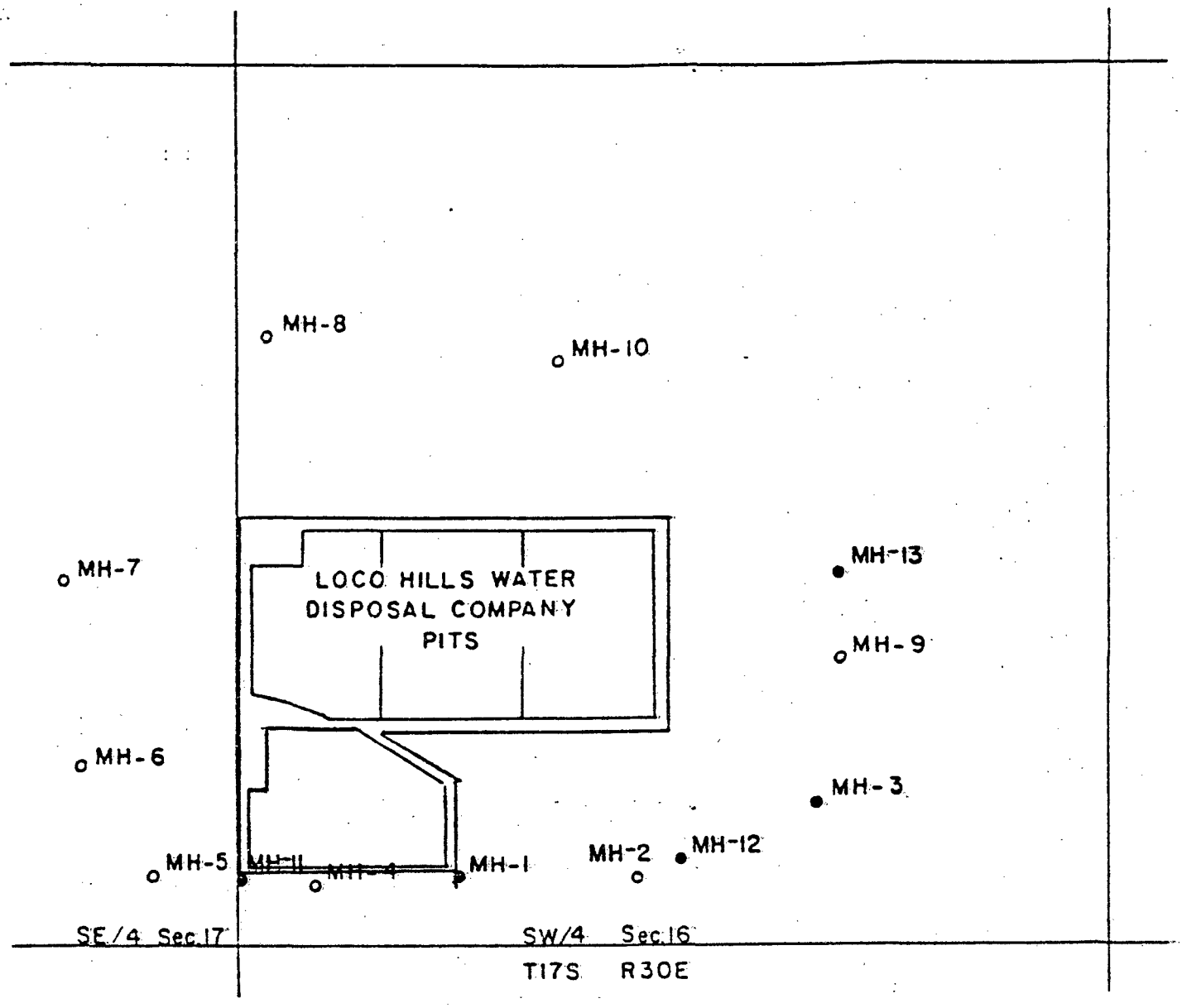
Because of the proximity of the new pit to some of the monitor wells, I would like our field people to witness the testing of these holes twice a year. If any water shows up in these wells or if the layout differs from the plat attached to this letter, please let me know immediately.

Sincerely,

R. L. STAMETS
Director

RLS/fd
enc.

cc: Jim Jennings - Roswell
Case File



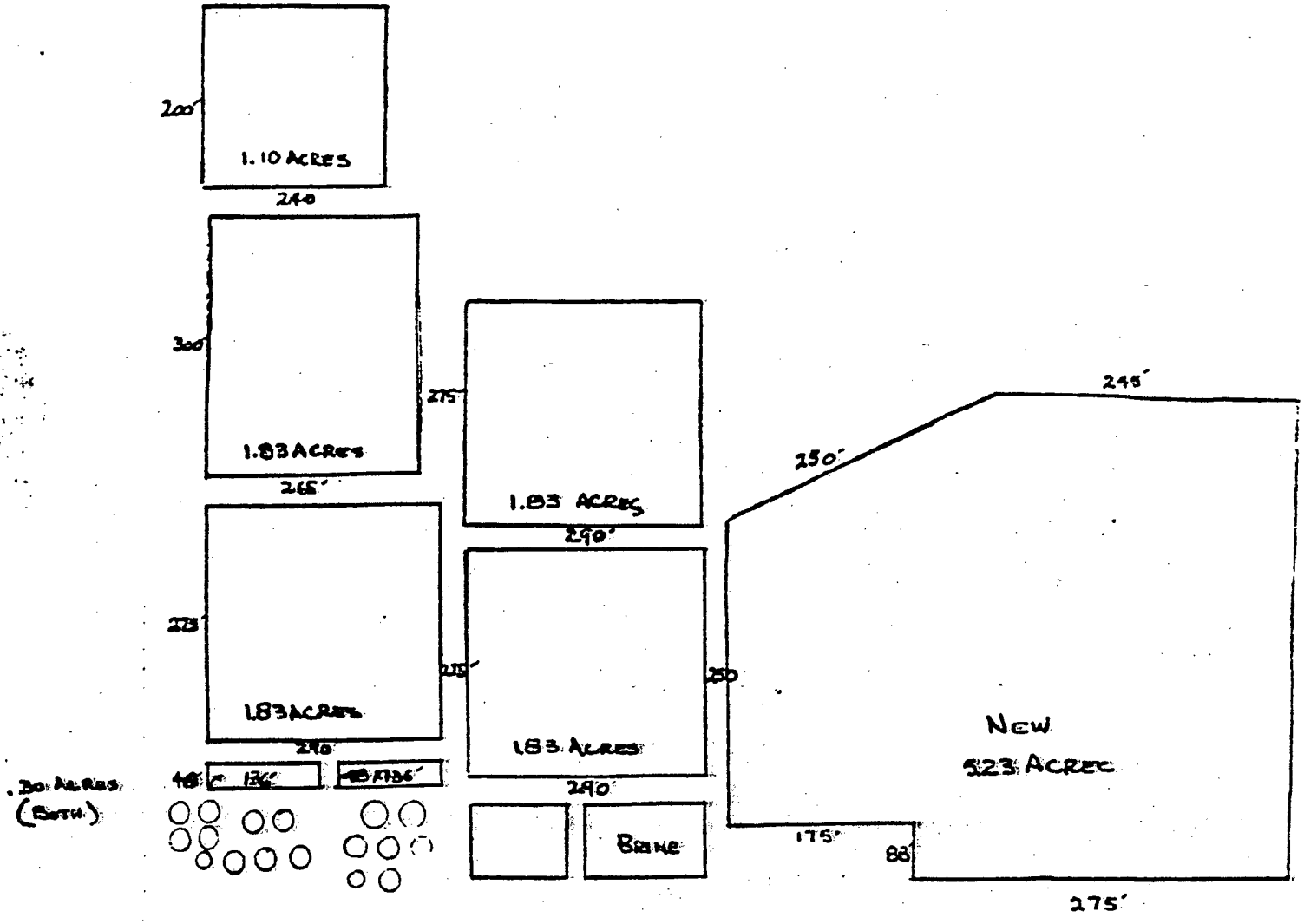
o 60' MONITOR HOLES

• RUSTLER DEPTH MONITOR HOLES

500 0 500 1000

EDDY COUNTY, NEW MEXICO
MONITOR HOLE LOCATIONS
LOCO HILLS WATER DISPOSAL CO
2/2/83

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGIST
MIDLAND & CORPUS CHRISTI, TEXAS



TOTAL ACRES 13.95 IN ALL PITS

LOCO HILLS WATER DISPOSAL CO.
P. O. Box 68
Loco Hills, NM 88255

March 3, 1984

Oil Conservation Division
P.O. Box 2088
Santa Fe, N.M. 87501

Re: Loco Hills Water Disposal

Gentlemen:

We have checked the monitor wells in February and there is no fluid of any kind.

Yours Truly,

Ray Westall
Director

RW/bf

Case file

Order No R-6811-A
Case No 7329 Dehovo

Brine Water 12 16 17S 30E
Eddy

LAW OFFICES OF
JENNINGS & CHRISTY
1012 SECURITY NATIONAL BANK BUILDING
P.O. BOX 1180
ROSWELL, NEW MEXICO 88202-1180

TELEPHONE 622-8432
AREA CODE 505

JAMES T. JENNINGS
SIM B. CHRISTY IV
K. DOUGLAS PERRIN
PHIL T. BREWER
DAMON RICHARDS

February 14, 1983

Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87501

Attention: Mr. Joe D. Ramey, Director

Re: Case No. 7720
Order No. R-6811-B

Dear Mr. Ramey:

We have now received the final report and plat showing location of the three additional monitor holes, being Nos. 11, 12 and 13, together with the complete Logs and sample descriptions of each well. Also enclosed is a copy of Ed L. Reed and Associates, Inc.'s letter of February 8, 1983. I assume that this fully complies with the Commission Order.

Yours very truly,

JENNINGS & CHRISTY

James T. Jennings

JTJ:clm

Enclosures

cc: Loco Hills Water Disposal Company

Ed L. Reed and Associates, Inc.

Consulting Hydrologists

MIDLAND · CORPUS CHRISTI

TEXAS

ED L. REED, P.E.
CHAIRMAN OF THE BOARD

A. JOSEPH REED
PRESIDENT

CHESTER F. SKRABACZ
VICE PRESIDENT FIELD OPERATIONS

1109 N. BIG SPRING
MIDLAND, TEXAS 79701
915 682-0556

V. STEVE REED
EXECUTIVE VICE PRESIDENT

708 GUARANTY BANK PLAZA
CORPUS CHRISTI, TEXAS 78475
512-883-1353

February 8, 1983

Mr. James Jennings
Jennings & Christy
P.O. Box 1180
Roswell, New Mexico 88202-1180

Dear Mr. Jennings:

In accordance with the Oil Conservation Division Order R-6811-B, three Rustler-depth monitor holes have been completed near the Loco Hills Disposal Facility. These monitor holes were drilled in late January, 1983. The sample logs and completion forms are enclosed.

These monitor holes were drilled with water to a depth sufficient to encounter the top of the Rustler Formation. The Rustler Formation was encountered at depths ranging from 245 feet in monitor hole #12 to 288 feet in monitor hole #11. After the holes were drilled they were cased with 4-inch PVC which was slotted with 1/8-inch cuts from total depth to 4 feet below the surface. Each of the monitor holes was jetted for 40 minutes. There was no indication that either the Triassic or the upper Rustler was producing water. These three monitor holes will now be part of a system which includes five Rustler depth and eight 60 foot deep monitor holes.

Please review these data and submit a copy to the Oil Conservation Division. If you have any questions, please call.

Very truly yours,

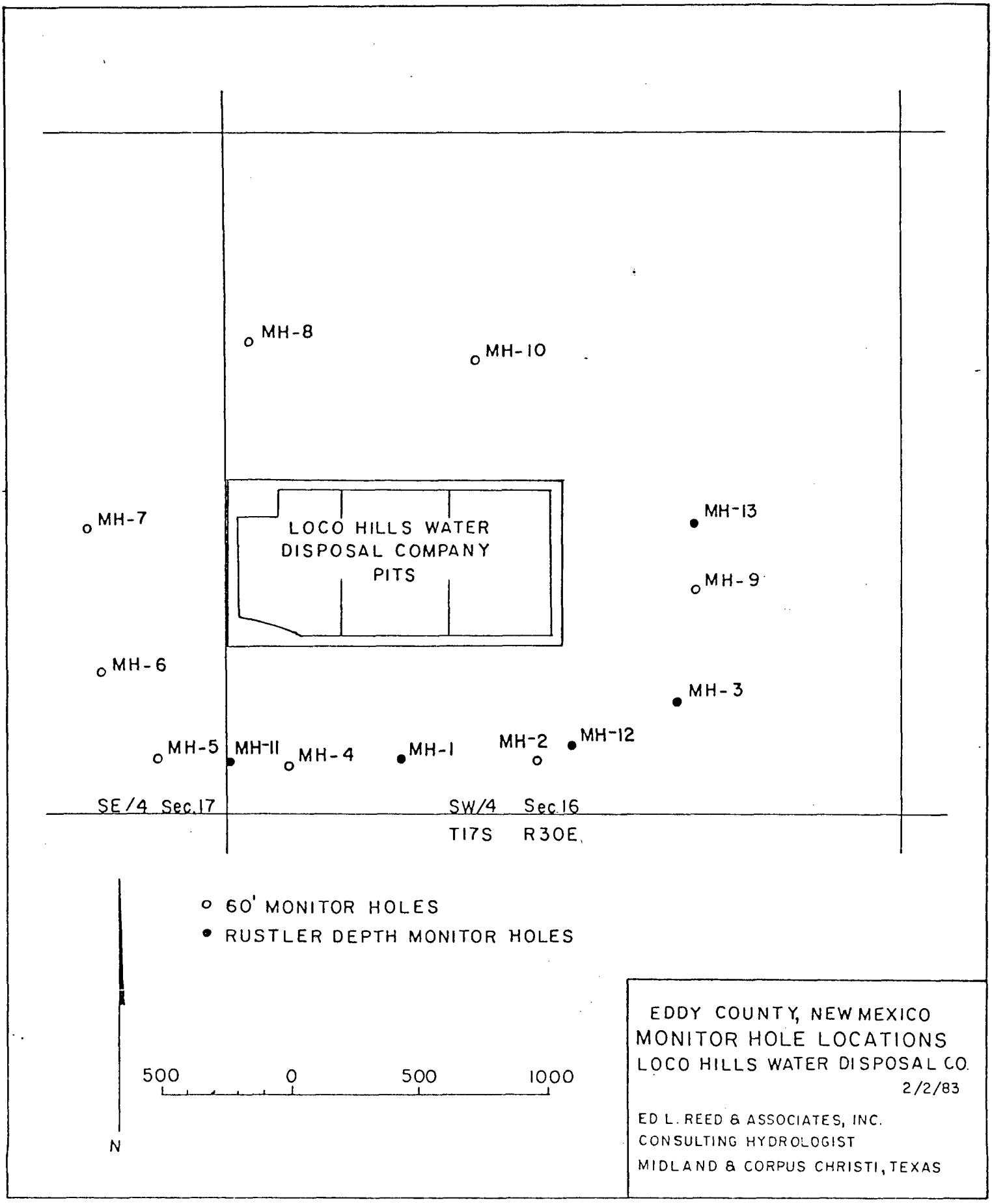
ED L. REED & ASSOCIATES, INC.

V. Steve Reed

V. Steve Reed

VSR:ljs

Enclosures


MH-8
MH-10
MH-7
LOCO HILLS WATER
DISPOSAL COMPANY
PITS
MH-13
MH-9
MH-6
MH-3
MH-5
MH-11
MH-4
MH-1
MH-2
MH-12
SE/4 Sec.17
SW/4 Sec.16
T17S R30E.
60' MONITOR HOLES
RUSTLER DEPTH MONITOR HOLES
500
0
500
1000
N
EDDY COUNTY, NEW MEXICO
MONITOR HOLE LOCATIONS
LOCO HILLS WATER DISPOSAL CO.
2/2/83
ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGIST
MIDLAND & CORPUS CHRISTI, TEXAS

WELL NO. MH-11

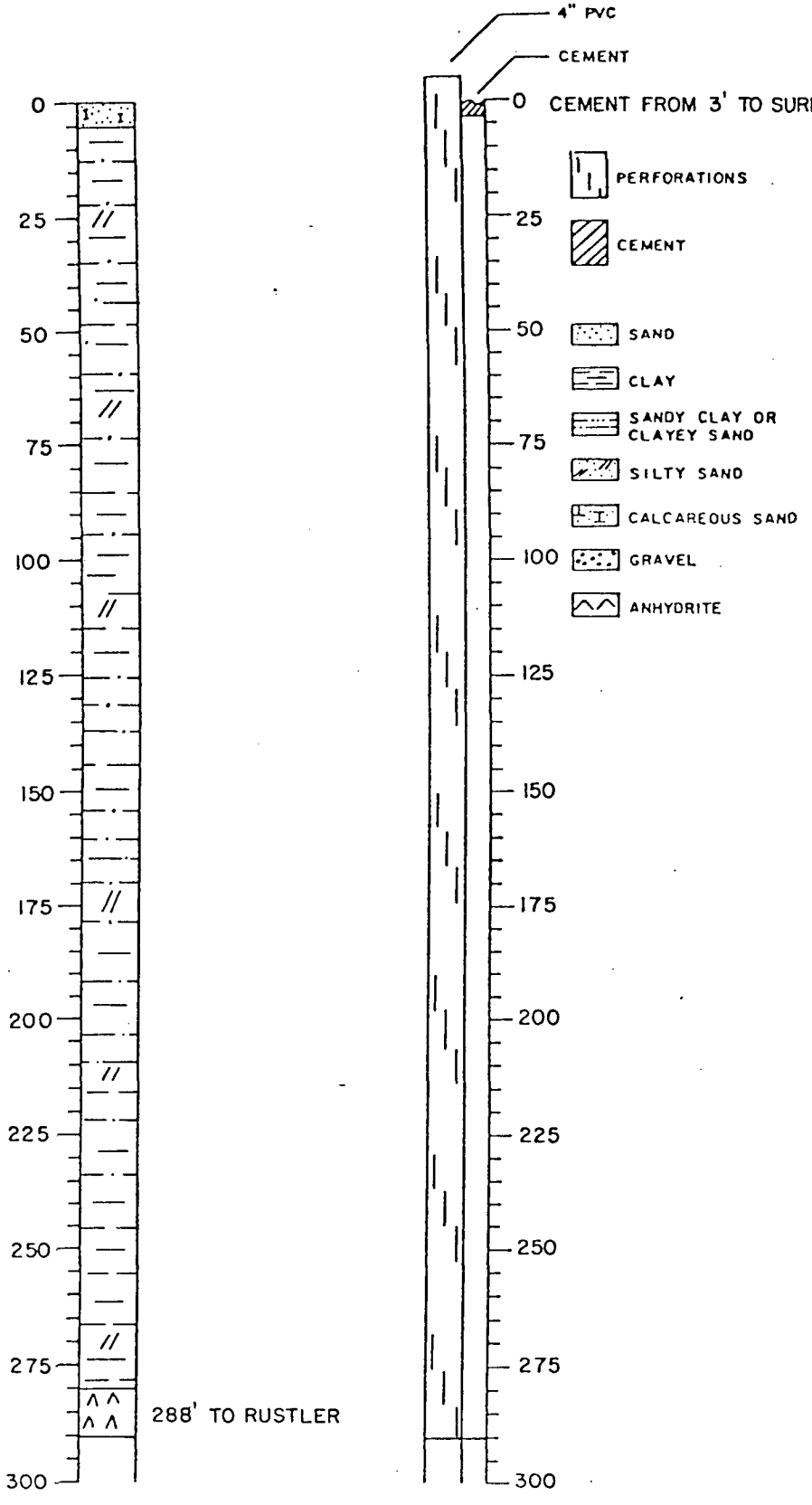
TOTAL DEPTH 290'

CLIENT LOCO HILLS

DATE 1/19/83

LITHOLOGIC LOG

COMPLETION LOG



SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co. S.W.L. Blown Dry 1/24/83

LOCATION ? FEL, 195' FSL, S.E. 1/4, Sec.17, T17S, R30E, Eddy Co. N.M. CASING 4" PVC

DATE 1/19/83 PERFORATIONS 4' to TD 6-3/4"/1.5', 1/8" wide

WELL NUMBER MH-11 (Rustler Depth) DRILLER L. Scarborough

ELEVATION Est. 3,653' Rustler Top 288' (+3,365')

6-1/2" bit, drilled with water

MH-11 entered approx. 277' from MH-4 and MH-5 (Total distance between MH-4 and 5 is 554')

INTERVAL	DESCRIPTION	POROSITY
0-10	70% sand, reddish brown, fine grained; 30% clay, calcareous (caliche)	Fair
10-20	100% clay, reddish brown, sandy and silty, slightly calcareous	Poor
20-30	90% clay, reddish brown, slightly calcareous; 10% sand, fine grained, silty	Poor
30-40	Same as above	Poor
40-50	Same as above	Poor
50-60	85% clay, reddish brown, slightly calcareous; 15% sand, very fine grained, silty	Poor
60-70	Same as above	Poor
70-80	Same as above	Poor
80-90	Same as above	Poor
90-100	80% clay, reddish brown, slightly calcareous; 20% sand, very fine grained, silty (report: 96'-107' gravels, multicolored, fine-medium, subangular, dominantly calcareous)	Poor
100-110	70% clay, reddish brown, sandy, slightly calcareous; 30% gravels, fine-medium (report 107'-115' clay, reddish brown, soft and sticky)	Poor
110-120	75% clay, reddish brown, sandy and silty, slightly calcareous; 75% gravels, fine, subangular-subrounded	Poor
120-130	85% clay, reddish brown, calcareous; 15% sand, fine grained, silty (report: 124'-131' clay, soft and sticky/ 131'-134' sand, firm)	Poor
130-140	Same as above	Poor
140-150	80% clay, reddish brown, slightly calcareous, 15% sand, fine grained, silty; 5% gravels, fine-medium, subangular	Poor
150-160	85% clay, reddish brown, slightly calcareous, some sparse gravels; 15% sand, fine grained, silty	Poor
160-170	Same as above (report: 159'-170' drilling rate increased, firm interval)	Poor
170-180	100% clay, reddish brown, silty, calcareous, sticky and pasty	Poor
180-190	90% clay, reddish brown, silty, slightly calcareous; 10% gravels	Poor
190-200	Same as above (report: 180'-197' drilling rate increased, firm interval)	Poor
200-210	Same as above (report: 197'-200' drilling rate decreased, soft and sticky interval)	Poor
210-220	100% clay, reddish brown, silty, calcareous, sticky and pasty (report: 211'-218' drilling rate decreased, soft	Poor

CLIENT Loco Hills Water Disposal Co. S.W.L. Blown Dry 1/24/83

LOCATION ?FEL, 195'FSL, S.E.1/4, Sec.17 T17S, R30E, Eddy Co. N.M. CASING 4" PVC

DATE 1/19/83 PERFORATIONS 4' to TD 6-3/4"/1.5',1/8" wide

WELL NUMBER MH-11 (Rustler Depth) DRILLER L/ Scarborough

ELEVATION Est. 3,653' Rustler Top 288' (+3,365)

6-1/2" bit, drilled with water

MH-11 entered approx. 277' from MH-4 and MH-5 (Total distance between MH-4 and 5 is 554')

INTERVAL	DESCRIPTION	POROSITY
210-220 continued	and sticky interval)	Poor
220-230	Same as above	Poor
230-240	Same as above	Poor
240-250	Same as above (in addition trace chips of Anhydrite)	Poor
250-260	Same as above (in addition trace chips of Anhydrite)	Poor
260-270	Same as above (in addition trace chips of Anhydrite)	Poor
270-280	Same as above (in addition trace chips of Anhydrite)	Poor
280-290	80% Anhydrite, white angular chips; 20% clay, reddish brown (report: numerous Anhydrite stringers started at 285')	Poor
	Top of Rustler 288'	
	Total Depth 290'	
	Cemented from surface to 3'	
	Started jetting hole approx. 116 hrs. after completion	
	Total jetting time 40 minutes.	
	Drilling fluid and mud produced for 15 minutes. Nothing produced last 25 minutes.	

WELL NO. MH-12

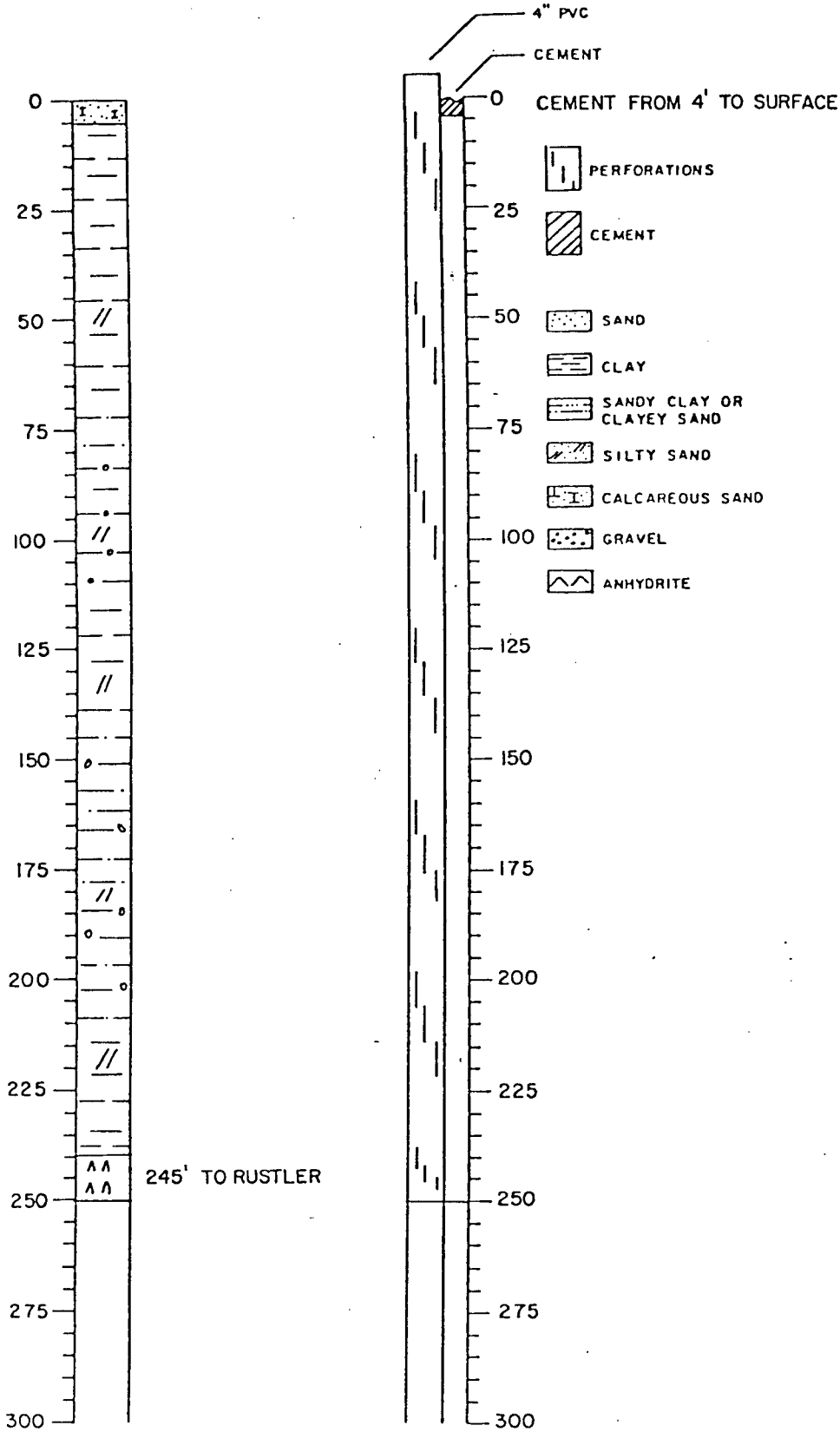
TOTAL DEPTH 250'

CLIENT LOCO HILLS

DATE 1/20-21/83

LITHOLOGIC LOG

COMPLETION LOG



CLIENT Loco Hills Water Disposal Co. S.W.L. Blown Dry 1/24/83

LOCATION FWL, FSL, SW 1/4, Sec.16, T17S, R30E, Eddy Co., N.M. CASING 4" PVC

DATE 1/20-21/83 PERFORATIONS 4' to TD, 6-3/4"/1.5', 1/8" wide

WELL NUMBER MH-12 (Rustler Depth) DRILLER L. Scarborough

ELEVATION Est. 3,663' Rustler Top 245' (+3,418')

6-1/2" bit, drilled with water, Location: slightly south of line connecting MH-2 to MH-3

INTERVAL	DESCRIPTION	POROSITY
0-10	70% caliche, yellowish white, angular chips; 30% sand, reddish brown, fine grained, silty	Fair
10-20	100% clay, reddish brown, silty, calcareous, sticky and pasty	Poor
20-30	Same as above	Poor
30-40	90% clay, reddish brown, calcareous, sticky; 10% sand, fine grained, silty	Poor
40-50	100% clay, reddish brown, silty, slightly calcareous, pasty	Poor
50-60	Same as above	Poor
60-70	Same as above	Poor
70-80	90% clay, reddish brown, slightly calcareous; 10% sand, very fine grained, silty	Poor
80-90	85% clay, reddish brown, faintly calcareous; 10% silt, 5% gravels, fine, angular (report: 86'-87' gravels, multicolored, fine, subangular)	Poor
90-100	90% clay, reddish brown, slightly calcareous, sandy; 10% siltstone, greenish yellow, calcareous matrix, angular fragments	Poor
100-110	75% clay, reddish brown, sandy, faintly calcareous; 25% gravels, multicolored, fine-medium, subangular-subrounded (report: 103'-110' drilling rate increased)	Poor
110-120	100% clay, reddish brown, silty, faintly calcareous, pasty	Poor
120-130	90% clay, reddish brown, silty, slightly calcareous; 10% limestone, white, angular fragments	Poor
130-140	100% clay, reddish brown, silty, faintly calcareous, pasty	Poor
140-150	90% clay, reddish brown, sandy and silty, faintly calcareous; 10% gravels white-clear, fine, subrounded, chert and limestone composition	Poor
150-160	100% clay, reddish brown, silty, faintly calcareous, sticky and pasty	Poor
160-170	Same as above	Poor
170-180	80% clay, reddish brown, silty pasty; 20% gravels, white-yellow, fine-medium, subangular-subrounded, limestone and sandstone composition	Poor
180-190	90% clay, reddish brown, faintly calcareous, sticky; 10% coarse sand and fine gravels, subangular	Poor
190-200	Same as above	Poor
200-210	100% clay, reddish brown, sandy and silty, faintly calcareous, soupy	Poor
210-220	100% clay, reddish brown, silty, slightly calcareous, pasty	Poor

CLIENT Loco Hills Water Disposal Co. S.W.L. Blown Dry 1/24/83

LOCATION FWL, FSL, SW 1/4, Sec.16, T17S, R30E, Eddy Co. N.M. CASING 4" PVC

DATE 1/20-21/83 PERFORATIONS 4' to TD 6-3/4"/1.5', 1/8" wide

WELL NUMBER MH-12 (Rustler Depth) DRILLER L. Scarborough

ELEVATION Est. 3,663' Rustler Top 245' (+3,418')

6-1/2" bit, drilled with water, Location: slightly south of line connecting MH-2 to MH-3

INTERVAL	DESCRIPTION	POROSITY
220-230	Same as above	Poor
230-240	Same as above	Poor
240-250	70% Anhydrite, white, translucent, friable angular chips;	Poor
	30% clay, reddish brown, silty, faintly calcareous, pasty	Poor
	Top of Rustler 245'	
	Total Depth 250'	
	Cemented from surface to 4'	
	Started jetting hole approximately 70 hrs after completion	
	Total jetting time 40 minutes	
	Drilling fluid and mud produced for 10 minutes. Nothing produced last 30 minutes.	

WELL NO. MH-13

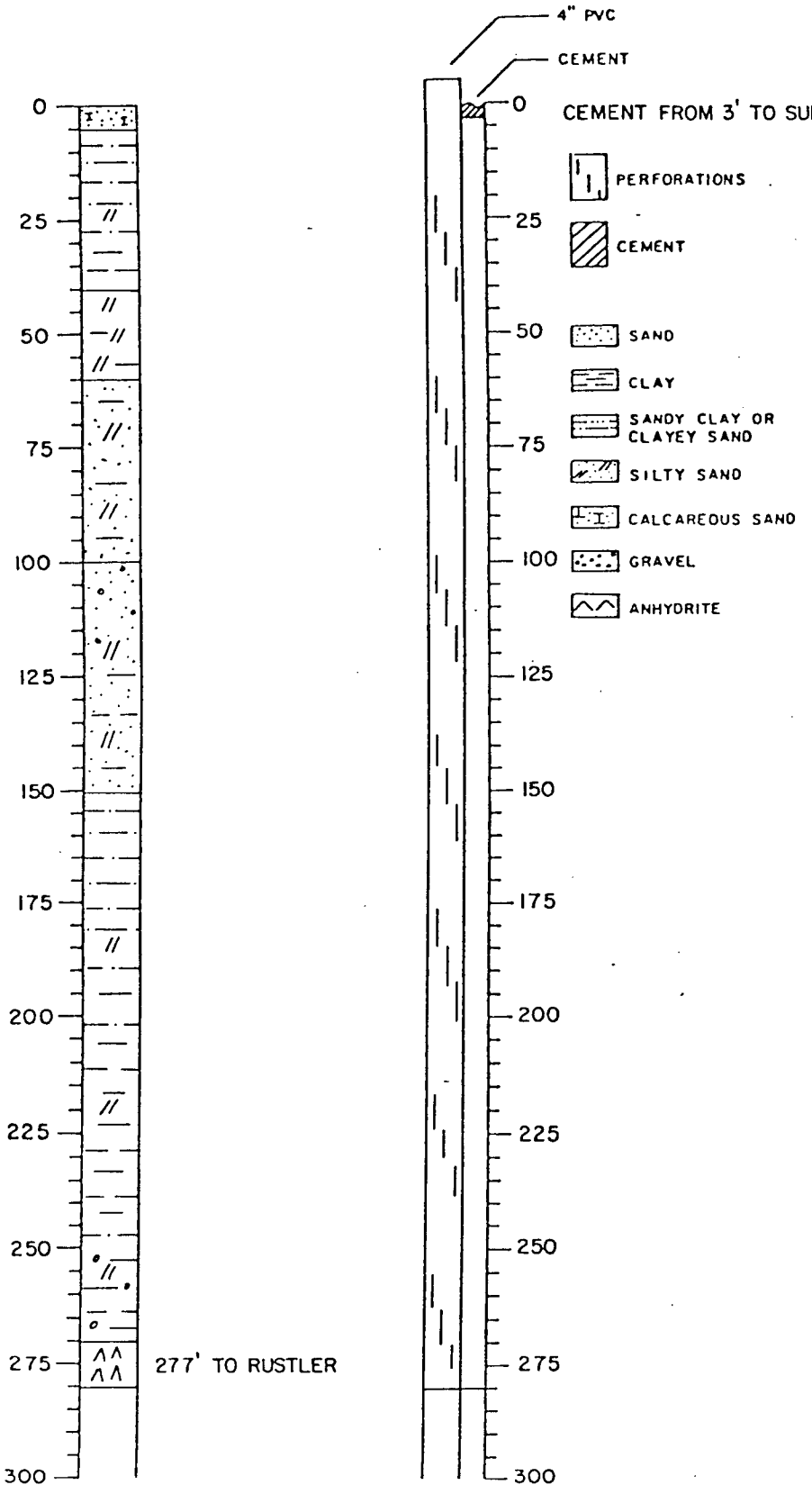
TOTAL DEPTH 280'

CLIENT LOCO HILLS

DATE 1/25/83

LITHOLOGIC LOG

COMPLETION LOG



SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co. S.W.L. Blown Dry 1/25/83

LOCATION 810'FEL, 1,100'FSL, SW 1/4, Sec. 16, T17S, R30E, Eddy Co. CASING 4" PVC

DATE 1/25/83 PERFORATIONS 4'-TD, 6-3/4"/1.5', 1/8"wide

WELL NUMBER MH-13 (Rustler Depth) DRILLER L. Scarborough

ELEVATION Est. 3,669' Rustler Top 277' (+3,392)

6-1/2" bit, drilled with air til 120', then with water til TD, Location: 250' approximately North of MH-9

INTERVAL	DESCRIPTION	POROSITY
0-10	80% caliche, tannish white-brownish pink, mostly fine powder with some calcite crystals; 20% silt, white-clear	Fair
10-20	80% clay, reddish brown, calcareous, slightly compacted; 20% fine sand amd silt	Poor
20-30	Same as above	Poor
30-40	90% clay, reddish brown, calcareous, fairly well compacted 10% silt	Poor
40-50	80% silt, reddish brown, sandy, powdery; 20% clay, calcareous, compacted	Fair
50-60	Same as above (except increase in clay content to 30%)	Fair
60-70	90% sand, light rust brown very fine grained, silty, powdery; 10% clay, calcareous	Fair-Good
70-80	80% sand, reddish brown, very fine grained, silty; 20% clay, slighty calcareous	Fair-Good
80-90	Same as above (except darker in color)	Fair-Good
90-100	Same as above (except slightly lighter in color)	Fair-Good
100-110	90% sand, goldish rust brown, fine-medium grained, silty argillaceous, slightly calcareous; 10% gravels, tannish white, translucent-opaque, subrounded and flat	Fair-Good
110-120	Same as above	Fair-Good
120-130	90% sand, dark reddish brown, fine-coarse grained, silty, some gravel; 10% clay calcareous	Fair-Good
130-140	75% sand, dark reddish brown, fine-medium grained, silty some gravel; 25% clay, slightly calcareous, sticky	Fair
140-150	60% sand, dark reddish brown, very fine-medium grained, silty, some sparse gravel; 40% clay, calcareous, sticky and pasty.	Poor-Fair
150-160	65% clay, reddish brown, slightly calcareous, pasty; 35% sand, very fine-fine grained, silty, some sparse gravel	Poor
160-170	Same as above (except decrease in sand content to 25%)	Poor
170-180	Same as above (except decrease in sand content to 25%)	Poor
180-190	80% clay, reddish brown, faintly calcareous, sticky and pasty; 20% silt and fine sand	Poor
190-200	Same as above (except decrease in silt content to 10%)	Poor
200-210	Same as above (except decrease in silt content to 10%)	Poor
210-220	100% clay, reddish brown, silty, faintly calcareous, sticky and soupy	Poor
220-230	Same as above	Poor
230-240	Same as above (except some sparse fine limestone chips)	Poor
240-250	Same as above (except slightly more calcareous)	Poor
250-260	90% clay, reddish brown, silty, slightly calcareous, pasty; 10% Anhydrite, white, fine chips	Poor

SAMPLE DESCRIPTION
MH-13 (continued)

CLIENT Loco Hills Disposal Co.
S.W.L. Blown Dry 1/25/83
LOCATION 810'FEL, 1,100'FSL, SW 1/4, Sec.16,T17S,R30E, Eddy Co.,
CASING 4" PVC
DATE 1/25/83
PERFORATIONS 4'-TD, 6-3/4"/1.5', 1/8"wide
WELL NUMBER MH-13 (Rustler Depth)
DRILLER L. Scarborough
ELEVATION Est. 3,669'
Rustler Top 277' (+3,392)
6-1/2" bit, drilled with air til 120', then with water til TD, Location: 250' approximately North of MH-9

INTERVAL	DESCRIPTION	POROSITY
260-270	80% clay, reddish brown, silty, faintly calcareous, sticky	Poor
	20% gravel, multicolored (dark gray, maroon, black, purple) very fine-medium angular fragments, quart comp.	
270-280	60% Anhydrite, white-light gray, opaque-translucent, fine-medium angular fragments; 40% clay, reddish brown, silty, faintly calcareous	Poor
	Top of Rustler 277'	
	Total Depth 280'	
	Cemented from surface to 3'	
	Started jetting hole 3 hours after completion	
	Total jetting time 40 minutes	
	Drilling fluid and mud produced for 20 minutes. Nothing produced last 28 minutes.	

LAW OFFICES OF
JENNINGS & CHRISTY
1012 SECURITY NATIONAL BANK BUILDING
P. O. BOX 1180
ROSWELL, NEW MEXICO 88202-1180

TELEPHONE 622-8432
AREA CODE 505

JAMES T. JENNINGS
SIM B. CHRISTY IV
K. DOUGLAS PERRIN
PHIL T. BREWER
DAMON RICHARDS

October 1, 1982

Mr. Joe D. Ramey, Director
Oil Conservation Division
P. O. Box 2088
Santa Fe, NM 87501

Re: Loco Hills Water Disposal Project
Case No. 7329 De Novo
Order No. R-6811-A

Dear Joe:

In compliance with the Order entered in the above case on July 29, 1982, the Applicant Loco Hills Water Disposal Company has drilled, completed and equipped the monitor wells shown on Exhibit "A" attached to and made a part of the Order, and to complete your files I am enclosing herewith a copy of the Ed Reed & Associates, Inc., report reflecting the drilling and completion, lithology, water levels and water samples in connection with the compliance with the Order.

I might add that Loco Hills has started using the facilities.

I sincerely hope that you find the enclosed material in order and if you have any questions, please call me.

Yours very truly,

JENNINGS & CHRISTY

James T. Jennings
JTJ/jb
Encl.
cc: Loco Hills Water Disposal Co.

Ed L. Reed and Associates, Inc.

Consulting Hydrologists

MIDLAND - CORPUS CHRISTI

TEXAS

ED L. REED, P.E.
PRESIDENT

A. JOSEPH REED
EXECUTIVE VICE PRESIDENT

CHESTER F. SKRABACZ
VICE PRESIDENT FIELD OPERATIONS

1109 N. BIG SPRING
MIDLAND, TEXAS 79701
915 682-0556

V. STEVE REED
VICE PRESIDENT GEOLOGY

OIL INDUSTRIES BLDG.
SUITE 315
723 UPPER N. BROADWAY
CORPUS CHRISTI, TEXAS 78403
512-883-1353

September 19, 1982

Mr. James T. Jennings
Jennings & Christy
P.O. Box 1180
Roswell, New Mexico 88201

Re: Loco Hills Water Disposal Comapny

Dear Mr. Jennings:

Pursuant to Oil Conservation Commission of New Mexico Order No. R-6811-A, Item 4 and Exhibit A, construction of ten (10) monitor holes surrounding proposed disposal pits to be operated by Loco Hills Water Disposal Company was begun on September 7, 1982 and completed on September 10, 1982. These monitor holes are located in the SW/4 of Section 16, and SE/4 of Section 17, T17S, R30E, Eddy County, New Mexico. The approximate position of the monitor holes are shown on attachment A. As required by the Commission, eight holes were drilled to 60' and two were drilled into the Rustler Formation.

Drilling And Completion

All of the holes were drilled using a 6-3/4" rock bit and completed with 4" Schedule 40 PVC. The two Rustler depth monitor holes, #1 and #3, were drilled utilizing water. The shallower 60' holes, #2, 4, 5, 6, 7, 8, 9, and 10 were drilled with air. Monitor holes #1 and #3 were drilled to sub-surface depths of 272' and 244' respectively. The Rustler Formation, characterized in its upper part by anhydrite, was encounted at 270' in monitor hole #1 and at 239' in monitor hole #3.

All monitor holes with the exception of monitor hole #1 were completed with slotted perforations from about four feet to their total depth. Monitor hole #1 was completed with slotted perforations from ten feet to total depth. The casing was cemented from surface to a depth of three to four feet in each hole.

Lithology

Lithologic samples were collected every ten feet in each hole and have been described. The sample descriptions and lithologic and completion logs are shown in attachment B. These logs indicate a wide range of discontinuous facies across the site. Calcareous sand was encountered to a depth ranging from five to ten feet. This was followed by sandy clay/clayey sand, silty sand, silty clay or sand to total depth. These facies correlate poorly in the shallow holes; somewhat better correlation is seen at depths greater than 100 feet. This wide range of discontinuous lateral facies indicates that water should migrate vertically to the top of the Rustler Formation.

Water Levels

Each monitor well was inspected for presence of fluids on 10 September 1982. These inspections were conducted by Larry Brooks of the Oil Conservation Division and J. R. Jones, a geologist with Ed L. Reed and Associates. All shallow 60' monitor holes were dry. In the deeper, water drilled holes (#1 and #3), small amounts of mud was observed in the lower 5 to 10 feet. The conclusion reached by the drilling team, with the Oil Conservation Division representative concurring, was that the moisture is residual drilling fluid and sediments remaining in the hole which could not be jetted. This moisture should eventually disappear.

Water Samples

Samples of water used to drill monitor holes #1 and #3 were collected. This water was obtained from the Loco Hills public supply. Samples of the mud remaining in the bottom of monitor holes #1 and #3 were also obtained using an open bailer. Analysis of these two samples will be compared to the sample of drilling water. This should confirm that the moisture present is, in fact, drilling fluid. The results of these analyses will be forwarded as soon as they are complete.

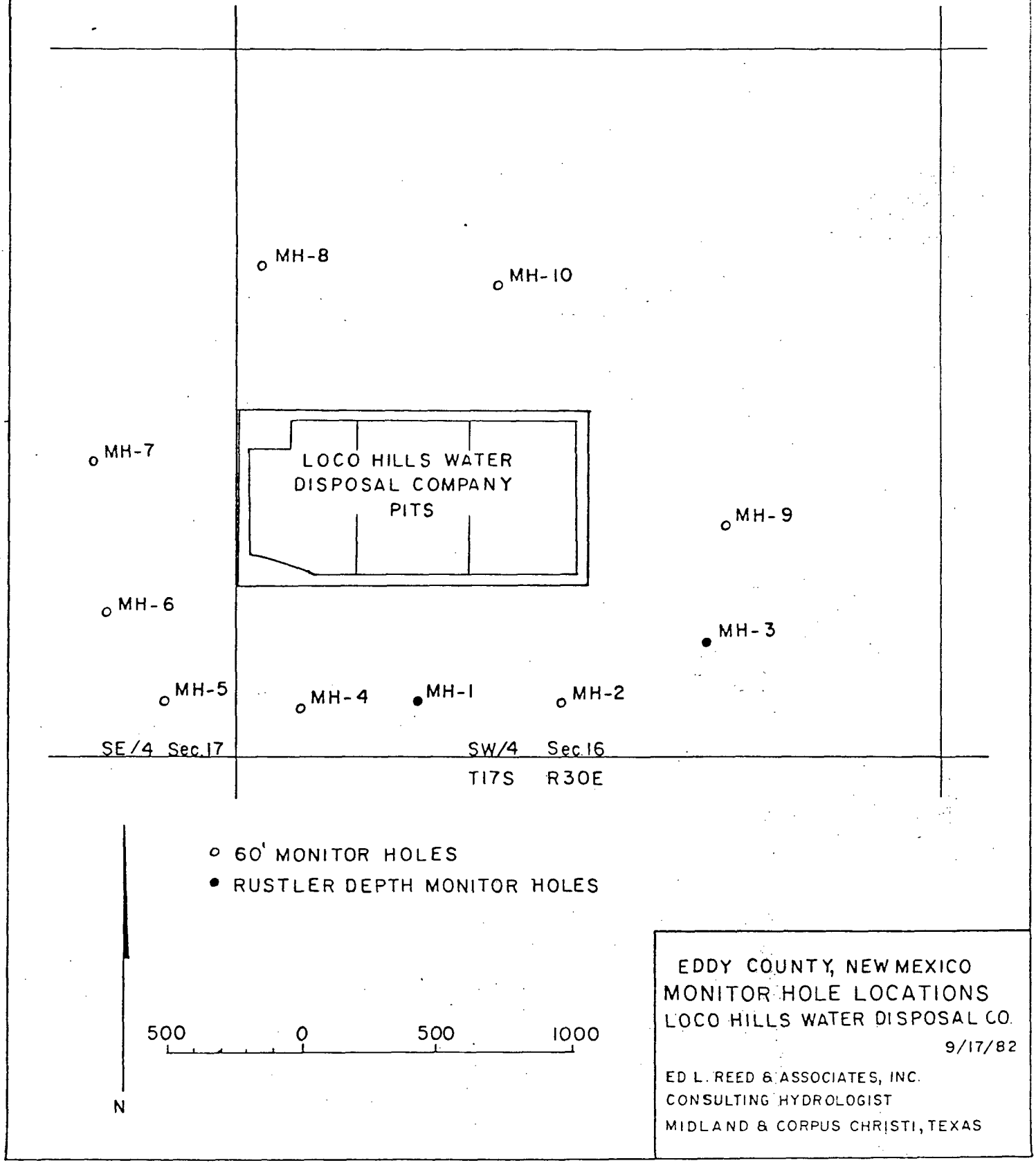
Oil Conservation Division Participation

Visits to the drilling site by Larry Brooks and B. F. Weaver, both representing the Oil Conservation Division, were conducted throughout the drilling and completion period. At each visit, the representatives were provided information on locations, depths and completion of the monitor holes.

Very truly yours,

James R. Jones

JRJ:ljs
Enclosures



EDDY COUNTY, NEW MEXICO
MONITOR HOLE LOCATIONS
LOCO HILLS WATER DISPOSAL CO.
9/17/82

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGIST
MIDLAND & CORPUS CHRISTI, TEXAS

ATTACHMENT A

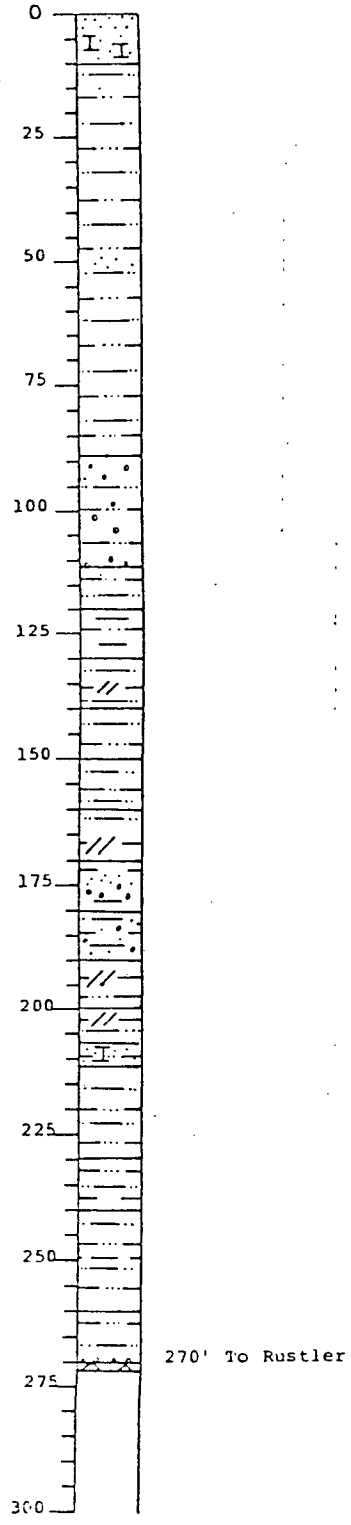
WELL NUMBER MH-1

TOTAL DEPTH 272'

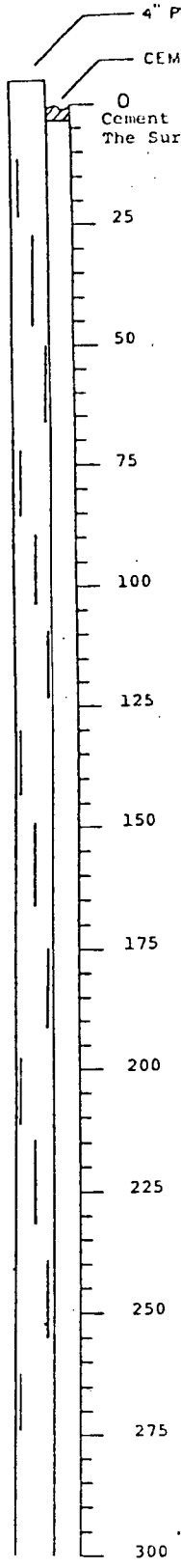
CLIENT Loco Hills

DATE 9/9/82

LITHOLOGIC LOG



COMPLETION LOG



KEY

PERFORATIONS

CEMENT

SAND

CLAY

SANDY CLAY OR CLAYEY SAND

SILTY SAND

CALCAREOUS SAND

GRAVEL

ANHYDRITE

SILT

SILTY CLAY

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co. S.W.L. Dry 9/9/82 after jetting

LOCATION 680' FWL 210'FSL SW/4 Sec.16 T17SR30E, Eddy Co. N.M. CASING 4" PVC, 272.3'

DATE 9/7/82 PERFORATIONS 10'-270' 6-3/4"/1.5', 1/8 wi

WELL NUMBER MH-1 (Rustler Depth) DRILLER L. Scarborough

ELEVATION 3661'

6-3/4' bit, drilling with water (60-90 cl- ppm, field test)

Location 7' NW of stake.

INTERVAL	DESCRIPTION	POROSITY
0-10	50% quartz sand, multicolored, coarse grain, rounded to subrounded, 50% sandstone caliche, white calcareous.	Good
10-20	60% Argillaceous sand, quartz sand, rounded to sub-rounded coarse grained, reddish brown.	Poor
20-30	As above, finer grains.	Poor
30-40	Argillaceous sand, F-M grained, sub-rounded, reddish brown.	Poor
40-50	As above; sub-rounded, sub-angular; trace sandstone.	Poor
50-60	As above; frosted grains.	Poor
60-70	Sandy clay; fine grained, rounded to sub-rounded, reddish brown. Some clay.	Poor
70-80	Sandy clay and clay; reddish brown, fine grained sub-rounded, sub-angular. Quartz grains are multicolored.	Poor
80-89	Sandy clay; reddish brown, quartz fine grained.	Poor
89	Driller reports gravel	
89-100	Gravel, sandy Bentonitic clay, 80% cryptocrystalline multicolored coarse gravel, 20% sandy clay and sand.	Fair
100-110	Sandy clay; coarse to fine grained quartz, multicolored grains. Some minor interbedded gravel and calareous sandstone.	Poor-Fair
111	Driller reports base of gravel.	
110-120	Sandy clay; reddish brown.	Poor
120-130	Sandy clay and clay; reddish brown, fine grained.	Poor
130-140	Slightly sandy, silty clay; reddish brown and more compact than above.	Poor
140-150	Slightly sandy clay; reddish brown, fine to medium grained quartz, multicolored grains, sub-angular.	Poor
150-160	As above, more compact.	Poor
160-170	Slightly silty to sandy clay; reddish brown, not as compact as 150-160.	Poor
170-180	Clay, sand and gravels; reddish brown; coarse to medium grained multicolored quartz sand angular gravel, some sandstone with a calcareous matrix.	Poor-Fair
180-190	As above with more clay.	Poor
190-200	Sandy to silty clay; reddish brown, medium to very fine grained, compact.	Poor
200-207	As above.	Poor
207-212	Sandy clay and sandstone with calcareous matrix and sand; reddish brown to white.	Poor
212-220	Sandy clay; reddish brown, coarse to medium grained, angular to sub-angular, multicolored quartz grains.	Poor
220-230	Same as above.	Poor
	CONTINUED ON NEXT PAGE	

CLIENT Loco Hills Water Disposal Co.
LOCATION
DATE 9/7/82
WELL NUMBER MH-1 (Rustler)
ELEVATION

S.W.L.
CASING
PERFORATIONS
DRILLER

INTERVAL	DESCRIPTION	POROSITY
230-240	Clay, sandy clay, sand, gravel; reddish brown clay and sandy clay, gravels are angular and multicolored.	Poor
240-250	Sandy clay; reddish brown minor amounts of coarse grained multicolored quartz sand at 248'.	Poor-Fair
250	Driller reports "Stickey clay"	
250-260	As above.	Poor
260-270	As above.	Poor
	Top Rustler 270', gravel and anhydrite "powder"	
	Total Depth 272'	
	Cemented surface to 3.0'	
	Total jetting time 40 minutes. Drilling fluid and mud produced for 3-1/2 minutes. Last 36-1/2 minutes nothing produced.	

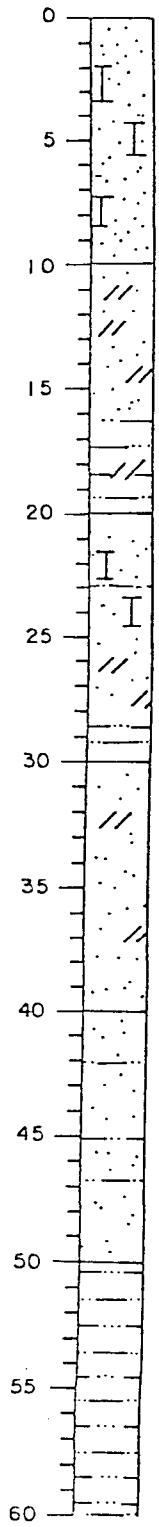
WELL NUMBER MH-2

TOTAL DEPTH 60'

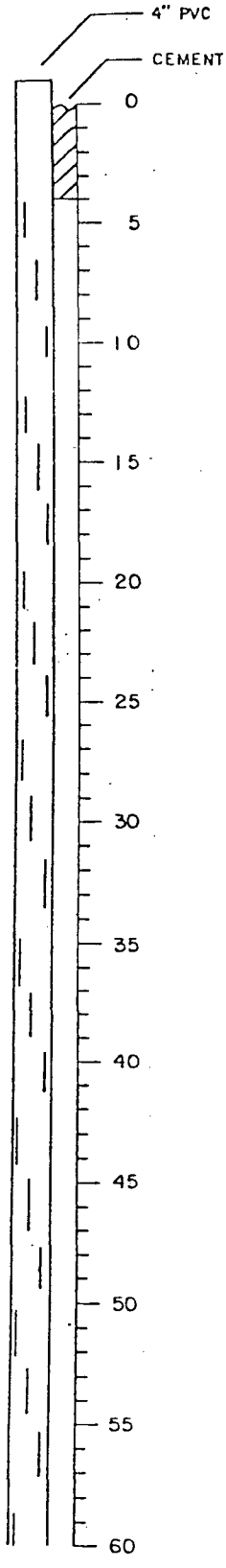
CLIENT Loco Hills

DATE 9/8/82

LITHOLOGIC LOG



COMPLETION LOG



KEY

PERFORATIONS

CEMENT

SAND

CLAY

SANDY CLAY OR CLAYEY SAND

SILTY SAND

CALCAREOUS SAND

GRAVEL

ANHYDRITE

SILT

SILTY CLAY

ED L. REED & ASSOCIATES, INC
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co.
LOCATION 1,200'FWL 200'FSL SW/4 Sec.16 ~~T-17S, R30E, Eddy Co., N.M.~~
DATE 9/8/82
WELL NUMBER MH-2
ELEVATION ±3,663'

S.W.L. Dry
CASING 4" PVC, 62.1'
PERFORATIONS 4' to TD, 6-3/4"/1.5', 1/8 wid.
DRILLER L. Scarborough

6-3/4" bit drilled with air. Location 45' WNW of stake

INTERVAL	DESCRIPTION	POROSITY
0-10	Sand and sandstone with calcareous (caliche) matrix; quartz grains medium to fine, sub-angular, pink to white.	Fair-Good
10-20	Sand, silt, silty clay; reddish brown, quartz fine grained sub-angular to sub-rounded.	Poor
20-30	Sand and sandstone or silt; reddish brown, quartz grains medium to fine, sub-angular to sub-rounded, frosted, some clay matrix.	Poor
30-40	80% sand fine grained and silt; reddish brown, loose, rounded to sub-rounded.	Poor
40-50	Sand; minor clay; reddish brown, sub-angular to sub-rounded, medium to fine grained, clay matrix.	Poor
50-60	Clayey sand; reddish brown, sub-rounded, frosted. More compact than above, slightly bentonitic.	Poor
	Total Depth 60'	
	Cemented from surface to 4'.	

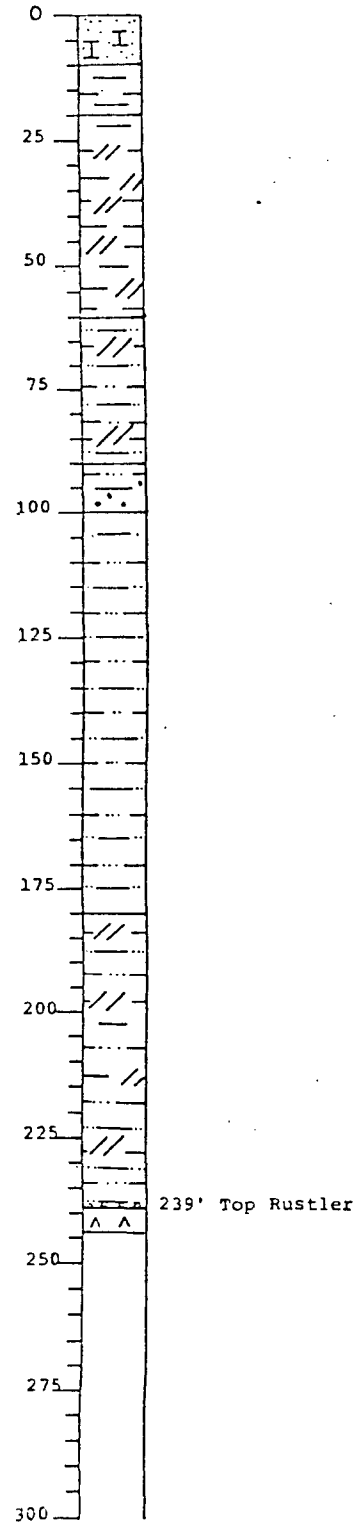
WELL NUMBER MH-3

TOTAL DEPTH 244'

CLIENT Loco Hills

DATE 9/8/82

LITHOLOGIC LOG



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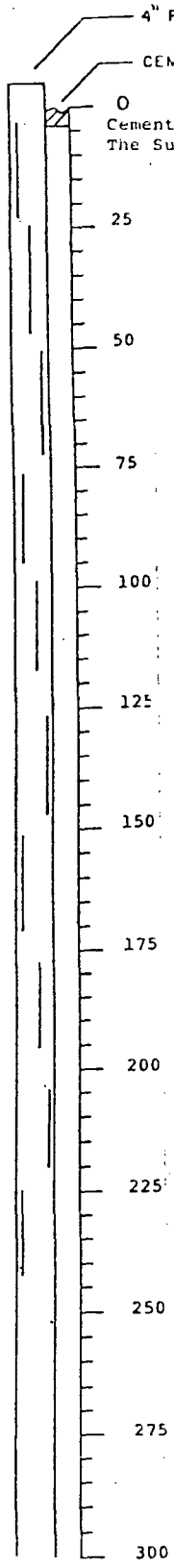


KEY

- PERFORATIONS
- CEMENT
- SAND
- CLAY
- SANDY CLAY OR CLAYEY SAND
- SILTY SAND
- CALCAREOUS SAND
- GRAVEL
- ANHYDRITE
- SILT
- SILTY CLAY

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

CLIENT Loco Hills Water Disposal Co.
LOCATION 870'FEL, 430'FSL, T17S, R30E ~~SW/4 Sec. 16, Eddy Co. N.M.~~
DATE 9/8/82
WELL NUMBER MH-3, Rustler Depth
ELEVATION 3,664'

S.W.L. Dry, 9/9/82 after jetting
CASING 4" PVC 243.4'
PERFORATIONS 4' to TD 6-3/4"/1.6',1/8"wide
DRILLER L. Scarborough

=6-3/4" bit, drilled with water, Location 10' N of stake,

INTERVAL	DESCRIPTION	POROSITY
0-10	Quartz sand stone in calcareous matrix and sand; pink to red, angular to rounded, fine to medium grained, frosted.	Good-Fair
10-20	Clayey sand (Argillaceous sand) fine to medium grained, sub-rounded multicolored quartz grains. Reddish brown clay.	Poor
20-30	Silty clay; rounded to sub-rounded fine quartz grains, reddish brown.	Poor
30-40	As above; sub-angular.	Poor
40-50	As above; sub-angular, bentonitic clay.	Poor
50-60	As above.	Poor
60-70	Sandy to silty clay; reddish brown, medium to fine grains sub-angular, frosted, bentonitic clay.	Poor
70-80	As above.	Poor
80-90	As above, slightly more silty.	Poor
90-100	Sandy clay, clay and gravel; reddish brown sub-angular gravels, red to dark brown gravels about 1/4". Gravel at 99'.	Poor
100-110	Clayey sand; fine to medium grained, sub-angular to angular, multicolored quartz grains. Reddish brown.	Poor
110-120	Sandy clay; reddish brown bentonitic clays poorly sorted angular quartz grains. Reddish to pink to white grains.	Poor
120-150	As 100-110, some clay between 140-150.	Poor
150-160	As 100-110.	Poor
160-180	Sandy clay; reddish brown, compact bentonitic.	Poor
180-190	Silty to sandy clay; reddish brown; some coarse quartz grains, angular to sub-rounded, poorly sorted.	Poor
190-200	As above.	Poor
200-210	As above.	Poor
210-220	As above.	Poor
220-230	As above.	Poor
230-240	Silty clay, clay and anhydrite. Anhydrite at 239'. 239-244' anhydrite; white powder, alkaline taste.	Poor
	Total Depth 244'	
	Total jetting time 40 minutes. Drilling fluid and mud produced for 10 minutes. Last 30 minutes nothing produced.	
	Cemented from surface to 4'.	

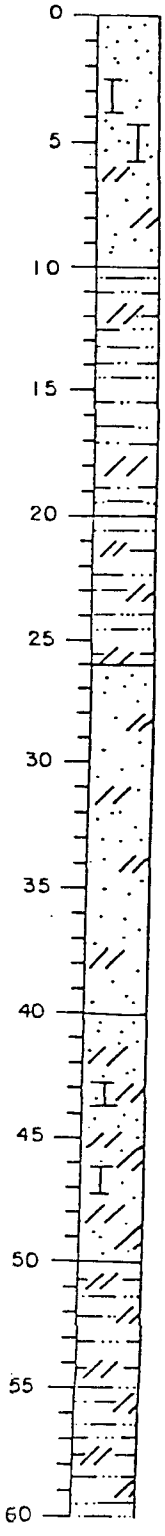
WELL NUMBER MH-4

TOTAL DEPTH 60'

CLIENT Loco Hills

DATE 9/9/82

LITHOLOGIC LOG



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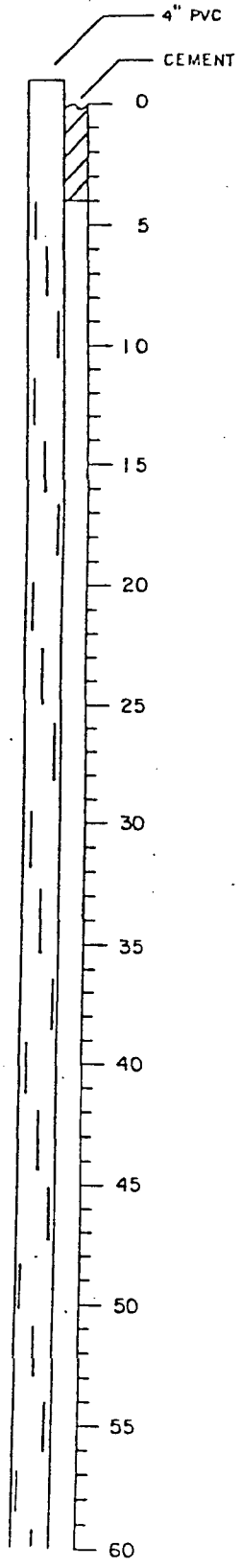


KEY

- PERFORATIONS
- CEMENT
- SAND
- CLAY
- SANDY CLAY OR CLAYEY SAND
- SILTY SAND
- CALCAREOUS SAND
- GRAVEL
- ANHYDRITE
- SILT
- SILTY CLAY

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co.
LOCATION 236'FWL, 180'FSL SW/4 Sec.16 T17S, R30E., Eddy Co., N.M.
DATE ~~9/9/82~~
WELL NUMBER MH-4 shallow
ELEVATION ± 3,657'

S.W.L. Dry
CASING 4" PVC 61.5'
PERFORATIONS 4' to TD 6-3/4"/1.5', 1/8" wide
DRILLER L. Scarborough

6-3/4" bit, drilled with air, location is 31' east of stake.

INTERVAL	DESCRIPTION	POROSITY
0-10	Caliche, sandstone with calcareous matrix, silt and sand. white to reddish brown, rounded to sub-rounded quartz grains.	Poor
10-20	Sandy to silty clay to clayey sand; reddish brown, fine to medium grains, sub-rounded, indurated, almost a shale.	Poor-Fair
20-26	Same as above.	Fair
26-30	Silty sand; reddish brown to pink. Fine to medium quartz grains in sand, some caliche.	
30-40	Silty sand; reddish brown, fine grained sub-rounded to sub-angular, frosted, well sorted.	Fair
40-50	As above, more silt and some caliche gravel.	Fair
50-60	Silty clay and sand; reddish brown to maroon, fine to medium grained multicolored quartz, frosted sub-rounded to rounded.	Poor
	Total Depth 60'	
	Cemented from surface to 4'.	

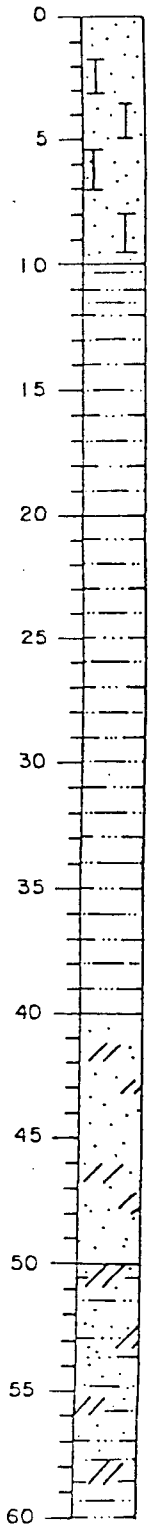
WELL NUMBER MH-5

TOTAL DEPTH 60'

CLIENT Loco Hills

DATE 9/9/82

LITHOLOGIC LOG



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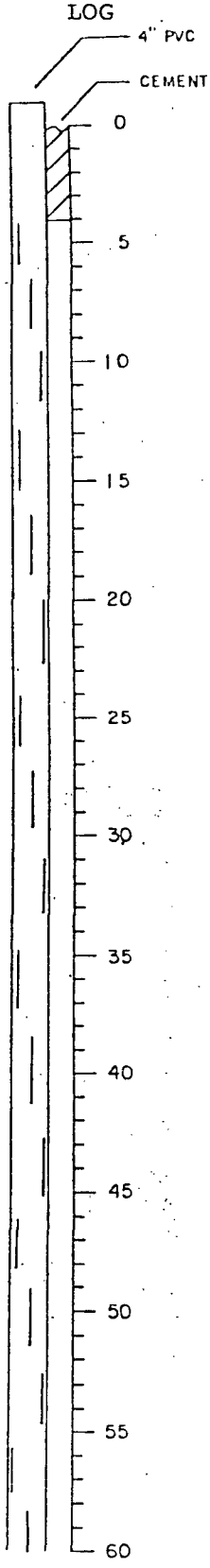


KEY

PERFORATIONS

CEMENT

SAND

CLAY

SANDY CLAY OR CLAYEY SAND

SILTY SAND

CALCAREOUS SAND

GRAVEL

ANHYDRITE

SILT

SILTY CLAY

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co. S.W.L. Dry

LOCATION 260'FEL, 210'FSL, SE/4 Sec.17 T17S, R30E, Eddy Co. N.M. CASING 4" PVC 61.5'

DATE 9/9/82 PERFORATIONS 4' to TD, 6-3/4"/1.5, 1/8" wide

WELL NUMBER MH-5 DRILLER L. Scarborough

ELEVATION ±3,648'

6-3/4" bit, drilled with air, location 17' west of stake.

INTERVAL	DESCRIPTION	POROSITY
0-10	Caliche, sandstone with calcareous matrix; white to pink.	Fair
10-20	Clayey sand; reddish brown, fine quartz grains, sub-rounded.	Poor
20-40	Clayey sand; reddish brown, fine grained rounded to sub-rounded, to sub-angular, frosted.	Poor
40-50	Silty sand; sub-angular to sub-rounded, medium sorting, reddish brown to pink.	Good-Fair
50-60	Silty clay and silty sand; red to brownish red, very fine to fine grained quartz.	Good-Fair
	Total Depth 60'	
	Cemented from surface to 4'.	

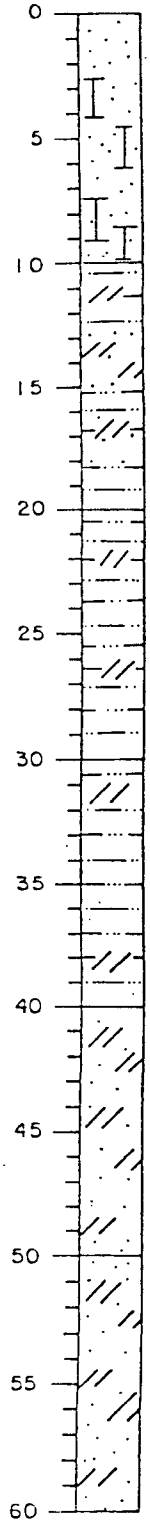
WELL NUMBER MW-6

TOTAL DEPTH 60'

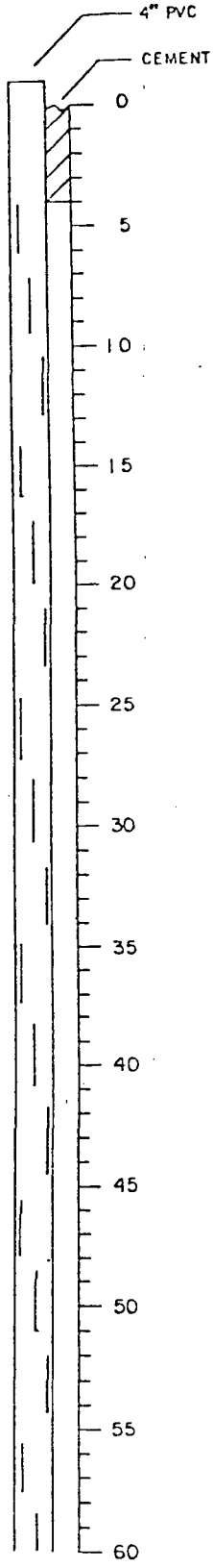
CLIENT Loco Hills

DATE 9/9/82

LITHOLOGIC LOG



COMPLETION LOG



KEY

PERFORATIONS

CEMENT

SAND

CLAY

SANDY CLAY OR CLAYEY SAND

SILTY SAND

CALCAREOUS SAND

GRAVEL

ANHYDRITE

SILT

SILTY CLAY

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co.
LOCATION 470'FEL, 540'FSL, SE/4 Sec.17 T17S, R30E, Eddy Co. N.M.
DATE 9/9/82
WELL NUMBER MH-6
ELEVATION ± 3,657'

S.W.L. Dry
CASING 4" PVC 61.5"
PERFORATIONS 4' to TD, 6-3/4"/1.5', 1/8" wide
DRILLER L. Scarborough

6-3/4" bit, drilled with air.
Location 7' west from stake.

INTERVAL	DESCRIPTION	POROSITY
0-10	Caliche, sandstone with caliche matrix. Some silt and sand. Pink to white.	Fair
10-20	Clayey sand and silt; reddish brown sub-rounded fine quartz grains.	Poor
20-30	Silty sand, clayey sand; reddish brown; fine grained quartz; sub-rounded, frosted.	Poor-Fair
30-40	Clayey sand to sandy silty clay; reddish brown. Darker than 20-30. Sub-Angular frosted quartz.	Poor
40-50	Silty sand; pinkish to reddish brown, sub-rounded, fine grained quartz.	Fair
50-60	As above, slightly finer grained, more silt, slightly darker.	Fair
	Total Depth 60'	
	Cemented from surface to 4'.	

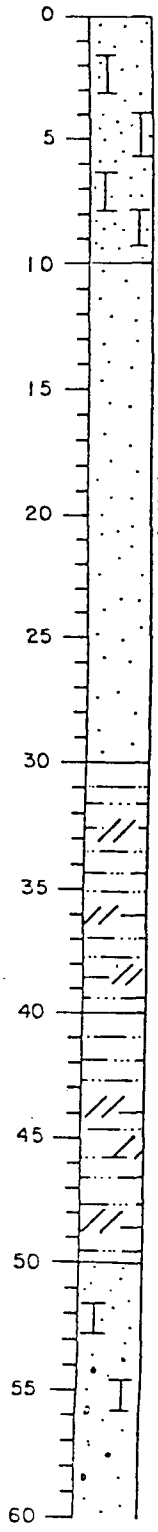
WELL NUMBER MH-7

TOTAL DEPTH 60'

CLIENT Loco Hills

DATE 9/9/82

LITHOLOGIC LOG



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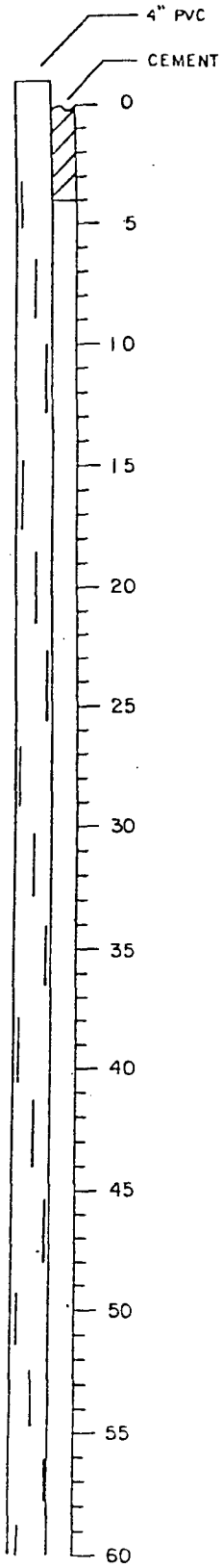


KEY

PERFORATIONS

CEMENT

SAND

CLAY

SANDY CLAY OR CLAYEY SAND

SILTY SAND

CALCAREOUS SAND

GRAVEL

ANHYDRITE

SILT

SILTY CLAY

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

CLIENT Loco Hills Water Disposal

LOCATION 531'FEL, 1090'FSL SE/4 Sec.17 T17S, R30E, Eddy Co. N.M.

DATE 9/9/82

WELL NUMBER MH-7

ELEVATION 3,664'

S.W.L. Dry

CASING 4" PVC 61.3'

PERFORATIONS 4' to TD 6-3/4"/1.5',1/8" wide

DRILLER L. Scarborough

6-3/4" bit, drilled with air, 4' S.E. from the stake.

INTERVAL	DESCRIPTION	POROSITY
0-10	Caliche and sandstone with calcareous matrix, white to pink.	Fair
10-20	Quartz sand; pink to reddish brown, sub-angular grains fine grained, minor sandstone.	Fair
20-30	Quartz sand; fine grained, sub-angular, multicolored, well sorted. Tan to pink, frosted.	Good
30-40	Silty to sandy clay; reddish brown, minor caliche.	Fair-Poor
40-50	Silty to sandy clay, brown to reddish brown.	Poor
50-60	Quartz sand, gravels and sandstone. Fine to medium grains in sand, sub-rounded to angular multicolored quartzite gravel up to 3/8". Some caliche.	Good
	Total Depth 60'	
	Cemented from surface to 4'.	

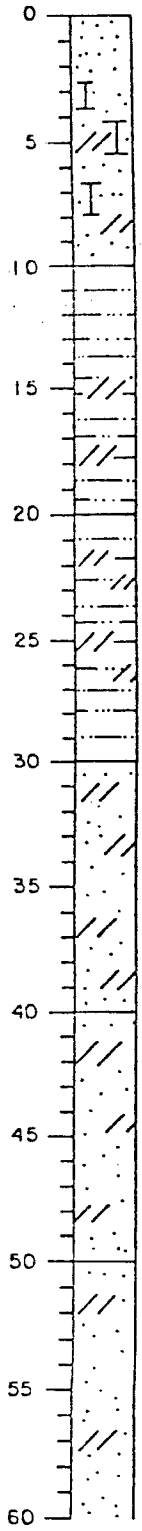
WELL NUMBER MH-8

TOTAL DEPTH 60'

CLIENT Loco Hills

DATE 9/9/82

LITHOLOGIC LOG



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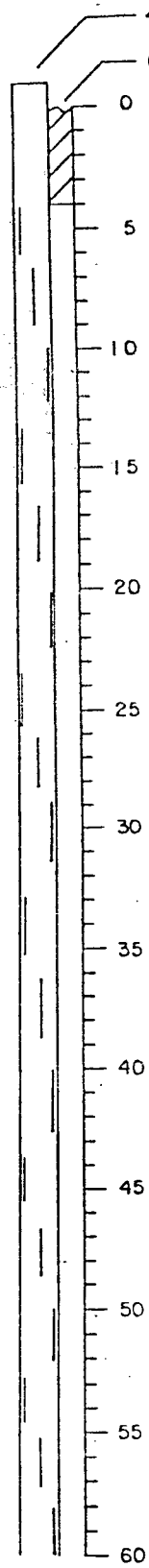


KEY

PERFORATIONS

CEMENT

SAND

CLAY

SANDY CLAY OR CLAYEY SAND

SILTY SAND

CALCAREOUS SAND

GRAVEL

ANHYDRITE

SILT

SILTY CLAY

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co. S.W.L. Dry

LOCATION 800'FNL, 100'FWL, SW4, Sec.16 T17S, R30E. Eddy Co. N.M. CASING 4" PVC, 61.7'

DATE 9/9/82 PERFORATIONS 4' to TD, 6-3/4"/1.5', 1/8" wide

WELL NUMBER MH-8 DRILLER L. Scarborough

ELEVATION ±3,672'

6-3/4" bit, drilled with air, 43' ENE of stake.

INTERVAL	DESCRIPTION	POROSITY
0-10	Caliche, silt, sand, and sandstone with calcareous matrix, white to pink.	Fair
10-20	Clayey to silty sand. Pink to reddish brown fine grained sub-angular quartz.	Fair
20-30	Silty to sandy clay; reddish brown, some minor caliche.	Poor
30-40	Silty quartz sand; reddish brown. Very fine, sub-angular sub-rounded, frosted, well sorted.	Good
40-50	As above, medium sorting.	Good
50-60	As 30-40	
	Total Depth 60'	
	Cemented from surface to 4'.	

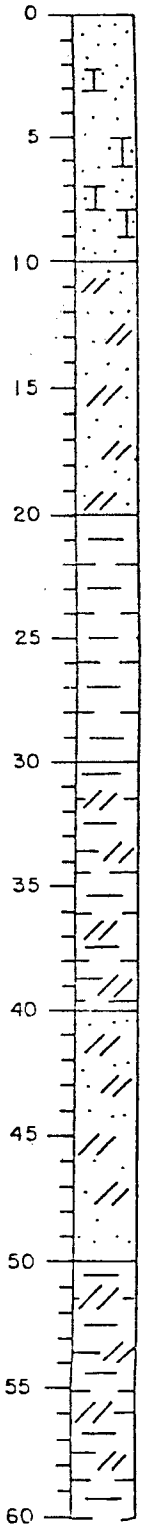
WELL NUMBER MH-9

TOTAL DEPTH 60'

CLIENT Loco Hills

DATE 9/10/82

LITHOLOGIC LOG



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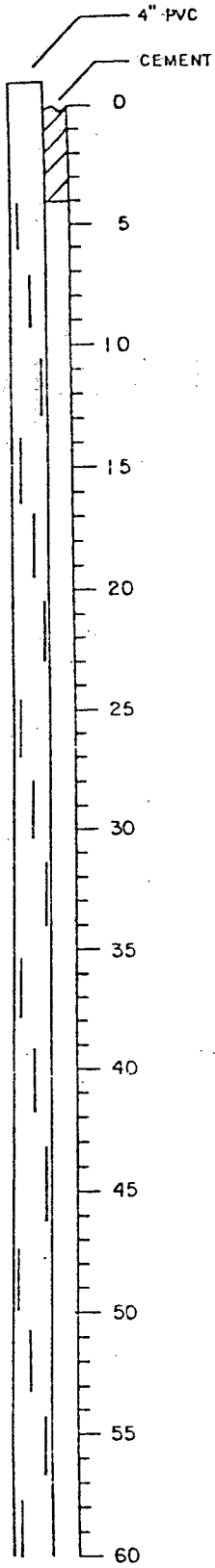


KEY

- PERFORATIONS
- CEMENT
- SAND
- CLAY
- SANDY CLAY OR CLAYEY SAND
- SILTY SAND
- CALCAREOUS SAND
- GRAVEL
- ANHYDRITE
- SILT
- SILTY CLAY

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co. S.W.L. Dry

LOCATION 850'FSL, 810 FEL SW/4, Sec. 16 T17S, R30E, Eddy Co. N.M. CASING 4" PVC, 61.9'

DATE 9/10/82 PERFORATIONS 4' to TD, 6-3/4"/1.5',1/8" wide

WELL NUMBER MH-9 DRILLER L. Scarborough

ELEVATION ±3,668

± 6-3/4" bit, drilled with air, location 65' WSW from stake.

INTERVAL	DESCRIPTION	POROSITY
0-10	Caliche, sand and sandstone with calcareous matrix, pink.	Fair
10-20	Sandy silt; reddish brown; minor sandy clay and caliche.	Fair
20-30	Clay; brown to slightly maroon.	Poor
30-40	Silty clay; reddish brown.	Poor
40-50	Silty sand; brownish red, very fine grained, sub-rounded to sub-angular, frosted .	Good
50-60	Silty clay; reddish brown.	Poor
	Total Depth 60'	
	Cemented from surface to 4'.	

WELL NUMBER MW-10

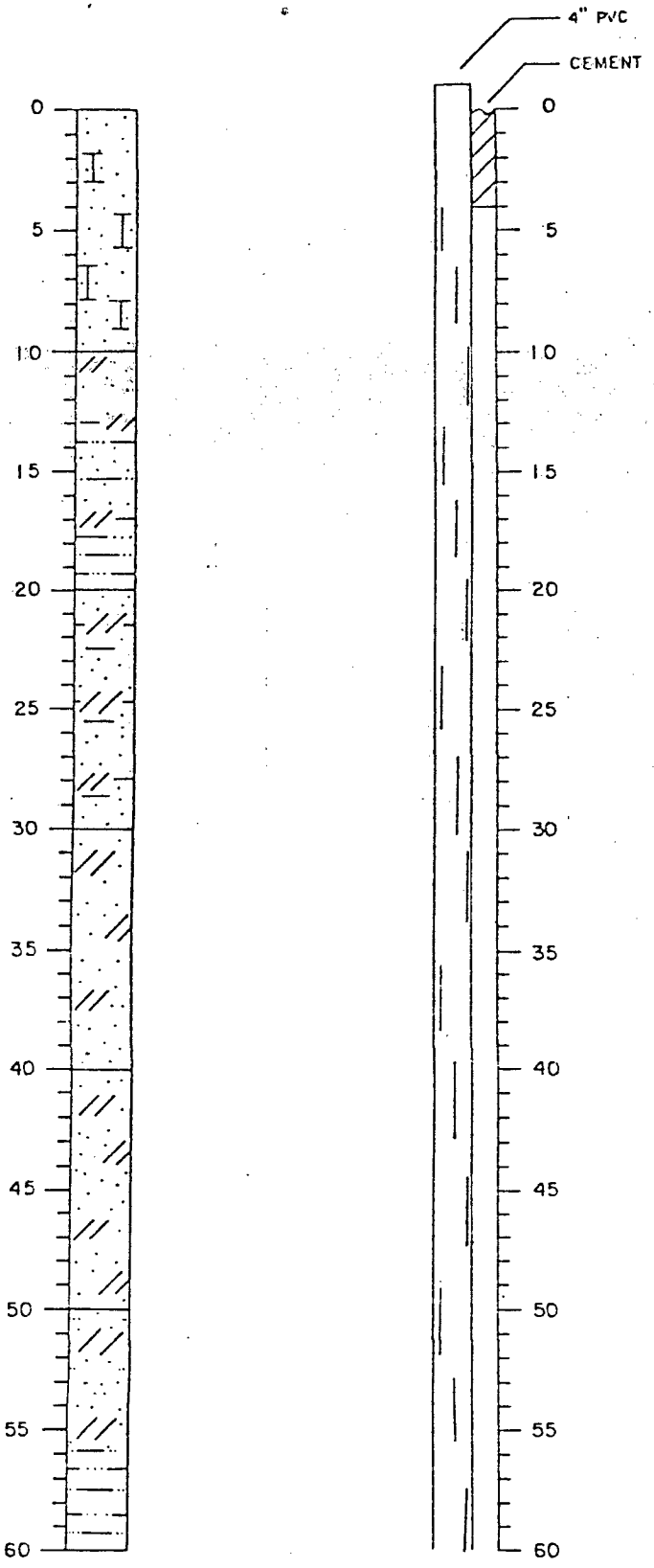
TOTAL DEPTH 60'

CLIENT Loco Hills

DATE 9/10/82

LITHOLOGIC LOG

COMPLETION LOG



KEY

PERFORATIONS

CEMENT

SAND

CLAY

SANDY CLAY OR CLAYEY SAND

SILTY SAND

CALCAREOUS SAND

GRAVEL

ANHYDRITE

SILT

SILTY CLAY

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND-CORPUS CHRISTI, TEXAS

SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co. S.W.L. Dry

LOCATION 870'FNL, 960'FWL, SW/4, Sec.16 T17S, R30E, Eddy Co. N.M. CASING 4" PVC, 61.5'

DATE 9/10/82 PERFORATIONS 4' to TD, 6-3/4"/1.5',1/8" wide

WELL NUMBER MH-10 DRILLER L. Scarborough

ELEVATION ±3,669 (Note: Elevation is @ 5' less than stake 3669-5=3664)

6-3/4" bit drilled with air, location approximately 114' south west of stake.

INTERVAL	DESCRIPTION	POROSITY
0-10	Sand and caliche; pink, sub-rounded to sub-angular grains fine grained pink quartz. Minor sandstone with calcareous matrix.	Good
10-20	Sand, silt and clayey silt and sand; reddish brown.	Fair
20-30	Clayey silt and sand; reddish brown very fine grained.	Poor
30-40	Silty sand; brownish red, sub-rounded to angular, frosted, very fine grained, well sorted.	Good
40-50	Silty sand; brownish red, sub-rounded to sub-angular, very fine to fine grained. Not as well sorted as 30-40.	Good
50-56	Silty sand; brownish, red orange. Fine grained well sorted, sub-angular to sub-rounded.	Fair
56-59	Silty to sandy clay; reddish brown.	Poor
59-60	As 50-56	Fair
	Total Depth 60' Cemented from surface to 4'.	

Ed L. Reed and Associates, Inc.

Consulting Hydrologists

MIDLAND - CORPUS CHRISTI

TEXAS

ED L. REED, P.E.
PRESIDENT

A. JOSEPH REED
EXECUTIVE VICE PRESIDENT

CHESTER F. SKRABACZ
VICE PRESIDENT FIELD OPERATIONS

1109 N. BIG SPRING
MIDLAND, TEXAS 79701
915 682-0556

V. STEVE REED
VICE PRESIDENT GEOLOGY

OIL INDUSTRIES BLDG.
SUITE 315
723 UPPER N. BROADWAY
CORPUS CHRISTI, TEXAS 78403
512-883-1353

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 7329 Exhibit No. 2
Submitted by Loco Hills
Hearing Date 7-14-82

May 25, 1982

Mr. James T. Jennings
Jennings & Christy
P.O. Box 1180
Roswell, New Mexico 88201

Dear Mr. Jennings:

Subsequent to our last report, we initiated a core test program in conjunction with Southwestern Laboratories in which we cored two locations in Section 16, T-17-S, R-30-E, Eddy County, New Mexico. Both core tests were stopped at a depth of 45 feet. The first test hole was located approximately 1000 feet from the south line and 950 feet from the west line of Section 16 and the second test hole was located approximately 1000 feet from the south line and 350 feet from the west line of Section 16.

The procedure was to drill from the surface down until clay zones were encountered at which time either Shelby tube cores or pitcher cores were obtained of the clay material. These cores were preserved and sent to Southwestern Laboratories for analysis and the data are presented in the attached laboratory report.

Three zones were encountered within the 45 feet penetrated by these two core tests which had low permeabilities. A zone in Boring No. 2 was encountered at 22 feet which had a permeability of $1.4X10^{-7}$ centimeters per second (cm/sec). In the same bore hole, at 36 to 39 feet the material had a permeability of $4.9X10^{-6}$ cm/sec. In Boring No. 1 a zone was encountered between 36-38 feet which had a coefficient of permeability of less than $1X10^{-9}$ cm/sec.

The zone with the lowest permeability will be the controlling influence for downward migration of any water stored in unlined ponds upon the land surface. Therefore we have calculated velocities of fluid movement, time of complete penetration and seepage rate per acre for the tightest two clay zones. Using a permeability of $1.4X10^{-7}$ we calculate that the rate of fluid movement through a two-foot thick bed of this material would be approximately $8.93X10^{-3}$ feet per day

requiring 224 days for a particle of fluid to move completely through this entire bed. At this rate, water would seep through a one-acre segment of this clay at 1.2 gallons per minute.

Using the permeability of $1X10^{-9}$ cm/sec which occurs at 36 to 38 feet in Boring No. 1, we calculate that the velocity of fluid movement through this zone would be $1.02X10^{-4}$ feet per day requiring 54 years for a particle of water to move entirely through this zone. At this rate, a one-acre tract would bleed 0.014 gallons per minute.

On the basis of sample descriptions from bore holes previously drilled under the supervision of our geologists, additional clays can be expected to a depth of at least 180 feet.

In summary, we have calculated that it will take at least 224 days to 54 years for water to move through the first 22 to 38 feet of Triassic material beneath the disposal site. We further calculate that between 0.014 and 1.2 gallons per minute of fluid can bleed through these clays per acre. Since the Rustler formation appears to occur at a depth of approximately 200 to 225 feet and additional clays are present to a depth of 180 feet as shown by previous borings, these additional clay zones may further impede the flow of water to the Rustler aquifer.

If additional information is needed concerning this matter, please advise.

Very truly yours,

ED L. REED & ASSOCIATES, INC.

A. Joseph Reed

AJR/lb

SWL

SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical consultation, fundamental testing and analytical services
P.O. Box 1526 • 612 Great Southwest Parkway • Arlington, Texas 76010 • 817/640-4425

April 6, 1982

Re: Test Borings
Laboratory Tests
Loco Hills, New Mexico
SWL Report No. 82-276

Mr. Steve Reed
315 Oil Industries Building
Corpus Christi, Texas 78403

Dear Mr. Reed:

Attached are copies of the field logs for the two test borings made at the locations you specified on the above site. Also attached are Summaries of the Atterberg Limits, Mechanical Grain Size, and Constant Head Permeabilities performed on the samples you designated.

We appreciate this opportunity to be of service. Please contact us if we can be of further assistance.

Sincerely,

SOUTHWESTERN LABORATORIES

Ralph B. Barnes, Jr., P.E.
Geotechnical Division

RBB:pa

SUMMARY OF PERMEABILITY TESTS

BORING NUMBER	DEPTH (FEET)	INITIAL MOISTURE	DRY DENSITY (PCF)	COEFFICIENT OF PERMEABILITY (CM/SEC)
1	36-38	14.5	119.2	less than 10-9
1	40-43	17.8	102.8	3.4×10^{-5}
2	20-22	19.5	106.1	1.4×10^{-7}
2	33-36	18.1	100.6	3.4×10^{-4}
2	36-39	16.2	100.3	4.9×10^{-6}

SWL Report No. 82-276

SOUTHWESTERN LABORATORIES

SUMMARY OF CLASSIFICATION TESTS

BORING NUMBER	DEPTH (FEET)	LIQUID LIMIT	PLASTICITY INDEX	PERCENT PASSING U.S. STANDARD SIEVES						
				#4	#8	#16	#30	#50	#100	#200
1	12-13	26	8	79	71	66	62	53	13	8
	22-23	26	8	98	94	90	87	79	32	21
	37-38	36	18	100	100	99	97	94	74	70
	40-43	23	6	99	99	98	84	13	7	
2	9-10	33	15	69	53	42	24	16	13	11
	20-22	20	3	99	98	95	60	4	2	
	33-36	22	5	100	98	95	92	76	18	10
	36-39	24	6	90	83	77	71	59	15	10

Report No. 82-276

SOUTHWESTERN LABORATORIES

LOG OF BORING

PROJECT: Loco Hills Disposal
CLIENT: Ed Reed and Associates

BORING NO.: 1
LOCATION: Loco Hills, New Mexico

DATE: 3/16/82 TYPE: Sample CASED TO: GROUND ELEVATION:

DEPTH IN FEET	SYMBOL	SAMPLE	STANDARD PENETRATION BLOWS/ft.	HAND PEN. tsf.	LEGEND: ■ SAMPLE, X STANDARD PENETRATION, ▼ WATER	WATER INFORMATION
						Drilled with air seepage not encountered

DESCRIPTION OF STRATUM

DEPTH IN FEET	DESCRIPTION OF STRATUM
	Tan clayey sand
5	Light tan caliche
10	Reddish tan and red clayey, cemented sand
15	
20	
25	
30	
35	
40	Tan clayey sand with pebbles
45	Bottom of boring at 45'
50	

SAMPLE: B B B B B B B

SOUTHWESTERN LABORATORIES

LOG OF BORING

PROJECT: Loco Hills Disposal
CLIENT: Ed Reed and Associates

BORING NO.: 2
LOCATION: Loco Hills, Texas

DATE: 3/16/82 TYPE: Sample CASED TO: GROUND ELEVATION:

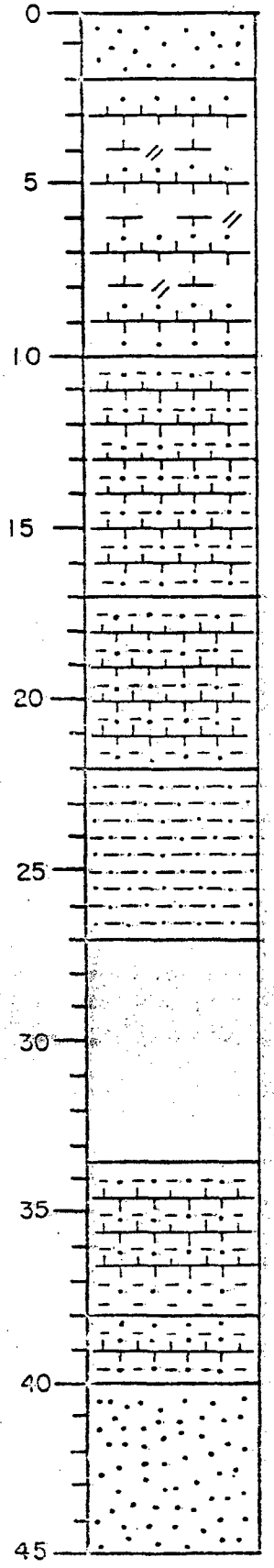
LEGEND:
- SAMPLE
- STANDARD PENETRATION
- WATER

WATER INFORMATION: Drilled with air seepage not encountered

DEPTH IN FEET	SYMBOL	SAMPLE	STANDARD PENETRATION BLOWS/ft.	HAND PEN. tsf.	DESCRIPTION OF STRATUM
		B			Tan sand
5		B			Light tan caliche w/broken rock
10		B			Tan and reddish tan clayey cemented sand with some gravel
15					
20					
25					
30					
35					Tan clayey sand with pebbles
40					
45					Bottom of boring at 45'
50					

SOUTHWESTERN LABORATORIES

BORING NO. 1



$<10^{-9}$

3.4×10^{-5}

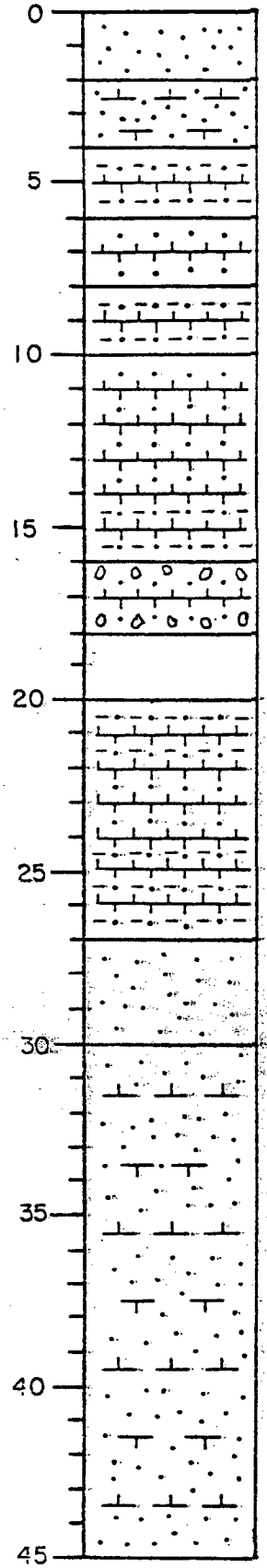
BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

Case No. 7299 Exhibit No. 3

Submitted by Lee Wells

Hearing Date 7-14-82

BORING NO. 2



1.4×10^{-7}

3.4×10^{-4}

4.9×10^{-6}

LITHOLOGIC DESCRIPTION

SAND

SANDY CLAY OR CLAYEY SAND

SANDSTONE

GYPSUM

SILT

CALICHE

GRAVEL

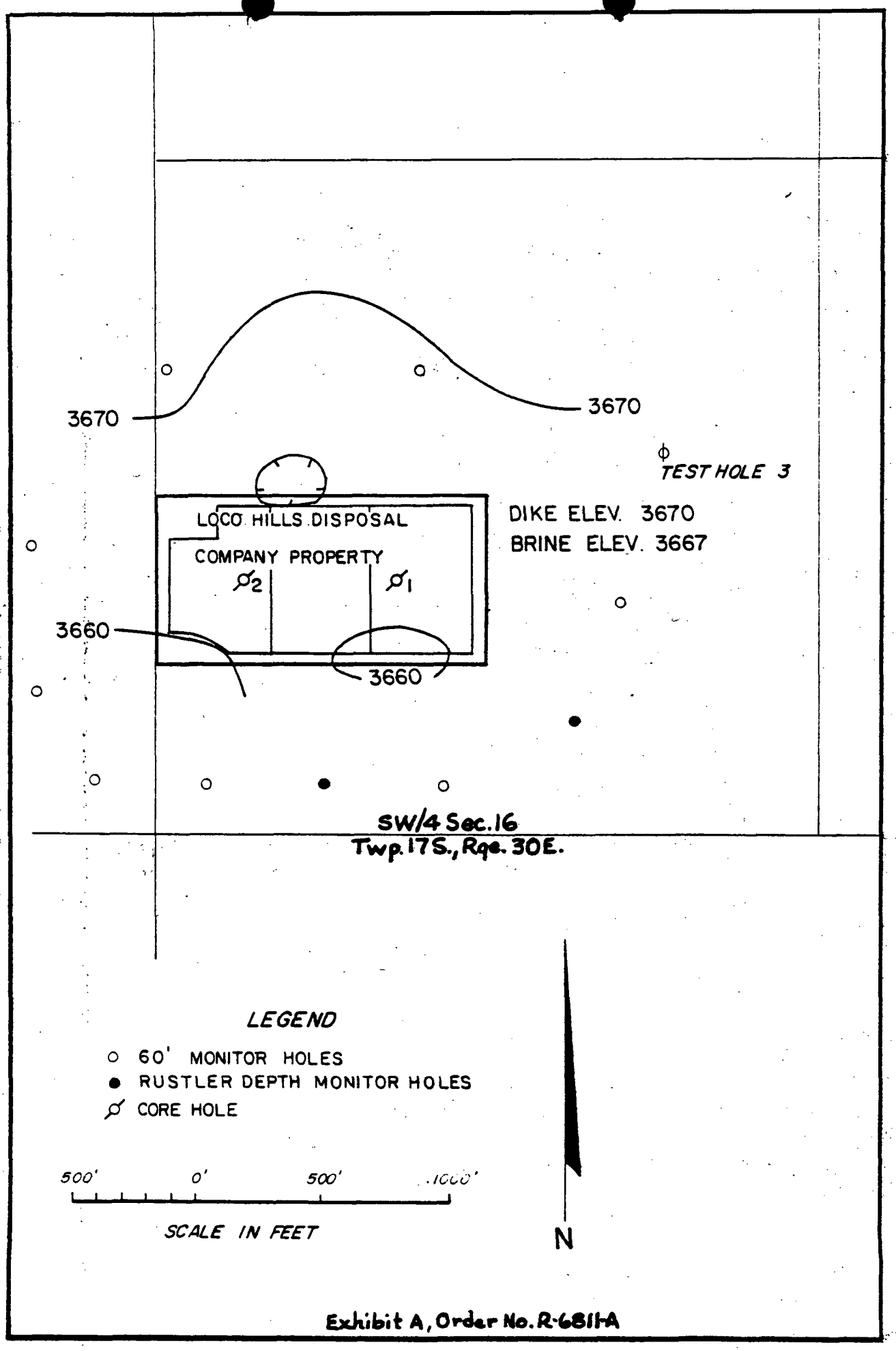
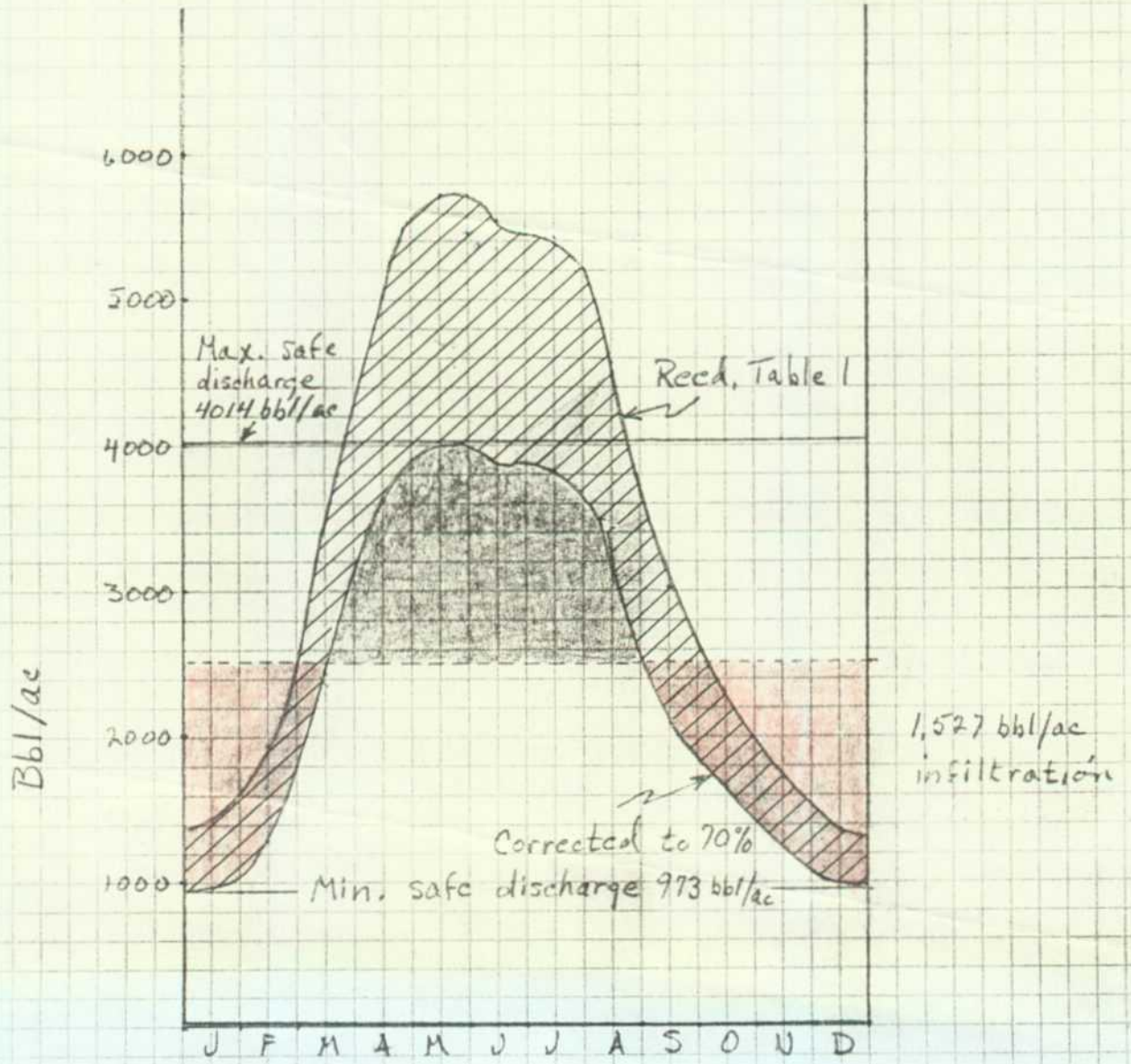


Exhibit A, Order No. R-6811-A

Table 1. Evaporation Rates, Red Bluff Reservoir

Month	Net Evaporation (inches)	Bbl/acre	30% Cor. Factor (0.23-0.36)
January	2.18	1409	986
February	3.01	1946	1362
March	5.32	3439	2407
April	7.97	5152	3606
May	8.87	5734	4014
June	8.55	5527	3869
July	8.4	5430	3801
August	7.1	4590	3213
September	4.67	3019	2113
October	3.59	2320	1624
November	2.79	1804	1263
December	2.15	1390	973
Totals	64.6	41,760	29,232


6,000
5000
Max. safe discharge 4014 bbl/ac
Recd. Table I
4000
3000
Bbl/ac
2000
1,527 bbl/ac infiltration
Corrected to 70%
1000
Min. safe discharge 973 bbl/ac
J F M A M J J A S O N D

2.

OCD FILES

35MM DRAWINGS

NM 1004

FILE NUMBER

General Correspondence

DOCUMENT TYPE

1991 - 1981

2

NO OF DWGS

R - 30 - E

T 17 S

LOCO HILLS W.D. CO.

Legend

- Abandoned Windmill Domestic Well or Testhole
- Gas Well
- Oil Well
- Dry & Abandoned Oil Well

3424' Sea Level Elevation of Top of Russler Formation

5.

2000' 0 2000' 4000'

SCALE IN FEET

N

FIGURE 4

EDDY COUNTY, NEW MEXICO

LOCO HILLS WATER DISPOSAL COMPANY

SALT WATER DISPOSAL SITE

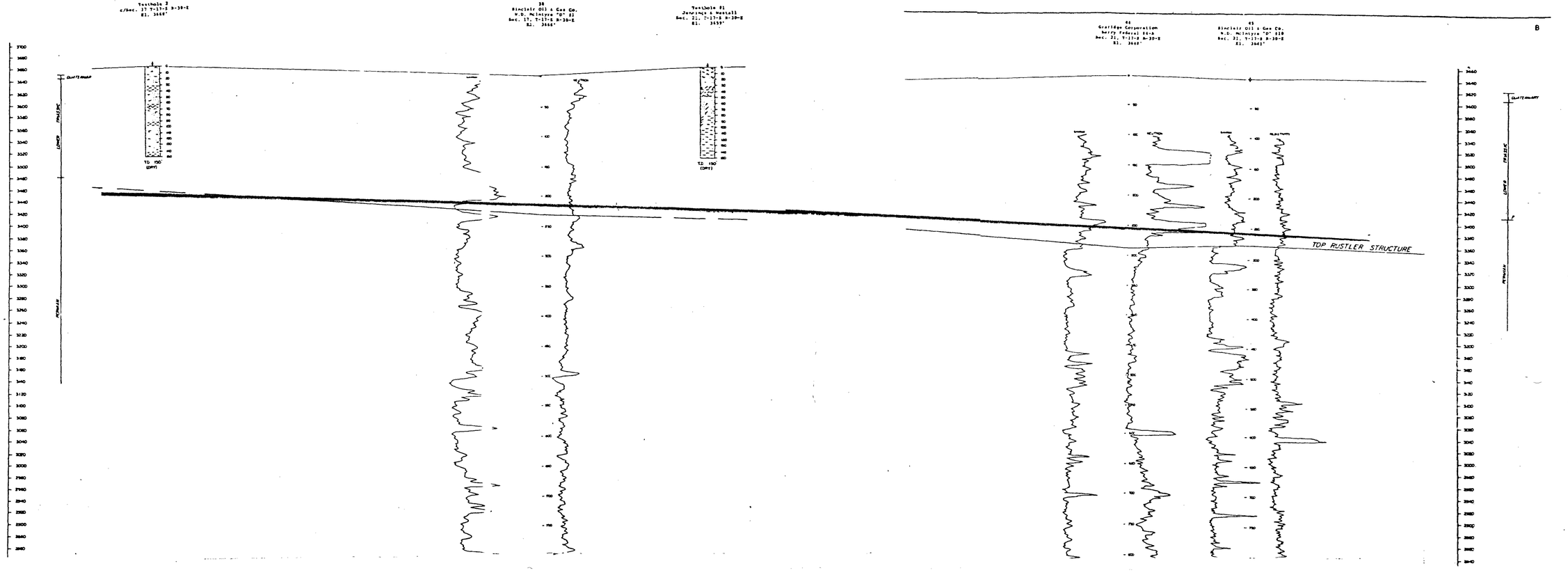
RUSTLER STRUCTURE

3-1981

DRN. BY DR.

ED L. REED & ASSOCIATES, INC.
CONSULTING HYDROLOGISTS
MIDLAND, CORPUS CHRISTI, TEXAS

THE REPRODUCTION OF THE FOLLOWING DOCUMENT (S) CANNOT BE IMPROVED DUE TO THE CONDITION OF THE ORIGINAL



4.

PROPOSED
SALT WATER DISPOSAL FACILITY

FOR

LOCO HILLS WATER DISPOSAL CO.
EDDY COUNTY, NEW MEXICO
AUGUST 1981

PROPOSED SALT WATER DISPOSAL FACILITY

LOCO HILLS, EDDY COUNTY, NEW MEXICO

INTRODUCTION

This firm has examined an area just north of Loco Hills, in northeastern Eddy County, New Mexico, for the feasibility of surface disposal of produced oil field brines. The investigation has shown that no fresh ground water is present in the vicinity of the proposed disposal site and thus no ground water degradation is anticipated. The area designated for surface disposal is the north half of the southwest quarter of the southwest quarter of Section 16, T.17S., R.30E.

GEOLOGY

The surface in the vicinity of Section 16 is underlain by about 10 feet of caliche and sandy caliche. This caliche cap rests on top of Triassic redbeds. The Triassic generally extends to a depth of about 250 to 300 feet where it lies on the Permian-age Rustler Formation.

The Triassic redbeds in the study area have been assigned to the Santa Rosa Formation, the lower member of the Dockum Group. The upper member (Chinle) consisting predominantly of red clay which is present in far southeastern New Mexico, is absent in northeastern Eddy County. The Santa Rosa consists principally of fine-grained sand with interbedded siltstone, silty clay and clay. Three cross-sections have been constructed (figures 1, 2, and 3) using gamma ray-neutron logs from oil wells and sample logs from test holes drilled for this study. An attempt was made to correlate the clay zones in the Santa Rosa Formation to determine if the clays were continuous across the site. We

have concluded from this exercise that the clays are essentially discontinuous and cannot be correlated with any confidence.

The Rustler Formation consists predominantly of gypsum and anhydrite in its upper part. The lower part of the Rustler Formation consists of dolomite interbedded with anhydrite. Figure 4 is a structure map contoured on the top of the Rustler Formation. This map shows that the Rustler has a regional southeastward dip. In the vicinity of Section 16 the Rustler has an irregular upper surface. A collapsed or erosional depression in the Rustler lies just southeast of Section 16. This depression plunges southwestward. The southwest quarter of Section 16 lies on the northwestern flank of this depression. The regional dip brings the Rustler Formation to the surface about 10 miles west of Section 16. The older Paleozoic formations dip regionally to the southeast into the Delaware Basin at the rate of about 80 feet per mile (Kelly, 1971).

HYDROLOGY

There is no evidence of ground water in the Santa Rosa Formation within a four mile radius of the proposed disposal site. Six test holes ranging in depth from 130 to 320 feet were drilled for this investigation to determine the presence of ground water and the lithologic characteristics of the Santa Rosa. One of these test holes (TH-6) was drilled 90 feet into the Rustler Formation without encountering ground water (figure 5).

Ground water is produced from the Triassic four to five miles west and seven to eight miles south of the proposed site. These wells are shown on figure 5. The nearest well completed in the Triassic is in Section 35, T-17-S, R-29-E. This well produces

water with reported chloride concentrations of 4,000 milligrams per liter (mg/l). The high chlorides suggest this well may be contaminated by oil field activities. Two wells five miles west of the site in Section 22, T-17-S, R-29-E, are also presumably completed in the Triassic. A water sample from one of these wells has a dissolved solid concentration of 2,722 mg/l. Wells completed in the Triassic south of the disposal site encounter water with total dissolved solids ranging between 932 and 6,882 mg/l. One well six miles northeast of the site (Section 24, T-16-S, R-30-E) produces Triassic water with total dissolved solids of 644 mg/l.

An abandoned water supply well drilled in the southeast quarter of Section 21, T-17-S, R-30-E, about a mile south of the disposal site was completed in the basal Rustler Formation. Analysis of this water indicates that the Rustler contains extremely poor quality water with chlorides exceeding 10,000 mg/l.

The local hydraulic gradient (figure 5) is to the southeast at a rate of about 25 to 30 feet per mile. Hendrickson and Jones (1952) show a regional hydraulic gradient south and southwestward toward the Pecos River.

DISPOSAL SITE FEASIBILITY AND OPERATION

The area of study lies just north of the Clayton Basin exemption. The site is in an area where fresh ground water is nonexistent. Indeed, as shown in figure 6, several brine pits have been permitted in the area because of the absence of fresh ground water. Additionally, surface disposal of salts generated by the potash industry is common in the area.

It is our opinion that brine placed in surface pits on Section 16 will migrate downward through the Santa Rosa to the Rustler Formation. The test holes drilled for this study show that the Triassic section is comprised largely of sands and thus vertical percolation is expected. Interbedded clays in the Santa Rosa will divert the brine for some distance horizontally. However, as discussed above, the clay zones appear to be discontinuous and thus, are not expected to create a widespread horizontal barrier. Once the brine has reached the Rustler Formation, it should migrate in a southerly to southeasterly direction.

We believe it is desirable to verify that the brine introduced into pits on Section 16 is indeed traveling downward to the Rustler. Even though there is no Triassic ground water in the vicinity of Section 16, there is potable water south and west of the site. After many years of horizontal movement of brine in the Triassic, the ground water to the south could be jeopardized. In order to detect undue horizontal migration of the brine, a ring of monitor holes is proposed around the disposal pit (figure 7). The original pit is anticipated to cover approximately five acres and ultimately expanded to about 15 acres. Monitor holes will be drilled 500 feet from the perimeter of the pit on a horizontal spacing of 500 feet. Test hole drilling in the area has shown that the first clay of consequence lies between 30 and 50 feet below the surface. This clay, if it is continuous, will divert the brine in a horizontal direction. It is anticipated, therefore, that the monitor holes will be drilled to a depth of 60 feet. Significant horizontal migration of the salt water will thus be detected prior to the brine leaving the property. Two of the monitoring holes (see figure 7)

will be drilled [redacted] the top of the Rustler. [redacted]ese two monitoring holes, which are situated downdip structurally from the pit, will detect horizontal migration above the Rustler. All of the monitoring holes will be cased with PVC pipe having at least a two inch inside diameter which will enable periodic sampling. The upper five feet of the casing will be cemented to prevent surface water from migrating down the annulus between the casing and the walls of the hole. The casing will be perforated from total depth to 10 feet below the surface with saw cuts or a minimum of four 1/4 inch holes per foot. The monitoring holes will be examined four times a year for the presence of brine.

In the event that the size of the disposal pit is enlarged, monitor holes which lie inside the expanded pit, or less than 500 feet from its perimeter will be abandoned by completely filling them with cement. Replacement monitor holes will be drilled such that the 500 foot horizontal spacing is maintained. Two Rustler depth monitor holes will be maintained. Should expansion require that the deep monitors be abandoned, they will be plugged with cement and will be redrilled such that a deep monitor is always maintained on the south and southeast sides of the pit.

The pits will be maintained with a minimum three foot freeboard.

Prior to discharging brine into the disposal pit, residual hydrocarbons will be removed by gravity separation in steel tanks. Discharged brine will enter a 50' x 50' earthen skimmer pit which will remove the last remaining hydrocarbons. Brine will be discharged into the disposal pit by siphoning from the bottom of the skimmer pit.

EVAPORATION POTENTIAL

Net evaporation figures have previously been reported to the Oil Conservation Division for data obtained from the Red Bluff Reservoir. Table 1 shows the average net evaporation in inches and the expected monthly evaporation in barrels per acre. We have previously demonstrated by using the Red Bluff evaporation figures that 3,180 barrels of fresh water can be evaporated per month per acre. This rate of inflow allows no accumulation from year to year. The actual evaporation rate at the Loco Hills site is expected to be less than 3,180 barrels per month per acre for the following reasons.

1. Loco Hills is about 60 miles north of Red Bluff Reservoir.
2. The elevation at Loco Hills is about 1,000 feet higher.
3. Evaporation from brine will be lower than fresh water.

With these factors considered we have estimated that the average disposal rate which will not allow yearly accumulation will be between 2,000 and 2,500 barrels per month per acre. This figure, of course, does not take into account infiltration which we know will occur. A 15-acre pit, therefore, should have a capability of disposing a minimum of 1,000 barrels of brine per day.

CONCLUSIONS

This investigation has shown the following:

1. The Loco Hills site is underlain by Triassic Santa Rosa Formation which does not contain ground water.
2. The underlying Rustler Formation contains ground water of extremely poor quality.

3. The Triassic formation 5 to 7 miles from the site contains a small amount of fresh ground water.

4. The material underlying the Loco Hills site is permeable and will allow migration of the brine through the bottom of the pit.

5. Clay zones within the Triassic are probably sufficiently discontinuous that the brine migrating from the pit will reach the Rustler Formation.

6. The possibility that the clays will divert the brine horizontally can not be overlooked. To detect this occurrence, a ring of monitor holes is proposed.

7. Brine that reaches the Rustler Formation will not adversely affect ground water or surface water.

Respectfully submitted,

ED L. REED & ASSOCIATES, INC.

V. Steve Reed

V. Steve Reed

Chester F. Skrabacz

Chester F. Skrabacz

VSR/cm

Table 1. Evaporation Rates, Red Bluff Reservoir

Month	Net Evaporation (inches)	Bbl/acre
January	2.18	1409
February	3.01	1946
March	5.32	3439
April	7.97	5152
May	8.87	5734
June	8.55	5527
July	8.4	5430
August	7.1	4590
September	4.67	3019
October	3.59	2320
November	2.79	1804
December	2.15	1390
Totals	64.6	41,760

REFERENCES

Hendrickson, G. E., and Jones, R. S., 1952,Geology and ground-water resources of Eddy County, New Mexico.

Kelley, Vincent C., 1971, Geology of the Pecos Country, South-eastern New Mexico.

SAMPLE DESCRIPTIONS

TEST HOLES

CLIENT Loco Hills Water Disposal Co. S.W.L. No Water

LOCATION NWNW Sec 21 T 17 S R 30 E, Eddy County, 806W & 540N New Mexico CASING 3" PVC to 50'

DATE 12/29/80 PERFORATIONS Slots 100' to 150'

WELL NUMBER TH 1 DRILLER L. Scarborough, Lamesa, Texas

ELEVATION 3658.9 GEOLOGIST: Chester F. Skrabacz

This location is approximately 75' SE of abandoned caliche pit which formerly measured 75 x 150' ± 250' SW of Arco #1-C McIntyre oil wells.

INTERVAL	DESCRIPTION	POROSI
0- 10	80% Sand; pink-red, medium to coarse grain, quartzitic, round to subround, loose	
	20% Caliche; red-white, calcareous sandstone	good
10- 20	As Above	good
20- 30	100% Sand, fine-medium-coarse, reddish, loose, subround, quartzitic	good
30- 40	70% Siltstone; pinkish, very fine sand and silt	
	20% Red clay with sand	
	10% Caliche; sandstone, trace gravels and calcareous snad	fair
40- 50	75% Silty clay and sandy clay, pink to red	
	25% Clay, reddish	none-sl
50- 80	100% Sand; fine-medium-coarse, reddish, loose, subround to round, quartzitic,	
	trace siltstone	good
80- 90	90% Siltstone; pinkish, argillaceous and sandy; 10% Clay	None
	Dry hole drilling started to inject some water to keep hole from slumping	
90-100	70% Sandstone and silt; pink-red, slightly argillaceous	
	30% Clay, reddish with sand	Sl-none
100-150	100% Clay; reddish-brown, slight sandy, few hard streaks sandstone	none
	Total Depth: 150' Jet from total depth, no fluid; wait 3 minutes, jet again, no fluid	
	Top of Triassic: 9'	
	Drillers:	
0- 9	Caliche	
9-100	Sandy clay and sand	
100-150	Heavy clay with sand streaks	
	Drillers water from Caprock Water Co., Loco Hills. Checked chlorides 30 ppm.	

CLIENT Loco Hills Water Disposal Co.

LOCATION Approx. Center of Section 17 T 17 S R 30 E, Eddy Co, New Mexico

DATE 12/29/80 2129' FEL 1960' FS

WELL NUMBER TH 2

ELEVATION 3668.9 topo

S.W.L.

CASING

PERFORATIONS

DRILLER L. Scarborough, Lamesa, Texas

GEOLOGIST: C. F. Skrabacz

138' West of oil well #2-F, General American McIntyre.

INTERVAL	DESCRIPTION	POROSI
0- 10	100% Caliche; white calcareous sandstone, some free limestone	slight
10- 20	80% Sand; reddish, fine-medium, subround, loose, quartzitic with caliche	
	20% Clay, choc-red	very sl
20- 30	100% Sand, red-orange, round-subround, loose, fine-medium, quartzitic with	
	some clay	none
30- 40	100% Clay; reddish-chocolate, silty	none
40- 60	100% Sand; red-orange, fine-medium, loose, slightly argillaceous	slight
60- 70	100% Clay; reddish-brown, very silty	none
70- 90	100% Sand; fine-medium-coarse, reddish-orange, argillaceous	slight
90-100	100% Clay, red-brown and silt.	none
	Hole dry. Driller started to inject drilling fluid @ 100'.	
100-110	100% Clay and sand, reddish-brown (mix)	none
110-140	75% Sand, fine-medium, red-brown, loose to argillaceous	
	25% red clay and silt	sl-none
140-150	100% Clay; red-brown, sandy	none
	Total Depth: 150' Jet from 150', no water. Waited 3 minutes jet again 150', no fluids	
	Top of Triassic: 14'	

SAMPLE DESCRIPTION

CLIENT Loco Hills Water Disposal Co. S.W.L. No Water

LOCATION c/Section 16, T 17 S R 30 E, Eddy Co. New Mexico 1780 S; 2540 W CASING 3" PVC 0 - 153'

DATE 12/29/80 PERFORATIONS 100 - 153'

WELL NUMBER TH 3 DRILLER L. Scarborough, Lamesa, Texas

ELEVATION 3667.3 topo GEOLOGIST: C. F. Skrabacz

212' SE of oilwell Texas American #3 Etz State

INTERVAL	DESCRIPTION	POROSITY
0- 10	100% Caliche; white, calcareous, sandstone, some limestone	slight
10- 20	30% Caliche; 70% Siltstone and clay; reddish brown, sandy	slight
20- 40	75% Sand; reddish, fine-medium-coarse, loose, subround, quartzitic	
	20% Caliche; 5% Clay	slight
40- 50	95% Sand; reddish, fine-medium with clay; 5% caliche	fair-good
50- 80	90% Sand; reddish, fine-medium, subround, loose, quartzitic; 10% silty clay	fair-sl
80-120	95% Sand; As Above; 5% clay streak	fair-good
120-153	75% Sand; 25% Clay, reddish, sandy	fair-good
	Total Depth: 153' Jet @ 153' no water; waited 10 minutes, jetted again, no water in hole.	
	Top of Triassic: 11'	

CLIENT Loco Hills Water Disposal Co. S.W.L. None

LOCATION c/section 21, T 17 S [illegible]30 E, Eddy County, 2386 FN 2325 FW New Mexico CASING

DATE 12/30/80 PERFORATIONS

WELL NUMBER TH 4 DRILLER L. Scarborough, Lamesa, Texas

ELEVATION 3647.2 Surv. GEOLOGIST: C. Skrabacz

Location 90' SE of Oilwell Petroleum Corp. of Texas #4, Berry 'A' SE/4 NW/4 Sec 21 T17S R30E

INTERVAL	DESCRIPTION	POROSI
0- 10	100% Caliche, white, calcareous, sandstone, some red loose sand	
10- 30	30% Caliche; 40% red loose sand; 30% gravels up to 3/8"	
30- 40	40% Sand, red loose, medium-coarse; 60% red argillaceous sand	
40- 50	100% Clay, red with sand	
50- 80	75% Sand, fine-medium-coarse, red, loose; 25% red clay	
80-100	50% Sand; 50% clay	
100-150	75% Sand; 25% Clay	
150-170	As Above	
170-180	Gravel up to 1"	
	Samples drilled with water and not distinguishable	
180-200	60% red sandy clay; 40% Sand	
	Jetted - no water from 200'	
	Top of Triassic: 11'	
	No PVC	
	Drillers log:	
0- 11	Caliche	
11- 35	Sand-sandy clay	
35-145	Clay & sand	
145-175	Sand & Gravel	
175-180	Clay	
180-200	Sand & Gravel	

CLIENT Loco Hills Water Disposal Co.

LOCATION Sec 19, T17S, R30E, Eddy County, N.M. 1350' FE 2500'FS

DATE 12/30/80

WELL NUMBER TH 5

ELEVATION 3625 topo

S.W.L.

CASING

PERFORATIONS

DRILLER L. Scarborough, Lamesa, Texas

GEOLOGIST: C. Skrabacz

50' SW of oil well General American No. 25-A Burch SE/4 Sec 19, T17S R30E

INTERVAL	DESCRIPTION	POROSITY
0- 10	75% red siliceous sandstone; some white calcareous sandstone	
	25% red loose sand	none
10- 20	20% caliche; 80% clay, firm, red-brown	none
30	100% Sand; reddish, medium-coarse, loose to cemented with clay	slight
40	70% As Above; 30% Sandy firm clay	none-sl
50	20% Caliche; 60% Sand; medium-coarse, loose to slightly argillaceous	
	20% Clay, red	slight
50- 60	100% Clay, red, firm, some sand	none
60- 90	100% Sand, loose, red, fine-medium-coarse, subround	good
90-100	70% Sand; 30% Gravel	"
100-130	40% Sand, fine-medium-coarse, loose, 60% Clay	
	Total Depth: 130' Abd hole. Hole too large, no circulation or control	
	Drillers log	
0- 11	Caliche	
11- 65	Clay with sand streaks	
65-130	Sand with some clay	
	Top of Triassic: 11'	

CLIENT Loco Hills Water Disposal Co. S.W.L.

LOCATION NW SW/4 Sec 21, T17S R[illegible], Eddy County, New Mexico 1338 FSL, 112 FWL CASING

DATE 12/31/80 PERFORATIONS

WELL NUMBER TH 6 DRILLER

ELEVATION 3624.4 Surv.

Location is 337' south & little west of Holly #H-2 Brigham SWD Sec 21 , 17S R30E, 1650'S-330'W

INTERVAL	Drilling with water DESCRIPTION	POROSITY
0- 10	70% red fine-medium, loose sand; 30% Caliche, white, calcareous sand	fair
10- 30	100% Sand, red in heavy clay	none
30- 40	70% Sand, red, fine grain in clay; 30% loose sand	none
40- 50	100% Sand in heavy clay (red)	none
50- 80	100% Clay; reddish, firm with sand	none
80-100	100% Sand; reddish in heavy clay	none
100-110	100% Clay, red firm sandy	none
110-120	70% Gravel; loose, round, up to 3/8"; 20% Sand; 10% Clay	fair
120-130	30% Sand & gravel; 70% Sand in heavy clay	slight
130-140	100% Clay; red firm sandy	none
140-150	100% Sand in heavy clay (soft)	none
150-180	70% Sand in heavy clay; 30% Clay, firm	none
180-200	80% Sand in clay and 20% clay, light colored	slight
200-220	As Above	
220-230	60% Sand in heavy clay; 40% Anhydrite, tan-white, fine crystalline	none
230-260	40% White, dense, fine crystalline anhydrite; 50% white soft gypsum	
	10% red clay	slight
260-270	30% Anhydrite; 30% gypsum, 40% orange siltstone	
270-280	70% Anhydrite; 30% gypsum	
280-300	40% Anhydrite; white, fine crystalline; 50% gypsum, white, chalky, purplish	
	10% Sand (conglomerate)	
300-320	70% Anhydrite; 20% Gypsum, 10% red clay	
	@ 300' Jetted hole clean, waited 10 minutes; no fluid, waited 20 minutes;	
	no fluid, waited 30 minutes; no fluid.	
	Drill dry to 320'	
	No fluid, dry cutting to surface only	
	Set 3" PVC 0 - 320' Slotted 220' - 320'	
	Drillers Log:	
0- 11	Caliche-Sand	
11- 52	Red Clay	
52- 65	Sand	
65- 71	Clay	
71- 77	Sand & Clay	
77- 85	Red Clay	
85- 93	Sand & Clay	
93-110	Red Clay	
110-124	Sand & Gravel	
124-140	Red Clay	
140-165	Sand & Gravel with clay streak	
165-180	Red Clay	
180-215	Sand & Red Clay	
215-228	Sand-Clay	
228-320	Gypsum, Anhydrite	

WATER QUALITY

SOUTHWESTERN LABORATORIES

FORT WORTH - DALLAS - HOUSTON - MIDLAND - BEAUMONT - TEXARKANA

CONSULTING, ANALYTICAL CHEMISTS
AND TESTING ENGINEERS

Midland Texas 1-6-81 File No. C-1950-W

Report of tests on Water

To Ed L. Reed & Associates Date Rec'd. 1-2-81

Received from

Identification Marks Eddy County, New Mexico, Jennings & Christy Windmill, 1985 FW, 660 FN, Section 24, T-16-S, R-30-E, 12-30-80, Sampled by Chester Skrabacz.

	mg/L
Chloride	101
Sulfate	242
Total Dissolved Solids @ 180° C.	664

3cc Ed L. Reed & Associates

SOUTHWESTERN LABORATORIES

Jack H Barlow

Lab. No. 31992

SOUTHWESTERN LABORATORIES

FORT WORTH - DALLAS - HOUSTON - MIDLAND - BEAUMONT - TEXARKANA

CONSULTING, ANALYTICAL CHEMISTS
AND TESTING ENGINEERS

Midland Texas 1-6-81 File No. C-1950-W

Report of tests on Water

To Ed L. Reed & Associates Date Rec'd. 1-2-81

Received from

Identification Marks Eddy County, New Mexico, Jennings & Christy Elec. Sub, Walters Camp, NW SE/4 Section 26, T-18-S, R-30-E, 12-30-80. Sampled by Chester Skrabacz.

	mg/L
Chloride	138
Sulfate	808
Total Dissolved Solids @ 180° C.	1236

3cc Ed L. Reed & Associates

SOUTHWESTERN LABORATORIES

Jack H Burton

Lab. No. 31991

SOUTHWESTERN LABORATORIES
FORT WORTH - DALLAS - HOUSTON - MIDLAND - BEAUMONT - TEXARKANA

CONSULTING, ANALYTICAL CHEMISTS
AND TESTING ENGINEERS

Midland Texas 9-16-80 File No. C-1902-W

Report of tests on Water

To Ed L. Reed & Associates Date Rec'd. 9-3-80

Received from

Identification Marks Eddy County, New Mexico, Jennings, etal, Stock windmill No. 1, NWNW, Section 22, T-17-S, R-29-E, 8-28-80, Sampled by Chester Skrabacz.

	mg/L
Sulfate	1719
Chloride	45
Total Dissolved Solids (Evap. @ 180° C.)	2722

3cc Ed L. Reed & Associates

SOUTHWESTERN LABORATORIES
Jack H Barker

Lab. No. 31784

SOUTHWESTERN LABORATORIES

FORT WORTH - DALLAS - HOUSTON - MIDLAND - BEAUMONT - TEXARKANA

CONSULTING, ANALYTICAL CHEMISTS
AND TESTING ENGINEERS

Midland Texas 9-16-80 File No C-1902-W

Report of tests on Water

To Ed L. Reed & Associates Date Rec'd. 9-3-80

Received from

Identification Marks Eddy County, New Mexico, Jennings, etal, Stock Windmill No. 3
SESW Section 10, T-18-S, R-29-E, 8-28-80, Sampled by Chester Skrabacz.

	mg/L
Sulfate	2088
Chloride	2035
Total Dissolved Solids (Evap. @ 180° C.)	6882

3cc Ed L. Reed & Associates

SOUTHWESTERN LABORATORIES

Jack H Baulke

Lab. No. 31785

SOUTHWESTERN LABORATORIES

FORT WORTH - DALLAS - HOUSTON - MIDLAND - BEAUMONT - TEXARKANA

CONSULTING, ANALYTICAL CHEMISTS
AND TESTING ENGINEERS

Midland Texas 9-16-80 File No. C-1902-W

Report of tests on Water

To Ed L. Reed & Associates Date Rec'd. 9-3-80

Received from

Identification Marks Eddy County, New Mexico, Jennings, etal, Stock Windmill No. 4
Section 24, T-18-S, R-29-E, 8-28-80, Sampled by Chester Skrabacz.

	mg/L
Sulfate	442
Chloride	28
Total Dissolved Solids (Evap. @ 180° C.)	932

3cc Ed L. Reed & Associates

SOUTHWESTERN LABORATORIES

Jack H Barton

Lab. No. 31786